

BUSINESS BEHAVIOR:
Statistical Analysis of Performance and
Characteristics of Ventures based on the SPI's PIMS
Database and Other Sources

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TABLE OF CONTENTS

	Page
TABLE OF CONTENTS	2
FOREWORD.....	7
PREFACE & EDITOR'S COMMENTS	9
1 GENERAL CORRELATES OF PROFITABILITY.....	11
2 RELATIVE MARGIN AND RELATIVE SHARE.....	17
3 RELATIVE PRODUCT QUALITY	20
4 TURNOVER (SALES/INVESTMENT)	24
5 CAPACITY UTILIZATION	28
6 PROFIT MARGIN PRESSURES	31
7 CAPACITY EXPANSION	35
8 CAPACITY SIZING	39
9 SALES GROWTH OF INDUSTRIAL PRODUCTS	45
10 IS SALES POTENTIAL A PHANTOM?.....	50
11 AUDITING SALES FORECASTS	54
12 SALES ESTIMATES FOR NEW PRODUCTS.....	59
13 ENTRY OF NEW COMPETITORS	65
14 BARRIERS.....	71
15 MARKET SHARE PENETRATION	75
16 EFFECTS OF PRICE CHANGES	81
17 SELLING PRICE INFLATION.....	86
18 PRICE INFLATION EFFECTS OF MARKETING AND R&D EXPENSES	90
19 CHANGES IN MARKET SHARE AND RELATIVE PRICE.....	95
20 PROFIT IMPACT OF SHARE AND PRICE CHANGES	101
21 INVESTMENT AND SALES EFFECT OF SHARE AND PRICE CHANGES	107
22 VOLUME AGGRESSIVENESS VS. PRICE AGGRESSIVENESS.....	112
23 MARKETING EFFORT, PERCEIVED VALUE AND PROFITABILITY.....	119
24 PREVIOUS STUDIES ON INDUSTRIAL ADVERTISING	124
25 MARKET SHARES AND BROKEN STICKS	129
26 SELLER CONCENTRATION.....	133

27	RELATIVE MARKET SHARE.....	139
28	THE IMPORTANCE OF MARKET SHARE POSITION	146
29	ANOTHER LOOK AT MARKET SHARE POSITION	152
30	MARKET SHARE STRUCTURE	158
31	PROFIT IMP ACT OF MARKET SHARE CHANGES	163
32	PROS/MARKET SHARE LEVERAGE.....	168
33	PROFIT IMPACT OF COMPETITIVE ADVANTAGE FACTORS	173
34	CHANGES IN VOLUME, SELLING PRICE AND PROFIT MARGIN	177
35	INFLATION AND RECESSION IN THE 1970s.....	182
36	RELATIVE DIRECT COST	187
37	MANAGING HIGH RELATIVE DIRECT COST BUSINESSES	191
38	MANAGING LOW RELATIVE DIRECT COST BUSINESSES	197
39	RELATING MARKETING EXPENSE TO PRODUCT R&D EXPENSE	202
40	RELATING MARKETING EXPENSE TO WORKING CAPITAL	206
41	SETTING MARKETING EXPENSE BUDGETS	209
42	ASSESSING MARKETING EFFECTIVENESS	213
43	CUTTING MARKETING BUDGETS	217
44	PRICE INCREASES RELATIVE TO NORMAL	222
45	INTENSELY COMPETITIVE SITUATIONS	226
46	LESS INTENSE COMPETITIVE SITUATIONS.....	229
47	PRODUCT QUALITY	232
48	PRODUCT QUALITY, MANUFACTURING COSTS, AND PRICE PREMIUMS....	236
49	PRODUCT QUALITY AND OTHER BUSINESS CHARACTERISTICS	240
50	MANAGING HIGH PRODUCT QUALITY BUSINESSES	244
51	PRICING HIGH QUALITY PRODUCTS	249
53	MANAGING INDUSTRIAL COMMODITY BUSINESSES	255
54	INDUSTRIAL BUSINESS COST RELATIONSHIPS	259
55	EMPLOYEE UNIONIZATION	264
56	LABOR PRODUCTIVITY.....	269
57	LABOR PRODUCTIVITY AND PROFITABILITY	274
58	R&D/MARKETING EXPENSE: SUCCESSFUL INGREDIENT PRODUCERS	279
59	R&D/ MARKETING EXPENSE: SUCCESSFUL INGREDIENT PRODUCERS	283
60	MARKETING EXPENSE: SUCCESSFUL INGREDIENT PRODUCERS.....	289

61 ADV. & PROM. PRACTICES: SUCCESSFUL INGREDIENT PRODUCERS	293
62 ADV. & PROM, SPENDING: SUCCESSFUL INGREDIENT PRODUCERS.....	297
63 PRODUCT DIFFERENTIATION	301
64 INCREASES IN PRETAX EARNINGS	306
65 EARNINGS INCREASES: MODERATE GROWTH INGREDIENT PRODUCERS	310
66 PRODUCTIVITY MEASURES	315
67 FIXED & VARIABLE COMPONENTS OF COSTS AND INVESTMENT	320
68 CALIBRATING THE COST (?) OF GAINING MARKET SHARE.....	324
69 ENTERING NEW INDUSTRIAL BUSINESSES	330
70 MARKET PIONEERING & SUSTAINABLE MARKET SHARE ADVANTAGES ..	335
71 DISTRIBUTION PRACTICES: SUCCESSFUL INGREDIENT PRODUCERS.....	341
72 MARKETING EXPENSE & PROFITABILITY: DISTRIBUTION PRACTICES	345
73 MARGINS & BUYER/SELLER POWER IN CAPITAL-INTENSIVE BUSINESSES	349
74 THE IMPORTANCE OF PRODUCT IMAGE AND COMPANY REPUTATION	355
75 ASSOCIATIONS AMONG PROFITABILITY. PRODUCT QUALITY & IMAGE ...	359
76 STRONG VS. WEAK IMAGE CORPORATIONS AND BUSINESSES PROI	363
77 THE IMPORTANCE OF CUSTOMER SERVICE.....	366
78 VALUE OF A PATENT POSITION	371
79 ANALYZING THE ELEMENTS OF INVESTMENT	375
80 SALES REVENUE GROWTH	380
81 SALES REVENUE GROWTH, PART II	384
82 PRICE AGGRESSIVENESS AND COMPETITIVE RESPONSE	388
83 THE ILLUSION OF POSITIVE PRICE/VOLUME RELATIONSHIPS	392
84 CONTRASTING NORTH AMERICAN AND WESTERN EUROPEAN BUSINESS	395
85 NORTH AMERICAN VS. WESTERN EUROPEAN BUSINESSES - II	399
86 NORTH AMERICAN VS. WESTERN EUROPEAN BUSINESSES - III.....	404
87 IMPORTANCE OF CUSTOMER PURCHASES	409
88 FUNDING STRONG VS. WEAK BUSINESSES	414
89 FUNDING STRONG VS. WEAK BUSINESSES - II.....	418
90 INCREASING SELLING EXPENSE BUDGETS	421
91 QUALITY, SERVICE, AND IMAGE CHANGES	425
92 STRATEGIES OF LATE ENTRANTS	429
93 STRATEGIES OF LATE ENTRANTS - II	432

94 SALES PER EMPLOYEE	435
95 SALES PER EMPLOYEE - II.....	438
96 SALES PER EMPLOYEE - III	442
97 SALES OF NEW VS. OLD PRODUCTS	447
98 SALES OF NEW VS. OLD PRODUCTS - II.....	451
99 SALES OF NEW VS. OLD PRODUCTS - III	453
101 CASH RETURN ON INVESTMENT	457
102 CASH RETURN ON INVESTMENT - II	463
103 CROI VS. ELEMENTS OF INVESTMENT	469
104 MANAGING CAPITAL-INTENSIVE INDUSTRIAL BUSINESSES	473
105 WHEN MARKET PIONEERING IS LESS IMPORTANT.....	477
106 DECREASING IMPORTANCE OF EARLY MARKET ENTRY.....	481
107 MANAGING RAW AND SEMI-FINISHED MATERIAL BUSINESSES	486
108 SELLING EXPENSE OVER-INVEST OR UNDER-INVEST?	490
109 CHANGE IN EARNINGS	495
110 THE CONTRIBUTION OF PRODUCT R&D TO EARNINGS GRQWTH	500
111 THE CONTRIBUTION OF PROCESS R&D TO EARNINGS GROWTH	505
112 OTHER FACTORS CONTRIBUTING TO EARNINGS GROWTH	509
113 DEGREE OF PRODUCT CUSTOMIZATION	513
114 INVESTMENT INTENSITY'S TRIPLE WHAMMY.....	518
115 GROW VS. HOLD VS. HARVEST STRATEGIES	522
116 PRODUCT OUALITY, COST POSITION, AND MARKET SHARE STRATEGY .	527
117 WHEN CAN BOTH MARKET SHARE & MARGIN INCREASE?	531
118 THE REWARDS FOR AGGRESSIVE PRICE INCREASES	535
119 MARKETING VS. INTENSIVE BUSINESSES	540
120 MANAGING HIGH-SHARE, MARKETING-INTENSIVE BUSINESSES	545
121 CORPORATE SUCCESS	548
122 DETERMINING THE APPROPRIATE QUALITY/PRICE POSITION	552
123 MARKET SHARE POSITION AND QUALITY/PRICE STRATEGY	556
124 INVENTORY/SALES RATIOS	559
125 INVENTORY/SALES RATIOS -II.....	562
126 CROI VS. INVENTORY LEVELS	567
127 PRICE DIFFERENTIATION	572

128 LARGE SHARE BUSINESSES NOT PRICE DIFFERENTIATED	575
129 PRICE DIFFERENTIATED LARGE SHARE BUSINESSES	580
130 AVOID AVERAGE SPENDING PRACTICE?	585
131 OPERATING COST STRATEGIES	589
132 THE IMPORTANCE OF IMPROVING PRODUCT QUALITY	594
133 BEING A MAJOR SUPPLIER	597
134 ADAPTING TO MARKET SHARE AND LIFE CYCLE POSITION	601
135 ADAPTING TO MARKET SHARE AND LIFE CYCLE POSITION -II.....	604
136 USING PROFITABILITY NORMS.....	609
137 USING PROFITABILITY NORMS -II.....	613
138 NORMS FOR ACCOUNTS RECEIVABLE	617
139 THE EFFECT OF COMPETITIVE ENTRY ON MARKET SHARE	621
140 IMPACT OF PRODUCT INNOVATION ON PRETAX MARGIN	625
141 A NORM FOR RELATIVE PRODUCT QUALITY	628
142 A NORM FOR RELATIVE DIRECT COST.....	633
143 HIGH MARKET SHARE GAIN BUSINESSES	638
144 THE BUSINESS SITUATION EVALUATION	642
145 BUSINESS SITUATION EVALUATION -II	646
146 A RENEWED PIMS DATABASE: SHAREHOLDER VALUE ADDED	650
147 MARKETING EXPENSE, PROFITABILITY AND REVENUE GROWTH	654
148 A DIAGNOSTIC TOOL FOR PRICE CHANGE.....	658
149 LEVERAGING IMPROVEMENTS IN EFFICIENCY	660
150 PIMS LOOK-ALIKE ANALYSIS: GROWTH OF A NUMBER TWO SUPPLIER .	664
GLOSSARY.....	667
QUESTIONS	671
INDEX.....	689

FOREWORD

This document contains statistical descriptions of business behavior, performance and characteristics based on the analysis of mainly the PIMS database. The Strategic Planning Institute's PIMS (Profit Impact of Marketing Strategy) database consists of performance and characteristic data of several thousand businesses. Businesses for this purpose are defined as a venture with tightly constrained products and markets. This is a unique research resource for determining the drivers of profitability and thereby help to clarify the importance of strategic issues.

To understand the importance and uniqueness of this database, one needs to appreciate that almost all comparative quantitative data on commercial operations are compiled on the firm or enterprise basis (for public corporations), not on the individual businesses that make up the enterprises. While consolidated financial information is readily available on the enterprise, it offers little insight into operational market and business strategy that are critical for the health of the firm. Modern publicly traded corporations are made up of tens to hundreds of ventures and operational divisions. Each of which tends to be run as a separate operation. Historically, information regarding the characteristics and performance of these business units has been treated as proprietary and not revealed for outside or even internal analysis.

Because of the lack of comparative quantitative business information, business strategy has relied on theory and conventional wisdom, supported by anecdotal case histories. While case histories are very useful teaching tools, they tend to be, by their nature, biased and oriented to present a particular point of view. These biases and inconsistencies make analysis by case history difficult and to a great extent statistically invalid. But once again, for most academic business research, they have been the extent of available information.

The PIMS database was established to provide a quantitative basis for testing strategic hypotheses on businesses. It was established with the encouragement of major multi-national public corporations including General Electric Company and E. I. DuPont de Nemours & Company, Inc. as a means of improving business strategy. In order to protect the proprietary nature of the information, methods and procedures were established to conceal the identity of the businesses. The identity of the businesses are not revealed, the quantitative and performance information is collected as ratios against sales, and most descriptive information is obtained by category. The Strategic Planning Institute (SPI) was then established to assure the integrity of those procedures.

Access to the PIMS database has been highly constrained. The Strategic Planning Institute has greatly limited access to either academics or potential industrial users. The Strategic Planning Institute is a private company whose funding comes totally from fees of its members and from payment from projects. As such, SPI has limited the access to the database and therefore, its results. Some academic studies have been published based on the early analysis of the data. However, much of that analysis focuses on general economic issues and not the types of strategic structural issues covered in this document.

John B. (Jack) Frey prepared the vast majority of the work in this document. Jack provides a unique perspective on business analysis. He was a founding member of the oversight board of directors of SPI and instrumental in the original formation database. His training and early business experience had been in operations research and had spent the majority of his industrial

career in managing marketing and business research functions at Dupont. This combination of a strong statistical background and practical orientation toward real business problems provides unique capabilities for this type of analysis.

Data Limitations

While the PIM's database represents probably the best available information on business characteristics, it has several limitations that effects our interpretation the analytical results. First, much of the data reflects the opinions of the managers or analysts who had submitted the data. Certain definitions, such as market share, may have multiple meanings. The one used for the database is that selected by the individual business. Relative measures of quality, for example, are determined by the submitting business. There are no requirements for market verification of these opinions for the database. Furthermore, the definitions of cost will vary among businesses and accounting schemes. The one used for each submission, is solely that of the business. This produces a business centric bias in the data, which may be inconsistent. The variables reflect the view of the business from the businesses' perspective, not necessarily the reality of the marketplace.

The PIMS database contains multi-year data, collected over more than two decades. The number of years captured by each business varies from a minimum of four to more than seven years. This may produce inconsistencies in averaging and timing of results.

And finally, while the PIMS database contains a large number of businesses, each business is almost always a part of a relatively small group of multinational corporations. There are likely to be very few or no stand alone operations. As such, the database reflects the perspective of large corporations and the results may not reflect the results of smaller operations.

Caveat in Interpreting Results

The relationships from all statistical analyses do not inherently imply causality. The data, particularly in the PIMS database, are highly intercorrelated. The cause of apparent relationships, such as those between changes in a particular characteristic and profitability, may be due to other intercorrelated variables rather than the particular characteristic.

Nor do the results imply prediction of similar results for a business, if it changes its current characteristics to those that are suggested to improved performance. Statistical analysis is based on the concept of distribution of results. Any particular case may improve or reduce performance with any change. Statistical analysis only provides insight into the likelihood of improvements based on the data. This is true of all data analysis whether it be using the PIMS database or any other data. Actual results will depend as much on how well the business executes its strategy as the particular intended changes.

However, even with these limitations, the following analyses of the PIMS database represents among the best available reality checks for the "conventional business wisdom."

Gene Lieb

PREFACE AND EDITOR'S COMMENTS

This document is the compilation of a series of monthly articles on business characteristics and behavior prepared mainly from August 1980 to September 1992 (with a couple of articles published after that date to June 1997). These were developed by John B. (Jack) Frey with contributions from James R. (Jim) Bernard and Eugene B. (Gene) Lieb. Our goals in producing this document were (1) to archive the articles for future research, (2) to put them into the hands of practitioners, and (3) be able to encourage rational strategic business planning.

During that main twelve-year period there were great changes in office technology used to produce the articles. None of the articles were available in electronic form nor were the backup materials available. As such, all of the articles had to be transcribed from paper copies. Graphs and tables were generated anew. In regards to some of the graphs where the actual data was not included in the articles, some additional error may have been introduced. This was compounded by the fact that we only had copies of the original manually drawn graphs.

As one would expect with almost 150 articles, there was great variation in format and style. An effort was made to establish a consistent "look and feel" to the document. Duplicate definitions were removed and a separate glossary added that summarized the major definitions of the PIMS and key combined variables.

Many of the articles contained discussions of current business issues. These discussions were obviously dated and were excluded in the compilation as well as any reference to corporate programs or specific products. In the original articles, citations to past articles were occasionally referred to by date. In these cases, article numbers have been substituted.

Included with the articles is a series of True/False questions. The purpose of these questions was to stimulate a review of what is considered to be "conventional wisdom." We have kept the questions associated with specific articles with them since they were used to focus the material in those articles. However, those questions as well as the rest prepared by Jack Frey also are listed in the appendix along with the answers.

In addition, to editing the original articles, some commentary and further analysis are included in the document. These include graphic distribution analyses of data that were available only as tables in the original articles. The purpose of these graphs is to test the underlying distributions of the data. Several editor's comments have also been included to highlight some inconsistencies in tables and graphs. The comments and new inclusions have been identified in teal colored text.

A cross-reference index is provided in the appendix which indicates the variables covered in each article. Due to the nature of the statistical and tabular analyses used in these articles, this type of index was deemed more useful than a traditional index. It is our intention to publish these notes electronically as an Adobe Acrobat file. As such, a facility to search for words and phrases is provided by the Adobe reader and therefore a traditional index was deemed to be redundant.

Special thanks needs to be given to Jack Frey and Jim Bernard for originally producing these articles and making them available for this compilation. Furthermore, it is important to

recognize John Reith, Ralph Beaman, and Carl Jepson whose original research work is also included in these notes. And finally, I wish to recognize a host of other researchers, managers, and colleagues who participated directly and indirectly in the development of the original articles.

Gene Lieb

No. 1, August 1980

1 GENERAL CORRELATES OF PROFITABILITY

True or False?

1. Competitive advantage is the most important single determinant of the profitability of a business.
2. Businesses, which sell to their customers in large purchase quantities, tend to be more profitable than those selling in small lots.
3. Strong businesses tend to increase their competitive advantage at the expense of weak businesses.

Answers to these and similar questions concerning relationships among business characteristics are the result of our analysis of a unique and comprehensive database of business experience. The Strategic Planning Institute (SPI), a nonprofit business research organization, has collected extensive data on nearly two thousand businesses and makes it available to their supporters in disguised but usable form. This article is the first of a series of articles, which will discuss our applications of this database, which is described in more detail in the appendix to this article.

The data base has been used to: 1) explore and quantify general business relationships; 2) develop and test business theory; 3) develop cost, investment, and performance norms for individual businesses; and 4) calibrate a newly developed business planning model. Applications are for the most part limited to businesses with in-kind competition producing and selling reasonably undifferentiated products where competitive shares can be clearly defined.

In addition to the analyses we perform internally, the Strategic Planning Institute has published many findings. While most of this work has been made available to member companies only, occasional articles of a more general nature have appeared in various publications.

Some Key Profit Correlates

Published articles by SPI have quantified the correlation between profitability and other business characteristics¹. We have analyzed the data and find that many of the key profit correlates are obvious. For example, pretax return on investment (PROI) tends to be higher when:

- Costs are low relative to competition.
- Product quality is high relative to competition.
- Market share (absolute and relative) is high.

¹ For example, see Harvard Business Review articles, "Impact of Strategic Planning on Profit Performance," Mar-Apr, 1974, p.137, and "Market Share-- A Key to Profitability," Jan-Feb, 1975, p.97.

- Capacity utilization is high.

However, other profit correlates are less obvious. For industrial businesses, PROI tends to be higher when:

- Investment as a percent of sales is low.
- Customers purchase in small purchase quantities.
- Employees are not unionized.
- The top two or three firms account for a large share of the total business.
- New products account for a small portion of total sales.

Some of these profit correlates will be discussed in future articles.

Importance of Competitive Advantage

While each of these factors is highly correlated with profitability, the most important factors are those related to competitive advantage. We have operationally defined competitive advantage in terms of relative market share, relative cost, and relative price. The factor which correlates most strongly with profitability among data base businesses is the difference between relative price and relative direct (mill) cost which we call "relative margin."

If, for example, a product is granted a 3% price premium over competitive products and has a 4% lower mill cost, its relative margin is +7%. If a product is sold at a price equal to competitive products but has a 5% higher mill cost, its relative margin is -5%. The relationship between pretax return on investment (PROI) and relative margin for industrial businesses is shown in Figure 1.

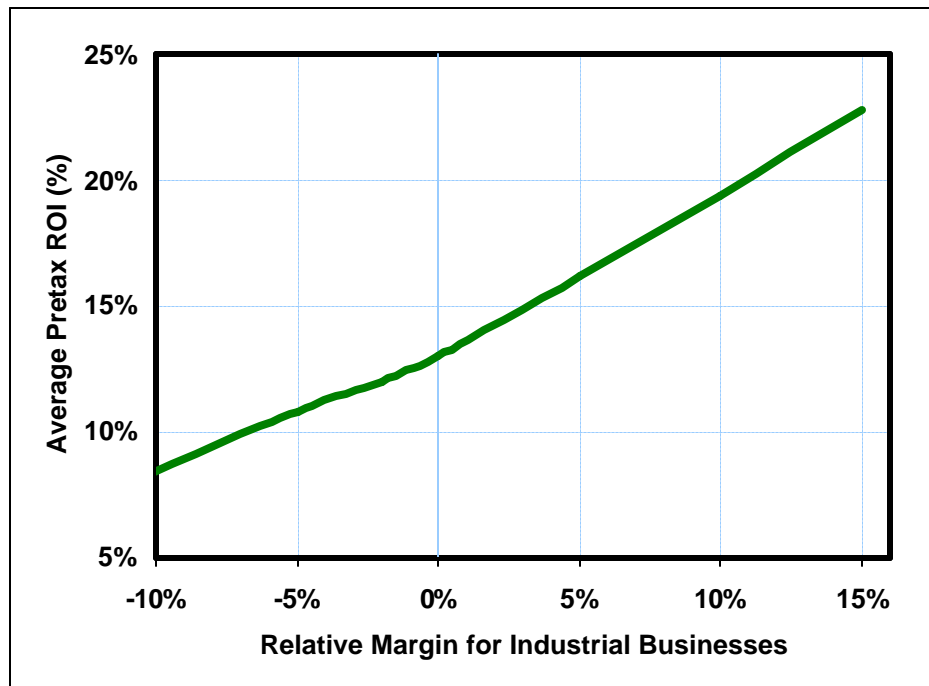


Figure 1, PROI vs. Relative Margin for Industrial Businesses
(N=1078)

A good deal has been written about the strong relationship between market share (or relative market share) and profitability. We find that relative margin is very strongly correlated with both share and profitability and believe it to be the driving force behind both. Figure 2 shows the strong relationship between relative market share and relative margin.

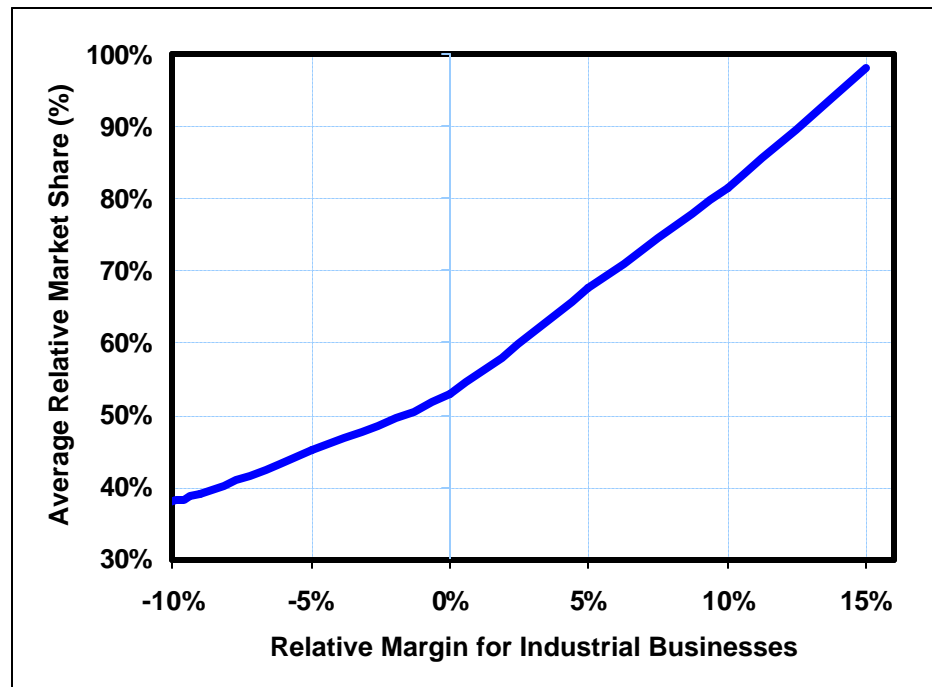


Figure 2, Relative Market Share vs. Relative Margin for Industrial Businesses (N=1078)

Changes in Competitive Advantage

The fact that the curve in Figure 1 bends upward indicates that PROI is more sensitive to changes in relative margin among strong businesses than among weak businesses. This supports the idea that it is often better to try to hold or strengthen a strong business than to shore up a weak business, all other things being equal.

Most companies do not do this. Figure 3 shows how relative margin change varies with relative margin level. Strong businesses tend to hold or gradually lose their relative margin advantage. Weak businesses tend to improve with the weakest businesses improving the most. This may simply be a result of the natural tendency to feed the hungry and nurse the sick.

It is dangerous, however, to generalize about differentially funding strong versus weak businesses. Each situation must be analyzed individually. A key concern is how much gain in relative margin can be achieved per unit of cost and investment expended and how that gain can be expected to be translated into sales and profits. Another issue is life cycle position and future growth prospects. Future articles will discuss these and other related factors.

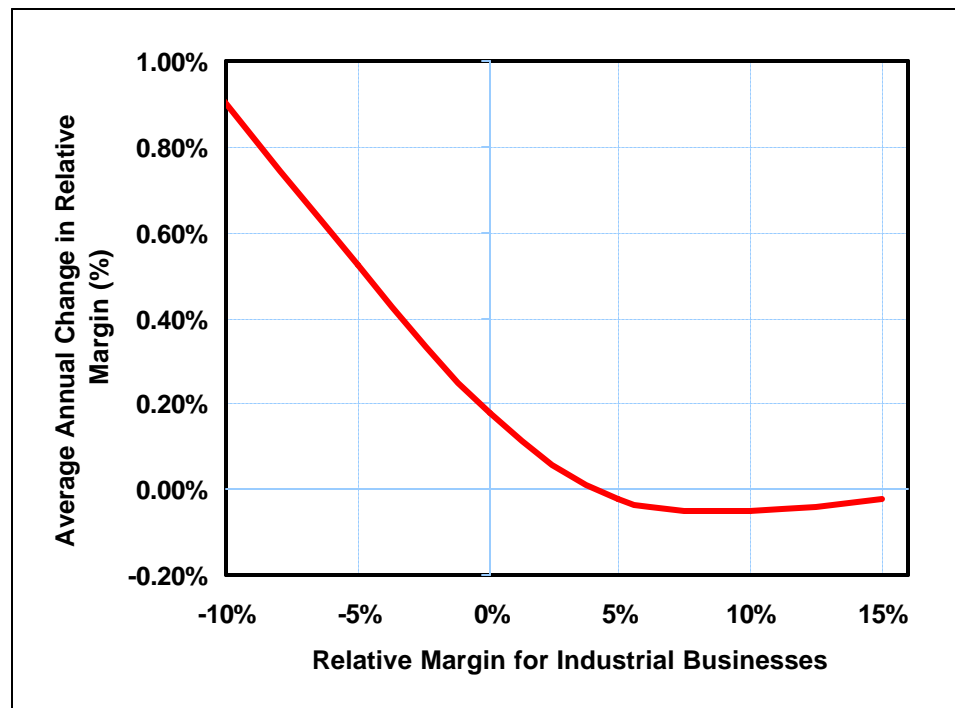


Figure 3, Change in Relative Margin vs. Relative Margin
(Industrial Businesses N=1078)

True-False Answers

1. **True** Competitive advantage is the most important single determinant of the profitability of a business. As discussed in the article, our analysis of the SPI data base lead us to conclude that competitive advantage as measured by relative margin and relative market share is the most important profit determinant.
2. **False** Businesses, which sell to their customers in large purchase quantities, tend to be more profitable than those selling in small lots. Generally businesses that sell in large purchase quantities have lower returns on investment (or on sales), all other things being equal. This is most likely because customers are probably stronger and tend to negotiate more intensely when purchase transactions are large.
3. **False** Strong businesses tend to increase their competitive advantage at the expense of weak businesses. As shown in Figure 3, weak businesses tend to become stronger.

APPENDIX

PIM Strategic Planning Institute Database

Business characteristics include financial, technical, marketing, competitive, and industry measures. For security purposes, steps have been taken to disguise business information. For example, most cost and investment figures are in ratio form rather than in absolute dollars. In

total, over 200 business measures on an annual basis are available on nearly 2,000 member company businesses.

The database is accessed through a computer terminal and is now of sufficient size and diversity to allow exploring relationships among business measures for a variety of business types. While consumer, service, 1 distributor, and foreign businesses are included in the database, businesses are primarily U. S. industrial businesses in the growth and mature stages of their product life cycles. In analyzing the database, segmentation is possible on any combination of business measures. The database we are currently analyzing contains four consecutive years of data on 1,498 businesses.

No.2, September 1980

2 RELATIVE MARGIN AND RELATIVE SHARE

This is the second in a series of articles, which discuss relationships among business characteristics.

True or False?

1. Industrial businesses with high relative market shares typically earn an above average pretax return on investment, even when they operate with a low "relative margin" (relative price minus relative direct cost).
2. It is quite natural to operate with a high relative share and low relative margin (or vice versa) and many industrial businesses continually operate this way.

The last article emphasized the importance of relative margin as a strong correlate of (and presumably determinant of) both pretax return on investment (return) and market share relative to competition (relative share). This article will expand upon those findings and examine the interactions between relative marginal and relative share.

Relative Share/Relative Margin Interaction

The August issue showed that each percentage point increase in relative margin is associated with an increase of over one-half a percentage point in return and over two percentage points in relative share. This leads to the question of whether relative margin accounts totally for the association between return and relative share or whether relative share has a profit over and above the relative margin.

Table 1, Pretax Return on Investment (%) for Combinations of Relative Market Share and Relative Margin
(Industrial Businesses N=1,105)

Relative Market Share	61%	High	12%	21%	23%
		Medium	10%	15%	16%
		Low	7%	12%	14%
			Low	Medium	High
			-0.4% 3.6%		
			Relative Margin		

Table 1 shows how return varies jointly with relative share and relative margin. Three levels of relative share are shown at the left. The "cut-points" of 26% and 61% are used because they divide the database roughly in equal thirds. Similar "cut-points" for relative margin at the bottom are -0.4% and 3.6%.

The table shows that, on average, return is higher for higher relative share businesses at all levels of relative margin. Thus, any measure of competitive advantage must include both factors.

Relative Share/Relative Margin Trade-off

Table 1 also gives some preliminary insight into desirable "trade-off's" between relative share and relative margin. Relative share can frequently be increased by lower prices and aggressive marketing; relative margin improvement comes from improving price premiums and/or reducing costs relative to competition.

Consider, for example, a business with a medium relative share and a high relative margin. Suppose that competitive conditions are such that relative share could be increased to a high level through aggressive action which would reduce relative margin to a medium level. On average, businesses in the latter situation earn a 21% return while businesses in the former earn 16%. Such decisions should obviously not be made on the basis of such a simple comparison; however, data base comparisons can be very useful to help support (or dispute) such decisions.

A strong correlation should exist between share and margin. High share businesses should generally seek high margins since each unit of margin is multiplied by a higher level of volume. Thus, high share businesses gain more per unit increase in margin. Low share businesses should normally seek to increase share since each share point gained represents a larger percentage increase in volume and contribution to profit and fixed costs.

Thus, the strong relationship between relative share and relative margin shown in Figure 2 of the August issue is a natural one². As shown in Table 2 there are relatively few businesses with low/high combinations (upper left, lower right). These businesses normally should and do tend toward a more even balance of the two dimensions of competitive advantage.

Further analysis of the database shows that, on average, businesses with high relative share and low relative margin (upper left) lose two percentage points of relative share annually. However, they gain one percentage point of relative margin. The businesses with low relative share and high relative margin (lower right) on average gain six tenths of a percentage point of relative share annually but lose three tenths of a percentage point of relative margin. Thus, both of the unbalanced combinations tend toward a more even balance.

In the case of share/margin trade-off, then, business behavior tends to follow economic theory. It might be useful to examine your business in terms of this trade-off. Any business with an

² The Dorfman-Steiner theory shows that, for a business wishing to maximize ~. its profitability short term, share should be proportional to price minus incremental cost when price elasticity is constant

unusual high/low combination might want to examine its strategy to see if it should be moving toward a more normal share/margin balance, particularly if its profit performance is below what should be expected given its business characteristics.

Table 2, % of Businesses at Combinations of Relative Market Share and Relative Margin
(Industrial Businesses Only - N=1,105)

Relative Market Share	61%	High	6%	11%	16%
		Medium	11%	11%	11%
		Low	15%	13%	6%
			Low	Medium	High
			-0.4%	3.6%	
			Relative Margin		

True-False Answers

1. **False** Industrial businesses with high relative market shares typically earn an above average pretax return on investment, even when they operate with a low "relative margin" (relative price minus relative direct cost). High relative share, low relative margin industrial businesses typically earn a 12% return as shown in the upper left-hand corner of Table 1. This is below the data base average of 14%.
2. **False** It is quite natural to operate with a high relative share and low relative margin (or vice versa) and many industrial businesses continually operate this way. See Table 2 and the related discussion in the article.

No. 3, October 1980

3 RELATIVE PRODUCT QUALITY

This is the third in a series of articles, which discuss relationships among business characteristics. The first two articles focused on two key dimensions of competitive advantage: relative margin and relative market share.

This article extends those results by adding a third important dimension to competitive advantage--relative product quality. Relative product quality is a difficult characteristic to operationally defined quantify. It is probably best expressed in terms of the perceived benefits your product offering relative to competitive offerings. Sometimes a true economic value (value-in-use) can be estimated for a product but this is normally specific to end use and only a part of the total perception of value. High variability in perceived value can be expected in most markets.

The definition of relative product quality chosen by The Strategic Planning Institute is shown in the list of definitions at the end of this article. This definition has limitations. It does not adequately define the three quality perception categories used (superior, equivalent, inferior), does not allow for variation across market segments, and does not include a measure of the conviction with which the quality perception is held. SPI is currently rethinking this definition. In spite of these drawbacks, product quality is obviously important and is strongly correlated with profitability. Therefore, we feel that it should be included in our measure of competitive advantage.

Relative Quality/Relative Margin Interaction

Table 3 shows how return varies jointly with relative quality and relative margin. This table shows three levels of each dimension of competitive advantage with "cut-points" chosen which divide the database roughly in equal thirds. The table shows that, on average, return is higher for higher levels of relative quality at all levels of relative margin.

Table 3, PROI (%) for Relative Product Quality and Relative Margin
(Industrial Businesses Only - N=1,105)

Relative Product Quality	High	14	16	23
	Medium	13	15	21
	Low	6	9	13
		Low	Medium	High
		Relative Margin		
		-0.4% 3.6%		

Relative Quality/Relative Market Share Interaction

As is shown in Table 4, the same is true with respect to relative market. Thus, we find that relative product quality has a significant profit, which is not accounted for by relative margin or relative share.

Table 4, PROI by Relative Product Quality and Relative Market Share
(Industrial Businesses Only - N=1,105)

Relative Product Quality	High	15%	17%	25%
	Medium	11%	13%	17%
	Low	8%	10%	15%
		Low	Medium	High
		26%	61%	
		Relative Margin		

Competitive Advantage Index

As has been pointed out, all three of these measures of competitive advantage are strongly correlated with profitability; the rationale for this is obvious. Although they are intercorrelated--e.g., high values of one tend to occur with high values of the others--each exhibits a significant profit correlation alone and warrants inclusion as part of an overall measure of competitive advantage.

Based on the weights developed using multiple regression, these three factors can be combined into a single "competitive advantage index" as follows:

Competitive Advantage Index =

$$\text{Relative Market Share} + (2 \cdot \text{Relative Product Quality}) + (10 \cdot \text{Relative Margin})$$

Following is an example of a calculation of the Competitive Advantage Index for a hypothetical business:

$$\begin{aligned}
 & \text{(Your Share)} \\
 1) \text{ Relative Market Share} &= \frac{28\%}{36\% + 17\% + 8\%} \cdot 100\% = 46\% \\
 & \text{(Share of Top Three Competitors)}
 \end{aligned}$$

2) Relative Product Quality:	25% Superior	
(% Superior - % Inferior)	65% Equivalent	+15%
	10% Inferior	
3) Relative Margin:	Relative Price = +4%	
(Relative Price-Relative Cost)		+7%
	Relative Direct Cost = -3%	
4) Competitive Advantage Index:	$46 \bullet 1 = 46$	
	$15 \bullet 2 = 30$	
	$7 \bullet 10 = \underline{70}$	
	C.A.I. = 146	

Combining the three measures of competitive advantage permits the direct comparison of business performance and operating characteristics with a single measure of competitive advantage. Figure 4 shows the relationship between pretax return on investment and the competitive advantage index. This graph indicates on average how profitability can be expected to vary as competitive advantage varies. Any analysis is complex, of course, since changes in one competitive advantage factor (e.g., relative product quality) will probably affect other factors (e.g., relative price, relative direct cost, relative market share). However, it does provide a "first approximation" to the probable profit consequences of possible changes in the dimensions of competitive advantage.

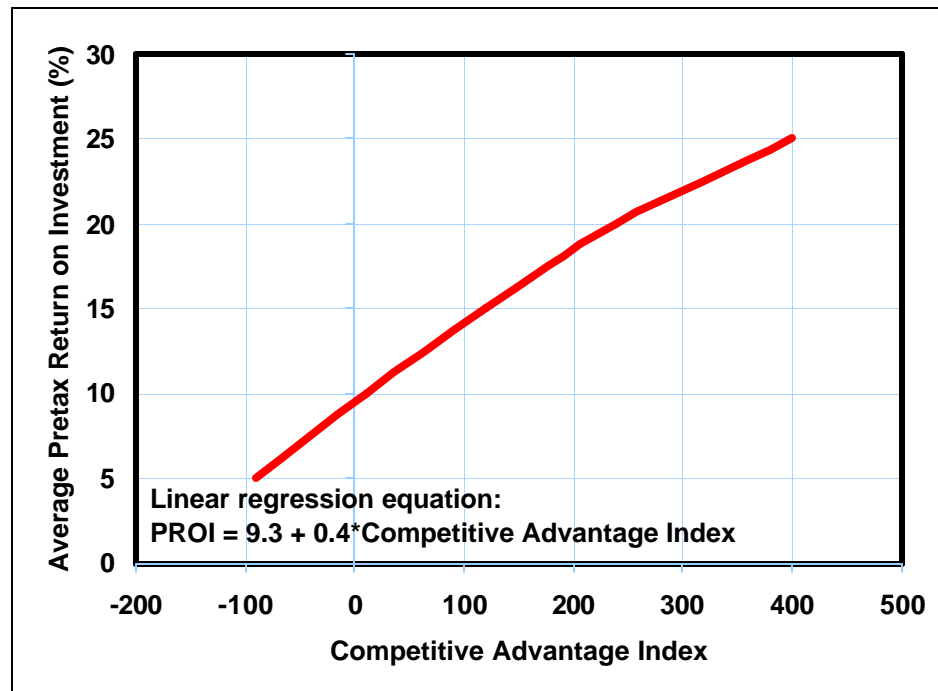


Figure 4, Average PROI vs. Competitive Advantage for Industrial Businesses (N=1105)

An increase of 25 in the competitive advantage index is associated with an increase of one percent in PROI. Thus, for example, a marketing and/or R&D program which can increase relative product quality by 10%, relative price by 2%, and relative share by 10% should be expected in average circumstances to increase PROI by two percent $((2 \cdot 10 + 10 \cdot 2 + 1 \cdot 10)/25)$ if no other significant changes occur. This provides a rough estimate of the benefit of a program which, under average conditions, can be compared to its cost and investment requirements.

Future issues will explore profit correlates other than competitive advantage as well as extend the findings with respect to competitive advantage. A key issue to be addressed is the circumstances under which an increase in competitive advantage is more likely to lead to a significant profit improvement.

No. 4, November 1980

4 TURNOVER (SALES/INVESTMENT)

This is the fourth in a series of articles, which discuss relationships among business characteristics. The first three articles discussed the single most important correlate of profitability, competitive advantage. This article examines "turnover," the second strongest profit correlate.

Turnover is the annual sales revenue of a business as a percent of its total investment. Total investment values permanent investment at original cost. These terms are defined more thoroughly at the end of this article.

True or False?

1. Pretax return on investment is usually higher for businesses which generate more sales revenue per dollar of investment.
2. Pretax return on sales is usually lower for businesses which generate more sales revenue per dollar of investment.

Profitability vs. Turnover

The Strategic Planning Institute has focused a good deal of attention on investment requirements³. The Key finding is that return on investment tends to be substantially higher at higher levels of turnover⁴. This strong correlation exists among the industrial businesses in the database as shown in Figure 5. This strong association is partly tautological. Pretax return on investment can be calculated as pretax return on sales multiplied by turnover:

$$\begin{array}{ccccc} \frac{\text{Pretax Earnings}}{\text{Investment}} & = & \frac{\text{Pretax Earnings}}{\text{Sales}} & \bullet & \frac{\text{Sales}}{\text{Investment}} \\ (\text{PROI}) & & (\text{PROS}) & & (\text{Turnover}) \end{array}$$

Thus, a natural correlation can be expected between PROI and Turnover (and between PROI and PROS).

³ For example, see "Capital-Intensive Technology vs. ROI: A Strategic Assessment," Management Review, Sept. 1978, pp. 9-14.

⁴ Note that turnover is the reciprocal of what SPI calls "investment intensity."

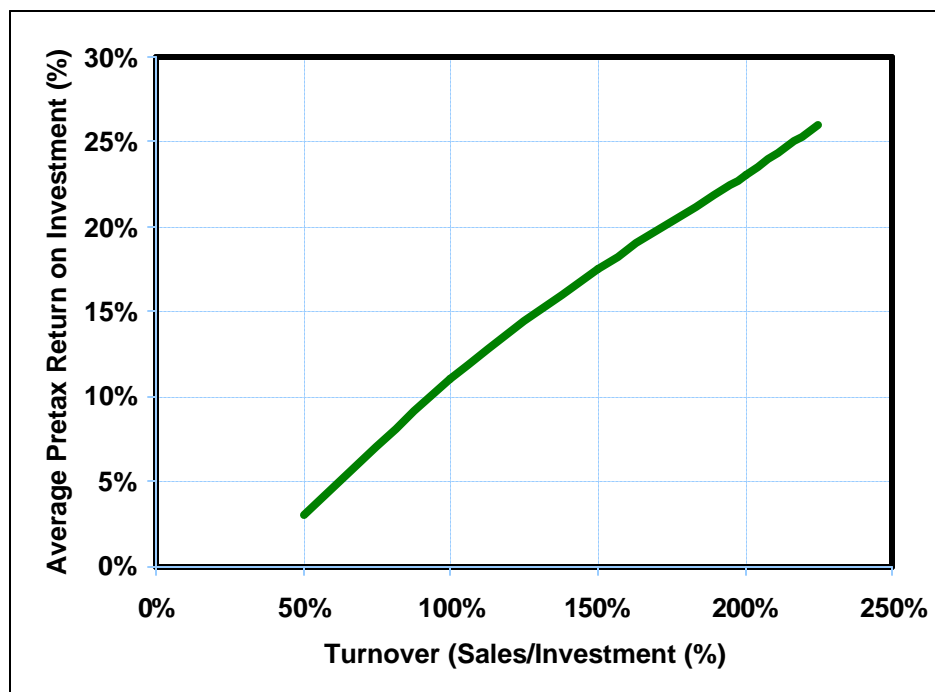


Figure 5, Average PROI vs. Turnover for Industrial Businesses
(N = 1121)



Figure 6, Average PROS vs. Turnover (Sales/Investment) (%)

However, if businesses are strongly focused on PROI as the primary measure of performance, a negative correlation would be expected between PROS and turnover. High turnover businesses could achieve "satisfactory" levels of PROI with a lower return on sales; low turnover (high "investment intensive") businesses would need a higher return on sales to earn a satisfactory PROI.

As shown in Figure 6, the evidence is contrary to this rationale. PROS is not negatively related to turnover; in fact, the correlation is slightly positive.

Return on sales, therefore, is insensitive to turnover. Businesses on average seem to regard investment as "sunk" and appear to target toward a satisfactory return on sales rather than being concerned with return on investment. This, of course, follows the theory that operating decisions (e.g., pricing) should be made ignoring factors such as fixed costs and in-place investment which do not vary with the decision.

Thus, all things being equal, it seems advisable to invest in high turnover businesses since these give average levels of PROS and higher levels of PROI. All things are never equal, of course, and the impact of investment on other factors--principally competitive advantage--must be examined carefully.

Profitability vs. Turnover and Competitive Advantage

Table 5 shows how PROI varies jointly with turnover and the competitive advantage index which was developed in the last article. The table shows the high sensitivity of return on investment to both of these factors. There is slight positive correlation between turnover and competitive advantage. Businesses high on one of these factors have a tendency to be high on the other and vice versa.

Table 5, PROI for Combinations of Turnover and Competitive Advantage Index
(Industrial Businesses N = 1121)

# of Businesses		PROI				
		High	Medium	Low	High	Low
Turnover (%) (Sales/ Investment)	High	13% (N=36)	17% (N=44)	23% (N=39)	25% (N=48)	40% (N=61)
	169%					
	135%	9% (N=46)	14% (N=36)	14% (N=42)	21% (N=46)	23% (N=46)
	Medium					
	113%	10% (N=33)	14% (N=44)	14% (N=52)	16% (N=46)	20% (N=46)
Low	89%	7% (N=43)	10% (N=54)	9% (N=50)	12% (N=50)	18% (N=31)
	Low	2% (N=72)	4% (N=43)	9% (N=38)	10% (N=34)	13% (N=41)
		13	73	144	273	
		Low	Medium	High		
		Competitive Advantage Index				

True-False Answers

1. **True** Pretax return on investment is usually higher for businesses which generate more sales revenue per dollar of investment. This is an important finding but not a surprising one.
2. **False** Pretax return on sales is usually lower for businesses which generate more sales revenue per dollar of investment. This is a surprising finding in that one might expect higher margins in businesses requiring higher investment.

No. 5, December, 1980

5 CAPACITY UTILIZATION

This is the fifth in a series of articles, which discuss relationships among business characteristics based on our analysis of the Strategic Planning Institute database. The first four articles discussed competitive advantage and turnover, the two strongest correlates of pretax return on investment (PROI).

This article discusses capacity utilization, the third strongest PROI correlate. Capacity utilization is the percentage of standard capacity utilized on average during the year. This is more thoroughly defined at the end of this article.

True or False?

1. When an industrial business' capacity utilization is decreasing, price cutting usually occurs leading to lower prices than would exist if utilization were steady or increasing.

Profitability vs. Capacity Utilization

As shown in Figure 7, PROI increases as capacity utilization increases. This is, of course, to be expected since higher utilization of capacity permits fixed costs to be spread across more sales. The relationship is not as strong as many people believe. While many businesses would expect to lose money if they operated at 50% capacity utilization, Figure 1 shows that the average industrial business operating at 50% utilization has almost a 10% PROI

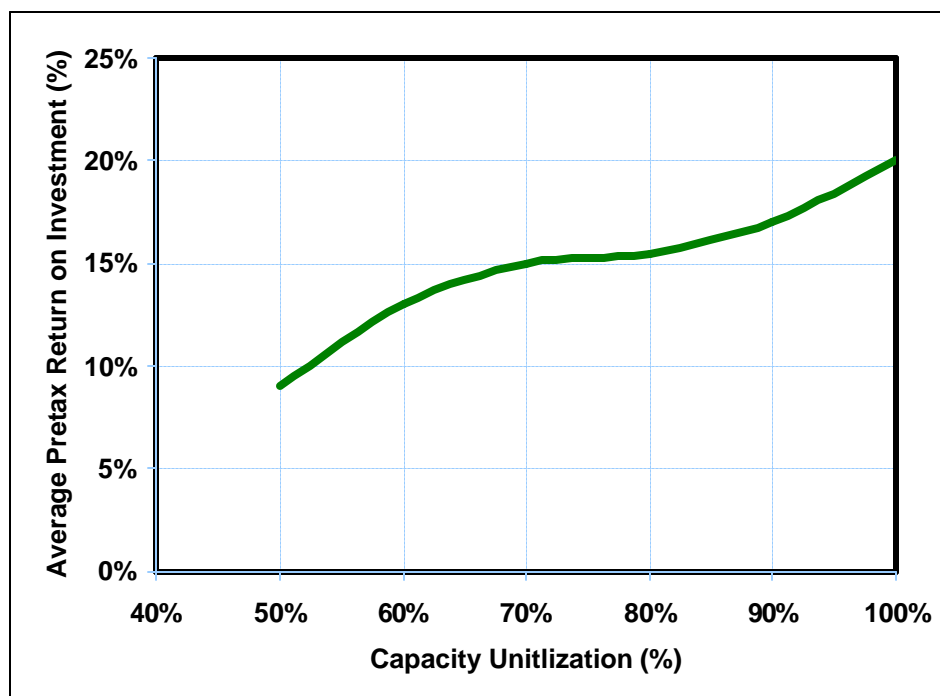


Figure 7, Average PROI vs. Capacity Utilization for Industrial Business (N = 1121)

There are two reasons for this apparent discrepancy. First of all, the normal level of capacity utilization varies substantially across businesses. Businesses in process industries requiring high investment per dollar of sales typically operate at higher levels of utilization. For example, industrial businesses in the SPI database which supply raw and semi-finished materials have a significantly higher average level of capacity utilization and lower average level of turnover (higher "investment intensity") than other industrial businesses. This is shown in Table 6.

As another example, businesses which are "marketing intensive" (an above average marketing to sales ratio) tend to operate at lower levels of capacity utilization. Profitability can be expected to be related, not only to the absolute level of utilization, but also to the level relative to normal.

Table 6, Capacity Utilization and Turnover by Type of Industrial Business (N = 1121)

	Raw and Semi-finished Material Suppliers	Capital Goods, Components, supplies, and Consumables
Average Capacity Utilization	81.5%	74.6%
Average Turnover	103%	138%

Secondly, breakeven levels are frequently calculated assuming selling price is not affected by changes in capacity utilization. How is selling price affected by change in utilization? One hypothesis is that prices normally drop as capacity utilization decreases with competitors driving down prices in an attempt to hold or gain volume when demand weakens or capacity is increased. A second hypothesis is that prices normally drop as capacity utilization increases with suppliers passing along to customers part of the unit cost decreases which occur with improving utilization.

As shown in Figure 8, there is a negative correlation between selling price growth and change in capacity utilization. Decreasing capacity utilization is more often associated with a greater increase in selling price. This tends to support the second hypothesis.

Most industrial businesses, therefore, appear unwilling to engage in severe price cutting to hold volume when capacity utilization is decreasing and, in fact, tend to raise price more to at least partially offset their higher unit costs. This means that for most industrial businesses there is a weaker relationship between profitability and capacity utilization than is frequently assumed. It also implies indirectly that:

- Industrial businesses tend to price opposite costs rather than "charging what the market will bear".
- High utilization of capacity is less inflationary than low utilization.

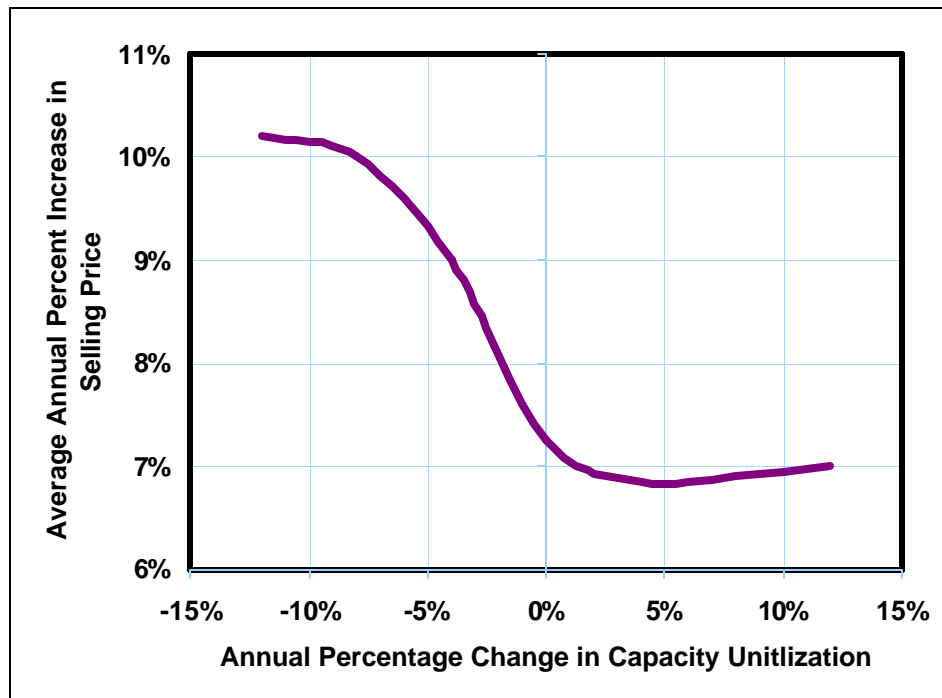


Figure 8, Selling Price Growth vs. Change in Capacity Utilization for Industrial Businesses (N = 1121)

True - False Answer

False. When an industrial business' capacity utilization is decreasing, price cutting usually occurs leading to lower prices than would exist if utilization were steady or increasing. As shown in Figure 8 selling prices tend to increase more when capacity utilization is decreasing.

No. 6, January, 1981

6 PROFIT MARGIN PRESSURES

This is the sixth in a series of articles, which discuss relationships among business characteristics based on our analysis of the Strategic Planning Institute database. The last article discussed capacity utilization. One of the findings presented was the somewhat counterintuitive fact that for most industrial businesses, prices increase more when capacity utilization is decreasing than when it is steady or increasing.

This negative correlation holds for all business segments tested thus far. It must be kept in mind that this finding pertains to annual changes; price pressures which are frequently felt ~ when demand softens or capacity increases are typically of shorter duration.

This article extends the above finding to pressures on profit margins. Copies of prior articles can be obtained by mailing the attached form.

True or False?

During the 1970's, most industrial businesses showed decreasing profit margins. This profit margin pressure was particularly severe among investment intensive businesses selling standard, raw and semi-finished materials.

Profit Margin Change vs. Capacity Utilization Change

The SPI database contains information on annual change in selling price and mill cost for each business. While not strictly correct, the best profit margin change estimate in the database is the difference between these two factors. Figure 1 shows how selling price growth and mill cost growth vary with annual change in capacity utilization. The selling price growth relationship was shown in the last article.

Figure 1 shows the profit margin pressure, which has existed among industrial businesses during the past decade. (The database contains data between 1969 and 1978.) Average mill cost growth (inflation) was 9.3% per year; selling prices on average grew at 7.8% per year. At all levels of capacity utilization change, mill cost growth exceeded selling price growth. The graph also shows little difference in profit margin change (the difference between the two curves) at different values of capacity utilization change.

Profit Margin Pressure

The average industrial business shows an annual profit margin decrease (mill cost growth minus selling price growth) of 1.5%. Thus, selling price increases fell significantly short of mill cost increases during the past decade. As shown in Table 7, this profit margin pressure varied by type of business, product, and market environment.

Table 7, Profit Margin Decrease by Type of Business
(Industrial Businesses Only N = 1121)

	Annual Profit Margin Decrease
<u>All Industrial Businesses</u>	1.5%
<u>Types of Business:</u>	
Capital Goods	0.4%
Raw, Semi-finished Materials	3.2%
Components for Finished Products	1.6%
Supplies and Consumables	1.5%
<u>Degree of Standardization:</u>	
Standard Products	1.9%
Custom-tailored Products	0.7%
<u>Turnover:</u>	
Low Turnover (high investment intensity)	2.0%
Moderate Turnover	1.5%
High Turnover (low investment intensity)	0.9%
<u>Market Growth:</u>	
Low Growth Markets	0.4%
Moderate Growth Markets	1.5%
High Growth Markets	2.7%

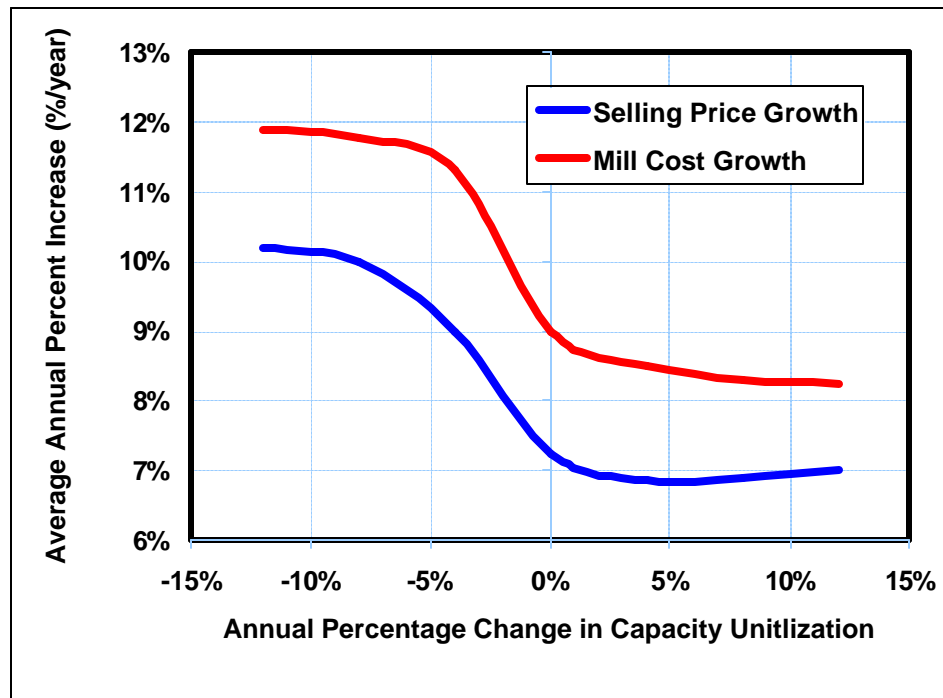


Figure 9, Price and Cost Growth vs. Change in Capacity Utilization for Industrial Businesses (N=1121)

Table 7 shows that raw and semi-finished material businesses, businesses selling "standard" products, high investment intensive businesses and businesses in high growth markets generally had above average levels of profit margin pressure. High growth businesses are probably not a problem in that they typically realize an increasing "scale of economy" with respect to selling, administrative and research costs; therefore, measuring margins with respect to mill cost only is misleading. The other three categories are: (1) raw and semi-finished materials, (2) standard products and (3) investment intensive businesses have been a problem.

Effect of Cost Inflation on Profit Margins

Among industrial businesses the factor which correlates most strongly with profit margin decrease is mill cost growth. As shown in Figure 2, businesses caught up in high cost inflation were especially unable to pass through these cost increases in the prices charged to their customers. Thus, the cost/price squeeze felt by many Du Pont businesses in the mid70's was typical of other industrial businesses as well.

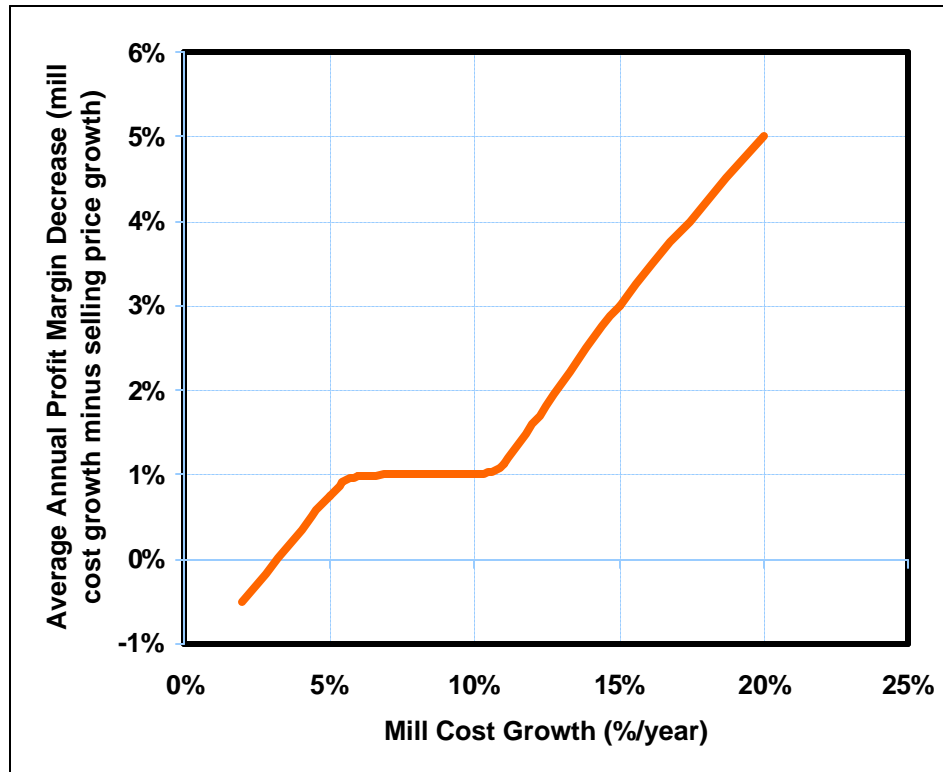


Figure 10, Profit Margin Decrease vs. Mill Cost Growth for Industrial Businesses (N=1121)

True - False Answer

True During the 1970's, most industrial businesses showed decreasing profit margins. This profit margin pressure was particularly severe among investment intensive businesses selling standard, raw and semi-finished materials. See Table 7.

No.7, February, 1981

7 CAPACITY EXPANSION

This is the seventh in a series of articles, which discuss relationships among business characteristics based on our analysis of the Strategic Planning Institute database. This article discusses the factors, which influence manufacturing capacity additions. Understanding the conditions under which businesses add capacity can be useful in helping a business predict probable competitive expansion. In investment intensive businesses market share generally tends toward capacity share and, thus, capacity additions have a strong influence on the present and future position of such businesses.

True or False?

The current level of profitability is normally a very important factor in determining whether an industrial business will expand its capacity.

Capacity Expansion Theory

Economic theory suggests that businesses will invest in manufacturing capacity when they need to do so and when they feel it will be profitable to do so. From the standpoint of needing capacity, it would be expected that a business would increase its capacity when demand is growing and the ability to supply is becoming limited. Limited supply occurs when capacity utilization is high, when finished product inventories are low, and when order backlogs are high. In order to justify the expansion, the expected level of profitability must exceed a minimum (hurdle) return rate which should vary with project risk, the cost and availability of funding, and alternative investment opportunities.

We have examined several factors based on this theory to find what seem to be the key driving forces behind growth in capacity among industrial businesses in the SPI data base. The SPI definition of capacity growth is the annual percent change in the amount of production on a volume basis which the business is capable of manufacturing using normal operating policies, the current product mix, and current constraints on technology, work rules, labor practices, etc. Capacity growth for the average ~. industrial business in the data base is 5.8% per year; it ranges from -15% to 40%.

Impact of Need Factors

The analysis indicates that the two strongest correlates of capacity growth are volume growth and beginning capacity utilization. Volume growth is the annual average percent change in the physical volume of the business. Beginning capacity utilization is the capacity utilization at the beginning of the period for which the data exist for each business. Capacity and volume growth measures are from this beginning or base point in time. These relationships are shown in Figure 11 and Figure 12.

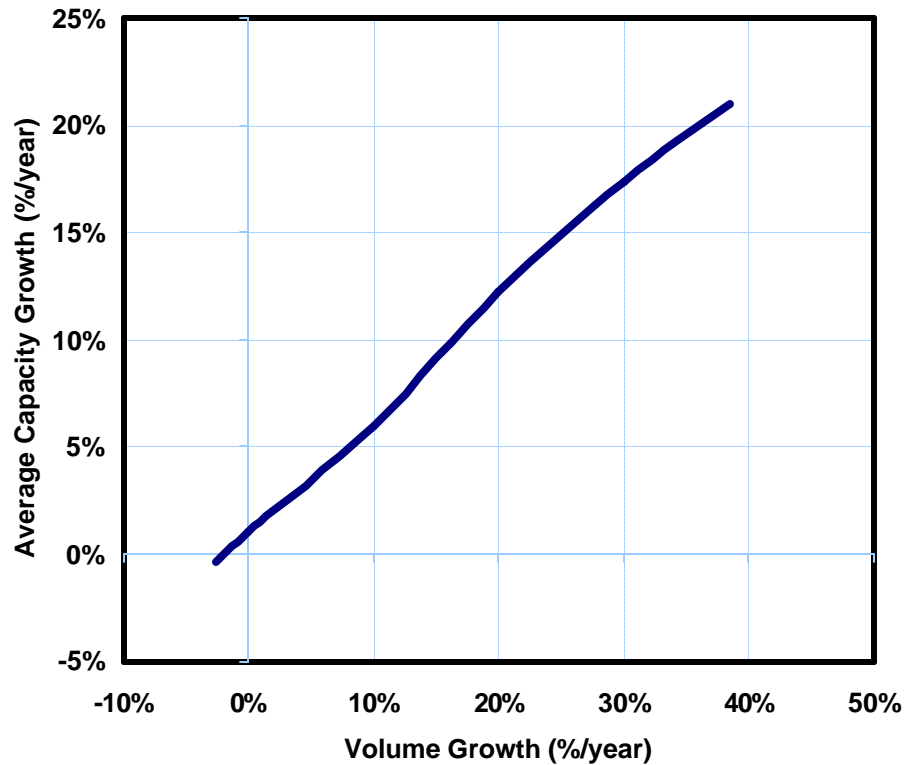


Figure 11, Capacity Growth vs. Volume Growth for Industrial Businesses (N = 1117)

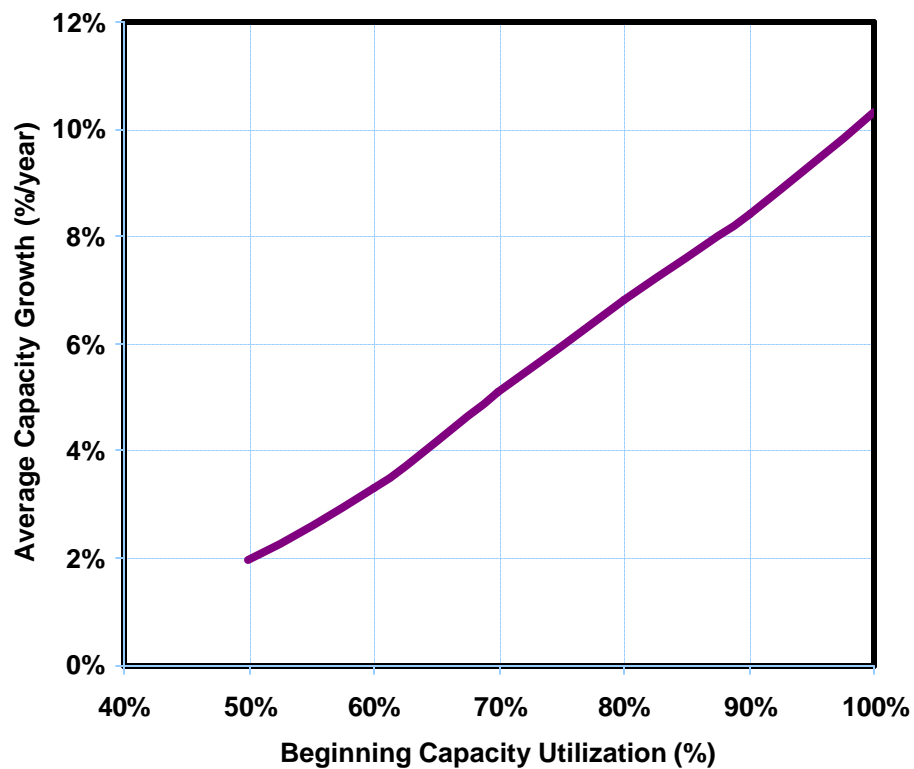


Figure 12, Capacity Growth vs. Beginning Capacity Utilization for Industrial Businesses (N=1117).

Table 8 shows how capacity growth varies jointly with volume growth and beginning capacity utilization. Note that businesses tend to increase capacity when volume growth is high, even if capacity utilization is medium to low. On the other hand, low and medium growth situations do not generally lead to significant capacity increases, even when capacity utilization is high.

Table 8, Average Capacity Growth by Volume Growth and Beginning Capacity Utilization
(Industrial Businesses N=1,117)

Volume Growth	10%	High	7%	15%	23%
		Medium	2%	3%	6%
	0%	Low	-3%	-1%	3%
			Low	Medium	High
			69%	86%	
			Beginning Capacity Utilization		

Impact of Profitability

The above analysis shows that a business tends to increase capacity when it needs to. The next question is the of profitability on the decision to invest in capacity. Among the industrial businesses there is, surprisingly, no correlation between capacity growth and pretax return on investment (PROI). As shown in Table 9, this lack of profit correlation with capacity growth occurs at all levels of volume growth.

Table 9, Average Capacity Growth by Volume Growth and PROI
(Industrial Businesses N=1117)

Volume Growth	10%	High	13%	13%	14%
		Medium	3%	5%	4%
	0%	Low	0%	0%	0%
			Low	Medium	High
			8.5%	18.5%	
			Pretax Return on Investment		

It seems reasonable to believe that future profitability in a business should be correlated with current profitability and that, if a company seeks to invest in its most profitable opportunities, there should be more of a tendency for capacity increases to occur in high-profit businesses. This is not the case. Even when the effects of the "need" factors were backed out, the effect of profitability was insignificant.

This result, while perhaps somewhat surprising, is not without precedent. The classical study of Ralph Sultan on "Pricing in the Electrical Oligopoly" also concluded that capacity strategies had no apparent relationship to profitability. In fact, he found that the two large firms, General Electric and Westinghouse, tended to follow each other in expanding capacity and to maintain stable capacity shares over the long term. He likened this to an "arms race." He found that the smaller firm, Allis Chalmers, tended to add capacity when needed, but again with no apparent relationship to profitability.

Conclusions:

Thus we find that industrial businesses add capacity when they need to. This generally occurs when volume is growing rapidly and when capacity utilization levels are high.

Current levels of profitability seem to have no on the decision. There may be two reasons for this. One is that businesses may be more share oriented than profit oriented and fight to hold capacity share, realizing that this will ultimately determine market share. Secondly, businesses may tend to be a bit myopic with respect to judging the future and may find reasons to believe that future profitability will be better than current profitability.

This result is important in terms of business strategy. A business which holds down prices to keep competitors marginally profitable may, in reality, be sacrificing current earnings without discouraging competitive expansion. Extremely aggressive marketing could, of course, limit a competitor's volume growth and level of capacity utilization and perhaps postpone competitive expansion plans. A highly aggressive marketing strategy should be examined very carefully in terms of expected longer term gains in position at the expense, usually, of lower shorter term profitability.

True-False Answer

False The current level of profitability is normally a very important factor in determining whether an industrial business will expand its capacity. As noted, capacity growth is unrelated to profitability and seems to depend entirely on the need for capacity (demand increases and anticipated supply limitations).

No.8, March, 1981

8 CAPACITY SIZING

This is the eighth in a series of articles which discuss relationships among business characteristics based on our analysis of the Strategic Planning Institute data base. The last article examined the factors which influence capacity expansion. This article discusses the profit consequences of "capacity aggressiveness" and suggests two approaches to the problem of capacity sizing.

True or False?

Industrial businesses which expand aggressively (capacity growth above the "norm") have decreases in PROI, (pretax return on investment) two years later; those with below normal levels of capacity growth show increases in PROI two years later.

Capacity Aggressiveness

Capacity expansion strategy has critical on long-term profitability for most industrial businesses. This strategy includes many elements such as location, technology, flexibility, timing, and sizing. It is particularly important that capacity strategy be closely linked to marketing strategy.⁵

The SPI database can be used to examine the short term profit of different levels of "capacity aggressiveness". Capacity aggressiveness can be defined as the difference between a business' actual level of capacity growth and a normal level given its characteristics.

Based on the two key factors discussed in the last article, a simple capacity growth "norm" can be calculated as follows:

Capacity Growth Norm =

$$0.563 \cdot \text{Volume Growth} + 0.293 \cdot \text{Beginning Capacity Utilization} - 16.41$$

(Equation explains 51% of the variance in capacity growth)

This equation, then, provides an expected rate of capacity growth for given values of volume growth and beginning capacity utilization. The actual rate can be compared with this norm, the difference being a measure of capacity aggressiveness.

As is shown in Figure 13, a strong negative correlation exists between change in PROI over a two year period and capacity aggressiveness. Businesses which aggressively expand tend to give up profitability in the short run. Thus, the timing and sizing of capacity expansions is an

⁵ "Capacity Expansion: Should You Play the Preemption Game?" by Michael Porter, The Journal of Business Strategy, Winter 1981, pg. 3 provides an excellent discussion of capacity strategy.

important consideration. The question of long run cannot be answered directly from the data base until several more years of data are accumulated.

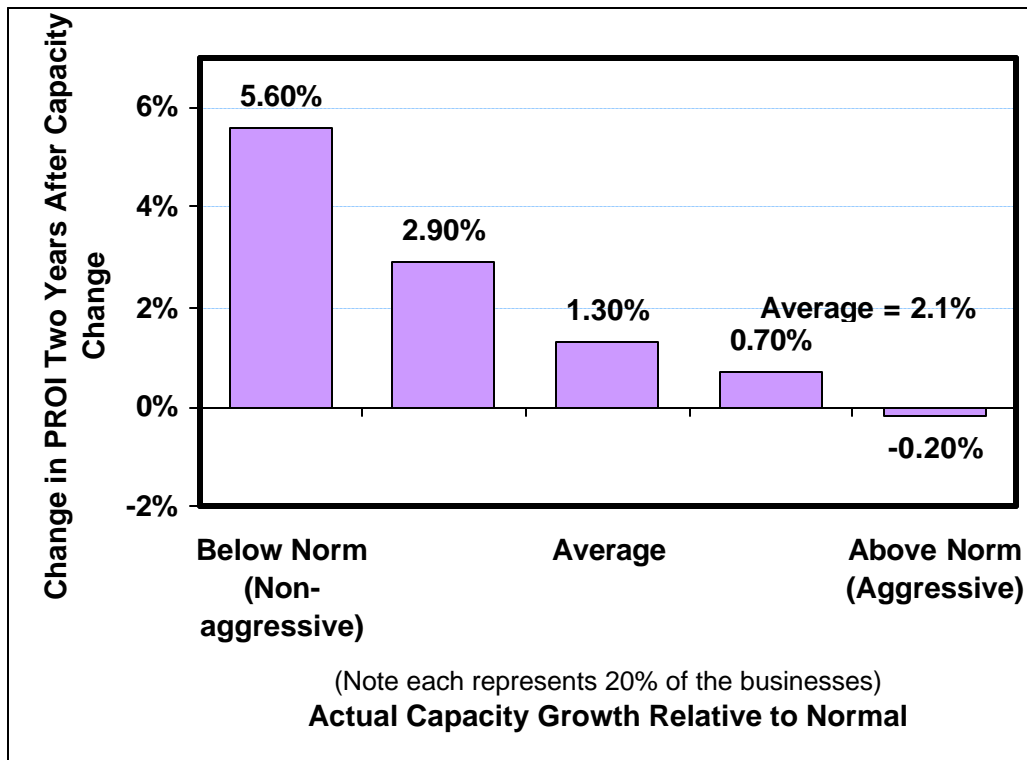


Figure 13, Change in PROI vs. Capacity Expansion Aggressiveness for Industrial Businesses (N = 1117)

Different approaches can be taken to the problem of determining the most appropriate size for new capacity in a growing business. One approach is to determine the indifference point between putting another "increment" of investment into the current expansion or postponing this increment until the next expansion. Increases in the time value of money lead to smaller plants; increases in the "economy of scale" associated with the plant lead to larger plants. Capacity economy of scale reflects the fact that a doubling of capacity can almost always be accomplished with less than a doubling of investment dollars. This relationship can be expressed as:

$$I = M \cdot X^N$$

where **I** = investment dollars, **X** = capacity; **N** = capacity economy of scale factor; and **M** = proportionality factor. In the above relationship, "N" normally has a value between 0.5 and 0.8 depending on the nature of the investment.

The time value of money is the other key factor in the investment approach. The required rate of return on the investment in new capacity should depend upon the current cost of money, business risk, and alternative investment opportunities. Assuming the above investment/capacity relationship and linear growth in demand, the optimal time between capacity expansions using

this approach is shown in Figure 14. Capacity size, of course, is simply time between expansions multiplied by annual demand growth.

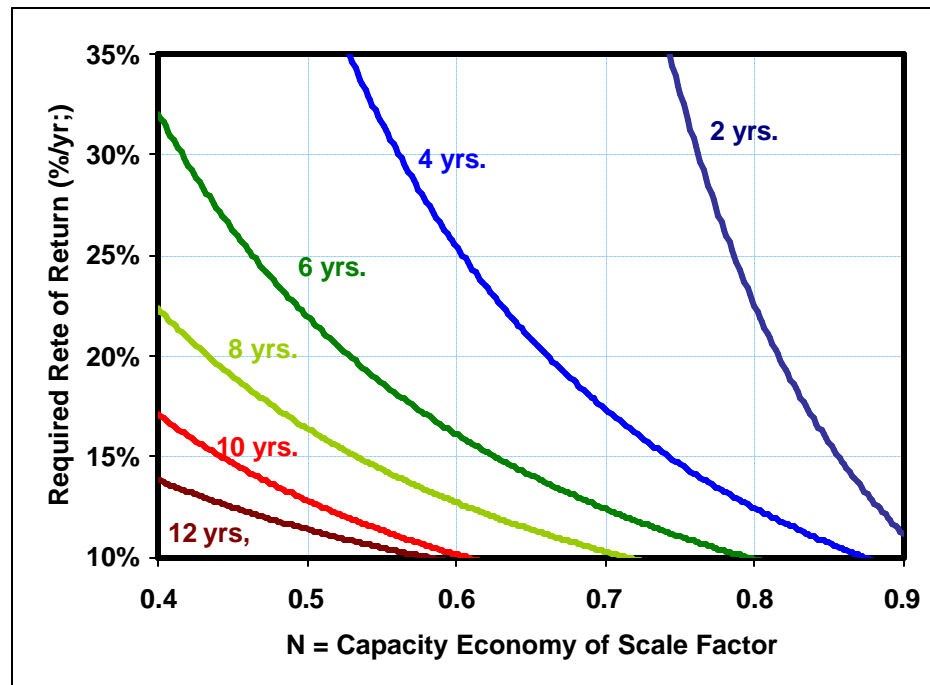


Figure 14, Optimal Time Between Capacity Expansion Using Investment Approach

Capacity Sizing - Profit Approach

One serious problem with the investment approach to capacity sizing is that market and competitive s are not considered. Capacity expansions change the supply/demand balance which creates market pressures with respect to volume, price, and competitive expansion. These interactions are difficult to estimate. As a rough approximation to the profit impact of alternative capacity expansions, the relationship between profitability and the three key profit correlates can be useful. These three profit correlates are competitive advantage, turnover, and capacity utilization and were discussed in previous articles. For the average industrial businesses, the profit sensitivity to each of these factors is shown in Table 10.

Table 10, Change in Key Profit Correlates Needed to Increase PROI by One Percent for Average Industrial Business

<u>Profit Correlate</u>	<u>Change Associated with a 1% Increase in PROI⁶</u>
Competitive Advantage Index	27%
Turnover	12%
Capacity Utilization	5%

Thus an increase in the competitive advantage index of 27 points or an increase of twelve percentage points in turnover or an Increase of five percentage points in capacity utilization will increase PROI by one percent in the average industrial business. The sensitivities are additive and can therefore provide predictions of PROI changes opposite changes in all of these factors.

A capacity expansion normally decreases turnover and capacity utilization immediately. If it uses improved technology, the relative cost may be reduced, thereby increasing the competitive advantage index. As sales and market share increase, increases occur in all three profit correlates. Thus PROI changes can be estimated into the future if the factors making up the three key correlates can be estimated. An important prediction required is the rate of sales penetration.

An example calculation is shown in Table 11. The calculation must be extended beyond 1985, of course, and future cash flows appropriately discounted. Alternative capacity strategies can be compared in this manner.

To assist in evaluating alternative capacity and marketing strategies, we have developed and are using a computer-based competitive business strategy model which predicts price, market share, and profit changes for major competitive producers across specified product/market segments. The model is based on established business principles and has been calibrated against the SPI data base. (3) If this approach is used, we recommend developing sensitivities from the database specific to the particular business.

⁶ If this approach is used, we recommend developing sensitivities from the database specific to the particular business

Table 11, Example of Profit Approach to Capacity Sizing

A. Input Assumptions:

Year	Capacity (MM lbs.)	Investment (\$MM)	Sales		Relative Price	Relative Cost	Relative Share	Relative Quality
			Volume (MM lbs)	Revenue (\$MM)				
1980	100	61	85	72	100	103	75	15
1981	100	64	92	83	100	103	76	15
1982	130	121	104	99	100	106	82	15
1983	160	133	120	120	100	100	90	15
1984	160	139	135	142	100	96	96	15
1985	160	145	147	162	100	94	105	15

B. Calculations:

Year	Capacity Utilization			Turnover			Competitive Advantage Index			Total
	Level	Rel. to Base	PROI Impact	Level	Rel. to Base	PROI Impact	Level	Rel. to Base	PROI Impact	PROI Impact
1980	85%	Base	-	118%	Base	-	75%	Base	-	-
1981	92%	+7%	+1.4%	130%	12%	+1.0%	76%	+1.0%	0	+2.4%
1982	80%	-5%	-1.0%	82%	-36%	-3.0%	52%	-23%	-0.9%	-4.9%
1983	75%	-10%	-2.0%	90%	-28%	-2.3%	120%	+45%	+1.7%	-2.6%
1984	84%	-1%	-0.2%	102%	-16%	-1.3%	166%	+91%	+3.4%	+1.9%
1985	92%	+7%	+1.4%	112%	-6%	-0.5%	195%	+120%	+4.4	+5.3%

True-False Answer

True. Industrial businesses which expand aggressively (capacity growth above the "norm") have decreases in PROI, (pretax return on investment) two years later; those with below normal levels of capacity growth show increases in PROI two years later. See Figure 13.

No. 9, April, 1981

9 SALES GROWTH OF INDUSTRIAL PRODUCTS

This is the ninth in a series of articles, which discuss relationships among business characteristics. Previous articles have focused on findings from the Strategic Planning Institute database. This article describes common growth characteristics of the physical sales of industrial products during their growth phase and is the result of research conducted by E. B. Lieb. Physical sales of industrial products have been found to have a common shape during their growth phase. Graphs of the logarithm of physical sales versus time for these products can be superimposed over broad regions of the graphs with only vertical and horizontal shifts as illustrated in Figure 15.

The history of products after their introduction can often be described in life stages. Typical growth, maturity, and decline phases are shown in Figure 16. During the growth phase, sales may increase several orders of magnitude until it levels off and matures. Eventually, sales for products will decline.

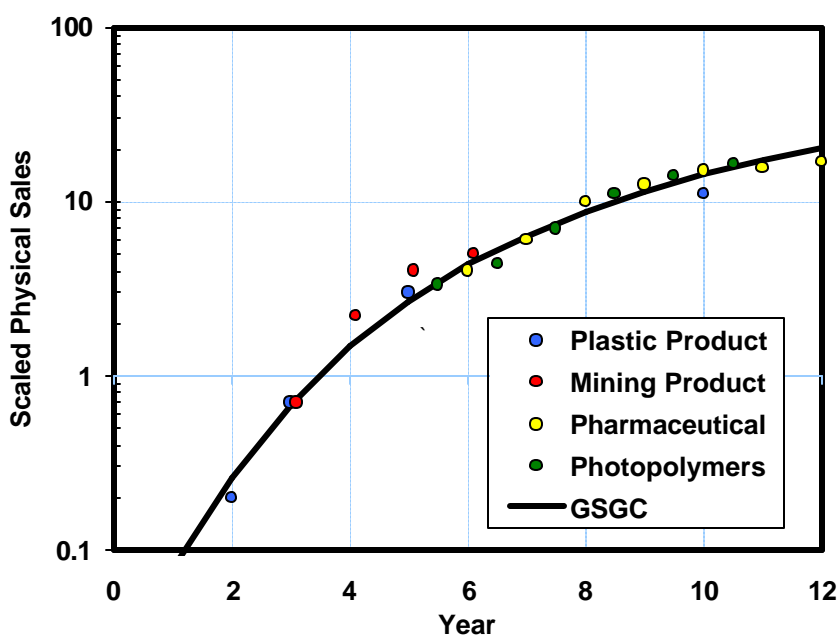


Figure 15, Typical Fit Between Physical Sales Data and the General Sales Growth Curve

The common shape sales growth curve applies only to the growth phase. A two-parameter model can be used to describe the growth characteristics of industrial products⁷.

⁷ A modification of the Gompertz curve is useful in describing the growth of industrial products. The general Gompertz curve is of the form:

$$u = u_{\infty} \cdot (1+b)^{t-t_0} \cdot (u_0/u_{\infty})^{R^{t-t_0}}$$

This general model has been tested on many classes of industrial products including:

- Polymer resins and elastomers;
- Textile and industrial fibers;
- Pigments;
- Agricultural and industrial chemicals;
- Photo-polymers;
- Integrated circuits;
- Instruments, and process equipment;
- Pharmaceutical and ophthalmic products; and
- Selected medical procedures.

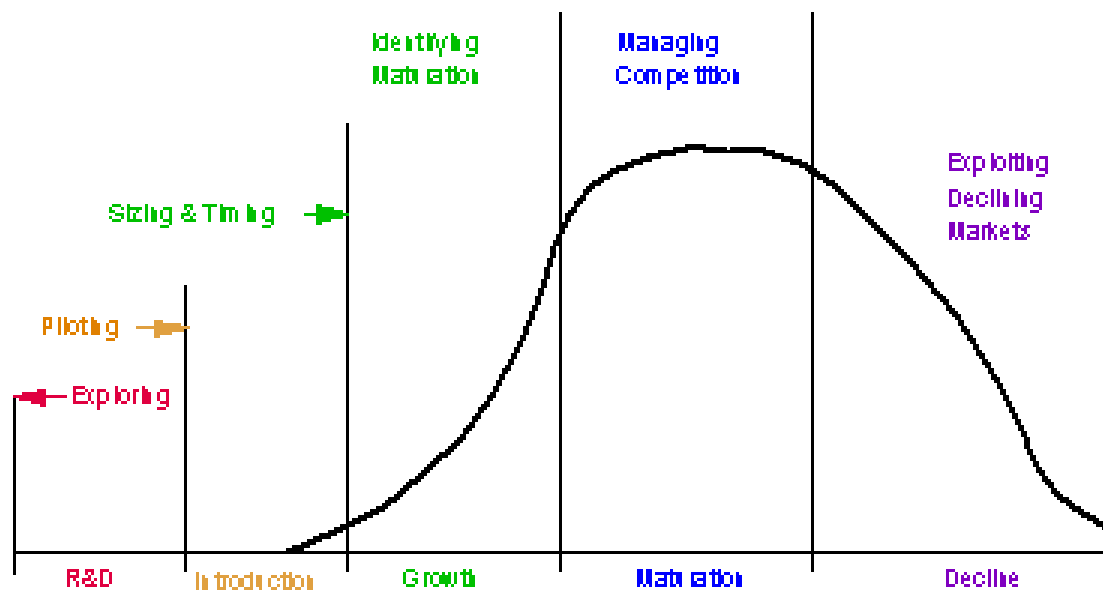


Figure 16, A Typical Product-Life-Cycle

The testing has used data extending over various parts of the twentieth century (see Figure 17) and, in one case, as far back as the end of the eighteenth century (see Figure 18). The curve has been shown to describe generic products, brands, and particular brands in specified applications.

where u_{∞} , b , t_0 , u_0 and R are constants. Some of these constants tend to be universal. After appropriate rearrangement and substitution of the universal relations we obtain:

$$\ln(u) = 0.077 \cdot t + B \cdot (0.77)^t + A$$

where A and B are the only constants that have to be estimated.

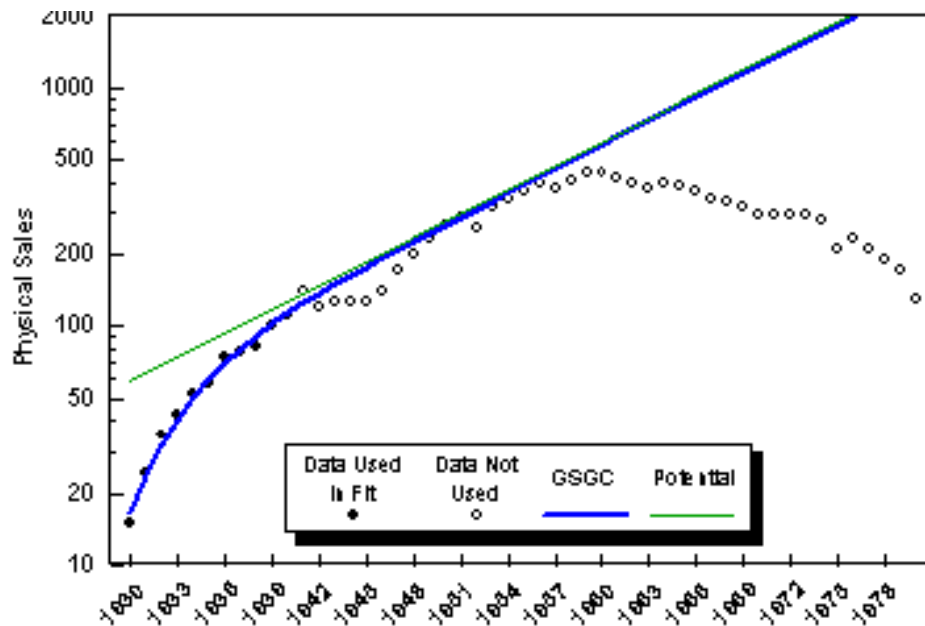


Figure 17, Sales Growth Curve for Cellophane Film

We have found that the average error between the fitted curve and the actual physical sales data for generic products and brands used for several applications is less than 15%⁸. Most of this error appears to be associated with the business cycle (e.g. recessions) and start-up conditions during the initial introduction of the product (in the first two years of commercialization).

⁸ The average error refers to the R^2 error used to test agreement of the curve with the set of points used to curve fit the two constants in the model. In general, the early high growth points were selected for fitting the model. This error does not reflect forecast error which can be somewhat higher, if the curve is used to forecast sales.

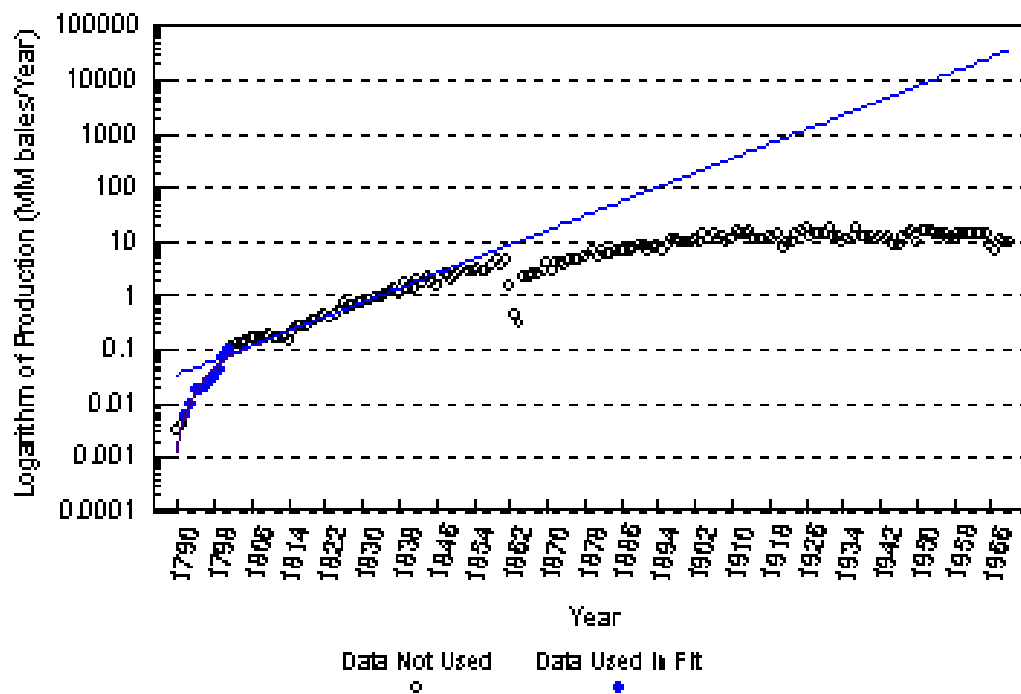


Figure 18, The Sales Growth for Cotton (1790 to 1970)

The common sales growth curve approaches an eight percent physical ~ volume growth rate. Since no product can grow indefinitely at that rate, all products must eventually mature. This curve, therefore, can only describe a portion of the product life cycle. Figure 19 shows the histories of five products indicating different maturing points. The sales growth curve appears to act as an upper limit to the possible sales of a product, if maturity can be postponed and the market remains stable. The sales growth curve does not predict when maturity will take place, but does predict the probable sales until that event takes place.

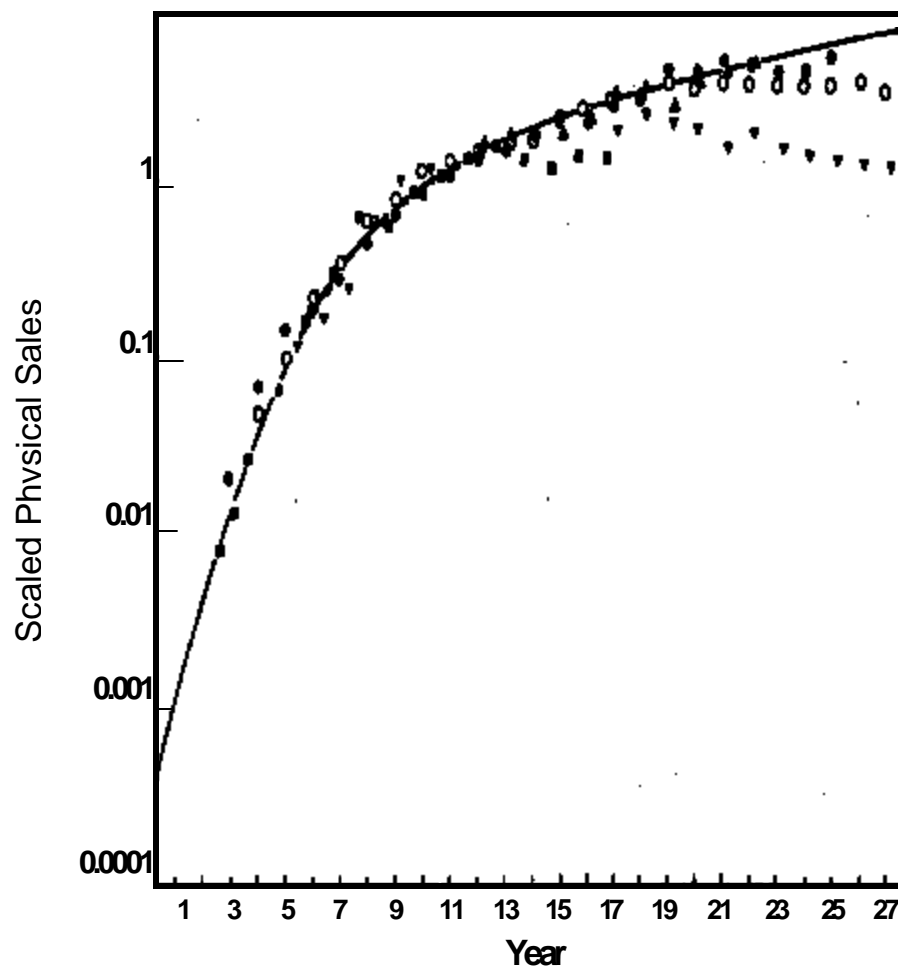


Figure 19, Growth Characteristics of a Set of Products

The existence of this common behavior among industrial products has permitted the development of forecasting techniques, auditing procedures, and planning tools. These developments will be discussed in subsequent articles.

No. 10, May, 1981

10 IS SALES POTENTIAL A PHANTOM?

There is no concept of business planning more critical or elusive than sales potential. Sales potential is usually considered to be the total market for which a product could conceivably be used. It is a key measure of stake for new product development. However, when a new product becomes commercial, considerations shift from potential sales to real sales. This article discusses the concept of sales potential as a key issue in understanding the structure of sales growth.

The last article described a common pattern observed in sales of industrial growth products. It was found that physical sales can be described by a simple model during the growth phase as shown in Figure 20.

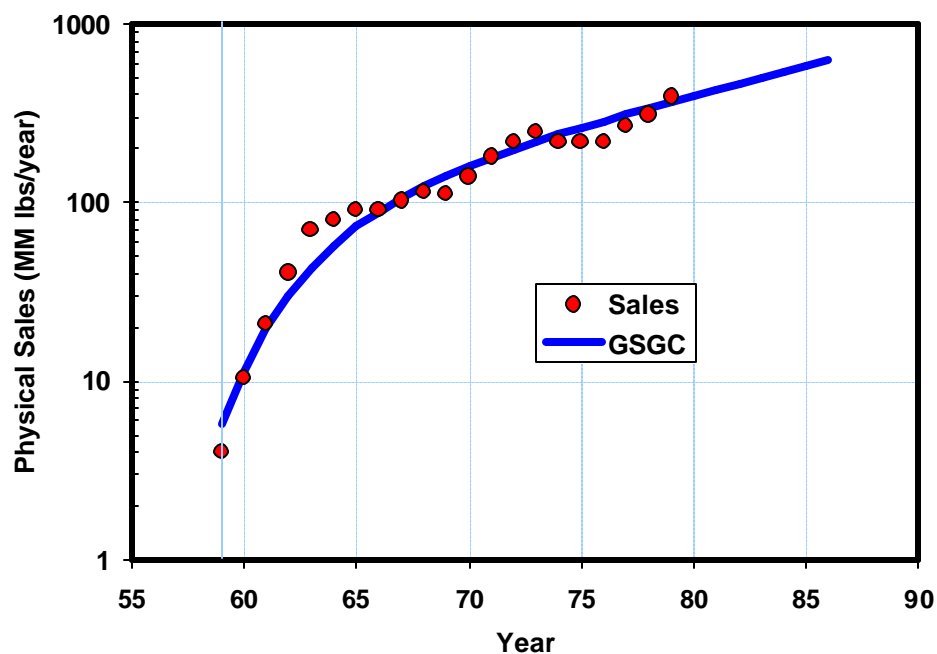


Figure 20, The General Sales Growth Curve for a Typical Industrial Product

Sales Potential

Sales growth curves usually show extremely fast growth (often in the order of 200% a year) during the first few years of the product. The growth rate continuously decreases and asymptotically approaches 8%. At some point in the history of the product, physical sales break from the growth curve and the product matures. But as long as the product remains in the growth phase, it will tend to follow the sales growth curve.

It is convenient to split the sales growth curve into two factors: (1) the sales potential, and (2) the

penetration into that potential. The potential can be approximated by extrapolating the long-term 8% growth portion of the curve forward in time, as shown in Figure 21⁹.

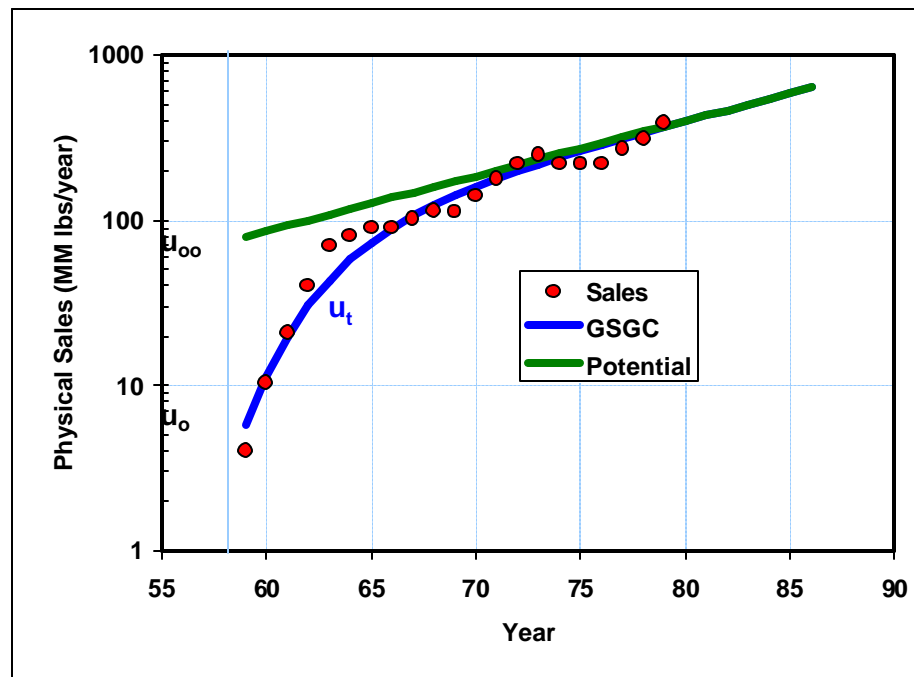


Figure 21, The Sales Growth Curve and the Implied Potential

We believe that this potential line is the maximum sales that the product can penetrate as long as the technology remains stable. It takes many years for products to approach this potential and, usually involves the penetration of many applications. In order to continue to penetrate this potential, products must provide increased value to their customers, usually in the form of decreasing real price. In this sense, the sales potential based on a sales growth curve captures the requirement of increasing value.

⁹ The sales growth curve can be expressed as:

$$u_t = \underbrace{u_{\infty}}_{\text{Potential}} \cdot \underbrace{(1.08)^t}_{\text{Penetration}} \cdot \underbrace{(u_0 / u_{\infty})^{.77}}_{\text{Penetration}}$$

where u_t is the physical sales, u_{∞} is the measure of potential based on extrapolating the long term growth back to the first year of introduction, u_0 is the physical sales along the sales growth curve in the first year of introduction, and t is the time since introduction. As noted, this expression can be divided into two components representing the potential and the penetration into that potential.

When data is fitted to the sales growth curve, we implicitly determine the sales potential. Thus, this concept of potential is inherent in the sales growth curve. The eight percent per year growth appears to be a natural consequence of the new markets which are developed as value increases. We should again point out that all products eventually break from the sales growth curve, and therefore, eventually fall short of meeting this measure of potential.

Share Adjusted Potential

This concept of potential is the market that a product can be expected to capture eventually. But what happens when a competitor enters the market? One would expect the potential to adjust, reflecting the expected long-term market shares.

Figure 22 shows the effect of the entry of a competitor. Originally, an innovative firm had entered a market with the proprietary technology. This product grew along the sales growth curve into a potential reflecting the total market. Some years after introduction, a competitor entered and also grew along the sales growth curve. Its growth was at the expense of the established product. Eventually the established product again grew but this time, into a reduced potential. In effect, the entry of the competitor produced an adjustment of the potential. For this reason, we refer to the potential of an existing product as a "share adjusted potential" with the effect of market share incorporated in the calculation.

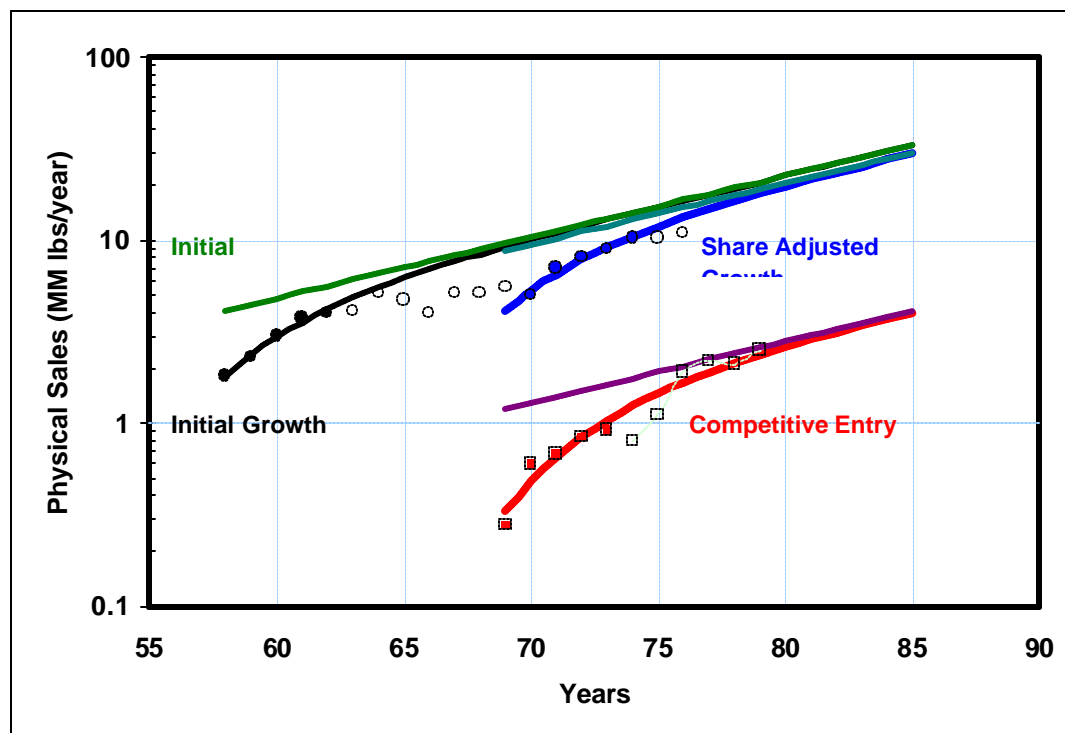


Figure 22, Effect of Competition on Sales Potential

New Technology

Physical sales of a product tend to remain along sales growth curves as long as the technology associated with the product remains stable. But what happens if an invention takes place allowing the product to enter into new markets for which it was previously technically unsuitable? This is not an economic driving force, but a technical one. Such a change may be within the product itself, or involving an invention on the part of the user. When this takes place, one could expect a radical increase in the sales potential as shown in Figure 23. But these radical changes take place because of an invention and are not merely a natural sequence of searching for new market opportunities.

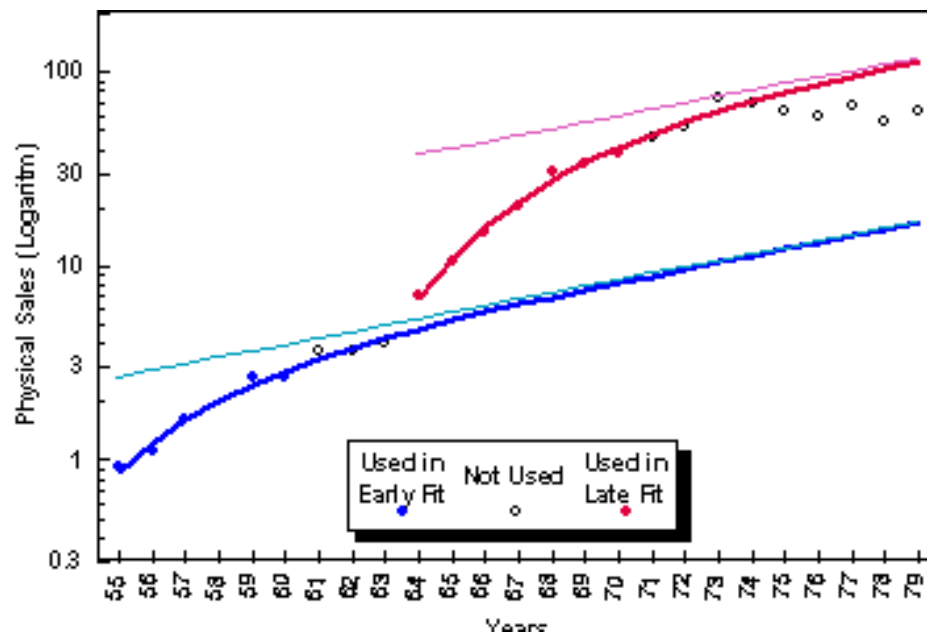


Figure 23, Effect of an Invention on Sales Potential

This article has shown that an estimate of sales potential is derivable directly from physical sales analysis. Furthermore, the sales potential reflects market conditions and must be adjusted for changes in competition and new technology.

No. 11, June, 1981

11 AUDITING SALES FORECASTS

Sales forecasts are key elements of strategic business planning. It is vital that these forecasts reflect reasonable expectations in the light of the changing business environment and the restriction of limited resources. This article discusses the analysis of sales forecasts based on the observed common pattern of sales for industrial growth products.

The last two articles showed that physical sales for industrial products can be described by a simple model during the growth phase. Growth along the common sales growth curve reflects a stable environment and continuing penetration into new applications for the product. This model allows for the estimation of a sales potential which reflects the business environment. All products eventually mature and break from the common sales growth curve at some point in time.

Sales forecasts should reflect the opinions of marketing, sales, and business management personnel. This quantification of the "feelings" about the market is necessary if the forecast is to represent a commitment to action by marketing and the sales force.

However, forecasts should be audited to identify inconsistencies among business objectives, sales expectations, allocated resources, and the business environment. This helps assure that business strategy remains responsive to changes in market needs and competitive pressures. The sales growth curve provides a standard for comparison. If a business continues to grow at its unconstrained, natural maximum rate, the sales should follow the sales growth curve. The curve acts in this sense as an upper bound to future sales given that the environment remains stable. Figure 24 shows a typical forecast, the historical sales data, and the common sales growth curve based on the historical data.

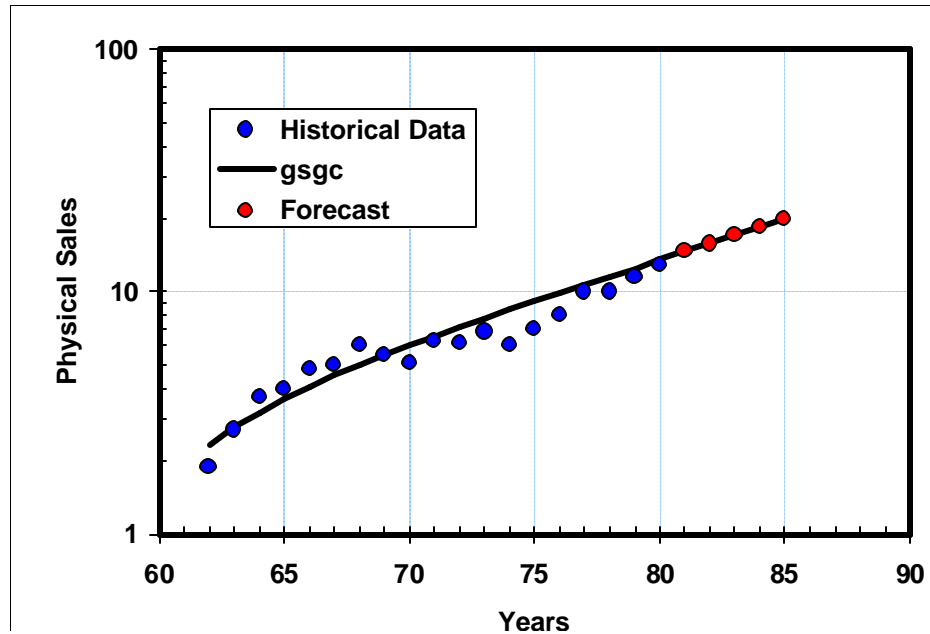


Figure 24, Forecast Following the Sales Growth Curve

Forecasts Along the General Sales Growth Curve

Note in Figure 24 that the forecasted sales fall on the growth curve. Since the forecasters for this product did not have prior knowledge of the sales growth curve, the curve represents an independent assessment of the possible future of the product.

The sales growth curve generally represents the fastest possible long-term growth of a product. If a product is forecast to grow along this curve, one might raise a series of questions. Is the price of the product high enough? Can new applications for the product be penetrated? Will the competitive environment remain stable? Is remaining on the sales growth curve the best strategy?

Forecasting Maturity

In the Figure 25 forecast, sales are expected to mature. Maturity might be the result of environmental factors such as: (1) saturation of an important market, (2) the entry of an in-kind competitor, (3) replacement by a superior technology, or (4) the inability to penetrate new markets because of the cost of the product opposite its value in marginal applications.

However, one might wish to allow a business to mature. In some cases, the cost to expand the market in terms of reduced price, market development expenditures, and investment requirements do not favor continued growth. Matured healthy businesses may become good cash generators.

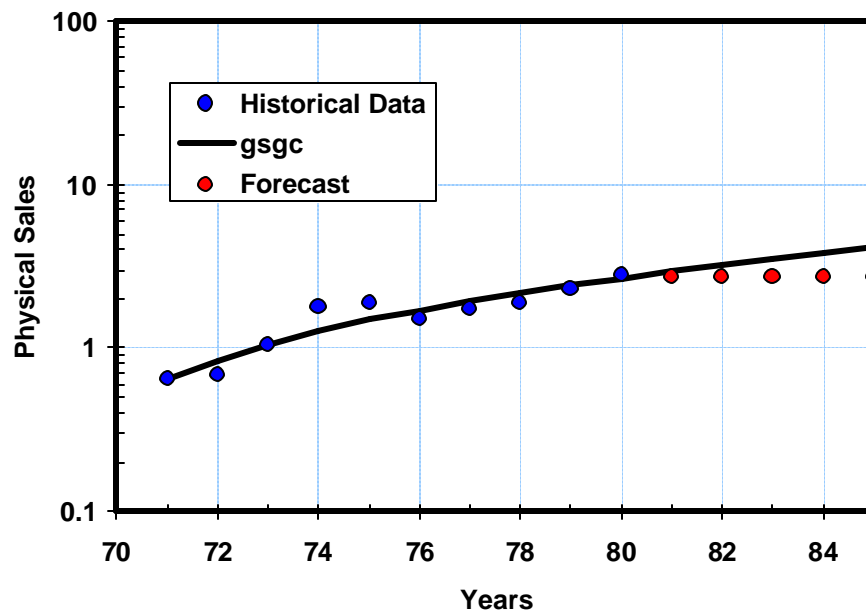


Figure 25, Forecast Indicating A Maturing Business

"Hockey Stick" Forecasting

The sales growth curve indicates continuously decreasing proportional growth approaching a long-term 8% annual growth limit. When a product matures, its growth rate becomes significantly less than this. Products can show a regeneration of growth as indicated in Figure 26 and Figure 27. However, these events normally require a special type of driving force.

Physical sales for the product in Figure 26 seem to have matured. The forecast, however, indicates a rebirth or retrofitting back to a new growth curve. In the last article, we indicated that this type of behavior is often characteristic of the establishment of equilibrium in market share between competitors.

A similar change back to previous growth rates has also been seen accompanying an aggressive marketing policy, usually with a softening of the price policy. Note that these changes are usually clear and explainable.

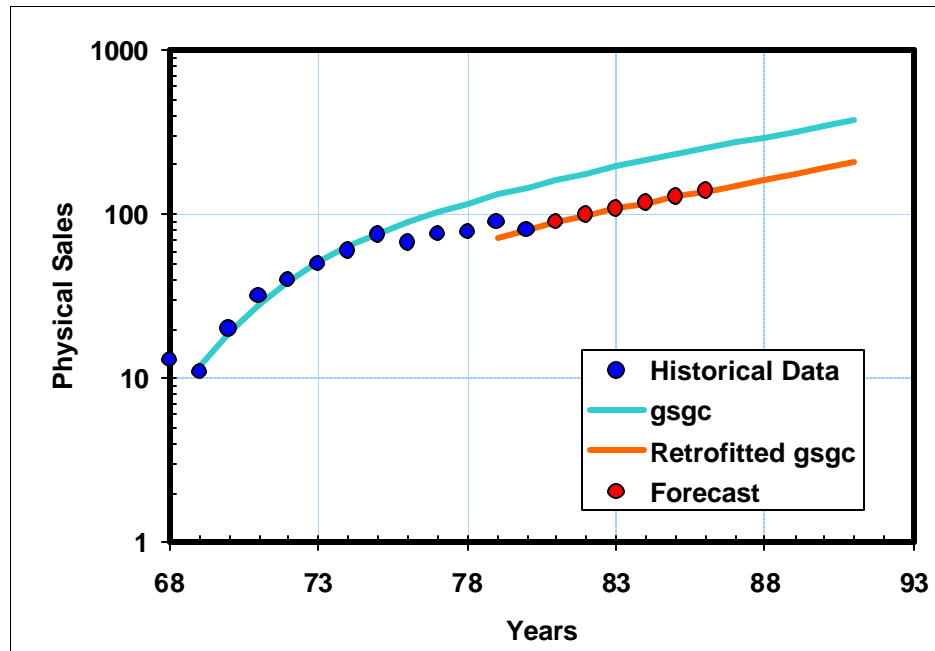


Figure 26, Forecast Indicating A New Growth Phase

A more radical forecast is indicated in Figure 27. The forecast indicates an upward break in sales from the sales growth curve. This type of behavior is usually associated with the entry into a previously excluded market. Exclusion from the market is generally technical rather than based on price. Thus, this usually requires the entry of a new product. As noted in the last article, such a change may be to the product itself or may involve an invention on the part of the user.

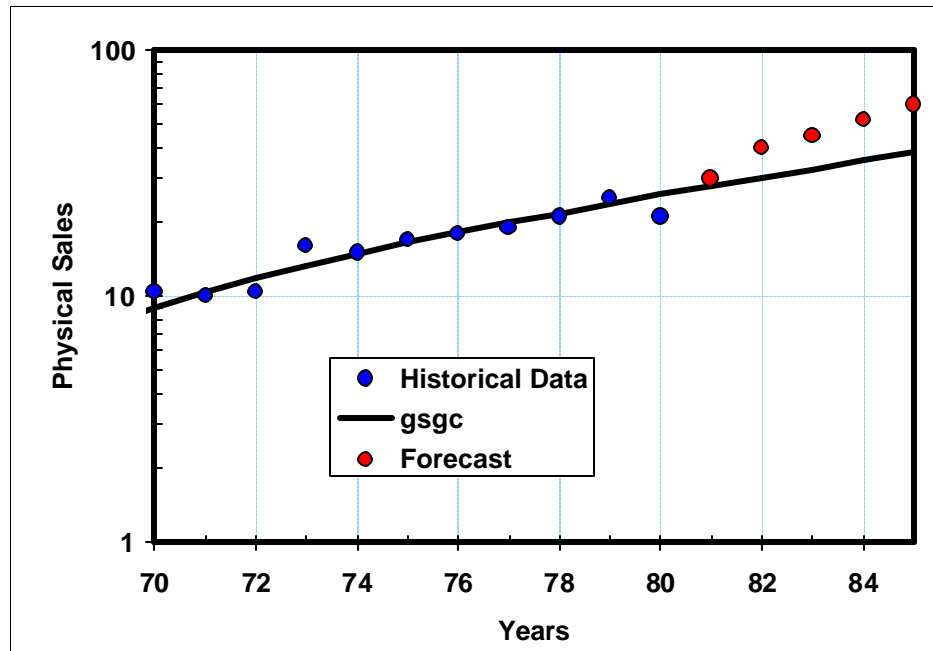


Figure 27, Forecast Indicating New Business Growth

In summary, the sales growth curve can be useful in helping to audit sales forecasts. Forecasts above the curve should be made only if new technology will allow penetration of previously excluded markets. Forecasts on the curve imply continued penetration of existing markets and entry into new applications not requiring new technology. Forecasts below the curve imply maturation of the product in the market.

No. 12, July 1981

12 SALES ESTIMATES FOR NEW PRODUCTS

The decision to develop a new product depends strongly upon estimates of the sales that the product can realize in the market. These estimates are inherently imprecise. This article discusses improving new product sales estimates using the observed common pattern of sales for industrial products.

The first two articles on the General Sales Growth Curve showed that the physical sales for industrial products can be described by a simple model during the growth phase. Movement along this common sales growth curve reflects a stable environment and continuing penetration into new applications for a product. This model provides an estimate of a sales potential which reflects the business environment.

In the last article, the use of the sales growth curve to audit sales forecasts was discussed. For products that are established in the marketplace, the sales forecast should reflect the opinions of marketing, sales, and business management personnel. In this context, we utilize the sales growth curve as an auditing tool to identify inconsistencies among business objectives, sales expectations, allocated resources, and the business environment. An example of the use of the sales growth curve for this purpose is shown on Figure 28.

However, for new products, marketing personnel are often unable to give accurate estimates. The estimates of sales are frequently made by research personnel who are uniquely familiar with the product concept, but who are often unfamiliar with marketing obstacles. The sales growth curve can be used to assist in the projection of sales by imposing the reality of market dynamics.

The problem of developing accurate sales forecasts for new products can extend into the first few years of commercialization. Small variations in sales results can produce exaggerated forecasts. Therefore, it is vital to view new product forecasts as highly speculative, even when early data is available. It is useful to present such projections as a range of possible values as indicated on Figure 29. In this case, we used the three early data points to estimate "bounds" on the forecast.

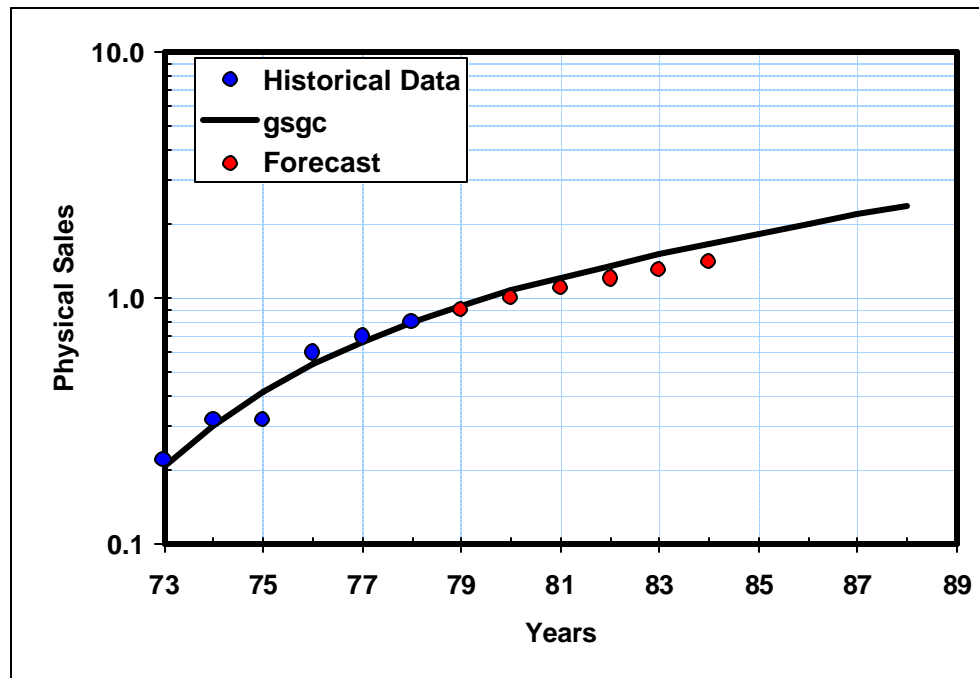


Figure 28, Typical Fit of the Sales Growth Curve with Historical Data

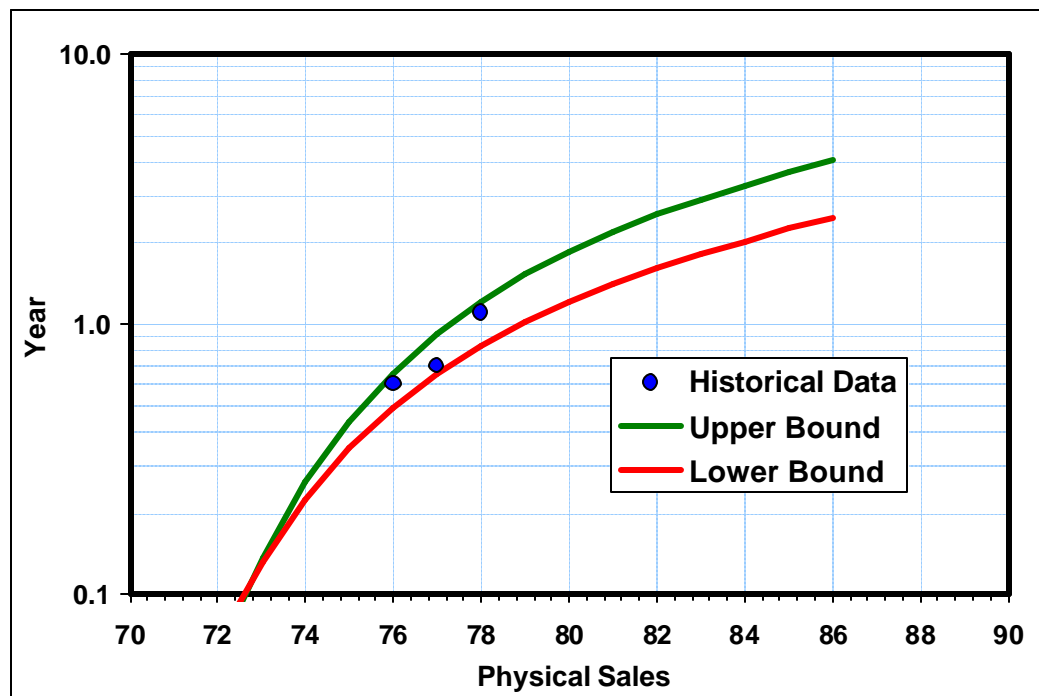


Figure 29, Bounded Sales Projections

Estimated Sales Potential

With an estimate of the sales potential and the starting date of commercialization, we can

estimate the physical sales based on the sales growth curve.¹⁰ A single estimate of potential is usually inadequate for describing the full set of risks associated with a new venture. It is more appropriate to use a set of possible potentials to give a better picture of the possible outcome of a new venture. Each potential represents a different scenario describing the competitive situation and the market acceptance of the new product.

Figure 30 is an example of the use of this type of scenario estimation for a proposed new product. The sales growth curve and estimates of the potential are used to predict sales. In this case the first commercial quantities help define the introduction date.

¹⁰ Sales Growth Curve can be described by the Gompertz Curve. The general Gompertz curve is of the form:

$$u_t = u_{\infty} \cdot (1+b)^{t-t_0} \cdot (u_0/u_{\infty})^R^{t-t_0}$$

where u_{∞} , b , t_0 , u_0 and R are constants. Some of these constants tend to be universal. For use in new product forecasts we find the following form of the General Sales Growth Curve to be useful.

$$u_t = u_{\infty} \cdot (1.08)^{t-t_0} \cdot (0.005)^{0.77^{t-t_0}}$$

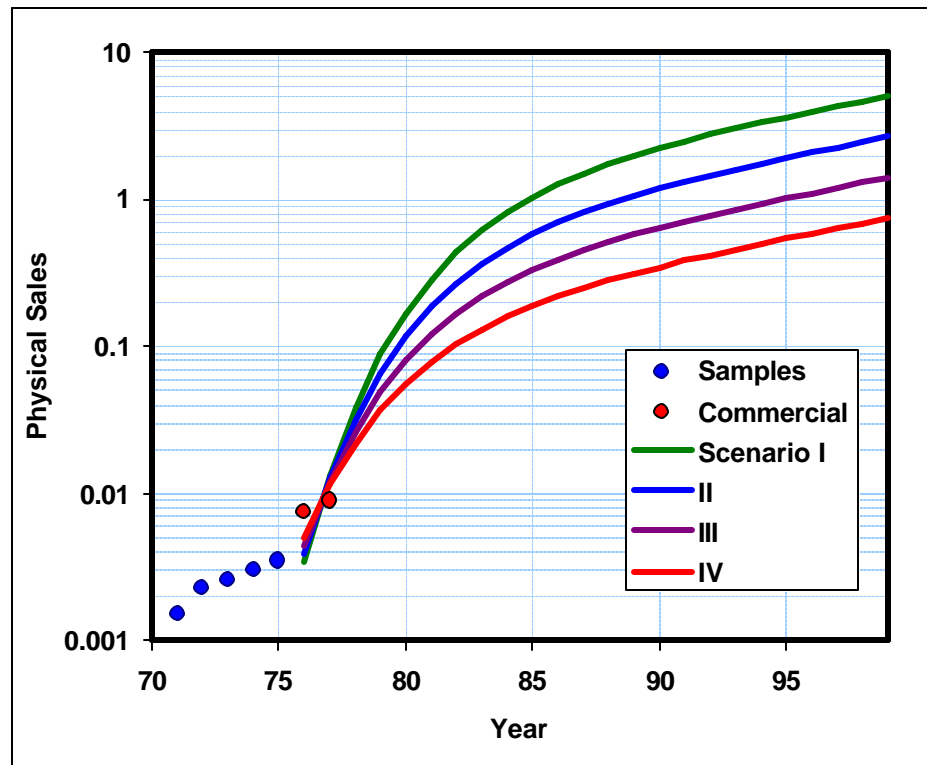


Figure 30, Sales Projections for a Set of Business Scenarios

Uncertainty

All scenarios are not equally likely to take place. Risk analysis can be combined with the scenario estimates to give an estimate of the likelihood of success. The risk analysis combines the opinions of decision makers in the market and within a firm to obtain a distribution of possible potentials as shown in Figure 31. These estimates are then combined with the scenarios for new product sales to give possible projections of sales and their likelihood of being realized.

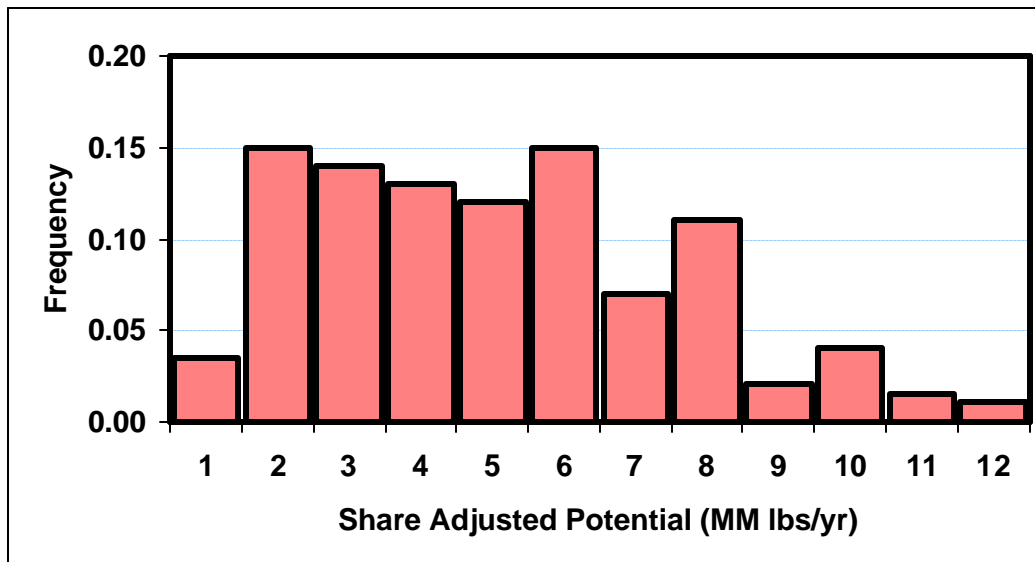


Figure 31, Typical Subjective Likelihood Estimates for Share Adjusted Potential

Figure 32, shows the typical results of this type of analysis. In this case, it was judged that there was a 15% chance that the sales will exceed the optimistic scenario, a 20% chance that the sales will exist between the optimistic and the most likely scenario, a 35% chance between the most likely scenario and the competitive scenario, and a 30% chance that sales will fall below the competitive scenario estimate. We would expect that, as product and market development continues on this venture, these estimates will tend to become tighter, continuing to reflect the risks associated with this project.

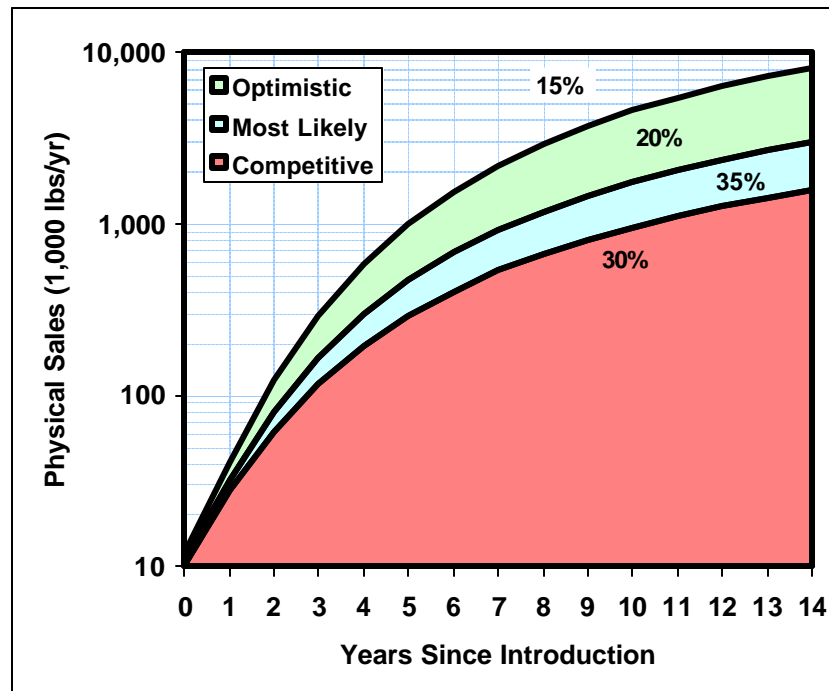


Figure 32, New Product Sale. Projections with Estimates of Levels of Certainty

In summary, the sales growth curve can be used to help in estimating product penetration. However, the procedure should be used only when lack of experience with this product precludes conventional forecasting. Since these estimates must be viewed as being highly speculative, they should be expressed in terms of the associated uncertainty.

No. 13, August 1981

13 ENTRY OF NEW COMPETITORS

The Strategic Planning Institute (SPI) database provides additional insight into the effect of new competition and its chances of occurring. Twenty-seven percent (27%) of the industrial businesses in the database reported that a new competitor had entered its served market within five years prior to the reporting date and subsequently captured at least a five percent market share.

Table 12 contrasts key average differences among the SPI industrial businesses which faced new competition to those, which did not. The key effect is on volume and market share. However, product quality relative to competitors also suffers. Profit margins do not improve so profitability is adversely affected in most instances.

Table 12, Effects of New Competition

<u>Business Characteristics</u>	Average Annual Change	
	<u>Without New Competition</u>	<u>With New Competition</u>
Market Share (%/yr.)	+0.4%	-0.2%
Relative Product Quality (%/yr.)	+1.1%	-0.3%
Profit Margin change (%/yr.)	-1.2%	-1.4%
	(N=840)	(N=308)

Because of the detrimental of new competition, it is important to examine the conditions under , which competitive entry is more or less likely to occur.

True or false?

1. Businesses with a product or process patent¹¹ position have a lower incidence of competitive entry compared to businesses without patent protection.
2. Competitive entry often occurs during periods when other competitors are exiting markets.

¹¹ As defined by SPI, patents include trade secrets and other proprietary positions.

Life Cycle Effects

As would be expected, life cycle position has a significant effect on the chances of a new competitive entry with more entry occurring in the early stages of the product life cycle. This is shown in Figure 33. For example, 40% of the 298 industrial businesses in the SPI database in the growth phase of their life cycle reported a new competitive entry.

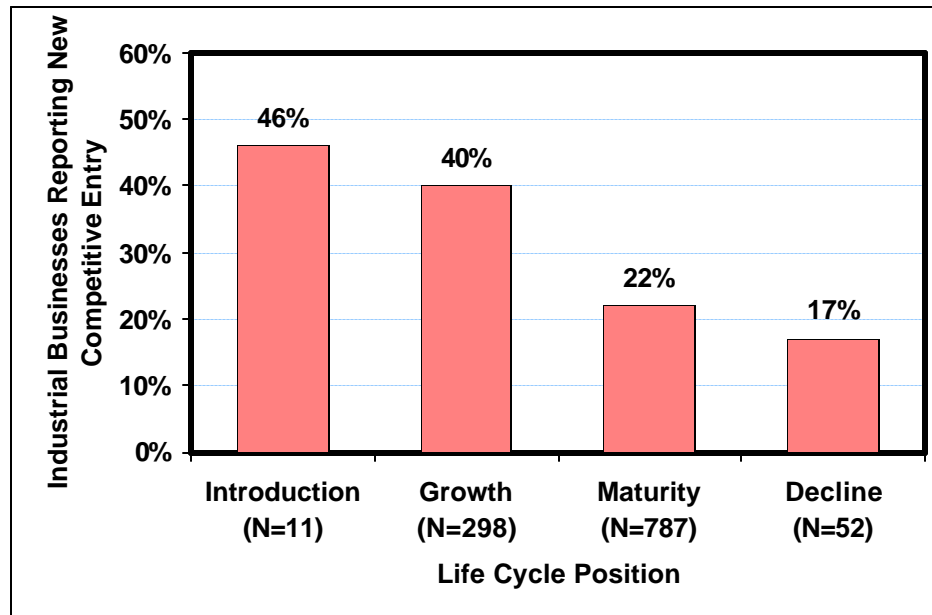


Figure 33, Competitive Entry and Product Life Cycle

Another measure of life cycle position, the number of years since the product category was introduced, shows a similar result (Figure 34).

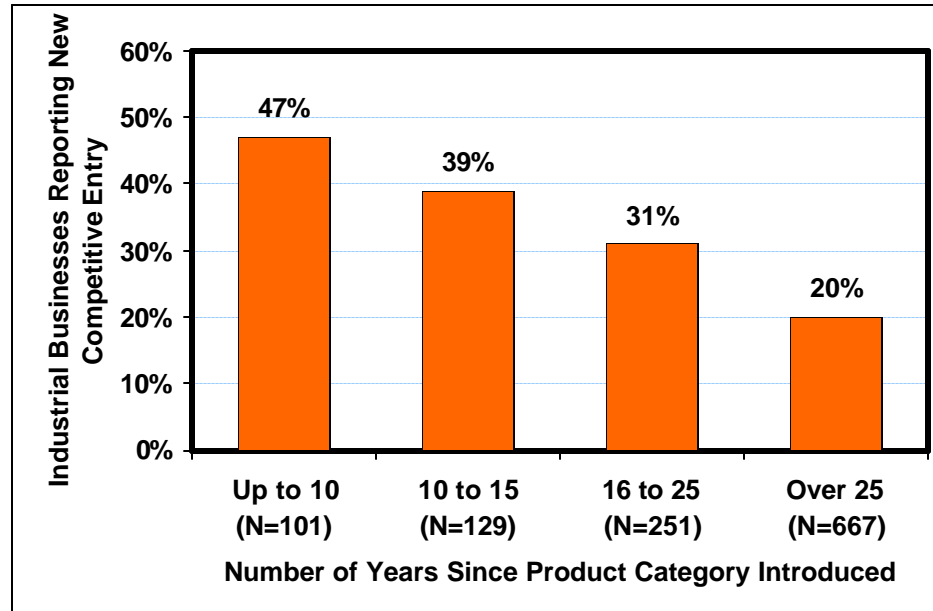


Figure 34, Competitive Entry vs. Age of Product Category

Effect of Changing Technology

Businesses which are undergoing technology changes are more prone to competitive entry. As shown in Figure 35, more industrial businesses reported new competitive entry when a recent technological change occurred in their industry. Similarly, businesses benefiting from a product or process patent position tend to attract more competitive entry.

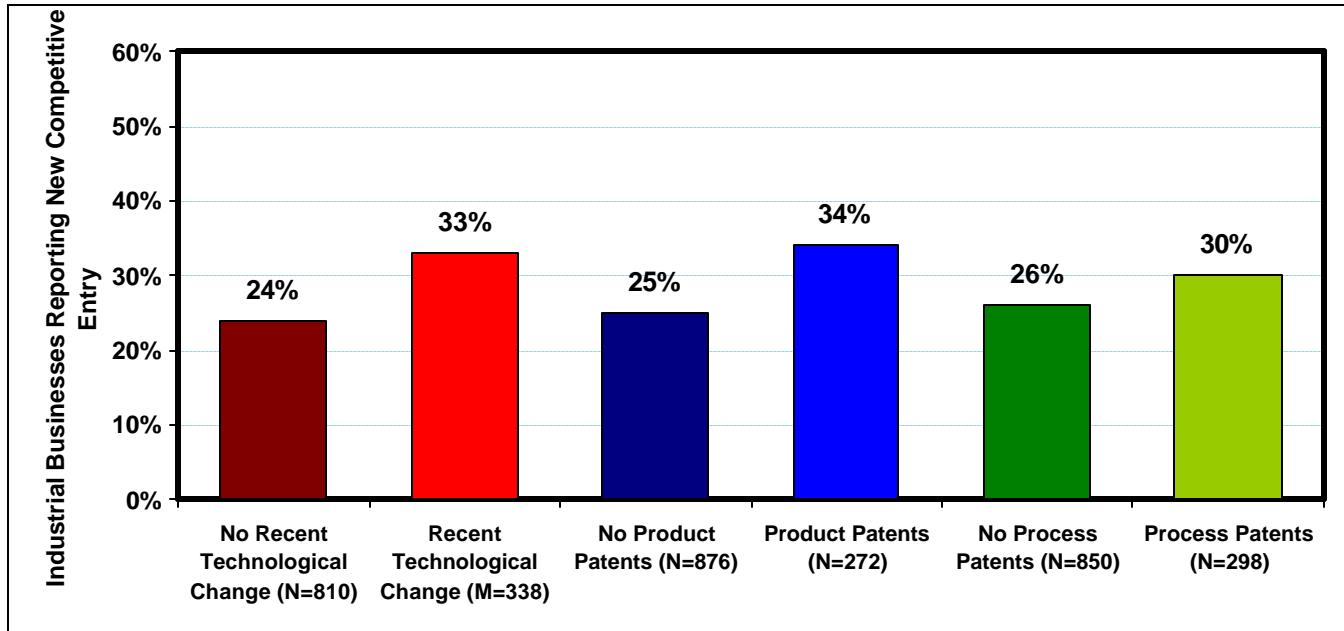


Figure 35, Competitive Entry vs. Technology Measures

This latter finding may be surprising in that a patent position is often considered a "barrier to entry". However, patent positions occur more frequently in the early stages of the product life cycle and the life cycle position is apparently a more important factor in entry decisions.

Profitability/Growth Effects

As expected, more competitive entry occurs among industrial businesses when profitability and market growth are higher. As shown in Table 13, market growth seems to be more important in entry decisions than profitability.

Table 13, Competitive Entry by Market Growth and Profitability (N=1148)

		% of Industrial Businesses Reporting a New Competitive Entry		
Real Market Growth	High	28%	34%	39%
	Medium	24%	24%	30%
	Low	18%	21%	24%
		Low	Medium	High
		Pretax Return on Investment		
		8.5%	18.5%	

Competitive Entry By Type of Business

A factor which does not correlate with profitability but which seems to affect the probability of competitive entry is the nature of the business. As shown in Table 14, businesses in which auxiliary services are very important to end users tend to attract more competitive entry. This is perhaps because (1) service is more important early in the product life cycle and, (2) it is often easier to compete on the basis of service. It is also interesting to note that raw and semi-finished material businesses seem to attract more competition.

Table 14, Competitive Entry by Type of Business and Importance of Auxiliary Services
(N=1148)

		% of Industrial Business Reporting a New Competitive Entry	
Type of Business	Capital Goods	23%	37%
	Raw and Semi-Finished Materials	24%	42%
	Components for Incorporation into Finished Products	23%	33%
	Supplies and Other Consumables	20%	27%
		Slightly or No Importance	Very Important
		Importance of Auxiliary Services to End User	

Competitive Turbulence

A surprising finding is the strong co-occurrence between competitive entry and exit. As shown Figure 36, competitive entry is much more likely to have occurred when competitive exit has also occurred. This suggests that industries frequently go through periods of competitive turbulence. Life cycle theory would erroneously suggest a smoother transition from a stage where entry occurs to a stage where exit occurs.

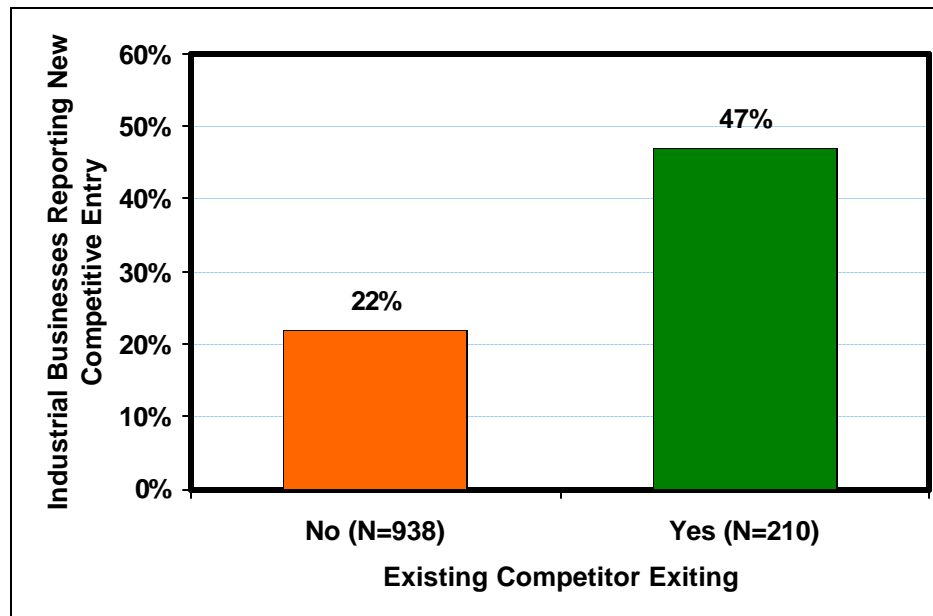


Figure 36, Competitive Entry vs. Competitive Exist

Summary

The entry of new competition strongly s sales, share, and profitability. Businesses tend to have a higher incidence of competitive entry when they are early in the life cycle, market growth rates are high, service is important to the end user, and other competitors are exiting. Entry occurs more frequently in conjunction with changing technology and patent protection, probably because these tend to occur early in the life cycle.

True-False Answers

1. **False** Businesses with a product or process patent position have a lower incidence of competitive entry compared to businesses without patent protection. See Figure 35.
2. **True** Competitive entry often occurs during periods when other competitors are exiting markets. See Figure 36.

No. 14, September, 1981

14 BARRIERS

Last month's article discussed the entry of new competitors and showed that industrial businesses tend to have a higher incidence of new competitive entry when:

- They are early in their life cycle,
- Technology is changing or patent protection exists,
- Market growth or profitability is high,
- Service is important to end users, and
- Other competitors are exiting.

This article examines three factors, which are frequently cited as barriers to ~ the entry of new competition in industrial markets. These are:

- High seller concentration,
- High investment requirements,
- High expenditures for marketing and R&D.

True or False?

Industrial businesses tend to have a lower incidence of new competitive entry when:

1. The top three sellers account for a large share of total sales.
2. Total investment is high relative to sales (turnover is low).
3. Marketing and R&D expenditures are high relative to sales.

Seller Concentration

A market is considered "concentrated" when only a few sellers account for a large share of total sales. Seller concentration is often measured by the total share of the three (or four) largest sellers in the market. The assumption is that a few competitors with large market shares will have developed to the competitive strength and market to discourage potential new entrants.

The evidence from the Strategic Planning Institute (SPI) database tends to refute this assumption. As shown in Table 15, industrial businesses where the three largest sellers account for a high total market share tend to have a slightly higher incidence of new competitive entry. This is true for the introductory/growth stage and mature/decline stage of the product life cycle.

Table 15, Competitive Entry by Life Cycle Position and Share of Three Largest Competitors
(N=1148)

		% of Industrial Businesses Reporting a New Competitive Entry		
Life Cycle Position	Introduction/ Growth	39%	39%	42%
	Maturity/ Decline	19%	22%	24%
		Low	Medium	High
		58%	77%	

Total Market Share of Three Largest Sellers

The evidence is similar when considering the market share of the largest seller as the measure of seller concentration. This is shown in Table 16. Note that mature/decline businesses show a much greater incidence of new competitive entry when the share of the largest seller exceeds 49% (26% and 49% split the data into equal thirds).

Table 16, Competitive Entry by Life Cycle Position and Share of Largest Competitors (N=1148)

		% of Industrial Businesses Reporting a New Competitive Entry		
Life Cycle Position	Introduction/ Growth	41%	39%	42%
	Maturity/ Decline	21%	20%	30%
		Low	Medium	High
		26%	49%	

Total Market Share of Largest Sellers

There are several possible reasons for this tendency toward slightly more entry into concentrated markets. First, potential competitors may believe that higher profits exist where high concentration occurs. Also, a firm considering entry may see a product/market segment which it can serve better than the incumbents which are, perhaps, too large to effectively serve each "niche". In addition, the large firms may be reluctant to or simply not want to exercise their potential market power.

Investment Requirements

Industrial businesses requiring a relatively large amount of permanent and working capital investment per dollar of sales might be viewed as unattractive to potential entrants. As discussed previously high investment intensive (low turnover) businesses typically have a lower pretax return on investment. In addition, the need for continuing investment to fund growth can strain cash flow. Also, greater requirements for permanent investment typically increases risk since it is often more difficult to exit such businesses.

Surprisingly, there is no difference in the amount of competitive entry, which occurs for high vs. low investment intensive business. As shown in Table 17 this is true for both product life cycle stages. In the introductory/growth stage, entry for medium investment intensive businesses is less than for high or low levels. In the mature/decline stage, entry for medium investment intensive businesses is more than for high or low levels.

Table 17, Competitive Entry by Life Cycle Position and Investment/Sales Ratio (N=1148)

		% of Industrial Businesses Reporting a New Competitive Entry		
Life Cycle Position	Introduction/ Growth	42%	36%	43%
	Maturity/ Decline	21%	25%	20%
		Low	Medium	High
		68%	93%	

Total Investment as a Percent of Sales Revenue

Marketing and R&D Expenditures

Marketing and R&D are investment-like costs, which, in theory, could deter businesses from entering markets where expenditures are high. High expenditures in marketing and R&D presumably create customer loyalties, product superiority, technology advantages, lower manufacturing costs, or market access which a potential entrant may find difficult or expensive to overcome.

Once again, however, the SPI database industrial businesses show a slightly higher incidence of entry when marketing and R&D is a high, rather than a low percentage of sales in both life cycle stages. However, as Table 18 shows, a pattern occurs which is very similar to that for investment/sales shown in Table 17; relative to high or low values, medium levels of marketing and R&D are associated with lower entry in the introductory/growth stage and higher entry in the mature/decline stage.

It thus appears that entry seems more attractive in the introductory/growth' stage when requirements for permanent investment, working capital, marketing, and R&D is "either low ~ high. Low requirements would normally seem attractive. High requirements may be attractive at this stage to a business, which feels it has the resources and determination to be successful, and, which believes these high investment requirements may deter future competition.

In the mature/decline stage, entry occurs more often under "medium requirements". Perhaps entrants at this stage tend to seek an "average" situation.

Table 18, Competitive Entry by Life Cycle Position and Marketing plus R&D/Sales Ratio
(N=1148)

		% of Industrial Businesses Reporting a New Competitive Entry		
Life Cycle Position	Introduction/ Growth	43%	29%	46%
	Maturity/ Decline	19%	26%	21%
		Low	Medium	High
		6.5%	12.1%	

Total Marketing plus R&D as a Percent of Sales Revenue

Summary

High seller concentration and high requirements for investment, marketing, and R&D are frequently cited as barriers to new competitive entry. The frequency of competitive entry among SPI industrial businesses leads to the conclusion that these are normally not entry barriers.

True-False Answers

1. **False** The top three sellers account for a large share of total sales. See Table 15.
2. **False** Total investment is high relative to sales (turnover is low). See Table 17.
3. **False** Marketing and R&D expenditures are high relative to sales. See Table 18

No. 15, October, 1981

15 MARKET SHARE PENETRATION

The last two articles in this series discussed competitive entry - the reasons for its importance and the conditions under which it is more or less likely to occur. Equally important is the market share penetration of existing competitors. This article discusses some of the characteristics of industrial businesses which correlate with change in market share.

True or False?

1. Industrial businesses with high market shares tend to lose share to their smaller competitors.
2. Increases in market share occur more often in businesses which are offering more new products and increasing the quality of existing products.

A good deal of year-to-year variation in market share exists among SPI (Strategic Planning Institute) businesses. Among the 1148 industrial businesses in the database, the average annual change in market share is +0.23 percentage points and the standard deviation are 2.0 percentage points. Because market share change depends strongly on factors other than the characteristics of the business (e.g., business conditions, supply or demand "shocks" such as strikes, and competitive actions), correlations between market share change and other database factors are not as strong as correlation with other factors such as profitability.

None the less, it is useful to investigate the correlates to determine conditions which are more likely to lead to share gain or loss. The strong correlates supply/demand factors, market structure, and marketing effect.

Supply/Demand Factors

Unsurprisingly, businesses which increase supply (capacity) faster than demand is growing (market growth) tend to show market share increases. This relationship is shown in Figure 37.

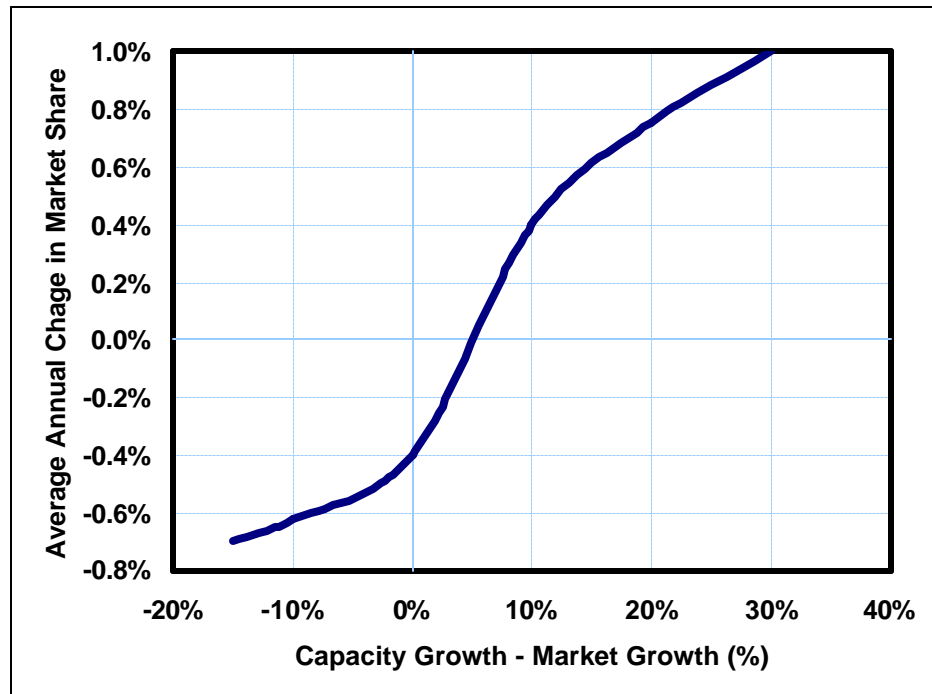


Figure 37, Market Share Change vs. Supply/Demand Change, Industrial Businesses (N=1148)

A previous article No. 7 (Feb. 1981) discussed conditions which lead to capacity expansion - principally high volume growth and high capacity utilization. This new finding simply confirms what all marketing managers know - that competitors will become more share aggressive when they have expanded capacity. In most situations, it seems that maintaining capacity share is necessary if market share is to be maintained.

Market Structure

Market share change varies significantly with both market share and competitive market shares. As shown in Figure 38, high share businesses tend to lose share while low share businesses tend to gain share. This is consistent with economic theory. Large share businesses have more incentive to keep prices up since each unit change in price affects a larger volume and, thus, has greater profit leverage. Price cutting is much less detrimental to small competitors, at least on an incremental basis.

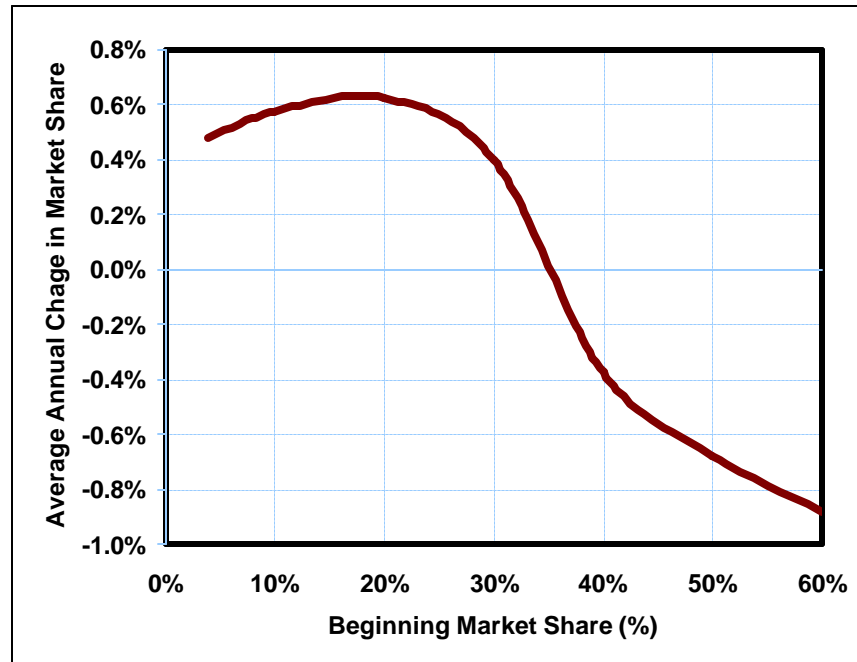


Figure 38, Market Share Change vs. Beginning Market Share for Industrial Businesses (N=1148)

The shares of competing businesses has an effect as well. Figure 39 shows the relationships between market share change and the combined share of the three largest competitors. It is apparently easier to gain share when your competitors are large. This, of course, is consistent with Figure 38, large competitors will tend to give up share.

The effects of market structure are more complex than this, of course. For example, share rank and differences in shares between competitors can have an effect as well. In addition, year-to-year variation can mask these trends in market share which are often observable only over a period of several years.

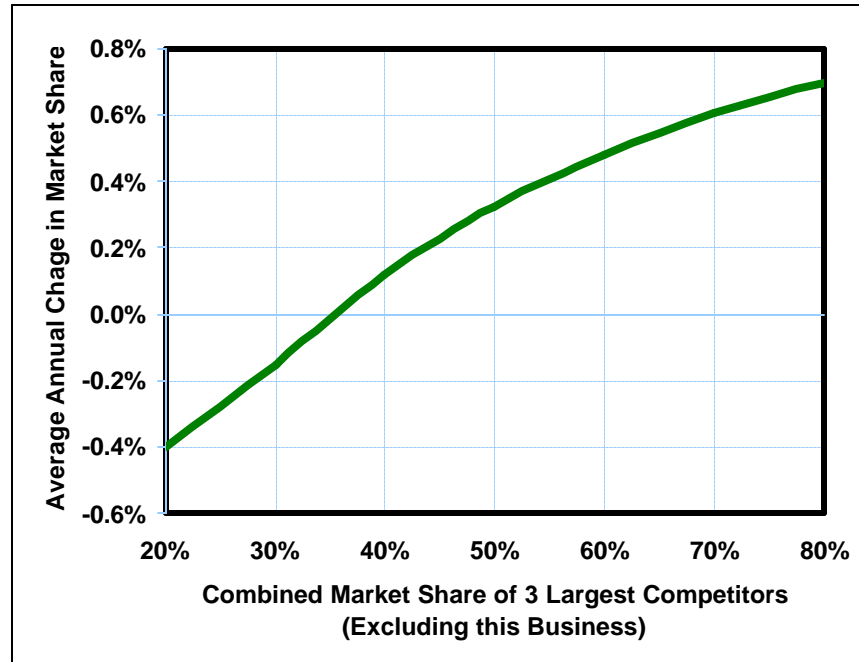


Figure 39, Market Share Change vs. Competitive Share Concentration for Industrial Businesses (N=1148)

Marketing Effort

As shown in Figure 40, market share change shows a strong positive correlation with change in marketing expense. The fact that increasing marketing effort is associated with increasing share does not necessarily mean that the former caused the latter, of course. There is undoubtedly mutual cause and effect; businesses that are growing tend to increase both share and marketing effort simultaneously. The important implication is that share increases should not be expected unless the necessary marketing resources are provided.

A strong association also occurs between change in market share and change in relative product quality (see definitions). This is shown in Figure 41. In addition, a weaker but still significant association occurs between market share change and the percent of sales revenue accounted for by products introduced during the preceding three years. Thus increases in market share occur more often in businesses which are offering more new products and increasing the quality (actual or perceived) of existing products.

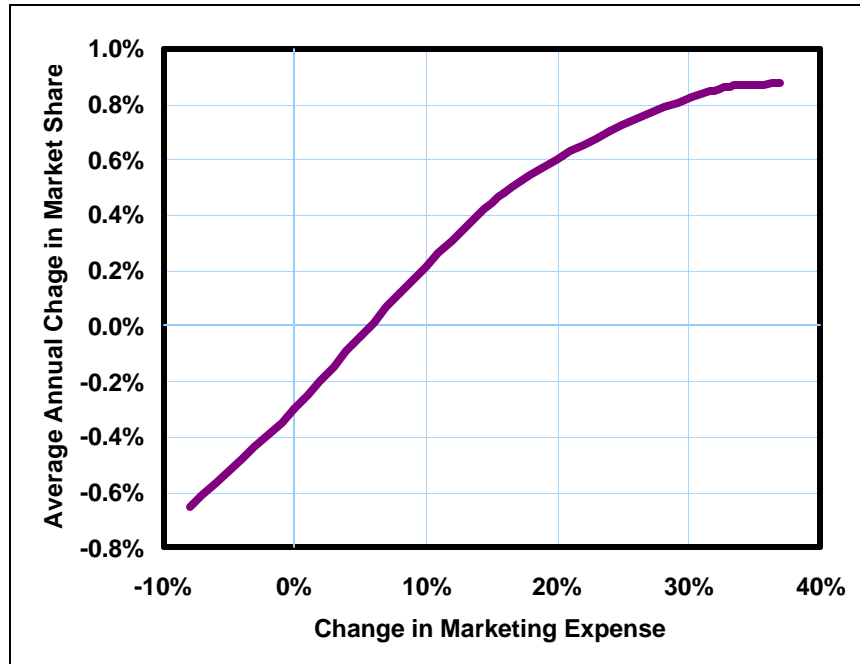


Figure 40, Market Share Change vs. Change in Marketing Expense for Industrial Businesses (N=1148)

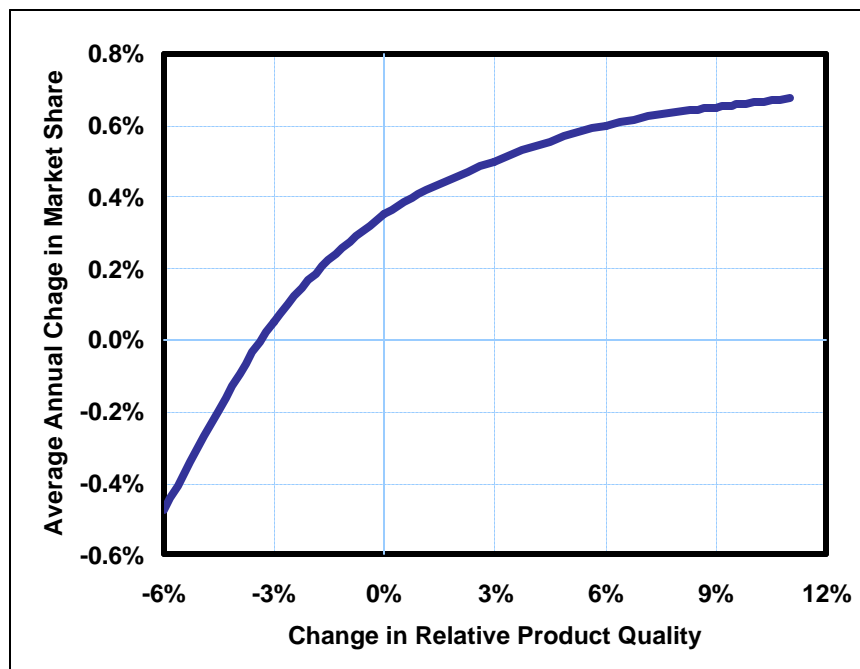


Figure 41, Market Share Change vs. Change in Relative Product Quality for Industrial Businesses (N=1148)

Summary

Increases in market share tend to occur more frequently among businesses which:

- are increasing capacity faster than demand is growing,
- have a small market share,
- have a high competitive share concentration,
- are increasing their marketing effort,
- are increasing product quality,
- have a high percentage of new products .

Market share forecasts should be based on a realistic assessment of market structure and the degree of commitment to providing the necessary investment, marketing, and R&D resources.

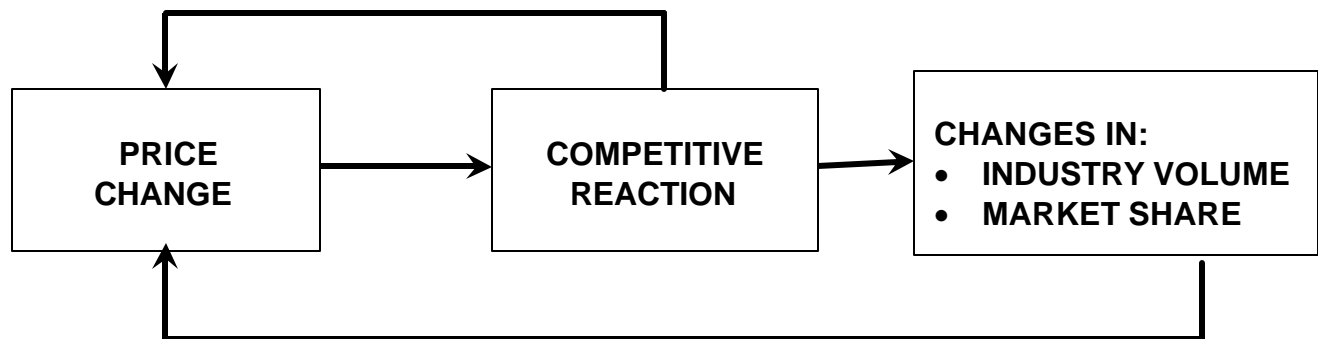
True-False Answers

1. **True** Industrial businesses with high market shares tend to lose share to their smaller competitors. See Figure 38.
2. **True** Increases in market share occur more often in businesses, which are offering more new products and increasing the quality of existing products.

No. 16, November, 1981

16 EFFECTS OF PRICE CHANGES

This article is the first of a series which will focus on price changes and their impact on volume and market share. These effects can be viewed as follows:



Price change is usually initiated by one competitor and reacted to (or not) by the others. The initiator may revise his original price change depending on this reaction. The new set of prices can affect both total volume and market shares. Volume and share shifts can lead to subsequent price changes.

The next few articles will examine each of the following in turn:

- 1) Price change relative to competition;
- 2) Actual price change;
- 3) The relationship between industry price change and Industry volume change;
- 4) The relationship between relative price change and market share change.

This article is concerned only with the first item, price change relative to competition.

True or false?

1. Industrial businesses which sell their products at premium prices (higher than prices of comparable competitive products) generally find that the "premiums" shrink over time.
2. When costs increase more than competitors' costs, prices usually increase more than competitors' prices also.

3. Industrial businesses show an above average amount of price reduction relative to competitive prices when operating at low levels of capacity utilization.

Changes in Price Relative to Competition

It has been found in previous work that relative prices for industrial products tend to remain fairly constant over reasonably long periods of time, even when actual prices are undergoing frequent changes. Irvin Gross has argued that price premiums are set by buyers, not sellers, and depend on the value of the total offering (product plus services) as perceived by the marketplace¹². However, Gross also has found that in the longer run price premiums tend to gradually erode, as it becomes more difficult to provide unique, valued products and services.

The observation that relative prices are slow to change is supported by The Strategic Planning Institute (SPI) database. Among 1208 industrial businesses, almost half (46%) reported no change in their price relative to leading competitors (see definitions) over a two year period. Among the thirty percent (30%) of the businesses reporting an increase in relative price, the average (mean) increase was only 1.8% per year. Twenty-four percent (24%) of the businesses reported a decrease which averaged only 1.5% per year. Thus, relative price changes tend to occur both infrequently and gradually.

Price Premium Erosion

The SPI database also provides support for the observation that price premiums tend to gradually erode. As shown in Figure 42, high relative price businesses tend to lose premium, and low relative price businesses tend to reduce their disadvantage.

¹² See "Insights From Pricing Research" by Irwin Gross, Pricing Practices and Strategies, The Conference Board, p. 34-39.

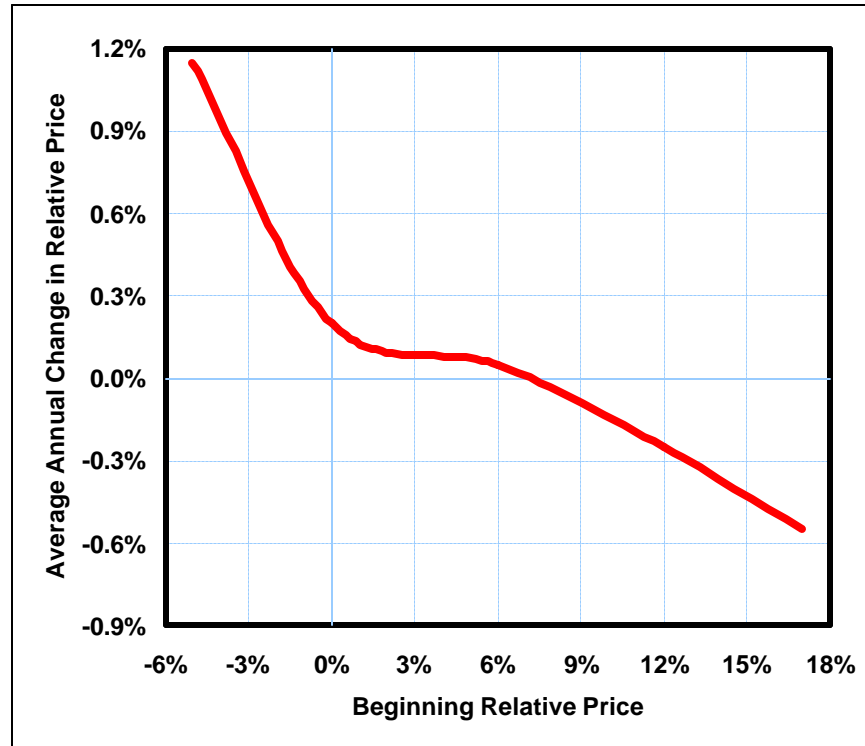


Figure 42, Relative Price Change vs. Beginning Relative Price for Industrial Businesses (N=1208)

Effect of Relative Cost Change

Another strong association found in the SPI database is the positive correlation between relative price and relative direct cost. This is shown in Figure 43. A four percent change in relative direct cost is associated with roughly a one percent change in the same direction in relative price.

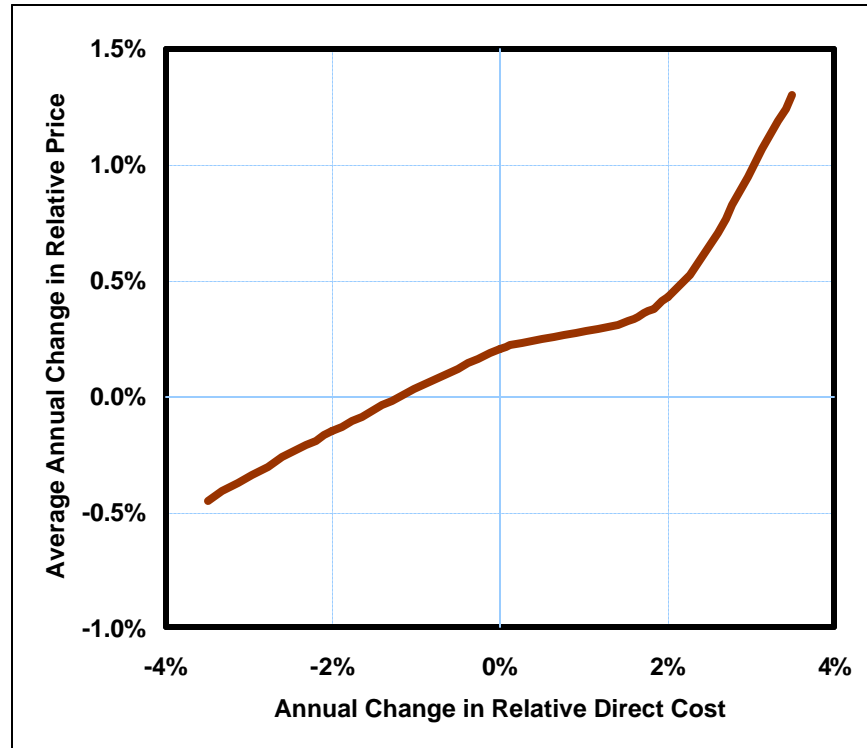


Figure 43, Relative Price Change vs. Relative Direct Cost Change

Thus, when direct costs increase more than competitive direct costs increase, prices also increase more. While it can be shown that this is consistent with profit maximizing behavior, it is not at all clear to what extent this is a seller decision and to what extent it is a marketplace effect. While sellers can "decide" to change prices relative to competition, the competitors and customers have to "agree." Unless customers perceive higher value (or do not "shop around"), the market share shifts which would result from out-of-balance relative prices will not be tolerated by share-losing suppliers. While it cannot be proven by the SPI database, it seems reasonable to believe that in most cases higher relative prices and higher relative costs are the result of an improvement in the product offering and that this accounts for the positive correlation between relative prices and costs.

It is, therefore, important that businesses clearly understand marketplace value perceptions and tailor their product offerings such that the market value of an offering attribute (e.g., delivery time, technical services, ~, product feature) as measured by price premium and/or amount purchased exceeds the cost of providing the attribute. Our Marketing Research Division has developed and applied techniques by which to estimate market perceptions of value.

Other Factors

There are also other business situations which are associated with different degrees of relative price change. For example, we find that a below average amount of change in relative price (up or down) is associated with businesses where:

- Little is spent on R&D and marketing:
- Profitability is high:
- Relative prices are equal or nearly equal:
- Product quality and direct costs relative to competition have stabilized.

These businesses appear to be mature ("commodity") businesses with a profitable market structure.

Perhaps surprisingly, very little difference in relative price change is associated with the level of capacity utilization. When capacity utilization is low, it might be expected that a business would attempt to cut prices relatively in an attempt to gain share. It appears, however, that competitors will not allow this to happen since they are presumably in the same situation.

Summary

- The relative prices among industrial products tend to remain stable in the intermediate term but gradually tend toward equality in the longer run.
- Relative prices appear to be set more by the perceived values of the buyers than the decision of the sellers.
- The positive association found between relative price change and relative cost change is probably due to changes in the product offering.
- Understanding marketplace values is imperative to proper tailoring of a product offering.
- The lack of association between capacity utilization and relative price change is probably due to the fact that competitors will not allow major share shifts regardless of supply/demand conditions.

True-False Answers

1. **True** Industrial businesses which sell their products at premium prices (higher than prices of comparable competitive products) generally find that the "premiums" shrink over time. See Figure 42.
2. **True** When costs increase more than competitors' costs, prices usually increase more than competitors' prices also. See Figure 43.
3. **False** Industrial businesses show an above average amount of price reduction relative to competitive prices when operating at low levels of capacity utilization.

No. 17, December, 1981

17 SELLING PRICE INFLATION

This article is the second of a series which will focus on price changes in industrial businesses and their relationship to volume, market share, cost, and profitability. The last addressed relative price change; this one discusses change in absolute price levels.

True or false?

1. Among industrial businesses cost increases are by far the strongest correlate of selling price increases.
2. A negative correlation exists between selling price growth and physical volume growth. The relationship is stronger (more negative) in mature/ decline businesses than in growth businesses.

Effect of Cost Inflation

A key concern in pricing analysis is to what extent price changes are driven by changes in costs and to what extent by changes in value. Last month's article showed that relative prices (yours relative to competition) tend to increase when relative costs increase and argued that this is probably due in most instances to changes in the product offering and, thus, in its perceived value.

When looking at changes in the absolute level of selling price, we find a very strong correlation with cost changes. Figure 44 shows the relationship between selling price growth and mill cost growth (see definitions) for SPI database industrial businesses. The correlation between these two factors is 0.68; this is by far the strongest selling price growth correlation in the database. Thus we find further evidence of the strong (and obvious) link between price and cost.

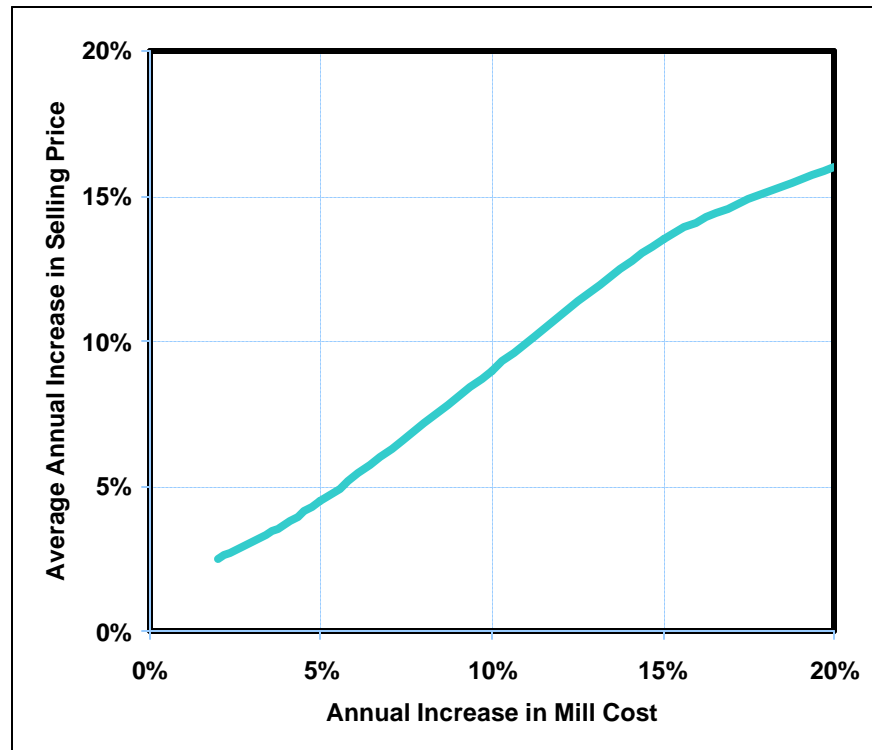


Figure 44, Selling Price Growth vs. Mill Cost Growth for Industrial Products (N=1208)

Growth in Physical Volume

Figure 45 shows how selling price growth and mill cost growth decrease with growth in physical volume. Note that the mill cost growth curve is consistently lower at higher volume growth rates. This indicates that faster growth can be expected to hold down costs, probably because of experience

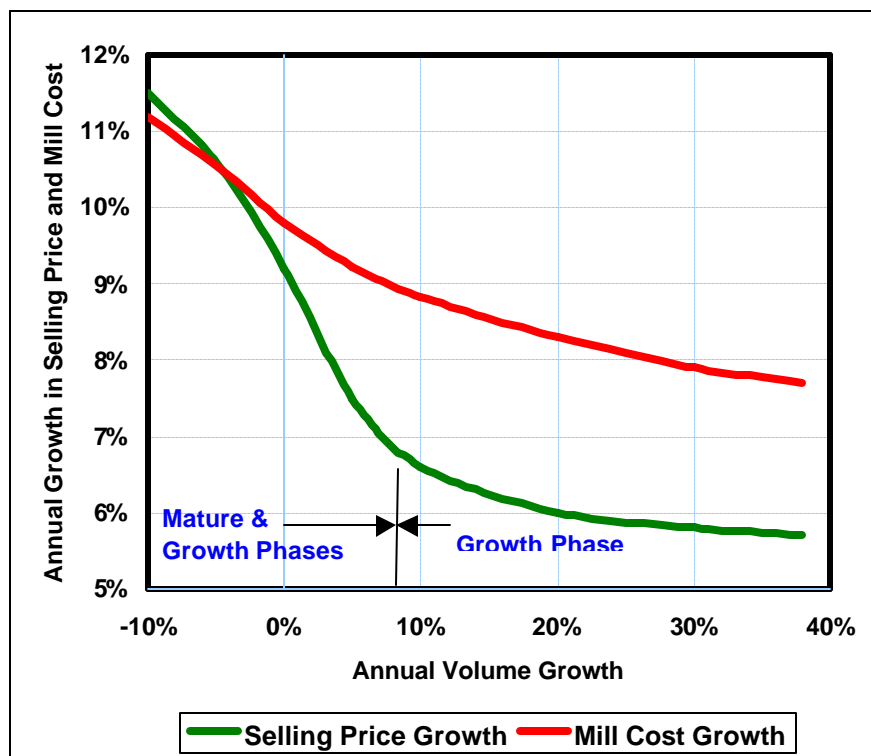


Figure 45, Selling Price and Mill Cost Growth vs. Volume Growth for Industrial Businesses (N=1208)

The selling price growth curve in Figure 45 is, perhaps, more interesting. In previous articles the "sales growth curve" was discussed. Among the general findings was that businesses tend to approach an eight percent physical volume growth rate asymptotically as long as they are growing. At same point, of course, they mature and break from the growth curve. An eight percent growth rate, therefore, seems to be a reasonably well defined dividing line between growth and mature/decline industrial businesses.

Note that there is a much stronger relationship between selling price growth and physical volume growth for mature/decline businesses than for growth businesses. This may be due to a tendency for mature/decline businesses to find themselves with the dilemma of insufficient volume growth to cover inflation in fixed costs and the resulting need for above-average price increases leading, in turn, to further declines in volume growth. During the growth phase, volume increases usually exceed fixed cost inflation so that unit fixed costs decrease. This effect is particularly important where a new -growing technology is replacing an incumbent technology; these volume/cost/price relationships could thus be expected to help accelerate the technology substitution rate.

These effects should be considered in business forecasts. Too often some "standard" inflation rate is used in projecting business costs and prices. The interaction between volume growth/life cycle position and price/cost inflation is important enough to warrant explicit consideration in forecasts.

Summary

- Selling price growth and mill cost growth are strongly and positively correlated.
- Both selling price and mill cost growth tend to be lower in businesses which are realizing a higher rate of physical volume growth.
- Many mature/decline businesses appear to be caught in the plight of :

lower volume ® higher unit costs ® higher selling ® lower volume.
- Price and cost forecasts should consider the volume growth/life cycle position of a business or product/market segment.

True-False Answers

1. **True** Among industrial businesses cost increases are by far the strongest correlate of selling price increases. See Figure 44.
2. **True** A negative correlation exists between selling price growth and physical volume growth. The relationship is stronger (more negative) in mature/ decline businesses than in growth businesses. See Figure 45.

No. 18, January 1982

18 PRICE INFLATION EFFECTS OF MARKETING AND R&D EXPENSES

This article is a continuation of a discussion of selling price inflation. In the last article covered, the relationships between price inflation, cost inflation and physical volume growth. A very strong positive association between price growth and cost growth and a strong negative association between both of these and physical volume growth was shown¹. The focus this article is on the association among price, cost and volume growth and marketing and research & development expenditures as a percent of sales.

True or False?

1. Selling prices tend to increase more rapidly among industrial businesses, which send a large percentage of their sales dollar on marketing and R&D.
2. Marketing and R&D expenses as a percent of sales correlate strongly with selling price inflation among growth businesses than among mature/decline businesses.

Effect of Marketing and R&D Expenditures on Selling Price Growth

The relationship between selling price inflation and expenditures on marketing and research & development as a percent of sales is interesting. Two conflicting theories can be proposed. On one hand, a positive association might be expected. It could be argued that high levels of marketing and R&D should increase economic and perceived values which would enable a seller to command higher prices. In addition, higher levels of marketing and R&D should require higher prices to offset these costs.

An argument can also be raised supporting an expected negative association between selling price growth and marketing expenditures as a percent of sales. High levels of marketing and R&D tend to be associated with cost reduction, either directly or indirectly. Faster growth in volume can both result from and cause higher expenditures; faster growth has been shown to hold down costs because of increasing economies of scale and experience (learning). Also, process R&D expenditures can directly lead to manufacturing cost reductions.

The evidence from the SPI database supports the second hypothesis. As shown in Figure 46, both selling price and mill cost growth are lower at higher levels of marketing and R&D as a percent of sales. (The fact that mill cost growth is consistently higher than selling price growth was discussed in the sixth article "Profit Margin Pressures.")

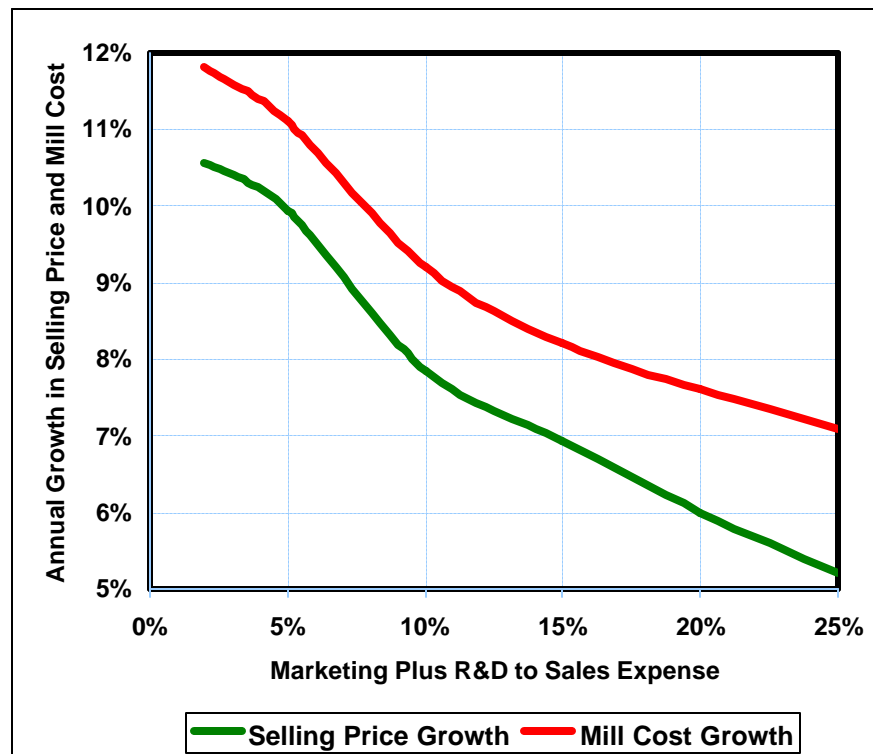


Figure 46, Selling Price & Mill Costs vs. Marketing Plus R&D Expense to Sales for Industrial Products (N=1208)

Relationship Between Marketing and R&D Spending and Physical Volume Growth

This negative association between price inflation and expenditures on marketing and R&D as a percent of sales could, of course, be simply a reflection of product life-cycle position. High volume growth and high levels of Marketing plus R&D to Sales are both to be expected early in the life cycle with declines in both as a product grows and matures.

A positive--but erratic and perhaps weaker than might be expected--relationship between Marketing plus R&D to Sales and physical volume growth exists among industrial businesses in the SPI database. This is shown in Figure 47.

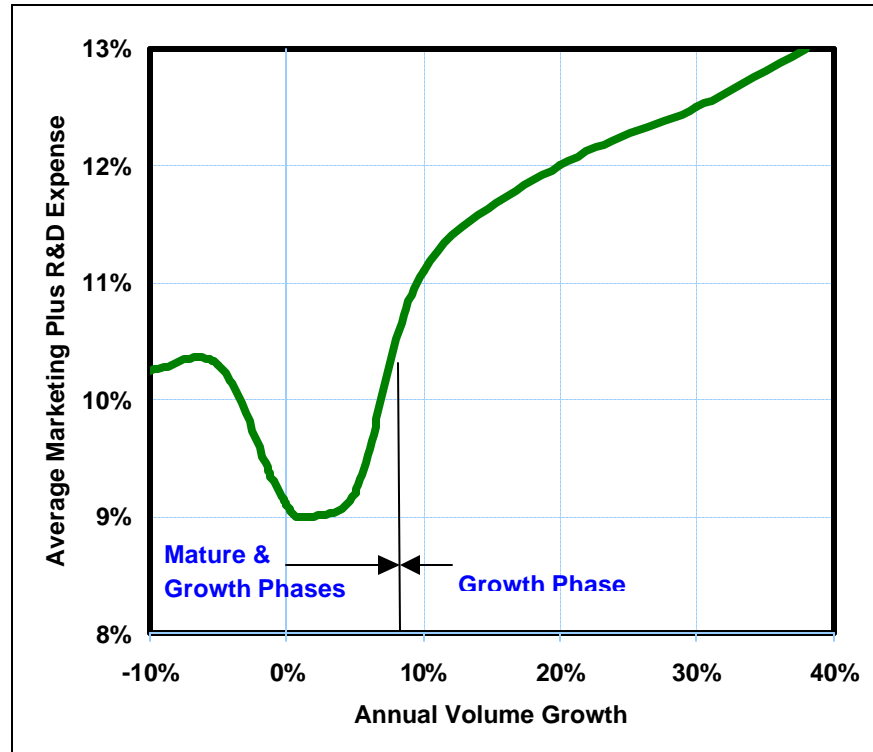


Figure 47, Marketing Plus R&D to Sales vs. Annual Physical Volume Growth for Industrial Businesses (N=1208)

During the growth phase (above 8% physical volume growth) a smooth relationship exists between Marketing plus R&D to Sales and volume growth. This reinforces our findings with respect to the sales growth curve; when growth is at least 8%, this growth generally proceeds orderly and predictably. Apparently marketing and R&D expenditures proceed predictably as well (although this needs further study).

As discussed previously, we have found that when volume breaks below the sales growth curve, its behavior is not predictable in many instances. Marketing plus R&D to Sales appears to behave erratically as well, with a minimum occurring (all other things being equal) at about zero growth. The higher level among "decline" businesses perhaps reflects the inability to reduce these resources as fast as sales decline.

Joint Effect on Selling Price Growth

Table 19 shows the joint effect of volume growth and Marketing plus R&D to Sales on selling price growth. Price inflation decreases as either of the two factors increase. Thus, Marketing plus R&D to Sales appears to add an effect beyond that of volume growth.

Table 19, Selling Price Growth vs. Volume Growth and Marketing Plus R&D to Sales
(Industrial Businesses N=1,208)

Marketing Plus R&D to Sales	12.3%	High	9.3%	5.9%	4.3%
		Medium	10.5%	7.6%	6.3%
	6.5%	Low	12.0%	9.3%	7.9%
			Low	Medium	High
			0.1%	11.4%	
			Annual Volume Growth		

Predicting Selling Price Growth

Volume growth and Marketing plus R&D to Sales were combined with mill cost growth, the strongest correlate of selling price growth, to see whether a simple equation could be developed which would be useful in predicting selling price growth. The results of a linear regression analysis are summarized in Table 20.

Table 20, Selling Price Growth Regression Equation Coefficients

Type of Business	Sample Size	Constant	Mill Cost Growth	Volume Growth	Mktg + R&D/Sales	R²
Growth (≥8%/yr.	491	2.43	0.6	0	-0.11	36%
Mature/ Decline (< 8%/yr.	717	1.23	0.78	-0.15	0	54%

It was found that substantially different equations resulted when the data were split into growth businesses and mature/decline businesses.

For mature/decline industrial businesses, over half of the variance in selling price growth can be "explained" by mill cost growth and volume growth. The rationale of the strong price inflation impact of lower volume growth was discussed last month. Marketing plus R&D to Sales does not add significantly to predictability and, therefore, shows no impact. The result for growth industrial businesses is, perhaps, more interesting. First of all, predictability is poorer; the equation explains only 36% of the variability. Secondly, the impact of cost inflation is weaker

with growth businesses (0.60 vs. 0.78). This helps support the generally accepted idea that cost advantage and cost containment are more important in mature industrial businesses than in growth businesses.

In addition, Marketing plus R&D to Sales is highly significant and has a negative impact. Higher levels of marketing and R&D tend to be associated with a broader customer base, more complex distribution channels, and newer and more complex technology. In these circumstances there is often more promise for future volume, cost and margin improvement. This provides an incentive to hold down price increases with the expectation of bigger rewards later.

Volume growth does not add significantly to predictability beyond these two factors. This helps confirm last month's finding where selling price growth was shown to have little relationship to the volume growth rate for growth rates above about 8%.

Summary

- A negative association exists between selling price growth and marketing and R&D expenses as a percent of sales. This is primarily but not totally due to the natural association between Marketing plus R&D to Sales and volume growth. (High volume growth tends to hold down selling price inflation as discussed last month.)
- All other things being equal, businesses near zero growth tend to spend the smallest amount of their sales dollar on marketing and R&D. On average, both growth and declining businesses spend more.
- Over half the variance in selling price growth among mature/decline industrial businesses can be explained by mill cost growth (+) and volume growth (-). Marketing plus R&D to Sales does not add to predictability.
- Selling price inflation among growth industrial businesses:
 - is less predictable.
 - depends on mill cost (+) but to a lesser degree.
 - also depends on Marketing plus R&D to Sales (-) but not significantly upon volume growth.

True-False Answers

1. **False** Selling prices tend to increase more rapidly among industrial businesses which send a large percentage of their sales dollar on marketing and R&D. See Figure 46.
2. **True** Marketing and R&D expenses as a percent of sales correlate strongly with selling price inflation among growth businesses than among mature/decline businesses. See regression equations in the last section of the article. The correlation coefficient between selling price growth and Marketing plus R&D to Sales is -0.19 for mature/decline businesses and -0.27 for growth businesses.

No. 19, February 1982

19 CHANGES IN MARKET SHARE AND RELATIVE PRICE

This article is the fourth of a series on price changes and their impact on volume and market share. The focus is on the relationship between relative price change and market share change.

True or false

Among industrial businesses in the SPI database, market share increases occur more often when prices decrease relative to competition than when they increase relative to competition.

Price Variation

The variation in prices paid for similar products is frequently used as a measure of differentiation of a product category. Generally the more dispersed the set of prices paid, the more differentiation exists in a product category. Commodity products are frequently characterized by identical or near identical pricing. As previous articles have discussed, the ability to command a price premium often means higher profitability, knowledge of the perceived value of the different aspects of a product offering is necessary if a business wishes to tailor its product line for maximum profitability.

Ralph Beaman (formerly with E. I. DuPont) has studied price distributions and has found a general distribution curve for a wide variety of product categories. Customers may be willing to pay a higher price for a product because of its performance features, associated services or simply because of the quality imputed to it by its price alone. This is true of many industrial products as well as consumer products.

Figure 48 illustrates this idea of a distribution of relative price. On the left of the distribution are people willing to pay a premium for the competitor's product; on the right are people willing to pay a premium for your product. Understanding who these people are - market segmentation - is important in the proper targeting of your marketing effort.

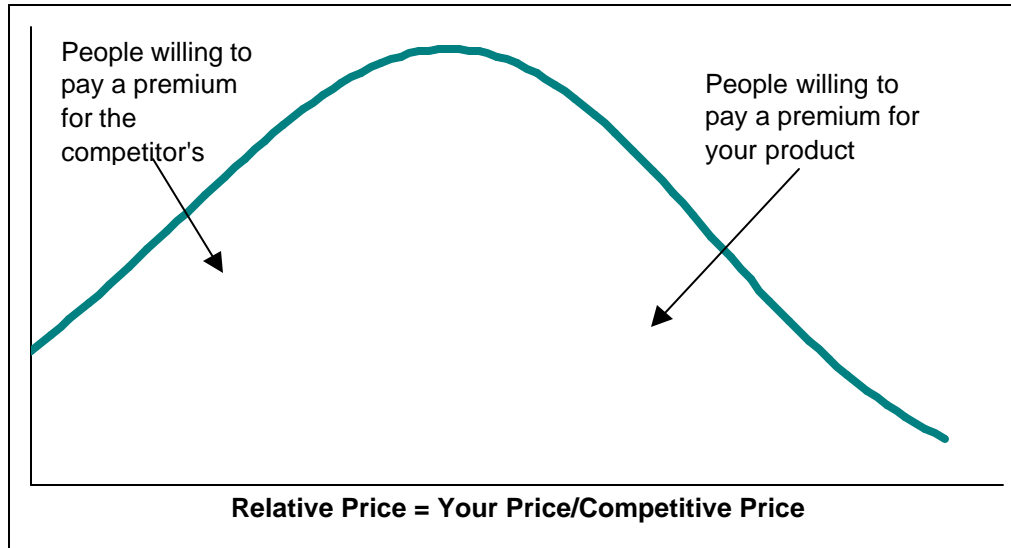


Figure 48, Distribution of Relative Price

The accumulation or integration of this distribution results in a relationship between market share and relative price as shown in Figure 49. Under conditions where the market has perfect product and price information as well as availability of each product, the market share is simply the area to the right under the distribution at any point. While these conditions are never totally met in practice, understanding this relationship between market share and relative price is critical in developing a pricing strategy in line with the profit and volume objectives of a business.



Figure 49, Market Share vs. Relative Price

Changes in Perceived Value

Part of the function of Marketing and R&D is to increase the perceived value of a product offering. Increased perceived value can be thought of an upward shift in the market share/relative price curve as shown in Figure 50.

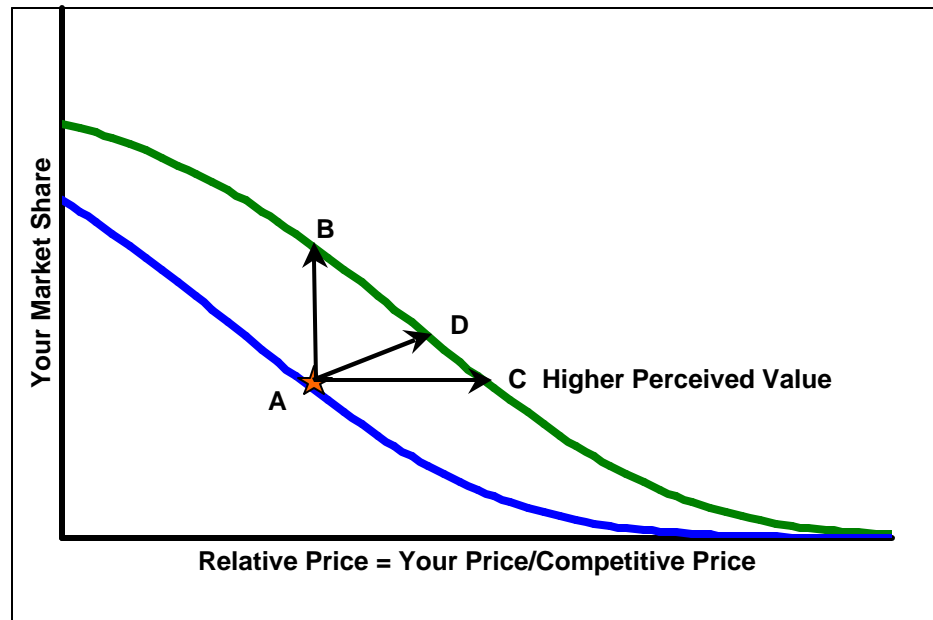


Figure 50, Change in Perceived Value

Assume in Figure 50 that a product is located at point A with the indicated market share and price premium and that a significant product development has raised the perceived value curve to the higher level. The business has three choices:

- It can hold the current premium and take out the increased value in market share moving to point B.
- It can hold market share and increase the premium moving to point C.
- It can do some of both moving to point D.

What it does, of course, depends not only on its decisions but on the action and reaction of competitors. After the "dust settles", the third option--the move to D--is the most likely outcome. In fact it can be shown that this is the most profitable of the three alternatives if point A properly balanced share and relative price, if capacity limitation is not a problem, and if competitors act in their own best interests.

Market Share Change vs. Relative Price Change

We thus have two possible expectations of market share change with relative price change as shown in Figure 51. When perceived value does not change, the business has a strategic choice

of trading off between market share and relative price. This results in a negative relationship. In cases where perceived value changes, we would expect a positive association.

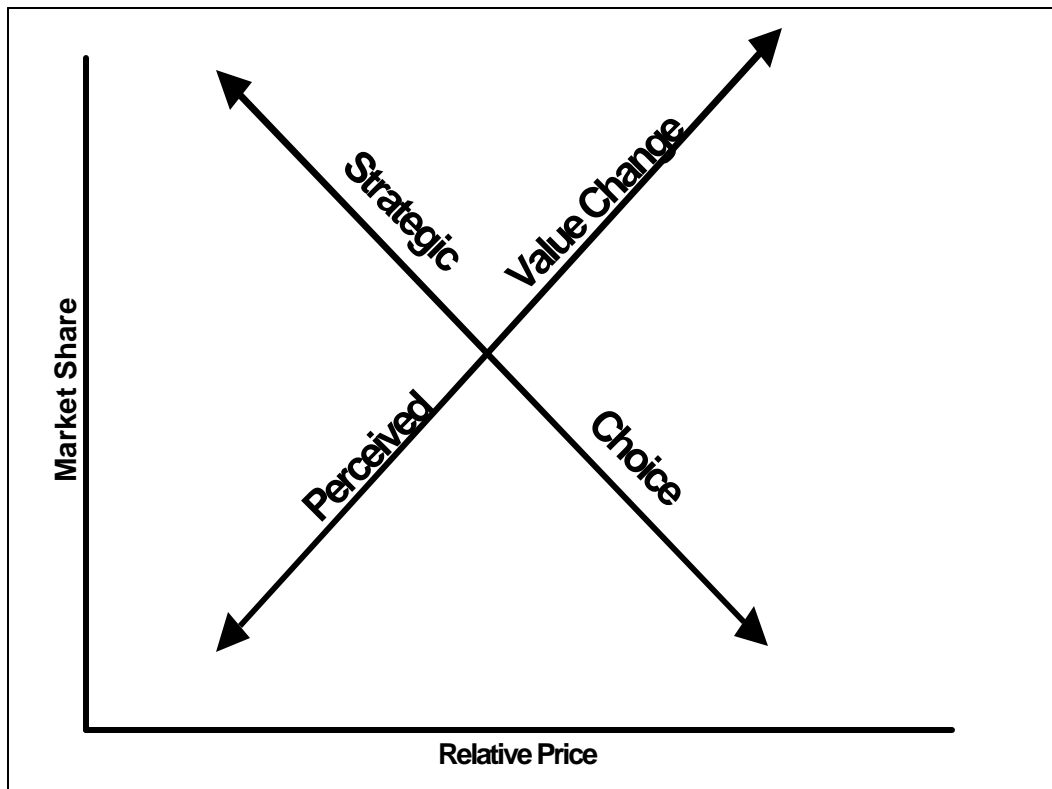


Figure 51, Possible Changes in Market Share and Relative Price

Table 21 shows the split among SPI database industrial businesses where changes in both market share and relative price have occurred. Among businesses where a market share increase has occurred, more businesses show a positive increase in relative price than a negative increase; increased perceived value is more typical among these businesses than any other combination. SPI database businesses tend to be more successful, high quality, growing businesses on average.

Table 21, Changes in Both Market Share and Relative Price
(Industrial Businesses, N=592)

Market Share Change	+	Volume Aggressive N=150 (25%)	Increased Perceived Value N=203 (34%)
	-	Decreased Perceived Value N= 108 (18%)	Price Aggressive N=131 (23%)
		-	+
		Relative Price	

Dependence on Other Changes

What is more important of course, is how each of these four possible combinations of changes depend on other factors. Table 22 shows the likelihood of market share change/relative price change combinations depending on three other factors.

Table 22, Likelihood of Market Share Change/Relative Price Change Against Other Factors

	<u>Base</u>	<u>Volume Aggressive</u>	<u>Price Aggressive</u>	<u>Increased Perceived Value</u>	<u>Decreased Perceived Value</u>
Total Sample -	592	25%	22%	34%	18%
Relative Product Quality					
	233	27%	18%	39%	15%
Increase -	195	22%	25%	27%	26%
Decrease -					
Relative Direct Costs					
	153	17%	30%	41%	12%
Increase -	151	33%	13%	27%	26%
Decrease -					
Change in Capacity					
Significant Increase-	224	31%	13%	42%	13%
Little or No Change	368	22%	27%	30%	21%

Note: Percentages may not add to 100 due to rounding.

As shown in Table 1, the contrast between the businesses which had an increase in relative product quality (see definitions) vs. those having had a decrease in quality shows that they were much more likely to have had an increase in perceived value than a decrease in perceived value. In addition they tend more to be volume aggressive rather than price aggressive. Increases in quality should, of course, be related to increases in perceived value as defined here.

Comparing businesses showing an increase in relative direct cost with those showing a decrease, we find a tendency toward increased perceived value and more price aggression than volume aggression. As discussed in a previous article, relative cost increases should frequently be related to relative quality increases and place more upward pressure on price. Interestingly, businesses showing a significant increase in capacity also " ~ increase their odds of being in the "increased perceived value" box. Strategically, of course, they tend to be more volume aggressive than price aggressive.

Perhaps one would expect a larger difference to occur in these percentages. ~ This points up the complexity of factors which interact in such changes. Other factors which must be considered are year-to-year changes in business conditions, competitive entry and exit, and variations in supply conditions.

Summary

The expected negative relationship between market share change and change in relative price does not occur among SPI database industrial businesses. The correlation coefficient between these two factors is near zero. It is therefore apparent that structural changes occur about as frequently as strategic changes. Structural changes include changes in relative product offerings, in competitive conditions and in marketplace values; these result in increased or decreased perceived value among the competitive product offerings. Strategic changes have to do with the tradeoff a business makes between volume aggressiveness and price aggressiveness.

The likelihood of market share change and relative price change combinations depends somewhat on other factors such as change in relative product quality, change in relative direct cost and change in the amount of capacity. However, many other factors impact on these change combinations as well.

True-False Answers

False Among industrial businesses in the SPI database, market share increases occur more often when prices decrease relative to competition than when they increase relative to competition. See Table 21.

No. 20, March, 1982

20 PROFIT IMPACT OF SHARE AND PRICE CHANGES

The previous article discussed changes in market share and relative price and showed that, among SPI industrial businesses, essentially no correlation exists between these two factors. It was therefore concluded that perceived value change must occur about as often as strategic choice - the tradeoff a business makes between seeking more volume ("volume aggressive") vs. seeking higher price ("price aggressive"). These changes are summarized in Figure 52 below. This article discusses the profit effects of these changes.

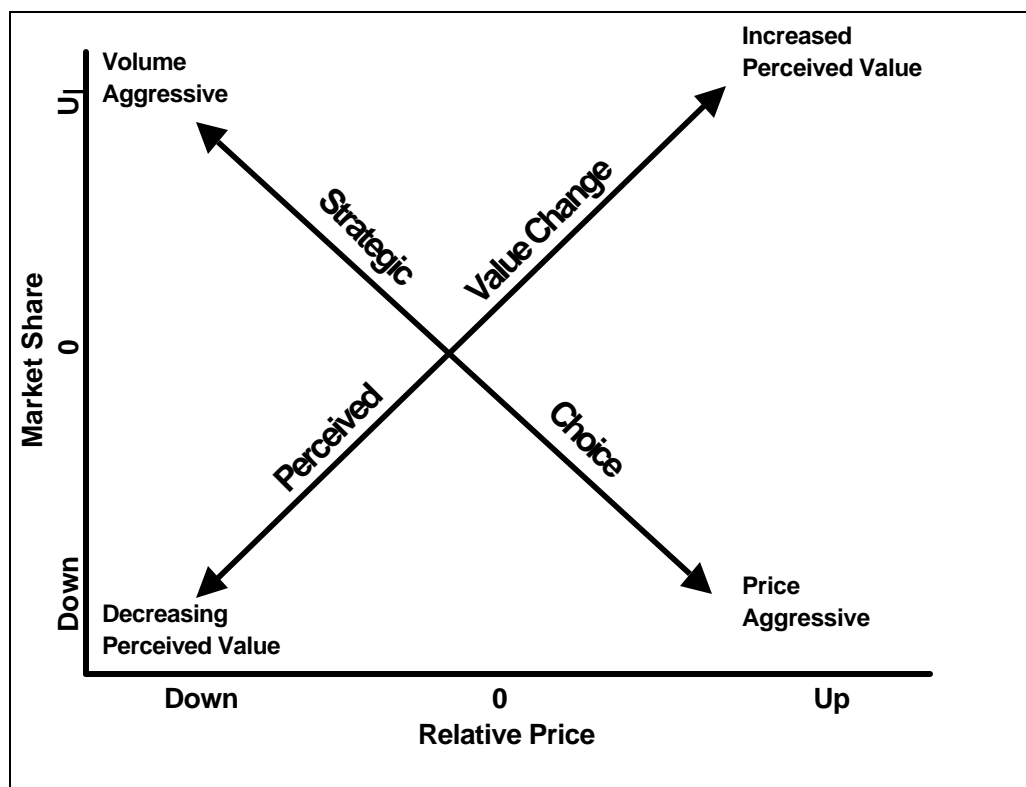


Figure 52, Possible Changes in Market Share and Relative Price

True or False

1. On average, volume aggressive businesses show more increase in pretax return on sales (PROS) than price aggressive.
2. In general, it pays to adopt a volume aggressive strategy in high growth markets but a price aggressive strategy in low growth markets if the objective is increased PROS.

Perceived Value Change

An increase in perceived value as defined here allows a business to increase its market share and/or relative price. Perceived value change can be measured by appropriately weighting market share change and relative price change and adding them together. A perceived value change index was constructed (see Definitions) and calculated for each of the 1,208 industrial businesses in the SPI database. These businesses were then split into seven equal size segments ranging from those businesses with the largest decrease in perceived value to those with the largest increase. The average annual change in pretax return on sales was calculated for the businesses in each segment; the results are shown in Figure 53. Note that the average SPI industrial business shows a 0.9 percentage points per year increase in PROS

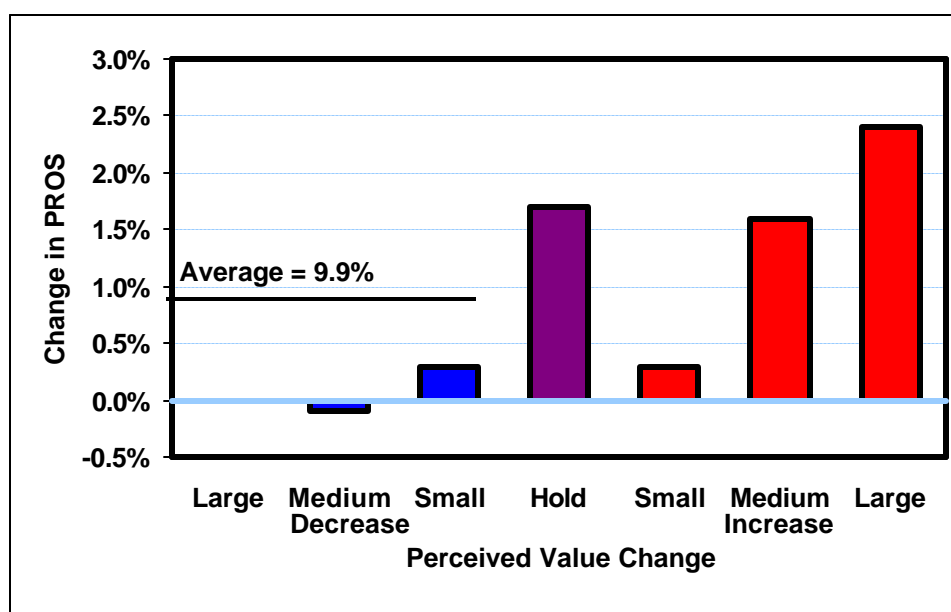


Figure 53, Average Change in PROS vs. Perceived Value Change for Industrial Product (N=1208)

As would be expected, businesses with increases in perceived value show much larger increases in PROS than businesses with decreases in perceived value (differences of about 0.5 percentage points year are statistically significant at the 90% confidence level). The top 29% (2/7) of the businesses average two percentage points per year more increase in PROS than the bottom 29%.

The high value of PROS change shown by the middle 14% (1/7) of the businesses (marked "Hold") is interesting. These businesses are mainly businesses with no change in either market share or relative price. While this finding needs further study, the above average PROS. increase is perhaps due in part to the lower degree of competitive activity and market turbulence implied by this stability in share and relative price.

Strategic Choice

Strategic choice is determined by the degree to which a business seeks volume increases at the expense of price or seeks price increases at the expense of volume. Strategic choice can be measured by the difference between market share change and relative price change appropriately weighted. A strategic choice index was developed (see Definitions) and the 1,208 industrial businesses in the SPI database were split into seven equal segments ranging from the most prices aggressive to the most volume aggressive. The average annual change in PROS. was calculated for each segment; the results are shown in Figure 54.

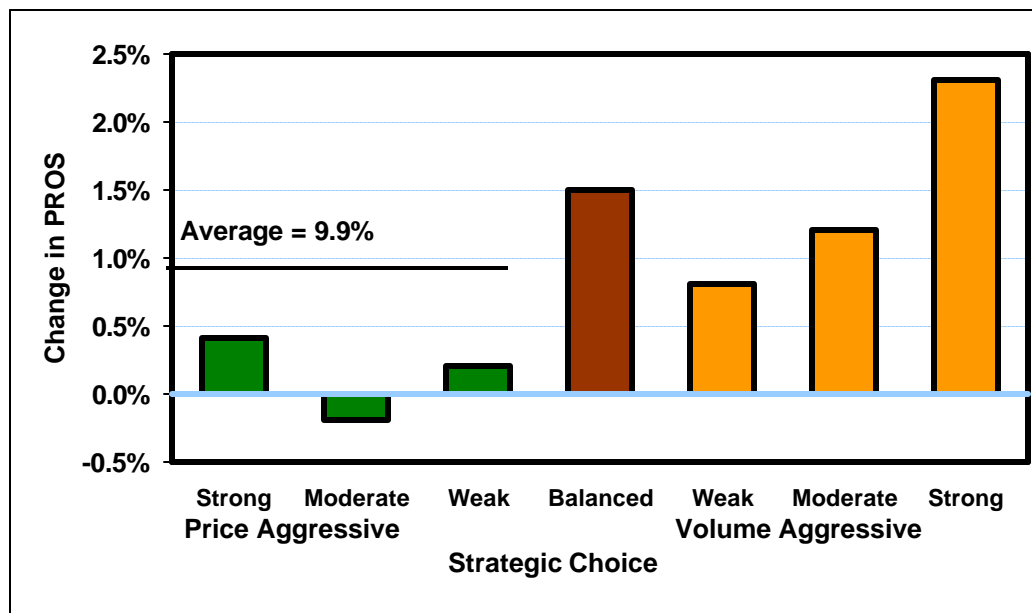


Figure 54, Average Change in PROS vs. Strategic Choice for Industrial Product (N=1208)

As can be seen in Figure 54, volume aggressive businesses on average do better than price aggressive businesses as measured by the annual change in PROS. In particular, the 14% most volume aggressive businesses significantly outperform the others. The businesses marked "Balanced" are mostly the same stable businesses marked "Hold" in Figure 53.

Combining Strategic Choice and Perceived Value Change

Perceived value change depends on long-term marketing commitment and changes in relative product offerings, markets served, competitive conditions and marketplace values. Good marketing management depends to a large extent on sensing when market conditions are such that share or price can be increased relative to competition; it also depends on knowing what to do when one or the other of these must be given up.

A key question is what strategic choice to make opposite a given change in perceived value or market conditions. This obviously depends on business goals. Table 23 below shows the average change in PROS for industrial businesses given three levels each of perceived value change and

strategic choice ice. The table was constructed with about one-third of the businesses in each level in each direction. A circle is drawn around the value corresponding to what is probably the preferred strategy for each perceived value change, assuming a goal of increased PROS.

Table 23, Average Change in PROS vs. Strategic Choice and Perceived value Change
(Industrial Businesses Only - N=1,208)

Strategic Choice	Volume Aggressive	0.7% (N = 134)	1.1% (80)	2.4% (187)
	Balanced	0.6% (95)	1.1% (267)	1.4% (49)
	Price Aggressive	-0.8% (183)	-0.9% (51)	1.3% (162)
		Low	Medium	High
Annual Volume Growth				

Look first at the center column where perceived value shows little change. The volume aggressive and balanced strategies both result in an average annual percentage point change of 1.1 in pretax return on sales. This is two percentage points better than a price aggressive strategy. Since a balanced strategy is less apt to upset the marketplace, it is probably the best strategy under average conditions.

When perceived value is decreasing (the left column) and a loss must be incurred in either market share or relative price, the story is similar. There is little to choose between the volume aggressive and balanced strategies; both dominate the price aggressive strategy. Again, a balanced strategy is probably preferable.

The implication is very different when perceived value is increasing, the right-hand column. Here the volume aggressive strategy is significantly better than the balanced or price aggressive strategy in the average case.

Dependence on Market Growth Rate

Table 23 suggests appropriate strategic choice under average conditions assuming a business wants to increase profit margin. Obviously other factors must be considered. Table 24, shows

similar PROS change values but with the industrial businesses in the database further segmented into high growth markets, moderate growth markets and low growth markets. A circle is again drawn around the preferred (PROS increasing) strategy for each of the three perceived value change possibilities in each of the three market growth situations.

Table 24, Average Change in PROS vs. Strategic Choice, Perceived Value Change & Market Growth
(Industrial Businesses N=1,208)

		High Growth Markets			Moderate Growth Markets			Low Growth Markets		
Strategic Choice	Volume Aggressive	1.9%	2.3	4.3	-1.1	0.4	2.4	1.2	0.9	1.1
	Balanced	0.9	2.6	* 2.5	0.3	1.0	* 1.4	0.3	-0.1	* 0.4
	Price Aggressive	0.1	* 0.4	2.3	-1.2	* -0.9	1.2	-1.2	* -2.5	0.2
		Decr.	Hold	Incr.	Decr.	Hold	Incr.	Decr.	Hold	Incr.
Perceived Value Change										

* Based on only twelve to twenty businesses.

Moderate growth markets parallel the average industrial business in that a balanced strategic choice is indicated except in cases where perceived value has increased; here a volume aggressive strategy is preferred. In high growth markets a volume aggressive strategy is suggested where perceived values have changed either up or down.

The situation in low growth markets is perhaps counter-intuitive. While the advice often is to pursue a price aggressive strategy in low growth situations, the suggestion here is that volume aggressiveness may be more appropriate in most situations. There are, of course, many other factors to consider including the cash flow implications of a volume aggressive vs. price aggressive strategy. Some of these will be addressed in future articles.

Summary

Pretax return on sales tends to increase more when Perceived value increases. It also tends to increase more when an industrial business is volume aggressive rather than price aggressive. An above average change in PROS also occurs when either market share or price relative to competition are changing.

In average conditions, a business will generally fare better in terms of increased PROS with a balanced strategy between volume and price aggressiveness unless perceived values are increasing; a volume aggressive strategy, appears better normally when perceived value has increased. In high growth markets a volume aggressive strategy also appears better when perceived value has decreased. This, of course, could result in severe price-cutting.

On average, a volume aggressive strategy appears best in low growth markets independent of perceived value change. This is perhaps counter intuitive; frequently the advice is to be price aggressive in low growth situations.

In addition to a goal of increased PROS, a business must consider the supply/demand situation and the impact on cash flow. Volume aggressive strategies frequently require increases in both permanent investment and working capital.

True-False Answers

1. **True** On average, volume aggressive businesses show more increase in pretax return on sales (PROS) than price aggressive. See Figure 54.
2. **False** In general, it pays to adopt a volume aggressive strategy in high growth markets but a price aggressive strategy in low growth markets if the objective is increased PROS. See Table 24.

No. 21, April, 1982

21 INVESTMENT AND SALES EFFECT OF SHARE AND PRICE CHANGES

The last article discussed the effect of changes in market share and relative price on pretax return on sales (PROS). The share/price changes expressed in terms of perceived value change and strategic choice. In general, assuming that increasing pretax return on sales (PROS) is the business objective, it was found that either a "volume aggressive" or "balanced" strategy was preferable to a "price aggressive" strategy for the average industrial business, regardless of perceived value change or market growth rate.

Table 23 in last article showed the average change in PROS vs. strategic choice and perceived value change. Whether the strategy selected on the basis of change in PROS is best depends on changes in other factors. Changes in Investment requirements and sales revenues are particularly important since changes in return on Investment and cash flow depend on these factors as well.

True or False

1. Volume aggressive industrial businesses, in addition to showing more increase in PROS on average than price aggressive businesses, also tend to show more of an increase in sales revenue.
2. Price aggressiveness becomes a much better strategy when the objective is increased PROI (pretax return on Investment) rather than increased PROS.

Change in Investment Requirements

It is reasonable to expect that a volume aggressive strategy will require more Investment in both working capital and permanent Investment. Since an increase in perceived value usually implies higher share (and volume), perceived value increases should require more investment as well.

Table 25, below shows the average annual change in Investment less depreciation for the same Strategic choice/perceived value change combinations and confirms that volume aggressiveness and increased perceived value do require a larger increase in investment.

Table 25, Change in Investment Less Depreciation vs. Strategic Choice and Perceived Value Change
(Industrial Businesses Only N=1208)

Strategic Choice	Volume Aggressive	11%	15%	2.4%
	Balanced	7%	10%	18%
	Price Aggressive	5%	8%	11%
		Decrease	Hold	Increase
Perceived Value Change				

Change in Sales Revenue

Another key factor to examine is change in sales revenue. Since perceived value is defined as change in share plus change in relative price, an increase in perceived value should be associated with a greater revenue increase. However, strategic choice is change in share minus change in relative price; thus the effect of strategic choice on sales revenue could be either positive or negative. Sales revenue is volume multiplied by price and an increase in one implies a decrease in the other (unless perceived value changes). Thus the relationship between volume and price determines how sales revenue will change when strategic choice varies.

Table 26 below shows that on average, sales revenue increases more with a volume aggressive strategy at all three levels of perceived value change. Thus a volume aggressive strategy usually shows enough share (and volume) increase to more than offset any decrease (or smaller increase) in price/relative price.

Table 26, Average Change in Sales Revenue vs. Strategic Choice & Perceived Value Change
(Industrial Businesses Only N=1208)

Strategic Choice	Volume Aggressive	16%	20%	26%
	Balanced	9%	16%	21%
	Price Aggressive	7%	9%	15%
		Decrease	Hold	Increase
Perceived Value Change				

Change in Pretax Return on Investment

Perhaps the best single measure of these three factors combined is change in PROI. The relationship between PROI and these factors is:

$$\text{PROI} = (\text{PROS} \cdot \text{Sales Revenue}) / \text{Total Investment}$$

Table 27 shows the average annual percentage point change in PROI across these same two dimensions. Investment here is defined without deducting depreciation to conform to standard corporate practice.

Table 27, Average Change in PROI vs. Strategic Choice & Perceived Value Change
(Industrial Businesses N=1208)

Strategic Choice	Volume Aggressive	0.6%	1.4%	3.1%
	Balanced	0.9%	1.7%	2.4%
	Price Aggressive	-0.2%	-1.1%	1.8%
		Decrease	Hold	Increase
		Perceived Value Change		

Thus we see that for the average industrial business, the preferred choice of strategy is the same for an objective of increasing PROI as for increasing PROS. A balanced strategy is preferable except in the case of a perceived value increase where a Volume aggressive strategy is best. Volume aggressiveness dominates price aggressiveness regardless of perceived value change.

Summary

- Both investment requirements and sales revenue tend to increase as volume aggressiveness increases and as perceived value increases.
- For the average industrial business, a Volume aggressive strategy is preferable to a price aggressive strategy regardless of perceived value change or whether the business seeks improvement in PROS or PROI.
- For the average industrial business a balanced strategy appears preferable to either volume aggressiveness or price aggressiveness unless perceived value is increasing; here a volume aggressive strategy is better.

True-False Answers

1. **True** Volume aggressive industrial businesses, in addition to showing more increase in PROS on average than price aggressive businesses, also tend to show more of an increase in sales revenue. See Table 25.
2. **False** Price aggressiveness becomes a much better strategy when the objective is increased PROI (pretax return on Investment) rather than increased PROS. See Table 26.

No. 22, May 1982

22 VOLUME AGGRESSIVENESS VS. PRICE AGGRESSIVENESS

The last three articles have discussed how pretax return on sales (PROS) and pretax return on investment (PROI) change for the average industrial business depending on "Strategic choice" and perceived value change."

Strategic choice refers to the tradeoffs made between share and price relative to competitive. "Volume aggressive " businesses show share gains at the expense of relative price; "price aggressive" businesses show relative price gains at the expense of share. Perceived value change is a measure of the degree to which a business shows gains or losses in both market share and relative price. -

It was shown in Table 27 of last article that on average a "balanced" strategy shows a greater increase in PROI when perceived value is decreasing or holding but a "volume aggressive" strategy shows a greater increase when perceived value is increasing. Therefore, when market conditions are such that gains can be made, the average industrial business tends to gain more on a PROI basis when it chooses to increase share than when it chooses to increase its relative price.

In order to test the consistency of this general result, the industrial businesses in the Strategic Planning Institute (SPI) database were segmented on a variety of key business characteristics. It was found that " the general result applied to many of the segments. However, some interesting differences did occur. This article examines the businesses segmented by market growth, profitability, number of competitors, and whether a competitive entry occurred in the prior five years.

True or false

1. As measured by change in PROI, the average low profit industrial business is better off pursuing a price aggressive strategy than a volume aggressive strategy.
2. A business with many competitors should be more volume aggressive than a business with few competitors.
3. A business is usually better off responding to the entry of a new competitor with a balanced strategy rather than a volume aggressive or price aggressive strategy.

Market Growth Rate

Table 28 shows the average annual percentage point change in PROI for three levels of market (physical volume) growth rate. This figure can be compared with Table 24 in article #20 which shows change in PROS for the same segments.

The most interesting suggestion here is that industrial businesses in moderate growth situations should pursue either a volume aggressive or price aggressive strategy when perceived value is

increasing. Both are preferable to a balanced strategy. Which is better depends, of course, on other factors. This is in conflict with microeconomic theory which suggests a balanced strategy if a business wants to maximize profits (see article #19). In all other situations either a balanced or volume aggressive strategy is suggested. The philosophy of being volume aggressive in high growth markets popularized by the Boston Consulting Group is supported.

Table 28, Average Change in PROI vs. Strategic Choice, Perceived Value & Market Growth
(Industrial Businesses N=1,208)

		High Growth Markets (> 8%)			Moderate Growth Markets (0 -8%)			No Growth Markets (Ï 8%)		
Strategic Choice	Volume Aggressive	2.6%	2.9	6.2	-1.0	0.4	2.0	0.4	1.0	1.8
	Balanced	1.3	3.9	* 4.1	0.7	1.6	* 0.7	0.8	-0.1	* 1.7
	Price Aggressive	1.5	* 0.7	3.0	-1.1	* -1.1	2.0	-1.1	* -3.3	0.0
		Decr.	Hold	Incr.	Decr.	Hold	Incr.	Decr.	Hold	Incr.
Perceived Value Change										

* Based on only twelve to twenty businesses.

Level of Profitability

The average change in PROI varies somewhat depending on the current level of PROI. As shown in Table 29, moderate profit businesses parallel the average situation. In high profit businesses a balanced strategy is suggested except when perceived value is decreasing. The implication in this situation is to be price aggressive. This means that when a high profit business is forced to give up share or relative price, it is better off on average when it gives up share.

Table 29, Average Change in PROI vs. Strategic Choice, Perceived Value
(Industrial Businesses Only - N=1,208)

		High PROI Businesses (>18.5%)			Moderate PROI Businesses (8.2% -18.5%)			Low PROI Businesses (\leq 8.2%)		
Strategic Choice	Volume Aggressive	-0.2%	2.1	2.1	-0.3	1.3	2.1	1.9	0.4	6.0
	Balanced	* 0.3	1.9	* 4.9	1.9	1.6	* 0.9	0.6	1.5	**
	Price Aggressive	0.9	**	1.2	-0.7	* -0.2	1.5	-1.1	-1.1	2.6
		Decr.	Hold	Incr	Decr.	Hold	Incr.	Decr.	Hold	Incr.

Perceived Value Change

* Based on fifteen to twenty businesses

** Too few business for meaningful average.

Often the temptation in low profit business is to focus on improved profit margins. Figure 3 shows that the average low profit business does better pursuing a volume aggressive strategy than a price aggressive strategy. When perceived value is not changing, a balanced strategy is preferable to either.

Number of Competitors

Some variation in PROI change also occurs as the number of competitors varies. As shown in Table 30, volume aggressiveness appears to be more desirable when a business has fewer competitors. Many of our business have ten or fewer competitors and Table 30 suggests that volume aggressiveness is the best strategy when perceived value is not changing as well as when it is increasing. With eleven or more competitors a different strategy is suggested at each level of perceived value change.

Table 30, Average Change in PROI vs. Strategic Choice, Perceived Value Change, & Number of Competitors
(Industrial Businesses Only - N=1208)

		Five or Fewer Competitors			Six to Ten Competitors			Eleven or More Competitors		
Strategic Choice	Volume Aggressive	0.1%	3.0	3.5	1.5	2.5	3.1	0.3	-0.4	2.4
	Balanced	*	2.4	**	1.7	1.8	*	0.3	1.3	*
	Price Aggressive	-0.8	**	2.1	-0.1	**	1.8	1.0	-0.6	1.6
		Decr.	Hold	Incr.	Decr.	Hold	Incr.	Decr.	Hold	Incr.
Perceived Value Change										

* Based on eighteen to twenty businesses

** Too few business for meaningful average.

Competitive Entry

Table 31 shows how PROI change varies depending on whether a significant new competitor entered the business in the past five years. While Table 30 suggested more volume aggressiveness with several competitors, Table 31 suggests backing off somewhat in the presence of new competition. A balanced strategy is suggested when a competitive entry has occurred regardless of the perceived value change.

Table 31, Average Change in PROI vs. Strategic Choice, Perceived Value Change, & Whether a Competitive Entry Occurs
(Industrial Businesses Only - N=1208)

		Competitive Entry Did Not Occur			Eleven or More Competitors		
Strategic Choice	Volume Aggressive	0.8%	1.0	3.3	0.1	* 2.6	2.4
	Balanced	0.3	1.3	2.1	2.7	3.8	* 3.0
	Price Aggressive	-0.8	**	2.1	-0.3	**	1.5
		Decr.	Hold	Incr.	Decr.	Hold	Incr.
Perceived Value Change							

* Based on sixteen to twenty businesses

** Too few business for meaningful average.

Summary

- For most business segments the general rule applies: a balanced strategy when perceived value is decreasing or holding and a volume aggressive strategy when perceived value is increasing.
- Volume aggressiveness is generally better in high growth markets, for low profit business, for business having fewer competitors, and for businesses not subjected to new competition.
- Price aggressiveness is suggested in only a few situations :
 - moderate growth markets when perceived value is increasing (perhaps).
 - high profit business when perceived value is decreasing.
 - business with more than ten competitors when perceived value is decreasing.
- A balanced strategy is normally the best response to new competition.
- Strategic choice is obviously critical to the future health of a business. While such choice should depend primarily upon the unique character of a business situation, an analysis of the

past performance of business with similar characteristics to yours can be enlightening. The SPI database provides an opportunity for this type of analysis.

True-False Answers

1. **False** As measured by change in PROI, the average low profit industrial business is better off pursuing a price aggressive strategy than a volume aggressive strategy. See Table 29
2. **False** A business with many competitors should be more volume aggressive than a business with few competitors. See Table 30.
3. **True** A business is usually better off responding to the entry of a new competitor with a balanced strategy rather than a volume aggressive or price aggressive strategy. See Table 31.

No. 23, June 1982

23 MARKETING EFFORT, PERCEIVED VALUE AND PROFITABILITY

The link between marketing effort and profitability is difficult to quantify and subject to much debate. Figure 55 illustrates this relationship. The tradeoff between the benefit of increased relative perceived value and the additional costs incurred should be appraised when marketing budget increases are considered.

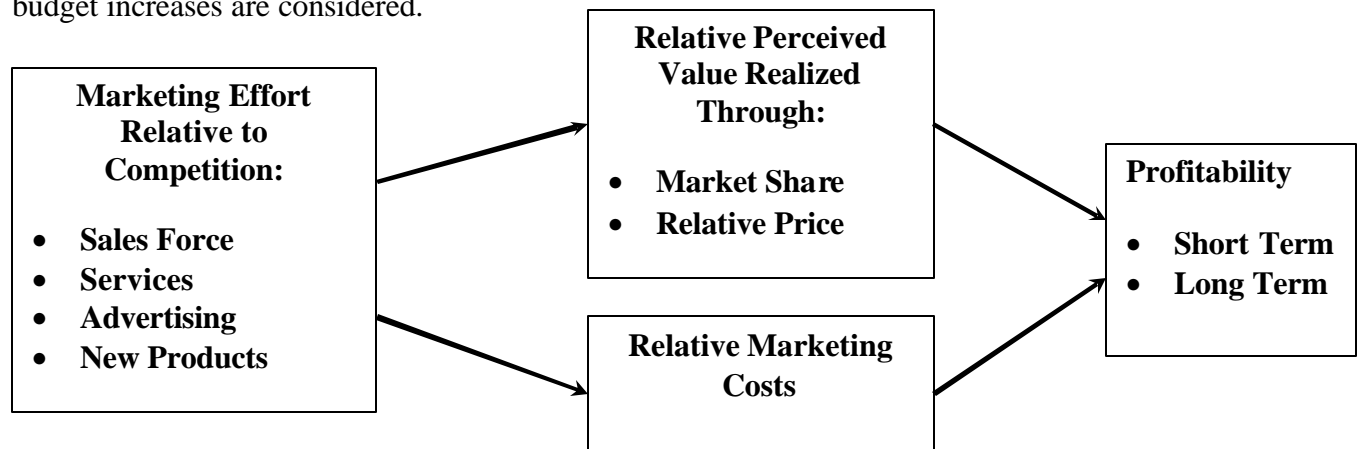


Figure 55, Relationship Between Marketing Effort and Profitability

In recent articles we have defined change in perceived value (or more precisely its realization) as annual change in market share (normalized) plus annual change in relative price (normalized). Article #19 (February, 1982) showed that increases in perceived value tended to be associated with increases in relative product quality, relative direct costs and production capacity. This article examines the association between marketing effort relative to competitors and change in perceived value. In addition, short-term profit changes are examined.

True or false?

1. Industrial businesses which outspend competitors on sales force expense and customer service show a greater increase in perceived value (as defined above) than those which outspend competitors on advertising.
2. It is normally better for industrial businesses to be consistent in their relative spending on sales promotion and advertising (i.e., don't spend relatively more on one and less on the other).
3. Industrial businesses which introduce more new products than competitors realize significantly larger gains in perceived value and PROI on average when they outspend competitor on advertising.

Effect of Marketing Mix Elements

Several elements of marketing effort are defined in the Strategic Planning Institute (SPI) database relative to competition. The average annual relative change in pretax return on

investment (PROI) and perceived value (as previously defined) were examined for these marketing mix elements. Table 32 presents a summary of the average results for industrial businesses for which these marketing elements were greater than competition.

Table 32, Annual Relative Change in PROI and Perceived Value for Industrial Businesses
Spending more than Competitors on Marketing Mix Elements

	Sample Size (%)	Average Annual PROI	Relative Change in Perceived Value
All Industrial Businesses	1208 (100%)	0%	0%
Those Spending More than Competition on:			
Sales Force Expense/Sales Revenue	362 (30%)	0%	-0.4%
Quality of Customer Service	615 (51)	-.034%	0%
Advertising Media Expense/Sales Revenue	168 (14%)	0.23%	0.21% *
Sales Promotion Expense/Sales Revenue	199 (16%)	-0.44%	0.06%
New Product as Percent of Sales Revenue	293 (24%)	0.88% *	0.25% *

Note: Last Three Years

* Statistically different from mean (zero) at 90% confidence

Many of these differences are small and not statistically significant. This should not be surprising, however, because normal increases in marketing expense can often be justified by relatively small increases in PROI.

As shown in Table 32, industrial businesses spending more than competition on sales force expense relative to sales revenue and those whose quality of customer service is greater than competitors do not on average show either improved perceived value or PROI. A relatively large number of businesses report expenditures exceeding competitors in these categories.

Looking next at advertising media expenses as a percent of sales revenue, only 14 percent of the businesses report spending greater than competitors. These businesses on average show a statistically significant increase in perceived value and also an increase in PROI Those with sales

promotion expenses greater than competitors tend on average to be losing profitability somewhat on average.

The most significant factor appears to be new products as a percent of sales. Statistically significant increases in both PROI and perceived value occur for the 24 percent of industrial businesses reporting new product introductions greater than competitors.

Synergism Between Advertising and Sales Promotion

Table 33 below shows the average annual relative change in PROI and perceived value for industrial businesses at varying relative levels of advertising and sales promotion. Synergism between these two marketing mix elements is indicated. Increases in both PROI and perceived value occur on average for the 106 businesses in which both advertising and sales promotion is greater than competition. Average performance is indicated by the vast majority of businesses where both of these factors are less than or equal to competition.

Negative performance on change in both PROI and perceived value occurs normally in businesses in which one marketing mix element is greater than competition and the others less than or equal to competition. This is particularly true of industrial businesses with average or less than average advertising expense and higher sales promotion expense relative to competition.

Table 33, Average Annual Relative Change in PROI and Perceived Value for Industrial Businesses with Differential Relative Spending on Advertising and Promotion

		Sample Size (%)	Average Annual PROI	Relative Change in Perceived Value
All Industrial Businesses		1208 (100%)	0%	0%
Spending Relative to Competition				
on:				
Advertising Media Expense/Sales	Sales Promotion Expense/Sales			
Greater	Greater	106 (9%)	0.65%	0.37%*
Greater	Less or Equal	62 (5%)	-0.49%	-0.06%
Less or Equal	Greater	93 (8%)	-1.73%*	-0.29%*
Less or Equal	Less or Equal	947 (78%)	0.12%	0.01%

* Statistically different from mean (zero) at 90% confidence

Marketing When New Products Exceed Competitive Offerings

One would expect that the consequences of relative marketing effort would vary depending on whether or not new products as a percent of sales were greater than competition. Table 34 summarizes the four marketing mix elements as to the average annual change in PROI and perceived value for the 293 businesses whose new products as a percent of sales were reported greater than competitors'.

Table 34, Relative Change in PROI and Perceived Value for Industrial Businesses Spending more than Competitors on Marketing Mix Elements whose New Products/Sales are Greater than Competitors

	Sample Size (%)	Average Annual PROI	Relative Change in Perceived Value
All Industrial Businesses with New Products Greater Than Competitors	293 (100%)	0.88%	0.25%
Those Spending More Than Competitors On:			
Sales Force Expense/Sales Revenue	97 (33%)	1.24%	0.34%
Quality of Customer Service	174 (18%)	0.48%	0.19%
Advertising Media Expense/Sales Revenue	52 (18%)	2.56% *	0.80%*
Sales Promotion Expense/Sales Revenue	64 (22%)	1.82%	0.52%

* Statistically different from mean (0.88%, 0.25%) at 90% confidence

Relatively, the greatest and only statistically significant impact to both PROI and perceived value is with advertising. Second is sales promotion; sales force expense is third; and quality of customer service is not only last but has a below average impact.

Summary

It is interesting and probably counter-intuitive that among industrial businesses advertising seems to have a greater impact on the PROI and perceived value change than sales force expense and customer service. Generally, there is more attention paid and money spent on the latter two marketing mix elements.

While these results are certainly not conclusive since differences are small and different business situations dictate the use of one marketing mix element versus another, the appropriateness of nontraditional marketing expenditures should always be questioned in an industrial business situation. Also, the synergism between advertising and sales promotion points up the need to consider the marketing mix elements in concert rather than independently.

True-false Answers

1. **False** Industrial businesses which outspend competitors on sales force expense and customer service show a greater increase in perceived value (as defined above) than those which outspend competitors on advertising, See Table 32.
2. **True** It is normally better for industrial businesses to be consistent in their relative spending on sales promotion and advertising (i.e., don't spend relatively more on one and less on the other). See Table 33.
3. **True** Industrial businesses which introduce more new products than competitors realize significantly larger gains in perceived value and PROI on average when they outspend competitor on advertising. See Table 34.

No. 24, July 1982

24 PREVIOUS STUDIES ON INDUSTRIAL ADVERTISING

The last article was on the link between marketing effort, perceived value and profitability concluded "that among industrial businesses advertising seems to have a greater impact on the PROI and perceived value change than sales force expense and customer service." Judging from the questions about this finding, it may be appropriate to review other studies on advertising in industrial businesses.

There is unfortunately no experimental evidence of the sales and profit impact of industrial advertising. Thus, generalized conclusions must be based on analyzing variations which occurred naturally. Methodological problems always exist in these analyses and thus they are never completely definitive. To quote from a Journal of Marketing article:

"The advertising budget for the industrial marketer is typically too small to justify or support the kind of research effort required to assess the impact of advertising in a manner that would yield information relevant to expenditure decisions. This condition contributes to the skepticism of many industrial executives toward the effectiveness of advertising. Thus, advertising expenditure policy continues to be a perplexing problem for industrial marketing managers and it becomes important to ask what is known about the process and effects of industrial advertising and how that knowledge relates to current budgeting practices."¹³

There is, nonetheless, a number of published studies on the practices and effects of industrial advertising and it is perhaps useful to review some of their major findings and implications.

A. D. Little Study

In 1971, A. D. Little conducted an evaluation of 1,100 research studies which had been conducted on the effectiveness of industrial advertising.¹⁴ The conclusions they reached on the basis of their study were as follows:

1. "There is evidence that in certain situations industrial advertising, acting as a partner to the personal sales call, can generate sales more economically than the salesman himself."
2. "There is evidence that the cost per sales dollar can be reduced by proper allocation of funds between direct sales effort and industrial advertising."

¹³ "Industrial Advertising Effects and Budgeting Practices" by Lilien, Silk, Choffray, and Rao, Journal of Marketing, January, 1976, p. 16, 19.

¹⁴ An Evaluation of 1100 Research Studies on the Effectiveness of Industrial Advertising" by A. D. Little; report to American Business Press, 1971.

3. "There is evidence that companies which maintain their advertising in recession years have better sales and profits in those and later years."
4. "Companies with product entries into categories which are not directly associated with the company's past history need to advertise the particular product to be considered in that category by potential buyers."
5. "The effect of industrial advertising can be tracked through intermediate variables and its quantitative impact on sales can be measured."
6. "There is no overall formula that top executives can apply to determine when to increase and when not to increase the advertising budget."

One of the studies evaluated by A. D. Little and also reviewed by the previously cited Journal of Marketing article is the John Morrill study.¹⁵ The Morrill study has been faulted from a methodological standpoint, principally because the "exposed" and "unexposed" groups were self-selected after the advertising occurred. However, the Journal of Marketing article concludes:

"Nonetheless the sheer bulk and consistency of the evidence from Morrill's studies is impressive and by no means can it be overlooked. The most important finding is that advertising, used in conjunction with personal selling, can reduce total selling costs. Morrill also refers to evidence of threshold effects in response to advertising. He suggests that less than a certain (small) level of exposure (a frequency of about 5 advertising pages per year) seems to have no effect. "

"ADVISOR" STUDY

The A. D. Little study conclusions indicate that industrial advertising can be effective and shed some light on how that effectiveness occurs. The key question, however, is under what conditions and in what types of business situations it is appropriate to advertise and to what degree.

In order to begin answering that question, we initiated the "Advisor" study in 1973 through the Association of National Advertisers.¹⁶ The Sloan School at M.I.T. was selected to conduct the study and eventually 22 companies participated and provided detailed marketing, advertising, financial and competitive data on 131 industrial products. The study focused on assessing conditions under which businesses tended to advertise and the extent of that advertising. The key factors which were found to correlate with the expenditures on industrial advertising were:

- Sales--the more sales, the more advertising.

¹⁵ "Industrial Advertising Pays Off" by John E. Morrill, Harvard Business Review, Mar.-Apr., 1970, p.4.

¹⁶ "ADVISOR 2: A Study of Industrial Marketing Budgeting" by Gary L. Lilien; report to sponsoring companies.

- Number of customers--the more customers, the more advertising.
- Customer concentration--the more sales concentrated on a few customers, the less advertising.
- The fraction of sales made to order--the greater the fraction of sales made to order, the less advertising.
- Life cycle position--the earlier in the life cycle, the more advertising.
- Marketing objectives--the more aggressive position the company takes toward the product, the more advertising.

Statistical regression was used to develop an equation which relates advertising to these and other factors. We have a computer model which can be used to develop a "norm" for any industrial product given estimates of these and other factors. However, we have not strongly advocated the use of this equation because:

- High variation in industrial advertising practice leaves a lot of "unexplained variance. "
- The equation reflects what is done rather than what should be done.

However, since most industrial advertising budgeting is based on thoughtful consideration by experienced advertising and marketing managers, an advertising norm can be useful, at least as a point of departure.

Spending Relative to "Normal"

In 1976 R. D. Buzzell used the Strategic Planning Institute (SPI) database to conduct a study of industrial marketing costs.¹⁷ He developed a norm equation similar to that described above for industrial business advertising and promotion spending and compared actual spending to that norm. He then determined the average annual percentage point change in market share associated with prior level of expenditures relative to norm and with change in advertising and promotion spending. These results are summarized in Table 35 below.

¹⁷ "Industrial Marketing Costs: An Analysis of Variations in Manufacturers' Marketing Expenditures for Industrial Product Businesses"; presentation at the Strategic Planning Institute meeting in 1976.

Table 35, Average Annual Percentage Point Change in Market Share Associated With ~ Prior level and Change in Advertising and Promotion Spending
Industrial Businesses (N=355)

Prior Advertising and Promotional Spending Level			
Change in Advertising and Promotional Spending	Well Below Norm	Near Norm	Well Above Norm
Above Average	0.9%	1.0%	0.2
Below Average	0.0%	0.4%	0.2

As shown in Table 35, a significant change in market share occurred among businesses which started below or near norm and which increased advertising and promotion spending by an above average amount. No difference in market share change because of change in spending was observed for businesses already above norm. While this study was done at a time when the database was much smaller than it is today (the study had not been updated), the results suggest that "below norm" spending may restrict potential market share growth.

Brand Awareness

A more recent study by SPI was conducted in cooperation with Cahners Publishing Company.¹⁸ This study attempted to show a link between brand awareness, market share and profitability for industrial products. The market share/profitability correlation was among the earliest investigated by SPI and was discussed in the first three articles (August-October, 1980).

This new study found a very high correlation between market share and brand awareness (measured relative to competition.) The study points out the difficulty in determining cause and effect but concludes that increases in brand awareness are frequently converted into market share. Change in brand awareness was found to be significantly related to four factors:

- A normal time decay in the absence of sufficient marketing effort.
- A positive impact when marketing expenditures are above "normal levels."
- A positive impact for businesses whose market share to brand awareness ratio is above average.

¹⁸ "Brand Awareness As a Tool for Profitability", Strategic Planning Institute and Cahners Publishing Co., 1980.

- A positive impact for businesses spending a higher than average amount on advertising and promotion as a percent of sales.

This study thus provides further evidence that industrial advertising generally has a positive influence on market share through brand awareness.

Business Cycle Effects

A number of studies on both industrial and consumer advertising have been done on the effect of advertising during a recession. Most of these find "that advertisers who do not cut back during a recessionary period--or who actually increase their advertising dollars--move ahead, not only during the recession but after it is over."¹⁹ Again, while cause and effect is difficult to assess, the sheer magnitude and consistency of results is impressive.

A recent SPI study examined market share changes opposite changes in size of served market and change in media advertising expenditures.²⁰ The following statistically significant differences were found:

- When annual change in served market decreased relative to trend by at least four percentage points in a year (presumably a recession) and media advertising increased by at least 28 industrial businesses on average gained 1.5 percentage points of market share.
- When annual change in served market increased relative to trend by at least four percentage points in one year (presumably an expansion) and media advertising expenditures decreased, industrial businesses on average lost 1.0 percentage points of market share.

Summary

A large number of empirical studies have found that advertising for industrial businesses can payoff. While many of these studies can be cited as having methodological problems, the evidence indicates that advertising for industrial businesses should seriously be considered as part of the overall marketing mix.

The challenge to the marketer, of course, is answering the questions of what kind of advertising is effective, how much is appropriate, under what conditions, when, how and to whom for his specific product/market segments. In addition, we need to develop better, more cost effective ways to evaluate the sales impact of industrial advertising so that experimentation becomes more practical.

¹⁹ "To Cut or Not to Cut?", Marketing and Media Decisions, April, 1981, p. 74.

²⁰ "Media Advertising When Your Market Is In a Recession" by Valerie Kijewski, Strategic Planning Institute, Jan. 1982.

No. 25, September 1982

25 MARKET SHARES AND BROKEN STICKS

The strong correlation between market share and profitability has been discussed in previous articles. Not only is the absolute level of market share a strong correlate of profitability but other elements of market structure (the relationship among the shares of all competitors) are also very important. The Strategic Planning Institute (SPI) database has various market structure measures including market share, market share rank and the market shares of the three leading (largest share) competitors.

SPI defines market share of each business as its total annual dollar sales expressed as a percent of total dollar sales sold into its served market. Its served market includes only that portion of the total market for which it has suitable products and toward which it directs its marketing effort. Competition may be "in function" as well as "in kind" but only if reasonably substitutable. While estimating served market and market share can be very difficult for some businesses, attempting to do so can provide insight into the nature of the business and its competitive situation.

Because of its strong link to profitability, the next few articles will discuss market structure.

Are There Natural Market Structures?

Studies of the relationship among market shares have led to several theories. The Boston Consulting Group (BCG) has hypothesized that a stable market will have only three significant competitors with their market shares proportioned 4:2:1.

Buzzell has studied market share distributions using the SPI database and finds that a proportional relationship tends to exist. However, he finds considerable variation in the proportion; in the average market share structure, each business is 64% the size of the next larger ranked business. (BCG hypothesized 50% in stable markets.) Other theories have also been proposed, including one by John Reith (formerly of E. I. Dupont).

Reith's Generalized Distribution Rule

Reith developed a method to estimate competitive market shares which he described in an unpublished paper in 1967 entitled "Generalized Distribution Rule." His method is based on the assumption that market share distribution is a random process and can be reasonably well predicted from a specific statistical law for any given number of competitors. The law views the total market as a "stick" of unit length which is "broken" at points chosen randomly along the stick into "n" pieces where "n" is the number of competitors.

The pieces are then ordered by their length. The expected (long run average) value of the largest piece of the stick is the estimate of the market share of the largest competitor, the expected value of the second largest piece estimates the share of #2, etc. Table 36 shows the expected market shares according to this rule which is sometimes referred to as the "broken stick rule."

		Number of Competitors											
		1	2	3	4	5	6	7	8	9	10	11	12
Market Share Rank	1-	100%	75.0%	61.1%	52.1%	45.7%	40.8%	37.0%	34.0%	31.4%	29.3%	27.5%	25.9%
	2-		25.0%	27.8%	27.1%	25.7%	24.2%	22.8%	21.5%	20.3%	19.3%	18.4%	17.5%
	3-			11.1%	14.6%	15.7%	15.8%	15.6%	15.2%	14.8%	14.3%	13.8%	13.4%
	4-				6.3%	9.0%	10.3%	10.9%	11.1%	11.1%	11.0%	10.8%	10.6%
	5-					4.0%	6.1%	7.3%	7.9%	8.3%	8.5%	8.5%	8.5%
	6-						2.8%	4.4%	5.4%	6.1%	6.5%	6.7%	6.8%
	7-							2.0%	3.4%	4.2%	4.8%	5.2%	5.4%
	8-								1.6%	2.6%	3.4%	3.9%	4.3%
	9-									1.2%	2.1%	2.8%	3.2%
	10-										1.0%	1.7%	2.3%
	11-											0.8%	1.5%
	12-												0.7%
Big 4		100%	100%	100%	100%	96.0%	91.1%	86.3%	81.7%	77.6%	73.8%	70.4%	67.3%

		Number of Competitors					
		13	14	15	16	17	18
Market Share Rank	1-	24.5%	23.2%	22.1%	21.1%	20.2%	19.4%
	2-	16.8%	16.1%	15.5%	14.9%	14.4%	13.9%
	3-	12.9%	12.5%	12.1%	11.8%	11.4%	11.1%
	4-	10.4%	10.1%	9.9%	9.7%	9.5%	9.2%
	5-	8.4%	8.3%	8.2%	8.1%	8.0%	7.8%
	6-	6.9%	6.9%	6.9%	6.9%	6.8%	6.7%
Big 4		64.5%	62.0%	59.6%	57.4%	55.4%	53.6%

Table 36, Expected Market Share According to the Generalized Distribution Rule

Reith discussed the conditions which he believed must exist in order to apply the law and showed its application to other situations besides share of market. In market share distribution application, he hypothesized that it only described "homogeneous" product/markets at "equilibrium". At the time of Reith's work (1967), the rule very accurately matched the shares of the four U.S. automobile manufacturers; GM had about 52%, Ford 27%, Chrysler 14.5%, and American Motors 6.5% of the domestic market. Reith also showed several other examples where the rule closely fit market share distributions.

SPI Database Findings

The 1208 industrial businesses in the SPI database were used to test Reith's theory. Table 37 shows the results of this analysis. In the SPI database the number of competitors is given as a range, rather than as a specific number. The market share rank of each business is shown as first, second, third and fourth or lower. In addition to the average market shares in each category,

Table 37 also shows the standard deviation about the means. This, of course, measures the amount of dispersion about the mean values.

Table 37, Average Market Share (% of Businesses)
(Industrial Businesses N=1208)

		Number of Competitors		
		2 to 5	6 to 10	11 to 20
Market Share Rank	1-	51.7% (14.9%)	36.7% (14,3%)	25.8% (10.7%)
	2-	27.8% (11.2%)	21.3% (6.6%)	16.5% (5.4%)
	3-	16.9% (10.3%)	13.4% (5.6%)	11.9% (4.9%)
	4 or lower	9.3% (7.6%)	7.4% (3.8%)	6.9% (3.7%)

Note: The numbers in parentheses are the standard deviations about these mean values.

Table 37 shows reasonable agreement with Reith's market share distribution rule and provides empirical support for the theory. The average shares shown for 2-5 competitors in Table 37 agree closely with 4 competitors in Table 36, particularly for the top two competitors. The share values for 6-10 competitors show fair agreement with 7 competitors in Table 36.

While the average values agree fairly well with Reith's share distribution rule, there is a large amount of variation as shown by the standard deviation values. (About 2/3 of the businesses are \pm one standard deviation.) Much of this variability may be due to:

- the number of competitors being a range rather than a specific number,
- businesses not having market structures at equilibrium (assuming shares do in fact tend toward equilibrium, as has been suggested but not proven),
- difficulties in defining and measuring served market and market share,
- the fact that competitors' served markets may be somewhat different from that of the business supplying the data.

While other factors, particularly elements of competitive advantage, can influence market share, Reith's share distribution rule appears to provide a reasonable first approximation to estimating market share if the number of competitors and market share rank can be estimated. This may be difficult to determine in many business situations but--again--there are benefits in attempting to do this. The rule is also useful in assessing how close a particular market share structure is to

"equilibrium." Assuming market shares do tend toward equilibrium, this may help determine likely future shifts in market share.

Polymer Products Application

As part of a comprehensive planning study of international polymer business activity, Hank Milligan and Frank Aronhalt (both formerly of Dupont) have used Reith's share distribution rule to help estimate "equilibrium" market shares. In order to use the rule for any specific product/country, estimates of both the number of competitors and the market share rank had to be made. Estimates of the number of competitors are based on the number currently competing, knowledge of likely entrants, and the number of competitors which the size of the market seems capable of supporting.

Estimates of market share rank are based on specific knowledge about current market shares and business practices in individual countries. Where little or no data exists, an analysis done by Bob David (also formerly of Dupont) has proven useful. Bob found that a general hierarchy of local share distribution often exists in foreign markets as follows:

- Local (national) companies. (largest share)
- Local/foreign joint venture companies
- Foreign companies
- Importers. (smallest share)

This hierarchy implies, of course, that company rank will depend on how it chooses to compete. The procedure provided an independent assessment of probable long-term share in both current and prospective product/countries.

Summary

Reith's share distribution rule provides a simple way to roughly estimate market share if the number of competitors and market share rank can be estimated. It is also useful as a test of how close a specific market share structure is to "equilibrium" assuming the concept of equilibrium is valid. Because of the high amount of variability, it should be viewed as a rough approximation only.

While Reith's rule and other similar rules assert that market structure is a random process, there is sufficient variation and correlation with other business characteristics to suggest that other factors be considered if more accurate market share estimates are needed. The next article discusses some of these other correlating factors.

No. 26, October 1982

26 SELLER CONCENTRATION

The last article discussed market share structure, i.e., the relationship among competitive market shares. It examined a market share distribution rule which can be used to roughly predict market share if the number of competitors and market share rank can be estimated.

In many business situations it may be difficult to estimate these two factors. Also, enough variation and correlation with other factors exists among businesses in the Strategic Planning Institute (SPI) database to suggest that a simple share distribution rule which assumes that market structure is a random process can be improved upon to make more accurate market share estimates.

An alternative method to be proposed is based on estimating seller concentration and relative market share. Seller concentration is typically measured as the total market share accounted for by the top three or four competitors. For purposes of this analysis, it is defined as the market share of the SPI reporting business plus the sum of the shares of its three largest competitors. Because almost all SPI businesses are among the top four in their industry, this is a good measure of the total share of the four largest competitors.

Relative market share is defined as the market share of the reporting business divided by the sum of the shares of its three largest competitors. Thus, if seller concentration and relative market share can be estimated, the expected market share of a business can be calculated.

Seller concentration as defined above is, of course, a very similar measure to number of competitors. Obviously the fewer competitors the higher the average seller concentration. This relationship is shown in Table 38 below. One advantage of using seller concentration in analyzing the SPI database rather than number of competitors is that the latter is given only as a range.

Table 38, Seller Concentration vs. Number of Competitors
(Industrial Businesses N=1207)

Number of Competitors*	Average Seller Concentration	Number of Businesses
2 - 5	91%	347
6 - 10	77%	420
11 - 20	60%	281
21 - 50	49%	132
51 up	42%	27

*Excludes the reporting business.

True or False

1. Seller concentration tends to be higher among industrial businesses selling to few immediate customers rather than many immediate customers.
2. Seller concentration tends to be higher in industrial businesses where auxiliary services are of great importance to end-users.
3. Seller concentration tends to be higher in businesses spending a small percentage of their total cost of sales on research and development.

The industrial businesses in the SPI database were examined to determine which business characteristics correlated with seller concentration. The key correlating types of factors can be categorized into customer characteristics, product characteristics, and cost/investment characteristics.

Customer Characteristics

As shown in Table 39 below, seller concentration tends to be strongly correlated with buyer concentration and the nature of the purchase transaction. Businesses which sell to few immediate customers tend to be more concentrated. In addition, higher seller concentration tends to occur among businesses which sell in large, long-term contracts.

Less opportunity apparently exists for smaller competitors when there are few customers who tend to buy in large quantities and prefer long-term contracts. This correlation between seller concentration and buyer concentration seems to support the idea of a tendency toward a balance in market power.

Table 39, Seller Concentration vs. Customer Characteristics
(Industrial Businesses N=1207)

Factor	Factor Range	Average Seller Concentration	Number of Businesses
Number of Immediate Customers:	1 - 9	86%	48
	10 - 19	84%	45
	20 - 49	80%	102
	50 - 99	73%	128
	100 - 999	72%	550
	1000 - 9999	70%	294
	10,000 & up	60%	40
Average Purchase Transaction Amount, Immediate Customers:	\$0 - \$1,000	65%	176
	\$1M - \$9.99M	71%	449
	\$10M - \$99M	76%	390
	\$100M - \$1MM	78%	139
	\$1MM & up	83%	53
Average Time Between Purchase Transactions, Immediate Customers:	Less than 6 months	72%	894
	6 months to 1 year	74%	147
	More than 1 year	80%	166

Product Characteristics

Table 40 shows four product characteristics that correlate with seller concentration. Businesses which sell raw or semi-finished materials and capital goods tend to have higher seller concentration than those selling components, supplies, or consumables. Also, businesses selling more or less standard products tend to be more concentrated than those selling custom tailored products.

Another product characteristic which correlates with seller concentration is the average development time for new products. Higher concentration typically occurs where it takes more than two years to develop new products. Also, seller concentration tends to be higher when auxiliary services are of great importance to end-users.

Table 40, Seller Concentration vs. Product Characteristics
(Industrial Businesses N=1207)

Factor	Average Seller Concentration	Number of Businesses
<u>Type of Product:</u>		
Capital Goods-	75%	332
Raw or Semi-Finished Materials-	77%	192
Components for Finished Products-	72%	434
Supplies or Consumable Materials-	70%	249
<u>Degree of Product Standardization:</u>		
More or Less Standard	75%	852
Custom Tailored	70%	355
<u>Development Time for New Products:</u>		
Less than 2 years	71%	477
More than 2 years	76%	522
Not Applicable/No New Products	71%	208
<u>Importance of Auxiliary Services to End-Users:</u>		
Little/No/Some Importance-	71%	768
Great Importance -	77%	439

Table 41 shows the relationship between seller concentration and three cost and investment factors. First, seller concentration tends to be higher when the cost of raw materials and energy is a smaller fraction of total cost of sales. Thus, higher concentration tends to occur in situations where more "value" is added to the product over its purchase cost.

Seller concentration also tends to be higher among businesses spending a high percentage of cost of sales on research and development. It is interesting that while research and development is related to seller concentration, marketing expense is not. This provides additional support to a conclusion in article #14 that marketing expense does not appear to be a barrier to entry in industrial businesses.

Permanent investment is also a correlating factor. Seller concentration tends to be higher among businesses which have a very low or relatively high amount of plant and equipment as a percentage of total cost of sales.

Table 41, Seller Concentration vs. Cost/Investment Characteristics
(Industrial Businesses N=1207)

Factor	Factor Range	Average Seller Concentration	Number of Businesses
Cost of Raw Materials and Energy as a Percent of Total Cost of Sales:	Less than 38%	76%	344
	Greater than 38%	72%	863
Research & Development Expense as a Percent of Total Cost of Sales:	Less than 0.7%	70%	357
	0.7% - 2.3%	72%	327
	2.4% -6.0%	75%	349
	Greater than 6.0%	80%	174
Original Cost, Plant & Equipment as a Percent of Total Cost of Sales:	Less than 21%	76%	166
	21% - 62%	71%	694
	62.1% - 91%	75%	174
	Greater than 91%	79%	173

Summary

In summary, seller concentration tends to be higher when:

- Buyers are concentrated;
- Purchase transactions are large and infrequent;
- Products are capital goods or raw or semi-finished materials;
- Products are more or less standardized;
- New product development takes more than two years;
- Auxiliary services to end-users are of great importance;
- Cost of purchases are relatively low;
- Research and development expenses are relatively high;
- Permanent investment is very low or relatively high.

Note that most chemical industry businesses have many of the above characteristics. It is therefore not surprising that high seller concentration exists in many of these businesses.

The next article will examine relative market share, the second factor needed to estimate market share, and will show the estimating procedure.

True/False Answers

1. **True**. Seller concentration tends to be higher among industrial businesses selling to few immediate customers rather than many immediate customers. See Table 39.
2. **True**. Seller concentration tends to be higher in industrial businesses where auxiliary services are of great importance to end-users. See Table 40.
3. **False**. Seller concentration tends to be higher in businesses spending a small percentage of their total cost of sales on research and development. See Table 41.

No. 27, November 1982

27 RELATIVE MARKET SHARE

The last article began a discussion on a method to estimate market share based on estimating seller concentration and relative market share. It focused on factors, which correlate with seller concentration. This month's article examines correlates of relative market share and describes a simple procedure for estimating market share.

The market share of each business is defined by the Strategic Planning Institute (SPI) as its total annual dollar sales expressed as a percent of total dollar sales sold into its served market. Its served market includes only that portion of the total market for which it has suitable products and towards which it directs its marketing effort.

Market shares of competitors are based solely on the shares sold into the served ~ market of the reporting business. In situations where the served market of a competitor extends beyond that of the reporting business, the share figures will understate the total sales for that competitor. Relative market share is the market share of the reporting business as a percent of the sum of the shares of its three largest competitors.

Article #25 discussed a market share estimation procedure based on estimates of number of competitors and market share rank. The close relationship I between seller concentration and number of competitors was shown last month. Similarly, relative market share will be very closely related to market share rank. This relationship is shown in Table 42.

Table 42, Relative Market Share vs. Market Share Rank
(Industrial Businesses N = 1315)

Market Share Rank	Average Relative Market Share	Number of Businesses
1	122%	549
2	41%	326
3	24%	156
4 or lower	15%	284

True or False

1. Industrial businesses tend to have higher market share relative to competition²¹ if they were among the early entrants into the business
2. Industrial businesses tend to have higher market share relative to competition if they are more backward integrated than competitors.
3. Industrial businesses tend to have higher market share relative to competition if they spend more money on advertising and promotion as a percent of sales than competitors.

The industrial businesses in the SPI database were examined to determine which business characteristics correlated with relative market share. The key correlating types of factors can be categorized into general business position and marketing strategy and image characteristics.

General Business Position Characteristics

The variation in relative market share with four general business position characteristics is shown in Table 43. Businesses tend to have a higher relative share when they were an early entrant into the market rather than an early follower or late entry. They also tend to have higher relative share if they are more backward integrated than competitors. Relative market share also tends to be higher in businesses which significantly benefit from a product or process patent or trade secret.

As shown in the first article (August, 1980), relative market share is highly correlated with relative margin. Relative margin is defined as the percentage difference between the price premium the products command and the relative cost to produce and distribute the products.

²¹ Competition is generally considered to be the three leading competitors In terms of market share.

Table 43, Relative Market Share vs. General Business Position Characteristics
(Industrial Businesses N=1315)

Factor	Factor Level or Range	Average Relative Market Share	Number of Businesses
Business/Market Entry Position -	One of the Pioneers	83%	707
	Early Follower	53%	404
	Late Entry	39%	204
Relative Backward Integration -	Less than Competitors	49%	343
	Same as Competitors	69%	785
	More than Competitors	92%	187
Significant Benefit from a Patent or Trade Secret	No	61%	864
	Yes	80%	451
Relative Margin (% Price Premium - % Relative Mill Cost)*	Less than -5.1%	43%	186
	-5.1% to -1.1%	51%	192
	-1.1% to 0.1%	56%	248
	0.1% to 2.1%	61%	121
	2.1% to 5.0%	81%	180
	5.0% to 9.6%	78%	202
	More than 9.6%	102%	186

*e.g. Price 6% above competitors; Mill cost 3% below competitors:

Relative margin; +6 - (-3) ; +9%.

Marketing Strategy and Image Characteristics

Table 44 shows the relationship between relative market share and marketing strategy and image characteristics measured relative to competition. As can be seen in the table, businesses tend to have a higher relative market share if they have a broader product line, serve more customers, serve larger customers, provide a higher quality of customer services, spend more on advertising and sales promotion as a percent of sales and have a better product image/company reputation relative to leading competitors. These factors should, of course, be viewed as correlating factors rather than causal factors.

Table 44, Relative Market Share vs. Marketing Strategy & Image Characteristics
(Industrial Businesses N=1315)

Factor (Relative to Competition)	Factor Level	Average Relative Market Share	Number of Businesses
Breadth of Product Line -	Narrower	39%	377
	Same	55%	459
	Broader	101%	479
Number of Customers Served -	Less	35%	458
	Same	58%	413
	More	110%	444
Size of Customers -	Smaller	30%	180
	Same	59%	820
	Larger	111%	315
Quality of Customer Services -	Worse	43%	141
	Same	48%	493
	Somewhat Better	75%	478
	Much Better	113%	203
Advertising & Sales Promotion Expenditures as Percent of Sales	Less	52%	553
	Same	69%	542
	Somewhat More	93%	168
	Much More	131%	52
Product Image/Company Reputation	Worse	34%	130
	Same	47%	457
	Somewhat Better	72%	515
	Much Better	121%	213

Procedure for Estimating Market Share

The following three step procedure can be used to make a rough estimate of a "normal" market share level for a business:

1. Estimate seller concentration using the tables in last month's article. For each of the factors that can be estimated, find the average seller concentration at the appropriate factor level or range and calculate an approximate average of these values, keeping in mind that each individual value should be weighted more if:

- There is a wide range in the seller concentration averages across the factor levels.
- A large number of businesses are represented at the estimated level.

2. Estimate relative market share similarly using the tables in this article.

3. Estimate market share by multiplying seller concentration times relative market share and dividing this product by relative market share plus 100 (see the Appendix for proof of this relationship).

Summary

Relative market share in industrial businesses tends to be higher among businesses which:

- Enter the market early.
- Are more backward integrated than competitors.
- Benefit significantly from a patent or trade secret.
- Have a high relative margin.
- Have a broader product line than that of competitors.
- Serve more customers than competitors.
- Serve larger customers than competitors.
- Provide a higher quality of customer services.
- Spend more on advertising and sales promotion as a percent of sales than competitors.
- Have a better product image/company reputation than competitors.

Thus significant correlation exists between relative market share and other measures of relative position and marketing strategies which lead to these positions. Again, it must be emphasized that these findings show correlations and not directions of causality.

True-False Answers

1. **True**. Industrial businesses tend to have higher market share relative to competition if they were among the early entrants into the business. See Table 43.

2. **True**. Industrial businesses tend to have higher market share relative to competition if they are more backward integrated than competitors. See Table 43.
3. **True**. Industrial businesses tend to have higher market share relative to competition if they spend more money on advertising and promotion as a percent of sales than competitors. See Table 44.

APPENDIX

Let: **X** = Market Share (%).

Y = Sum of shares of three largest competitors (%).

R = Relative market share (%).

C = Seller concentration (%).

By definition:

$$\mathbf{R = 100 \cdot X/Y}$$

$$\mathbf{C = X + Y}$$

Rearrange and Combine Equations:

$$\mathbf{Y = 100 \cdot X/R}$$

$$\mathbf{C = X + 100 \cdot X/R}$$

$$\mathbf{R \cdot C = X \cdot (R + 100)}$$

$$\mathbf{X = (R \cdot C)/(R + 100)}$$

No.28, December 1982

28 THE IMPORTANCE OF MARKET SHARE POSITION

The last three articles have discussed market share structure and described two ways to roughly estimate market share. Business characteristics which correlate with seller concentration and relative market share were discussed in the last two articles. The focus this month is on the impact of market share and market share position on profit performance, competitive advantage and discretionary expenditures.

The market share of each business is defined as its total annual dollar sales expressed as a percent of total dollar sales sold into its served market. The served market includes only that portion of the total market for which it has suitable products and toward which it directs its marketing effort.

True or False

1. Pretax return on sales (PROS) for industrial businesses tends to be higher for higher levels of market share but in "diminishing return" fashion with PROS less sensitive to market share at higher of share.
2. Higher PROS at higher market share is due more to high share businesses having higher incremental margins than to scale economies associated with spreading fixed costs over a broader sales base.

Market Share Rank

The Strategic Planning Institute (SPI) industrial businesses were examined to see how profit performance, competitive advantage and discretionary expenditure varied depending on market share rank. Average values of these characteristics are shown in Table 45 below.

The advantage of being the largest business selling into your served market is evident. On average, first rank businesses earn over 20% pretax return on investment, have a significant market share advantage, have higher perceived product quality and have a strong relative margin advantage (the difference between relative price and relative mill cost). They also tend to reinvest slightly more money in R&D.

Table 45, Average Value of Business Characteristics vs. Market Share
(Industrial Businesses N=1315)

<u>Business Characteristics</u>	<u>Market Share Rank</u>			
	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>Fourth, lower</u>
PROI	20.2%	13.7%	12.3%	8.3%
PROS	14.4%	10.5%	9.0%	5.8%
Market Share	39.1%	21.4%	13.5%	7.1%
Relative Market Share**	122%	41%	24%	15%
Relative Product Quality*	36%	21%	18%	17%
Relative Price**	5.0%	3.5%	1.9%	2.9%
Relative Mill Cost**	0.4%	3.2%	3.6%	3.4%
Relative Margin***	4.6%	0.3%	-1.7%	-0.5%
Marketing Expense/Cost of Sales	8.9%	9.1%	9.3%	8.3%
R&D Expense/Cost of Sales	3.0%	2.9%	2.5%	2.5%
Sample Size	549	326	156	284

* Percent of sales perceived by customers to be "superior" to competition

** Relative to three largest competitors

*** Relative Price minus Relative Mill Cost

While being second ranked in terms of market share has some advantage over being third, the difference is not nearly as striking on average. It is difficult to have above average performance if your business is fourth or lower. Keep in mind, however, that these are average values and a good deal of variability exists around these averages.

Profitability vs. Market Share

A good deal has been written about the correlation between profitability and market share. This was discussed in the first three articles where the profit measure was pretax return on investment and the market share measure was relative market share - your share as a percent of the sum of the shares of the three leading competitors.

Figure 56 shows the relationship between pretax return on sales and market share. A diminishing return relationship can be seen; PROS increases with market share but the rate of increase is lower at higher levels of market share.

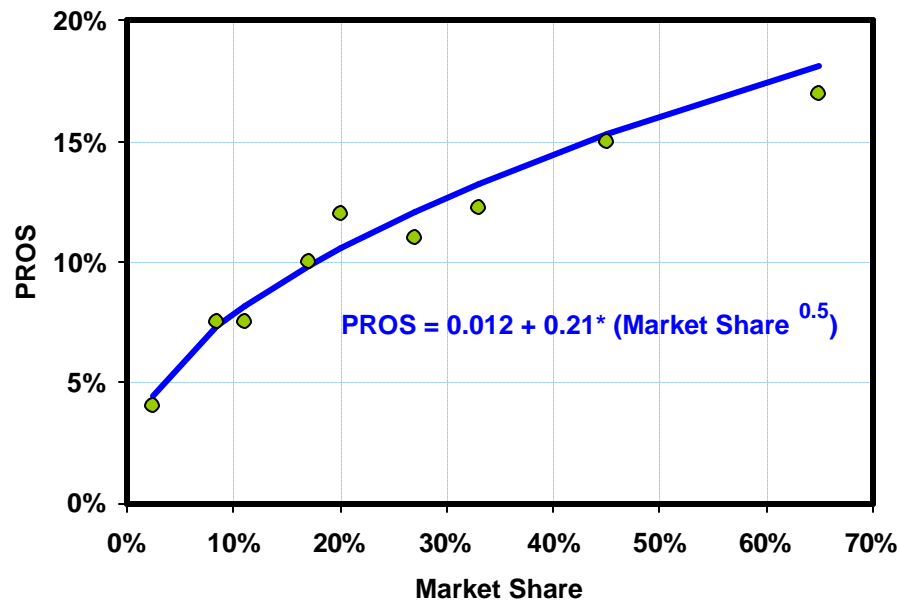


Figure 56, PROS vs. Market Share
(Industrial Businesses N=1315)

This relationship implies that a percentage point of market share is more valuable to a small share than a large share business. This is logical, of course, in that the smaller the share, the larger the percentage increase a share point represents. It also matches business behavior; as shown in article #15 small share businesses tend to increase share and large share businesses tend to give up share.

Figure 56 shows a simple equation relating PROS. to market share and shows that this measure of profitability increases approximately with the square root of market share. There is obviously a good deal of variation business to business since market share is only one of many factors which affect profitability. Statistically, this single equation explains 12% of the variance in PROS

PROS Components vs. Market Share

For analysis purposes it is often useful to split PROS into two components. As shown in the appendix, PROS is the difference between incremental margin (price minus variable cost as a percent of price) and fixed costs as a percent of sales revenue. Incremental margin is a measure of the benefit of additional sales volume. Fixed costs/sales revenue is a measure of the cost to procure that additional volume. The distinction is often useful in applying benefit/cost analysis to the budgeting and allocation of discretionary expenditures.

PROS was split into these two components to check the effect of each at varying levels of market share. Unfortunately the SPI data base cost components do not permit a clear separation into fixed and variable costs. For this analysis, purchases were considered variable costs and all other

costs were considered fixed costs.

It might be expected that larger share businesses would benefit from both a higher incremental margin and a lower fixed cost/sales revenue. Higher share businesses have been shown to typically command a higher price premium and should benefit from being able to purchase energy and raw materials at lower unit prices. Also, simple economies of scale should permit large share businesses to spread their fixed costs over a larger sales base.

As shown in Figure 57, larger share businesses do tend to have higher incremental margins. However, there seems to be little or no reduction in fixed costs as a percent of sales revenue. Thus, higher levels of pretax return on sales appear to be due almost exclusively to the incremental margin component.

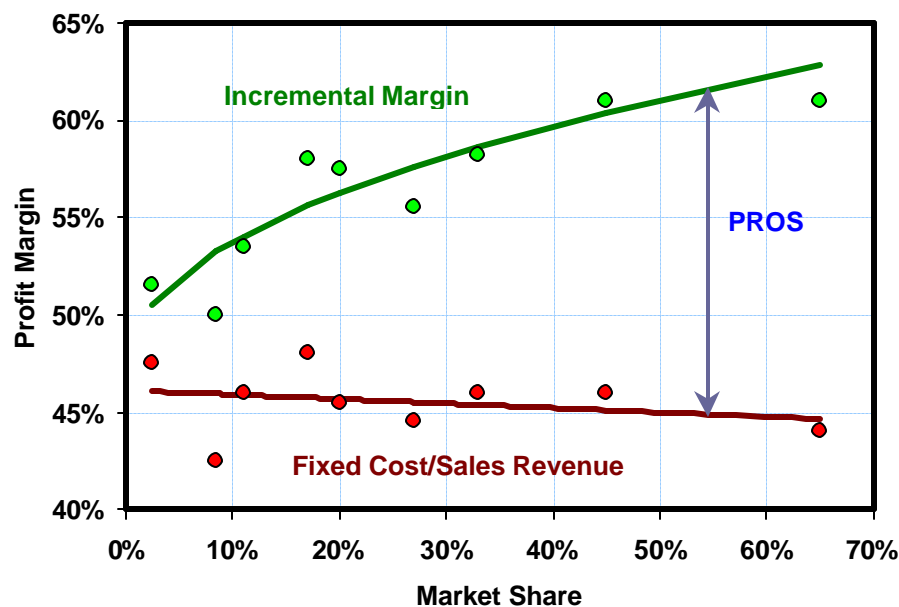


Figure 57, PROS Components vs. Market Share
(Industrial Businesses N=1315)

This suggests that the key advantage of high market share is the ability to command premium prices and purchase raw materials and energy at lower prices. Since there seems to be no advantage in spreading fixed costs across a larger sales base, large share businesses apparently must heavily on marketing, R&D, and manufacturing to maintain this position. Compared to lower share competitors, these large share businesses are usually broader based businesses in terms of the total product line and market segment participation.

Summary

- First ranked market share businesses tend to have a much better competitive position and profit performance than their smaller competitors.

- Second ranked businesses tend to have a relatively small advantage over third ranked businesses. -
- PROS. increases with market share but in a "diminishing return" fashion.
- Higher PROS. at higher market share is primarily due to higher incremental margins. Expected scale economics associated with spreading fixed costs over the broader sales base is not evident.

True-False Answers

1. **True**. Pretax return on sales for industrial businesses tends to be higher for higher levels of market share but in "diminishing return" fashion with PROS less sensitive to market share at higher of share, See Figure 56.
2. **True**. Higher PROS at higher market share is due more to high share businesses having higher incremental margins than to scale economics associated with spreading fixed costs over a broader sales base. See Figure 57.

APPENDIX

Relationship Between PROS Incremental Margin, and Fixed Cost/Sales Revenue

Let:	E = Pretax earnings
	V = Sales volume
	P = Unit price
	C = Unit variable cost
	F = Total fixed cost
	R = Sales revenue
	Z = Pretax return on sales (PROS.).
By definition:	E = V · (P-C) – F
	R = V · P
	Z = E/R

Combine and rearrange equations:

$$Z = \{V \cdot (P - C) - F\} / (V \cdot P)$$

$$Z = \frac{\{P - C\}}{P} - \frac{F}{V \cdot P}$$

(Incremental Margin) {Fixed Cost/Sales Revenue}

No. 29, January 1983

29 ANOTHER LOOK AT MARKET SHARE POSITION

Last month's article began a discussion of market share position and showed the advantage of being first ranked. It also showed that pretax return on sales (PROS) increases with market share in "diminishing return" fashion. Moreover, the advantage at higher share was shown to be due more to higher incremental margins than to scale economies associated with spreading fixed costs over a broader sales base.

The market share of each business in the Strategic Planning Institute (SPI) data base is defined as its total annual dollar sales expressed as a percent of the total dollar sales sold into its served market. The served market includes only that portion of the total market for which it has suitable products and towards which it directs its marketing effort.

True or False

1. Large share businesses are usually able to generate more sales revenue per employee than small share businesses.
2. All other things being equal, by raising his market share by one share point, a small share competitor realizes more pretax earnings than does a large share competitor.

Apparent Market Share Inconsistency

Several people questioned an apparent inconsistency in the market share measures shown last article. As shown in Table 46 below, the average market share and relative market share values by market share rank lead to competitive market shares which seem to be inconsistent with the total market share of the other three ranks listed. For example, first ranked businesses have a market share of 39.1% and a relative market share of 122%. This means that the sum of the market shares of the three leading competitors must be 32.0% ($122\% \times 32.0\% = 39.1\%$). The sum of the market shares of the second, third and fourth or lower ranked businesses is 42.0% ($21.4 + 13.5 + 7.1$).

Table 46, Average Values of Business Characteristics vs. Market Share Rank
(Industrial Businesses - N=1315)

<u>Market Share Measures</u>	Market Share Rank			
	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>Fourth, lower</u>
Market Share	39.1%	21.4%	13.5%	7.1%
Relative Market Share	122%	41%	24%	15%
Market Shares, Three Leading Competitors	32.0%	52.2%	56.3	47.3%
Total Market Shares, Other Three Ranks	42.0%	59.7%	67.6%	74.0%
Sample Size	549	326	156	284

The key reason for this difference is in the definition of served market. Market share is based on the served market of the reporting business. Because served markets among competitors frequently do not totally overlap, competitors will tend to have a smaller share of another business' served market. This is shown for a hypothetical two-competitor market in Figure 58. The difference is particularly strong among small share businesses which typically follow a "niche" strategy and select served markets in which they are not forced into head to head competition with their larger competitors.

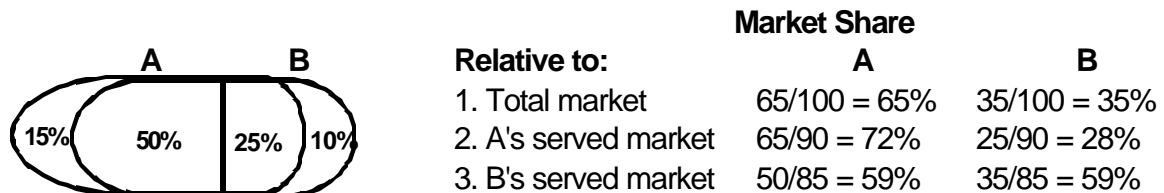


Figure 58, Illustration of Market Shares by Served Market Assuming Two Competitors

Market Share Rank Table 2 shows how investment, labor efficiency and cash flow vary on average with market share rank. Other average characteristics were shown last month.

It might be expected that large share businesses would benefit by having lower investment requirements per dollar of sales revenue. As shown in Table 47, this is true, but only for first ranked businesses. In fact, fourth and lower ranked businesses tend to have some investment advantages over second and third ranked businesses.

It also might be expected that large share businesses would have other efficiencies such as higher sales per employee. In fact, the reverse is true; small share businesses tend to generate more sales per employee than large share businesses. Large share businesses tend to pay their employees slightly better, however.

Table 47, Average Value of Business Characteristics vs. Market Share Rank
(Industrial Businesses N=1315)

<u>Business Characteristics</u>	<u>Market Share Rank</u>			
	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>Fourth, lower</u>
Investment				
Orig. Cost, P&E/Sales Revenue	45.4%	49.6%	49.7%	49.2%
Raw Mat. Semi. Fin. Inventory/Sales Revenue	11.9%	13.5%	13.5%	13%
Finished Product Inventory/Sales Revenue	7.3%	7.5%	8.6%	7.8%
Accounts Receivable/Sales Revenue	15.1%	16.0%	16.0%	15.4%
Labor Efficiency				
Sales Per Employee (\$M, 1975)	67	70	70	77
Relative Employee Compensation*	1.4%	0.6%	-0.4%	-1.0%
Cash Flow**/Sales Revenue	2.5%	0.6%	-0.5%	-2.3%
Sample Size	549	326	156	284

* Relative_to three largest competitors.

** Cash now is defined as half the annual pretax earnings plus depreciation minus increase (or plus decrease) in total investment.

Perhaps the key single measure is the ability of a business to generate cash flow. As Table 47 shows, first and second ranked businesses on average have positive cash flow while third and lower ranked businesses have negative cash flow. Market share rank tends to have a strong impact on cash flow as well as profit margin.

Earnings vs. Market Share

Last month's article showed that pretax return on sales tends to increase approximately as the square root of market share. In terms of profit margin for each share point increase, this "diminishing return" relationship means that a low share business typically has more to gain than a large share business.

This seems to imply that a small share business should aggressively seek market share and a large share business should not. However, a business is generally seeking maximum earnings and cash flow, not profit margin. A gain in market share affects not only profit margin but the sales to which this profit margin is applied. (Pretax earnings = Industry Sales Revenue • Market

Share • PROS.).

Table 48 shows that pretax earnings increase as market share increases with respect to both company and industry sales revenue. While the increase shown opposite company sales revenue is in a diminishing return fashion, the increase opposite industry sales is in increasing fashion. The latter, of course, will be relatively constant with respect to small shifts in market share. The nature of these two relationships is illustrated graphically in Figure 59.

Table 48, Average Values of Pretax Earnings vs. Market Share

Average Pretax Earnings as a Percent of:		
Market Share	Company Sales Revenue*	Industry Sales Revenue**
10%	PROS = 7.8%	0.8%
20%	10.6%	2.1%
30%	12.7%	3.8%
40%	14.5%	5.8%
50%	16.0%	8.0%
60%	17.5%	10.5%
70%	18.8%	13.2%

* $PROS = 1.2 + 2.1 \cdot (\text{Market Share})^{0.5}$ (See article #28)

** $PROS \cdot \text{Market Share}$

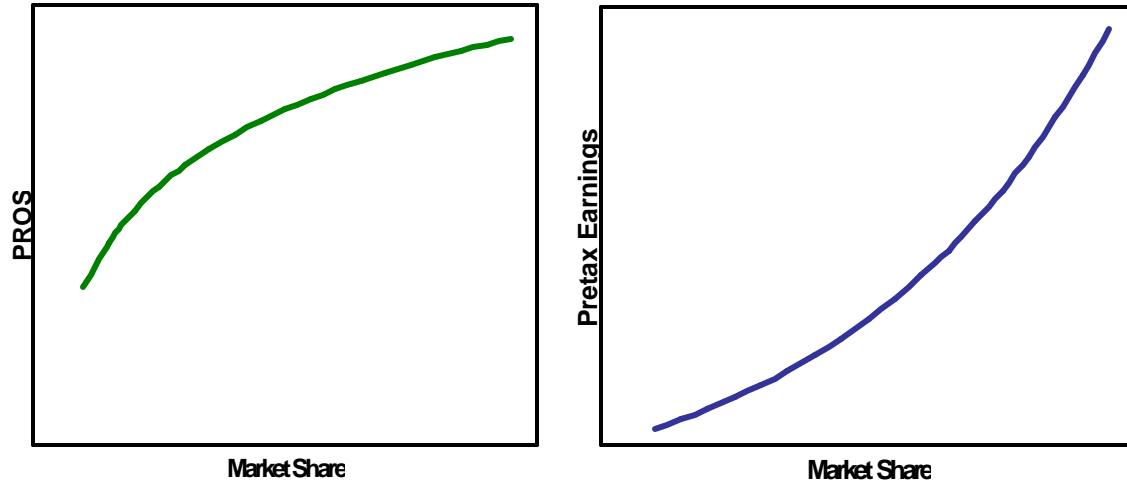


Figure 59, PROS and Pretax Earnings vs. Market Share
(Industrial Businesses N=1315)

It is therefore apparent that, all other things being equal, it is better to build share in a large share business rather than in a small share business. This provides support for the widely accepted principle that support should be given to strong businesses and minimal support to weak businesses.

Again, keep in mind that these are average figures and all other things are never equal. Obviously the decision to change market share position must be based on an in-depth analysis of the benefits and costs of the business' situation and the unique characteristics of its product/market segments.

Summary

- First ranked market share businesses tend to have a slight investment economy of scale advantage.
- Businesses ranked fourth and lower tend to have a very slight investment advantage over second and third ranked businesses. This is probably due to their tendency to adopt a "niche" strategy based on limited products and/or market segments.
- High share businesses tend to generate less sales per employee than small share businesses and pay their employees slightly more.
- Large share businesses on average have higher net cash flow than small share businesses. In the SPI database, businesses ranked third or lower are on average in a negative cash flow position.
- While pretax return on sales increases in diminishing return with market share, pretax earnings increase in an accelerating manner. Thus, all other things being equal, a share point

has a larger effect on earnings in a large share business than in a small share business.

True-False Answers

1. **False**. Large share businesses are usually able to generate more sales revenue per employee than small share businesses. See Table 47.
2. **False**. All other things being equal, by raising his market share by one share point, a small share competitor realizes more pretax earnings than does a large share competitor. See Table 48 and Figure 59.

No. 30, February 1983

30 MARKET SHARE STRUCTURE

The last two articles discussed the relationship between profitability and market share position. The following relationship between pretax return on sales (PROS) and market share derived from the Strategic Planning Institute (SPI) industrial businesses was shown:

$$\text{PROS (\%)} = 1.2 + 2.1 \cdot \sqrt{\text{Market Share(\%)}}$$

While there are many other factors which affect profitability, this simple PROS/market share formula explains most of the variability in PROS that can be explained by the market share structure measures in the data base. However, there are other market share structure elements in which significant differences were found from that predicted by the above formula. These are examined in this V article to provide more insight into the association between profitability and market structure.

True or False

An industrial business typically has a higher level of PROS than that predicted by the above PROS/market share formula if it:

1. Is in a situation of high seller concentration where the top three suppliers account for a large percentage of the business.
2. Has few (10 or less) competitors.
3. Has many (more than 10) competitors but has the largest market share among them.

Seller Concentration

As shown in Table 49, the relationship between PROS and seller concentration- once the impact of market share has been accounted for- is negative. The average PROS is higher than that predicted by the above formula for businesses having low seller concentration. A business situation in which the three largest suppliers account for less than half the total market share tends to produce profit margins almost a percentage point higher than that predicted by the formula.

This finding is in conflict with the widespread belief that high seller concentration, tends to produce excess profits. The key problem in studies which have led to this conclusion is the difficulty in separating the effect of a single firm's share vs. the concentration of the industry since they are strongly correlated.

Table 49, Average PROS Difference from PROS/Market Share Formula vs. Three Firm Seller Concentrations
(Industrial Businesses - N=1315)

Sum of Market Shares of Three Largest Suppliers	Average PROS Difference from Formula	Sample Size
Below 50%	0.9%*	320
50% - 70%	0.1%	398
Above 70%	-0.6%	597

* Statistically different from zero at 90% confidence

Market Share Rank and Number of Competitors

A similar measure to seller concentration is number of competitors. Concentration is generally lower when there are many competitors. As shown in Table 50, businesses in situations with more than ten competitors on average have profit margins almost a point higher than that predicted by the market share formula. This agrees with the above findings on seller concentration.

Frequently is in business situations where there are ten or fewer competitors. As Table 50 shows, such competitive situations tend to be unprofitable for businesses with market share ranks fourth or lower. Not only are the shares usually small for such businesses but average profit margins tend to be almost three percentage points lower than that predicted by the PROS/market share formula.

Table 50, Average PROS Difference from PROS/Market Share Formula vs. Market Share Rank and Number of Competitors
(Industrial Businesses - N=1315)

		Number of Competitors		Overall
		Ten or Less	More than Ten	
Market Share Rank	First	0.1% (N=375)	1.0%* (N=174)	0.4%
	Second or Third	-0.3% (N=329)	0.5% (N=153)	0%
	Fourth or Lower	-2.8%* (N=121)	0.8% (N=163)	-0.7%
	Overall	-0.5%	0.8%*	

* Statistically different from zero at 90% confidence

Size of Competitors

Profitability has been found to depend not only the market share of the business itself but on that of its competitors. As shown in Table 51 it is generally better to have smaller competitors than larger competitors.

It is interesting that the size of the largest competitor does not make a big difference. Statistically significant differences occur in Table 51 for the second largest and third largest competitors only. A business tends to be helped if its second largest competitor has less than 7% market share and tends to be hurt if its third largest competitor has more than 11% market share.

Table 51, Average PROS Difference from PROS/Market Share Formula vs. Market Share of Competitors
(Industrial Businesses N=1315)

Competitor's Market Share Rank	Market Share Range	Average PROS Difference from Formula	Sample Size
Largest	Up to 20%	0.6%	487
	More than 20%	-.3%	828
Second Largest	Up to 7%	1.7%*	209
	7% to 14%	0%	527
	More than 14%	-0.6%	479
Third Largest	Up to 11%	0.3%	987
	More than 11%	-1.1*	328

* Statistically different from zero at 90% confidence.

Summary

- Most of the variability in pretax return on sales which can be explained by SPI market share structure factors can be explained by the simple formula:

$$\text{PROS} = 1.2 + 2.1 \cdot \overline{\text{Market Share}}$$

- Businesses tend to have higher values of PROS than that given by this formula if there is low seller concentration and/or many competitors.
- PROS is on average almost three percentage points lower than that predicted by the formula for businesses with market share rank fourth or lower and with ten or fewer competitors.
- Businesses tend to do better than the formula predicts if their competitors are small, particularly their second largest competitor.

True-False Answers

An industrial business typically has a higher level of PROS than that predicted by the above PROS/market share formula if it:

1. **False**. Is in a situation of high seller concentration where the top three suppliers account for a large percentage of the business. See Table 49
2. **False**. Has few (10 or less) competitors. See Table 50.
3. **True**. Has many (more than 10) competitors but has the largest market share among them. See Table 50.

No. 31, March, 1983

31 PROFIT IMP ACT OF MARKET SHARE CHANGES

The relationship between profitability and market share is very important since businesses almost always cite market share goals as a key part of their business mission. An important consideration in deciding between a "build," "hold" or "harvest" strategy is understanding the likely profit consequences of the associated change in market share.

Article #20 examined this profit impact in terms of perceived value change and strategic choice. This article will examine the change in pre-tax return on sales (PROS) per unit change in market share as it varies with the position and other characteristics of the business.

True or False

Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when:

1. Market share is low.
2. They are early in their life cycle.
3. They are protected with a process patent.

PROS Change vs. Market Share Change

The industrial businesses in the Strategic Planning Institute (SPI) database show a good deal of variability in the relationship between change in PROS and change in market share. Table 52 segments these businesses into those showing an increase in market share of at least one percentage point per year, those showing a small change of less than one percentage point, and those showing a decrease of at least one percentage point per year. Over half the businesses show a small change in market share and most of these show an annual change in PROS of at least one percentage point per year. While over half of those showing an increase in market share also show an increase in PROS, a significant number show a small change or decrease. A similar result can be seen for those showing a decrease in market share. Because economic conditions affect share gainers as well as share losers, this variation is not surprising.

Table 52, Change in PROS vs. Change in Market Share
(Industrial Businesses N=1315)

Annual Change in Market Share	Number (Percent) of Businesses	Annual Change in PROS	Number (Percent) of Businesses
Increase (Gain of at least 1%/yr)	377 (29%)	Increase	195 (52%)
		Small Change	86 (23%)
		Decrease	96 (25%)
Small Change (Less than 1%/yr. increase or decrease)	683 (52%)	Increase	264 (39%)
		Small Change	166 (24%)
		Decrease	253 (37%)
Decrease (Loss of at least 1%/yr.)	255 (19%)	Increase	79 (31%)
		Small Change	58 (23%)
		Decrease	118 (46%)

PROS/Market Share Leverage

The 632 industrial businesses showing either an increase or a decrease in market share of at least one percentage point per year were examined as to how PROS varied per percentage point change in market share. Businesses showing a change of less than one percentage point per year were not used because such changes were felt to be too small to give a reliable reading.

Among these businesses the average (mean) increase in PROS was 0.7 percentage points per year per percentage point increase in market share. However, the standard deviation was 2.7 indicating the large amount of variation. Again, this is to be expected because of the impact of business conditions and other factors.

Effect of Market Share and Life Cycle Position

Table 53 summarizes this PROS/market share leverage in terms of market share level and life cycle position. The table shows that low market share businesses tend to have higher PROS/market share leverage which confirms the findings from the recent articles. The diminishing return relationship between PROS and market share shown in the last three articles was based on "cross sectional" analysis which, looks at variation across businesses. This analysis is "longitudinal" and looks at differences within businesses.

Table 53, Average Change in PROS/Change in Market Share vs. Market Share and Life Cycle Stage

(Industrial Businesses with Market Share Change of at Least one percent /yr. N=632)

		Life Cycle Position		
		Introductory & Growth	Mature & Decline	Overall
Market Share	Less than 18%	1.9%* (N=67)	1.0%* (N=105)	1.3%*
	18 to 36%	0.8% (N=62)	0.4%* (N=176)	0.5%*
	More than 36%	0.6%* (N=64)	0.5%* (N=158)	0.5%*
	Overall	1.1%*	0.6%	

* Statistically different from mean (0.7%) at 90% confidence.

Table 53 also shows that PROS/market share leverage is, on average, higher for businesses early in their life cycle. In particular, businesses with less than 18% market share in the introductory or growth stage of their life cycle realize, on average, almost two percentage points increase in PROS per percentage point increase in market share. This provides some basis for the Boston Consulting Group theory that "wildcat" businesses (low share, high growth) should aggressively pursue market share.

Effect of Process Patent Position

Perhaps surprisingly, businesses which have a process patent position tend to have less PROS/market share leverage than those without a patent position. As shown in Table 54, this tends to be true regardless of market share level. This may indicate that businesses in which there is process patent protection have more stable levels of profitability and are less sensitive to market share fluctuation.

Table 54, Average Change in PROS/Change in Market Share vs. Market Share & Process Patent Position

(Industrial Businesses with Market Share Change of at Least one percent /yr. N=632)

		Process Patent		
		Introductory & Growth	Mature & Decline	Overall
Market Share	Less than 18%	1.5%* (N=127)	0.7% (N=105)	1.3%*
	18 to 36%	0.6% (N=179)	0.2%* (N=59)	0.5%*
	More than 36%	0.6% (N=149)	0.3%* (N=73)	0.5%*
	Overall	0.9%	0.4%*	

* Statistically different from mean (0.7%) at 90% confidence.

Summary

- While profitability tends to increase when market share increases, a good deal of variation exists in this relationship due to business conditions and other factors.
- Among industrial businesses in which annual market share change was at least one percentage point, the average (mean) business showed a PROS increase of 0.7 percentage points per percentage point increase in market share.
- PROS/market share leverage tends to be higher among businesses which:
 - Have low levels of market share
 - Are in the early stages of their life cycle
 - Do not have process patent protection.

True-False Answers

Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when:

1. **True**. Have low levels of market share. See Table 53.
2. **True**. They are early in their life cycle. See Table 53.

3. **False**. They are protected with a process patent. See Table 54.

No. 32, April 1983

32 PROS/MARKET SHARE LEVERAGE

Last month's article discussed PROS/Market Share leverage, the amount of change in PROS (pretax return on sales) per percentage point change in market share. An examination was made of some business characteristics which seemed to have an influence on or at least correlate with change in PROS per unit change in market share. It was found that this leverage tended to be higher among businesses which have low levels of market share, are in the early stages of their life cycle, or do not have process patent protection. This article is a continuation of that discussion.

As mentioned last month, this relationship is important to a business deciding its correct growth strategy. The basis for the analysis is 632 industrial businesses showing either an increase or a decrease in market share of at least one percentage point per year. Five correlating business characteristics will be examined this month: R&D expense, marketing expense, relative product quality, relative mill cost, and turnover.

True or False

Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when:

1. R&D expenses are a large percent of sales relative to other businesses.
2. Product quality is high relative to competition.
3. Mill (manufacturing and distribution) cost is low.
4. Turnover (sales/investment) is high relative to other businesses.

R&D Expense

As shown in Table 55, a positive correlation exists between PROS/market share J leverage and research and development expenses as a percent of sales revenue. This correlation is particularly strong for introductory and growth businesses. The 70 introductory, growth businesses spending more than 4 percent of their sales revenue on R&D expense average a 1.7 percentage point increase in PROS per percentage point increase in market share. This high level of R&D expense can, of course, occur because the technology or product value can support high R&D or because the business is so new that sales are very low.

Table 55, Average Change in PROS/Change in Market Share vs. R&D/Sales and Life Cycle Position

(Industrial Business with a Market Share Change of at least one Percent/yr. N=632)

		R&D Expenditures/Sales Revenue			Overall
		Less 1%	1% to 4%	More than 4%	
Life Cycle Position	Introductory & Growth	0.1%* (N=38)	1.1% (N=85)	1.7%* (N=70)	1.1%*
	Mature & Decline	0.4%* (N=185)	0.5% (N=173)	0.9% (N=81)	0.6%
	Overall	0.3%*	0.7%	1.3%*	

* Statistically different from mean (0.7%) at 90% confidence.

Marketing Expense

The relationship between PROS/market share leverage and marketing expense as a percent of sales revenue is shown in Table 56. Many businesses have low marketing intensity with marketing expense less than 5 percent of sales revenue. It is interesting that among these businesses, PROS/market share leverage tends to be very high for introductory/growth businesses and low for mature/decline businesses. This suggests that the growth mission of low marketing intensive businesses be reexamined when the business matures.

Table 56, Average Change in PROS/Change in Market Share vs. Market Share & Life Cycle Position

(Industrial Business with a Market Share Change of at least one Percent/yr. N=632)

		Marketing Expenses/Sales Revenue			Overall
		Less 5%	5% to 11%	More than 11%	
Life Cycle Position	Introductory & Growth	1.5%* (N=51)	0.9% (N=75)	1.0%* (N=67)	1.1%*
	Mature & Decline	0.5%* (N=184)	0.4%* (N=175)	1.0% (N=80)	0.6%
	Overall	0.7%	0.6%	1.0%	

* Statistically different from mean (0.7%) at 90% confidence.

Relative Product Quality

The Strategic Planning Institute (SPI) defines relative product quality as the percentage of dollar sales perceived to be superior to competition minus the percent perceived to be inferior. Since many "commodity" products tend to be viewed as equivalent by most customers, these would tend to have a low value of relative product quality by this definition. As shown in Table 57, high PROS/market share leverage tends to exist among low quality introductory and growth businesses. The fact that high quality products have low leverage may simply reflect the fact that high quality products tend to have high profitability independent of level of market share (see Article 13, October 1980).

Table 57, Average Change in PROS/Change in Market Share vs. Market Share & Relative Product Quality

(Industrial Business with a Market Share Change of at least one Percent/yr. N=632)

		Relative Product Quality			Overall
		Less 12%	12% to 40%	More than 40%	
Life Cycle Position	Introductory & Growth	2.3%* (N=47)	1.3%* (N=57)	0.4%* (N=89)	1.1%*
	Mature & Decline	0.8% (N=168)	0.3%* (N=121)	0.5%* (N=150)	0.6%
	Overall	1.1%*	0.6%	0.5%*	

* Statistically different from mean (0.7%) at 90% confidence.

Relative Mill Cost

Relative mill cost is simply the mill cost of the reporting business relative to leading competitors. As shown in Table 58, businesses at a mill cost disadvantage (costs more than 5 percent above competition) tend to have above average PROS/market share leverage. Once again this is particularly true of introductory and growth businesses.

Table 58, Average Change in PROS/Change in Market Share vs. Relative Mill Costs & Life Cycle Position

(Industrial Business with a Market Share Change of at least one Percent/yr. N=632)

		Relative Mill Costs			Overall
		Less -2%	-2% to 5%	More than 5%	
Life Cycle Position	Introductory & Growth	0.6% (N=54)	1.0% (N=78)	1.7%* (N=61)	1.1%*
	Mature & Decline	0.4%* (N=96)	0.4%* (N=228)	1.0%* (N=115)	0.6%
	Overall	0.4%*	0.5%	1.3%*	

* Statistically different from mean (0.7%) at 90% confidence.

Turnover

Table 59 shows the relationship between PROS/market share leverage and turnover (sales revenue as a percent of total investment). Some large manufacturing firms tend to have low turnover businesses. Among low turnover introductory/growth businesses, PROS/market share leverage tends to be high.

Table 59, Average Change in PROS/Change in Market Share vs. Turnover & Life Cycle Position
(Industrial Business with a Market Share Change of at least one Percent/yr. N=632)

		Sales Revenue/Total Investment (Turnover)			Overall
		Less 110%	110% to 160%	More than 160%	
Life Cycle Position	Introductory & Growth	1.7%* (N=62)	1.1% (N=70)	0.6% (N=61)	1.1%*
	Mature & Decline	0.8% (N=145)	0.5% (N=170)	0.3%* (N=123)	0.6%
	Overall	1.0%*	0.7%	0.4%*	

* Statistically different from mean (0.7%) at 90% confidence.

Summary

- PROS/market share leverage tends to be among introductory and growth businesses which have:
 - High R&D/sales ratio.
 - Low Marketing/Sales ratio.
 - Low relative "product quality."
 - High relative mill cost.
 - Low turnover.
- PROS/Market Share leverage tends to be lower among mature and decline businesses. It is particularly low among mature and decline businesses which have:
 - Low R&D/Sales ratio.
 - Average or below average Marketing/Sales ratio.
 - Average or above average relative "product quality."
 - Average or low relative mill cost.
 - High turnover.
- Estimating how profitability is likely to change as market share changes is essential to determining the proper growth mission of a business. Examining similar ("look-alike") businesses in the SPI data base can be helpful in such an evaluation.
- A natural tendency is to avoid funding weak businesses for growth. Since low turnover, high cost, low quality, low share, low profit businesses tend to have high PROS/Market Share leverage (especially early in their life cycle), any such decision should be carefully considered.

True/False Answers

Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when:

1. **True** R&D expenses are a large percent of sales relative to other businesses. (See Table 55).
2. **False** Product quality is high relative to competition. (See Table 57).
3. **False** Mill (manufacturing and distribution) cost is low. (See Table 58).
4. **False** Turnover (sales/investment) is high relative to other businesses. (See Table 59).

No. 33, May 1983

33 PROFIT IMPACT OF COMPETITIVE ADVANTAGE FACTORS

The last two articles discussed the profit impact of market share changes and conditions under which market share change tends to have more leverage on PROS (pretax return on sales). This article discusses change in this and other elements of competitive advantage and the impact on profitability.

The key Strategic Planning Institute (SPI) competitive advantage factors are absolute and relative market share, relative product quality and relative margin. SPI defines relative product quality as the percent of your product offering perceived to be superior to competition minus the percent perceived to be inferior after splitting dollar sales into superior, equivalent and inferior. Relative margin is the percentage point difference between price relative to competition and mill cost relative to competition. Competition is generally considered to be the three leading competitors.

The first three articles showed the strong relationship between profitability and competitive advantage using "cross-sectional" analysis - examining levels across businesses. This analysis is "longitudinal"; it looks at changes within businesses.

The average SPI industrial business tends to be in an above average competitive position and in a favorable economic environment. More of these businesses show increases in profitability, market share, relative margin, relative product quality, capacity utilization, etc. than show decreases. The values shown below have been adjusted for these above average conditions to reflect average business conditions.

Individual Competitive Advantage Changes

As shown in Table 60 below, PROS change has a strong positive association with change in market share, relative margin and relative product quality. These results are not surprising, of course, and the table simply quantifies effects that have been previously discussed and provides confirmation for the results of the first three articles.

Table 60, Change in PROS vs. Individual Changes in Competitive Advantage Factors
(Industrial Businesses N=1315)

Competitive Advantage Factor	Change	Annual Change in PROS	Number of Businesses
Market Share:	Increase	1.6%	377
	Small Change	-0.1%	683
	Decrease	-1.2%	255
Relative Margin:	Increase	0.9%	473
	Small Change	0.1%	468
	Decrease	-0.6%	374
Relative Product Quality:	Increase	1.1%	460
	Small Change	0.1%	500
	Decrease	-0.8%	355

* Adjusted to reflect average business conditions

NOTES: Market Share Increases - Gain of at least one percentage point per year.
 Small Market Share - Less than one percentage point increase or decrease.
 Market Share Decrease – Loss of at least one percentage point per year.

There is, of course, natural association between the three elements of competitive advantage. Increases in product quality often result in higher price premiums but frequently require higher costs. Increased quality is also often associated with increased market share. Increased market share can sometimes reduce relative cost but may require a reduction in relative price to accomplish. Each individual business must examine its situation to assess these relationships.

Combined Competitive Advantage Changes

Table 61 shows change in PROS for the various combinations of changes in these three elements of competitive advantage. Since there are 27 "cells," sample sizes are sometimes small and the values are not precise. However, the table does provide a rough quantification of the likely PROS impact of combination of changes in the competitive advantage factors.

Table 61, Change in PROS* vs. Combined Changes in Competitive Advantage Factors
(Industrial Businesses N=1315)

		Market Share Increases (N=377)			Small Market Share Change (N=683)			Market Share Decreases (N=255)		
Change in Relative Product Quality	Increase	0.5%	2.0%	4.1%	0.2%	1.1%	0.2%	-0.3%	**	0.6%
	No Change	0.3%	1.7%	1.3%	-0.2%	-0.3%	0.6%	-2.5%	-1.9%	-1.0%
	Decrease	-0.9%	0%	2.3%	-1.7%	-0.5%	-0.8%	-1.8%	-1.8%	-1.0%
		Decr.	No Chg.	Incr.	Decr.	No Chg	Incr.	Decr.	No Chg	Incr.
Change in Relative Margin										

* Adjusted to reflect business conditions

** Insufficient sample for meaningful average

The matrix on the right shows the 255 businesses with an annual market share decrease of at least one percentage point per year. These values imply that only businesses showing an increase in both relative product quality and relative margin can be expected, on average, to show an increase in PROS. This points up the difficulty of maintaining profit margin when share is eroding.

The middle matrix shows the results for businesses where share changes are less than 1 percent per year, the most common situation. Note that if product quality is decreasing, profitability will normally erode when market shares are stable when quality is increasing, profitability will normally increase.

The matrix on the left shows the average situation when market share is increasing at least one percentage point per year. Share-increasing businesses which also increase their relative product quality and their relative margin enjoy, on average, about a four percentage point per year increase in PROS. Seventy-six of the 1,315 industrial businesses (6%) managed to simultaneously increase all three elements of competitive advantage. An average loss occurred with market share increasing only when decreases occurred in both relative quality and relative margin.

Summary

This article again emphasizes the importance of competitive advantage and quantifies the average impact among industrial businesses opposite changes in three key elements of competitive advantage-market share, relative margin and relative product quality. Market share changes tend to have the greatest impact but changes in relative margin and relative product quality are also extremely important. When market shares are stable-the most common situation-profit margin changes often depend on changes in relative product quality.

No. 34, June 1983

34 CHANGES IN VOLUME, SELLING PRICE AND PROFIT MARGIN

Last month's article related change in pretax return on sales (PROS) to changes in three elements of competitive advantage-market share, relative margin and relative product quality. This month's article will examine two related factors which have a direct effect on change in PROS - change in sales volume and change in selling price.

It would seem easy to predict from the PROS equation how changes in either sales volume or selling price affect profitability:

$$\text{PROS} = \{\text{Volume} \cdot (\text{Price} - \text{Variable Cost}) - \text{Fixed Cost}\} / \{\text{Volume} \cdot \text{Price}\}$$

This is true if there is no interaction between volume, price and costs or if such interactions can be estimated and the factors all predicted. An investigation of these interactions was begun in Article #17 where a strong positive correlation was shown between selling price growth and mill cost growth and a negative correlation between both price and cost growth and sales volume growth. This article extends those findings.

True or False

1. Among Strategic Planning Institute (SPI) industrial businesses, PROS increases as sales volume increases at all levels of sales volume growth.
2. Among these businesses, PROS increases as selling price increases at all levels of selling price growth.

Change in Sales Volume

As expected, change in sales volume has a large impact on profitability. As shown in Figure 56Figure 60, the strong positive relationship between percentage point change in PROS and percentage change in sales volume occurs at all levels of sales volume change. As the figure shows, the average SPI industrial business requires an annual volume increase of about 4% to maintain its level of profitability. Obviously many other factors will affect this profit-maintaining level of volume growth.

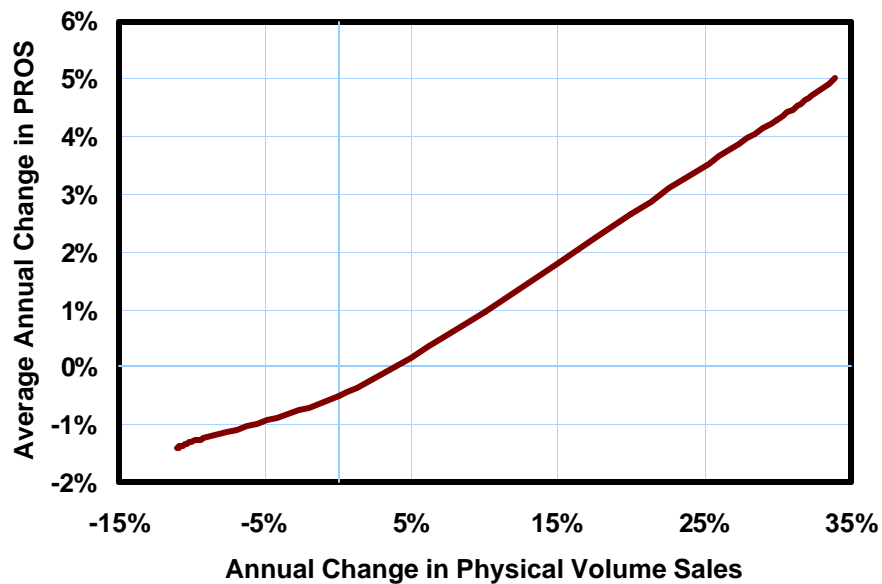


Figure 60, Change in PROS vs. Change in Sales Volume
(Industrial Businesses. N=1315)

Change in Selling Price

As shown in Figure 61, the relationship between change in PROS and change in selling price is not nearly so strong. In fact, little impact on PROS is seen for selling price growth rates less than about 10%. While this is perhaps surprising, it is most likely due to the strong negative correlation between selling price growth and sales volume growth.

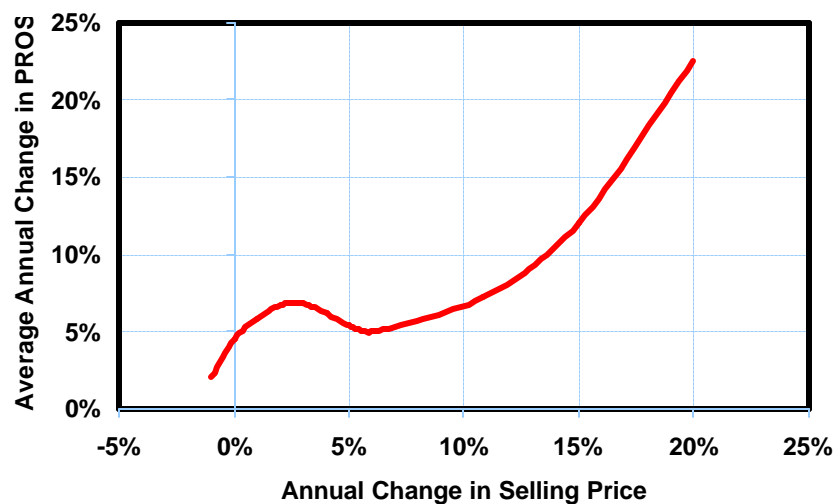


Figure 61, Change in PROS vs. Change in Selling Price
(Industrial Businesses. N=1315)

There are two possible reasons for this. First, when sales volume is increasing rapidly, a business does not need as much price increase to reach or maintain acceptable levels of profitability. Academic studies have shown that most businessmen tend to behave as profit "satisficers" rather than as profit "maximizers." Secondly, the normal negative relationship that exists between volume and price means that volume can be expected to be higher when prices are not increased as much. Market pressures help assure that businesses, in most instances, do not get dramatically higher levels of price and volume at the same time.

Price/Volume Interaction

Table 62, shows the combined impact of sales volume growth and selling price growth on change in pretax return on sales. The "break-points" shown in the figure split the sample of businesses with approximately one-third in each of the high, medium and low categories.

Table 62, Change in PROS vs. Change in Sales Volume & Beginning Level of PROS
(Industrial Businesses. N=1315)

Annual Change in Physical Volume Sales	10.9%	High	2.4% (N=205)	2.5% (N=127)	4.8% (N=107)
		Medium	-0.7% (N=145)	0.2% (N=162)	1.2% (N=135)
	0.3%	Low	-2.1% (N=85)	-0.9% (N=154)	-0.4% (N=195)
			Low	Medium	High
			5.2%	9.6%	
			Annual Change in Selling Price		

Note that 107 (8%) of the businesses did manage to increase sales volume more than 10.9% and selling prices more than 9.6% at the same time. On average these businesses realized an annual percentage point increase in pretax return on sales of nearly 5%. The fact that there are more than twice as many businesses in the high-low and low-high cells of Table 62 than in the low-low and high-high cells again points out the negative correlation between volume and price. The figure shows not only the high leverage of sales growth, but also the importance of increasing selling price at all levels of volume growth.

Beginning Level of Profitability

The relationship between price increase and profit level can be examined by looking at selling

price change opposite the level of PROS at the beginning of the time period being studied. Table 63 shows this relationship at the three different levels of change in sales volume. The tendency of low-profit businesses to increase selling price more than high-profit businesses is evidently dependent on the volume growth situation. When volume is growing strongly, low-profit businesses do manage to increase prices more than high-profit businesses. When volume is not growing, they are apparently unable to do this.

Table 63, Change in Selling Price vs. Change in Sales Volume & Beginning Level of PROS
(Industrial Businesses. N=1315)

Annual Change in Physical Volume Sales	10.9%	High	7.1% (N=168)	5.8% (N=132)	5.0% (N=139)
		Medium	8.1% (N=128)	7.3% (N=166)	7.7% (N=148)
	0.3%	Low	10.3% (N=139)	10.7% (N=145)	10.3% (N=150)
			Low	Medium	High
			5.3%	13.6%	

Beginning Level of PROS

Summary

- As expected, change in sales volume has a substantial positive impact on change in profitability. Accurate short-term profit forecasts depend upon accurate short-term forecasts of volume.
- The impact of selling price growth is, perhaps surprisingly, much less. A strong negative correlation exists between selling price growth and sales volume growth. When sales volume is growing strongly, businesses do not need as much price increase to reach or maintain acceptable levels of profitability. Moreover, higher volume is likely to accrue simply because prices have not increased as much.
- To raise their profitability to acceptable levels, low-profit businesses can normally increase their selling prices more than high profit businesses only if sales volume is growing at an above-average rate.

True-False Answers

1. **True**. Among Strategic Planning Institute (SPI) industrial businesses, PROS increases as sales volume increases at all levels of sales volume growth. (See Figure 60).
2. **False**. Among these businesses, PROS increases as selling price increases at all levels of selling price growth. (See Figure 61).

No. 35, July 1983

35 INFLATION AND RECESSION IN THE 1970S

The Strategic Planning Institute (SPI) database has been in existence for twelve years. The main research database consists of four years of data on each business. The time period the business data represents is coded so it is possible to examine differences among businesses based on the time period of business submission. This article examines how several key factors varied during the 1970s.

True or False

Among SPI industrial businesses, pretax return on investment (PROI) is higher on average late in the 1970s than early in the 1970s.

Inflation and Recession

Article # 6 discussed the profit margin pressures which occurred among industrial businesses during the 1970s. As shown in Figure 62, cost inflation exceeded price inflation during each of the eight four-year periods for which a significant amount of industrial business data exists in the SPI database. The figures represent the average for businesses which submitted data in that particular time period; each of the eight time slots represents different businesses. While inflation was high all through the 1970s, it peaked prior to and during the 1975 recession.

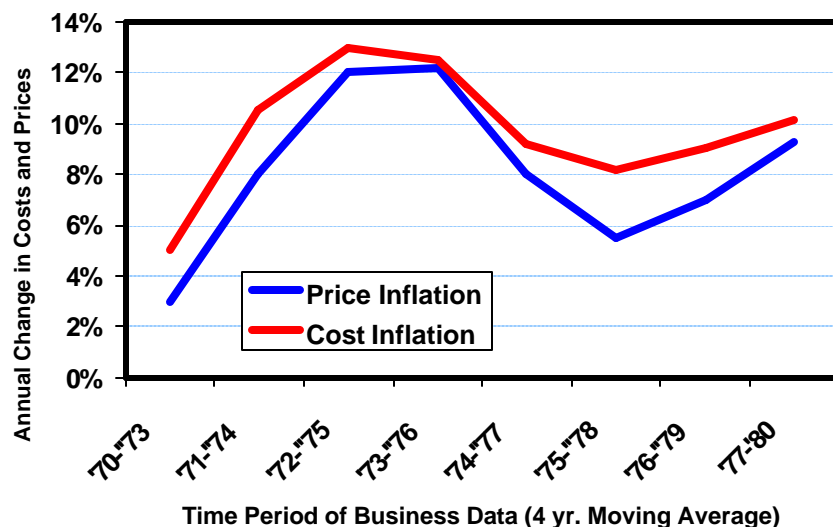


Figure 62, Change in Prices and Costs vs. Time Period
(Industrial Businesses. N=1315)

Figure 63 shows change in sales volume by time period of business data. The 1975 recession is evident in this chart. However, the average business managed to maintain its level of physical volume sales even during the poorest of the eight time periods, 1973-1976.

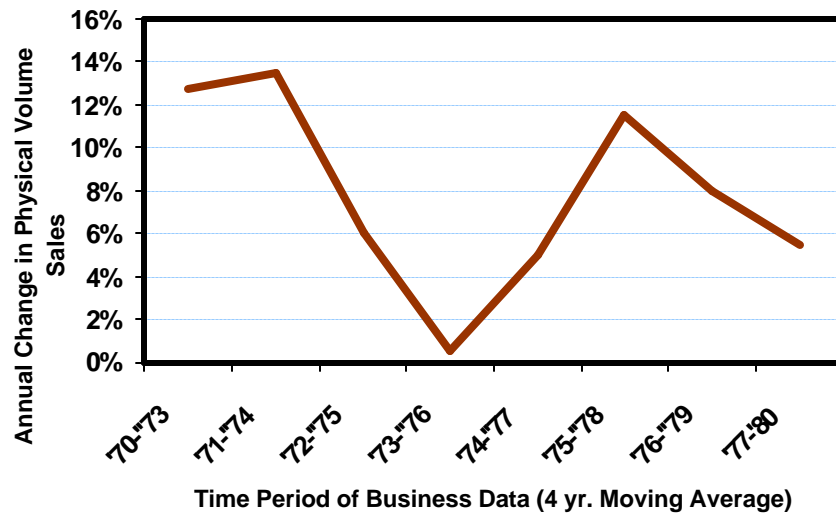


Figure 63, Change in Sales Volume vs. Time Period
(Industrial Businesses. N=1315)

Sales, Costs and Investment

As Figure 64 shows, the average value of turnover (sales/investment) increased V among SPI industrial businesses across these eight time periods. This means, of course, that sales increased at a faster rate than investment increased. Inflation tends to have an immediate impact on sales, costs, and prices. While it may have an immediate effect on some elements of working capital, its effect on permanent investment is not immediate because permanent investment occurs sporadically and is measured at its original cost. In a highly inflationary period, turnover will tend to increase because the investment typically includes plant and equipment purchased much earlier at lower cost while prices and sales tend to keep up with inflation. LIFO inventory accounting also contributes to this increase.

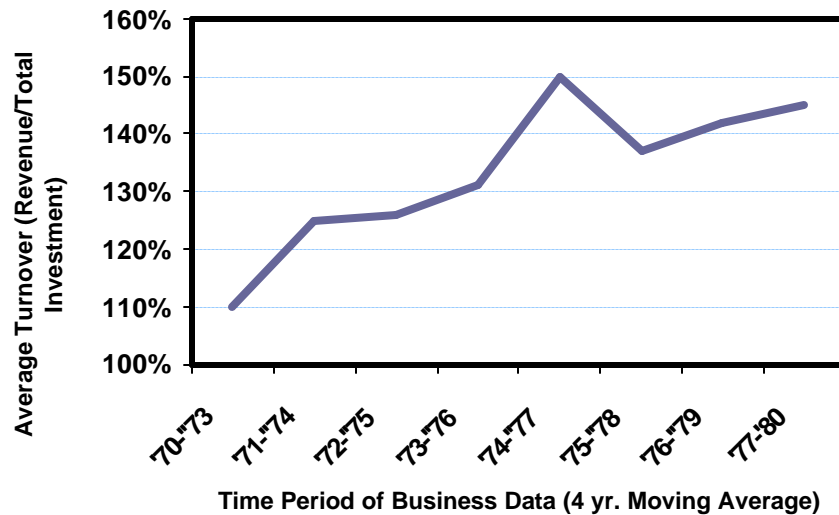


Figure 64, Turnover (Sales/Investment) vs. Time Period
(Industrial Businesses. N=1315)

For the same reason, plant investment as a percent of cost of sales typically decreases in an inflationary period. As shown in Figure 65, plant investment as a percent of cost of sales in the latest time period is little more than half the value of the first time period.

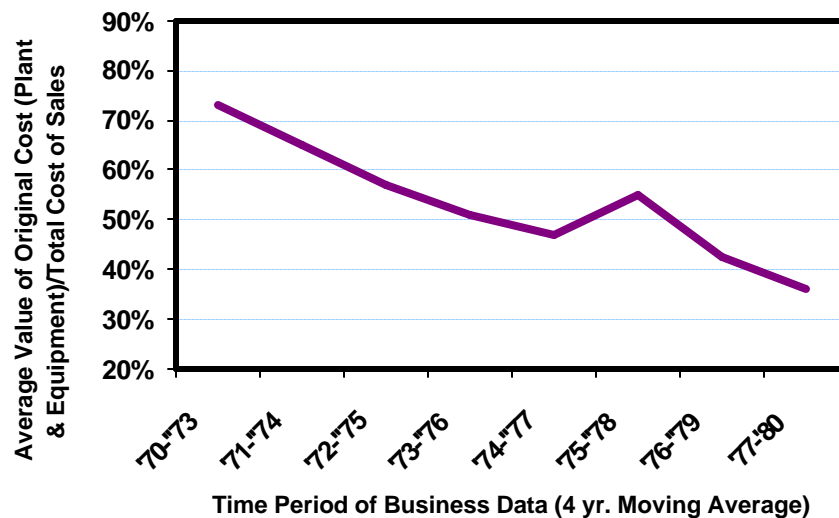


Figure 65, Plant Investment as a Percent of Cost of Sales vs. Time Period
(Industrial Businesses N=1315)

Profitability

As Figure 66 shows, pretax return on sales (PROS) remained reasonably constant across the SPI businesses during the 1970s. This may seem surprising in view of the fact that cost inflation

exceeded price inflation during this period. However, cost inflation includes inflation in labor and material only. Depreciation expenses J decreased over this time period as a percent of cost of sales in a manner very similar to the plant investment decrease shown in Figure 4. On average, decreasing depreciation costs as a percent of total costs offset the small spread between labor and material cost inflation and price inflation.

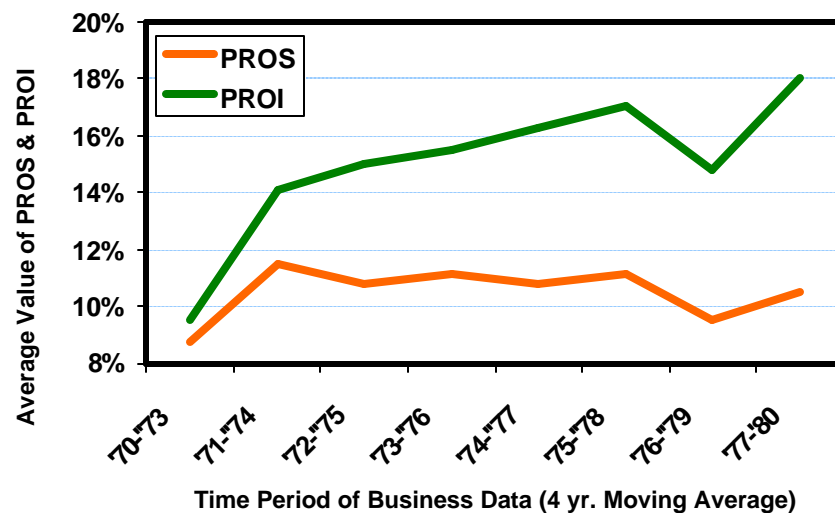


Figure 66, Profitability vs. Time Period
(Industrial Businesses. N=1315)

The increase in turnover combined with a stable level of pretax return on sales resulted in an increasing pretax return on investment as shown in Figure 66. As many articles have pointed out, this effect is more illusory than real because of reasons previously cited. A recent article, "Will Corporate Performance Decline In An Improving Economy?" by Michael Hergert, *Journal of Business Strategy*, Spring, 1983, provides further evidence and discussion of this effect.

Summary

The effect of the mid-70s recession and the preceding and concurrent high rate of inflation is evident from the industrial businesses in the SPI database. The high inflation rate during the 1970s resulted in increasing turnover and decreasing ratio of investment to cost. Since profit margins remained reasonably constant among the SPI industrial businesses across this time frame, pretax return on investment was substantially higher in later periods.

This effect is more illusory than real since inflation tends to have an immediate impact on sales, costs and prices but a lagged effect on capital investment measured at its original cost. This is, of course, the key reason for arguments that capital investment should be measured at replacement value rather than at original cost.

True-False Answer

True. Among SPI industrial businesses, pretax return on investment (PROI) is higher on average late in the 1970s than early in the 1970s. See Figure 66.

No. 36, August 1983

36 RELATIVE DIRECT COST

It is not surprising that one of the strongest profit correlates in the Strategic Planning Institute (SPI) database is the cost position of a business relative to competition. This is a key component of competitive advantage and has been discussed in several previous articles. This article begins a more in-depth analysis of the impact of relative direct cost.

SPI defines relative direct cost as "unit raw material, manufacturing, depreciation and distribution costs relative to the three largest competitors." For example, -3 indicates that a business has a 3 percent cost advantage relative to its largest competitors.

True or False

A direct cost advantage is more likely to be associated with a higher level of pretax return on sales (PROS) for businesses:

1. With markets growing less than 2 percent per year.
2. Making standard (off-the-shelf) products rather than custom- designed products.
3. Having few competitors rather than many competitors.

Direct Costs

Figure 67 shows the relationship between PROS and relative direct cost for SPI industrial businesses. This figure indicates that profitability is more sensitive to relative direct cost when costs are nearly equal to competitive costs-within 5 percent or so. This suggests that cost reduction in manufacturing and distribution has more profit leverage in business situations where little cost advantage exists for any competitor. This situation is. more likely to occur later in the product life cycle but could occur early In the life cycle as well.

As discussed in previous articles, competitive advantage is difficult to hold and most SPI businesses show "regression toward the mean." Businesses with a direct cost advantage tend to lose that advantage and businesses in a poor cost position tend to improve. Thus, while cost leverage seems to be higher when costs are nearly equal, in many cases it may be difficult to significantly reduce relative costs in a maturing industry.

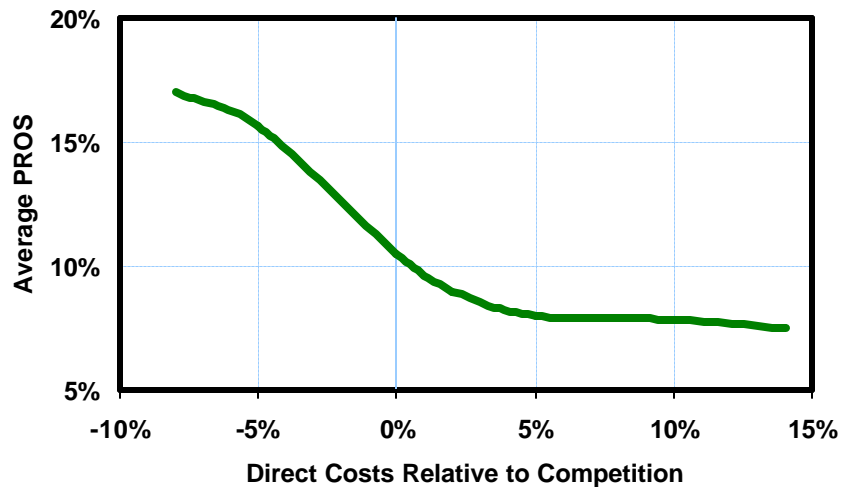


Figure 67, PROS vs. Relative Direct Cost
(Industrial Businesses N=1315)

Real Market Growth

The advantage of relative direct cost may therefore vary depending on life cycle position or market growth rate. Figure 68 shows the relationship between PROS and relative direct cost for three different levels of real market growth. Real market growth is the annual physical volume growth of this and similar products in markets served by the business.

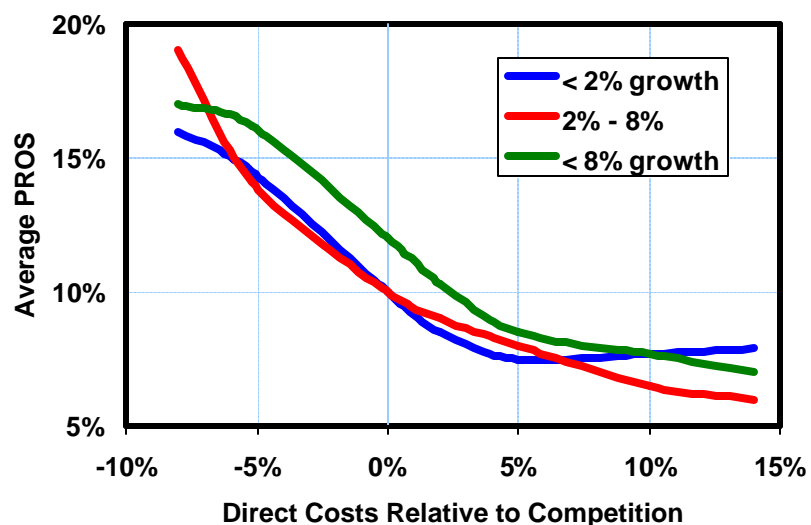


Figure 68, PROS vs. Relative Direct Cost and Real Market Growth
(Industrial Businesses N=1315)

As can be seen in Figure 68, very little difference exists among these three curves except for

businesses having a strong cost advantage. Apparently moderate growth businesses tend to benefit more by a cost advantage than either low growth or high growth businesses. Thus, cost advantage may be more important to businesses which are in transition from growth to maturity than to businesses which are clearly high growth or very mature or decline businesses. This finding is very important and needs further study.

Degree of Product Standardization

It also might be expected that relative direct cost leverage might vary depending on the type of product produced and sold. The SPI database distinguishes between standard products, those primarily produced according to fixed specifications and sold "off the shelf" versus custom tailored products, those for which individual customers specify their own product design. As shown in Figure 3, considerably more profit leverage exists with businesses selling standard products than custom tailored products. This is not surprising since more in-kind competition will tend to exist with businesses producing standard products. Having a cost advantage is therefore more important for the latter type of business.

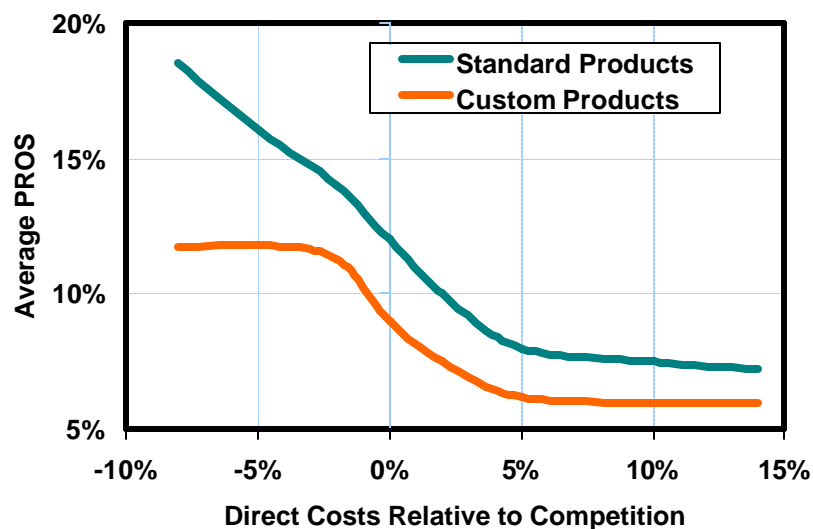


Figure 69, PROS vs. Relative Direct Cost and Degree of Product Standardization
(Industrial Businesses N=1315)

Number of Competitors

Industry structure is another factor which could affect profit leverage. Figure 70 shows the relationship between PROS and relative direct cost depending on the number of competitive businesses. As the figure shows, relative cost advantage is much more important for businesses with ten or fewer competitors than for businesses with many competitors. When many competitors exist, businesses are more likely to adopt "niche" strategies and differentiate themselves on the basis of their unique product offering or special markets served. Competition is more likely to be head- to-head in oligopolies-industries with few competitors.

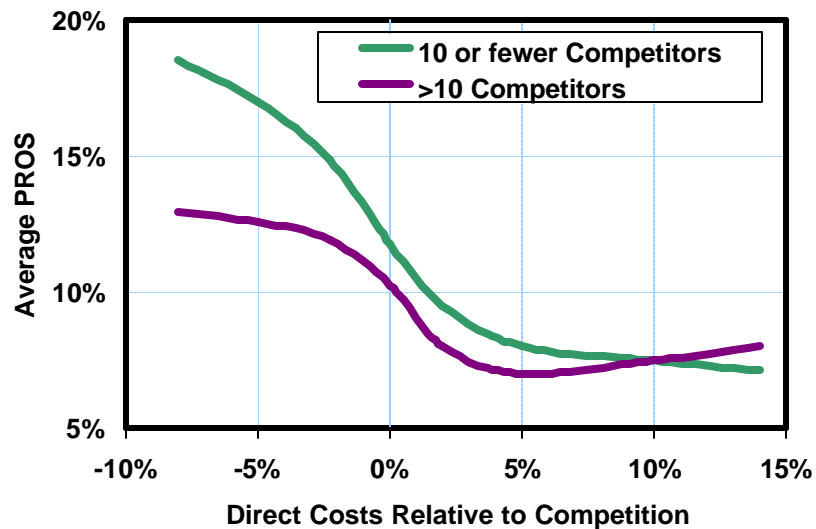


Figure 70, PROS vs. Relative Direct Cost and Number of Competitors
(Industrial Businesses N=1315)

Summary

Relative direct cost, manufacturing and distribution cost relative to leading competitors, is one of the strongest profit correlates among industrial businesses in the SPI database. Profit leverage tends to be strongest in competitive situations where direct costs are nearly equal among competitors. A relative direct cost advantage appears to be most important to businesses:

- In moderate growth markets
- Selling standard products
- With ten or fewer competitors.

Many large industrial businesses have these characteristics; thus a strong cost reduction orientation in manufacturing and distribution is important to corporate profitability.

True-False Answers

A direct cost advantage is more likely to be associated with a higher level of pretax return on sales (PROS) for businesses:

1. **False**. With markets growing less than 2 percent per year. See Figure 68
2. **True**. Making standard (off-the-shelf) products rather than custom- designed products. See Figure 69
3. **True**. Having few competitors rather than many competitors. See Figure 70.

No. 37, September 1983

37 MANAGING HIGH RELATIVE DIRECT COST BUSINESSES

The last article began a discussion of relative direct cost and showed that a relative direct cost advantage tends to be more important to businesses in moderate growth markets, those selling standard products, and those with ten or fewer competitors. Relative direct cost is defined as "unit raw material, manufacturing, depreciation and distribution costs relative to the three largest competitors."

The focus this month is on high relative direct cost industrial businesses. Of the 1,315 industrial businesses in the Strategic Planning Institute (SPI) database, 391 (30%) have a direct cost position at least 5 percent higher than the average of their three largest competitors. These businesses have an average cost disadvantage of 11 percentage points and an average pretax return on sales (PROS) of 7.5 percent, almost five percentage points below the average of the other 924 industrial businesses. Thus it is important to understand which business characteristics are likely to help such businesses achieve a normal level of profitability.

Among high direct cost industrial businesses, key differences in PROS are related to market position, operating efficiency, patent protection, product policy and product value. These will be examined in turn.

True or False

High direct cost industrial businesses are more likely to achieve higher profit margins (PROS) if they:

1. Were the first supplier to enter the market.
2. Have product patent protection.
3. Have a narrower product line than competitors.

Market Position

Profitability in the SPI high-cost industrial businesses is related to both market share rank and market entry position. Table 64 shows the average PROS and sample size for combinations of these two factors. While the relationship between PROS and market share rank is not surprising, the relationship with market entry position is much stronger than observed for other types of businesses. High cost businesses tend to do considerably better when they were the first supplier to enter a market. Apparently securing and sustaining a strong market presence by being the pioneer is very important to such businesses.

Table 64, Average PROS vs. Market Entry and Market Share Rank for High Relative Cost Industrial Businesses
(N=391)

Market Entry	First In	12.4% (N=78)	9.9% (N=58)	8.2% (N=63)
	Not First in	7.6% (N=45)	6.2% (N=47)	2.5% (N=100)
		First	Second	Third
Market Share Rank				

Operating Efficiency

A key requirement for high cost businesses is operating them efficiently. Table 65 shows average PROS for three different levels of capacity utilization and sales per employee. While the relationship between profitability and capacity utilization has been observed in many other types of businesses, the relationship with sales per employee is generally not nearly this strong. High cost businesses can frequently achieve acceptable levels of profitability by maintaining high levels of operating efficiency.

Table 65, Average PROS vs. Capacity Utilization and Sales/Employee for High Relative Cost Industrial Businesses
(N=391)

Capacity Utilization	83%	High	6.2% (N=35)	10.2% (N=44)	12.0% (N=51)
		Medium	6.3% (N=51)	7.3% (N=46)	9.1% (N=27)
	68%	Low	4.0% (N=66)	6.2% (N=38)	7.8% (N=33)
			Low	Medium	High
			40%	65%	
	Sales per Employee (\$M, mid-70's)				

Patent Protection

As shown in Table 66 below, product patent protection appears to be more important than process patent protection for high cost industrial businesses. This is perhaps obvious in the sense that businesses which cannot achieve competitive advantage through cost can sometimes achieve it through products " and marketing. As defined by SPI, patents include trade secrets and other proprietary technology.

Table 66, Average PROS vs. Patent Position for High Relative Cost Industrial Businesses (N=391)

Process Patents	Yes	6.7% (N=33)	12.1% (N=55)
	No	6.2% (N=263)	10.8% (N=40)
		No	Yes
		Product Patents	

Product Policy

Two other factors which relate strongly to PROS for high cost industrial businesses are product line breadth relative to competitors and the degree to which the product line consists of relatively new products. SPI considers new products as those introduced during the three preceding years.

As Table 67 shows, a product line broader than that of the competition tends to be more profitable; however, profitability tends to be insensitive to product line breadth when new products account for some but less than 9 percent of the total in the line. Thus it appears advisable for a high cost business to develop a broad line of products early in its life cycle and cut back abruptly on its product development work if this can be done without jeopardizing its product line breadth. Obviously the competitive situation and product patent position may dictate the extent to which this is achievable.

Table 67, Average PROS vs. Product Line Breadth and New Product Position for High Relative Cost Industrial Businesses
(N=391)

Breadth of Product line Relative to Competition	Broader	13.0% (N=32)	9.8% (N=49)	9.1% (N=48)
	Same	7.4% (N=53)	8.8% (N=35)	6.8% (N=31)
	Narrower	5.0% (N=50)	9.1% (N=39)	1.8% (N=54)
		Low	Medium	High
		0.1%	9%	

Percent of New Products in Product Line

Product Value

As one would expect, achieving and sustaining high product quality important single advantage a high cost industrial business can have. Table 68 shows average PROS for combinations of relative product quality and price relative to competition. It is interesting that above average levels of profitability can be achieved when product quality is high either by pricing the product on par with competition and providing value to the customer, or by being in a market which grants a high premium to the product. As might be expected, low quality, high cost businesses are rarely profitable.

Table 68, Average PROS vs. Relative Quality and Price for High Relative Cost Industrial Businesses
(N=391)

Quality Relative to Competition (% superior - % inferior)	35%	High	14.5% (N=16)	8.1% (N=39)	12.4% (N=95)
		Medium	5.9% (N=42)	7.4% (N=59)	7.8% (N=25)
	5%	Low	2.1% (N=68)	4.4% (N=29)	3.4% (N=18)
			Low	Medium	High
			2%	8%	
Price Relative to Competition					

Summary

Thirty percent of the industrial businesses in the SPI database report costs at least 5 percent higher than their competitors. On average, these businesses have a cost disadvantage of 11 percent and achieve profit margins nearly five percentage points below the other database industrial businesses. However, these high cost businesses are able to achieve near or above average levels of profitability when they:

- Were first to enter the market and maintain market share leadership.
- Achieved a high level of capacity utilization and sales per employee.
- Have product patent protection.
- Can maintain a broad product line relative to competitors without introducing new products.
- Have a high quality product offering which is sold at either very competitive prices or a high price premium.

High cost industrial businesses are unlikely to be profitable when they:

- Have no quality advantage.
- Enter the market as a follower and do not become the first or second largest supplier.
- Have both low capacity utilization and low sales per employee.
- Have a narrow product line with a large amount of new products.

True -False Answers

High direct cost industrial businesses are more likely to achieve higher profit margins (PROS) if they:

1. **True**. Were the first supplier to enter the market. See Table 64.
2. **True**. Have product patent protection. See Table 66.
3. **False**. Have a narrower product line than competitors. See Table 67.

No. 38, October 1983

38 MANAGING LOW RELATIVE DIRECT COST BUSINESSES

The last article discussed high cost businesses and conditions under which they tend to be more or less profitable. The focus this month is on low relative direct cost industrial businesses. The Strategic Planning Institute (SPI) defines relative direct cost as' "unit raw material, manufacturing, depreciation and distribution costs relative to the three largest competitors."

Of the 1,315 industrial businesses in the SPI database, 176 (13%) have a direct cost position at least 5% lower than the average of their three largest competitors. These businesses have an average cost advantage of 9.3 percentage points and an average pretax return on sales (PROS) of 17.4%, more than 7 percentage points above the average of the other 1,139 industrial businesses. While the large majority of these businesses earn above average returns, it is still important to understand factors which tend to leverage profitability.

True or false?

1. Low cost industrial businesses serving moderate growth markets tend to achieve high levels of PROS whether they are the first ranked market share business or not.
2. Low cost industrial businesses typically earn higher levels of PROS if they are not unionized.
3. PROS is not very sensitive to relative product quality among low cost industrial businesses providing products which are more or less standard.

Market and Life Cycle Position

Among low direct cost industrial businesses key differences in PROS are related to market and life cycle position, operating efficiency, patent protection and product position.

As shown in Table 69, low cost industrial businesses which rank first in market share tend to be highly profitable regardless of the growth rate of the markets they serve. Less consistent results are seen for such businesses which are ranked second or lower in market share. Low cost businesses serving moderate growth markets tend to achieve high levels of profitability, but those serving either low or high growth markets tend to achieve significantly lower (more average) levels of PROS.

Table 69, Average PROS vs. Market Share Rank and Market Growth Rate for Low Relatively Cost Industrial Businesses
(N=176)

Market Share Rank	First	20% (N=34)	18% (N=38)	19% (N=47)
	Not First	13% (N=21)	19% (N=17)	10% (N=19)
		Low	Medium	High
		1%		9%
Market Growth Rate				

Table 70 shows results for low cost industrial businesses depending on their market entry position and number of competitors. As was shown in article No. 36, low cost industrial businesses tend to have higher levels of return when they have fewer competitors. When many competitors exist, low cost businesses tend to do considerably better when they were the first to have entered the market, largely because "pioneer" businesses tend to maintain a high level of market share.

Table 70, Average PROS vs. Market Entry & Number of Competitors for Low Relative Cost Industrial Businesses
(N=176)

Market Entry	First in	21% (N=38)	18% (N=34)	16% (N=31)
	Not First in	19% (N=29)	16% (N=26)	10% (N=18)
		1-5	6-10	11 - up
Number of Competitors				

Operating Efficiency

Two key operating characteristics which tend to be associated with different levels of profitability for low cost industrial businesses are degree of unionization and capacity utilization.

As shown in Table 71, low cost industrial businesses tend to produce higher levels of profitability when they are not unionized and are operating at high levels of capacity utilization.

Table 71, Average PROS vs. Degree of Unionization and Capacity Utilization for Low Relative Cost Industrial Businesses
(N=176)

Percent of Employees Unionized	Many or All	13% (N=38)	18% (N=47)
	None or Few	15% (N=41)	22% (N=59)
		Low	High
		80%	
		Capacity Utilization	

Patent Protection

Last month's article showed that having a product patent was much more important for a high cost business than having a process patent. As shown in Table 72 below, the reverse is true for low cost industrial businesses although not nearly to the same degree. As one might expect, the existence of a process patent tends to be associated with higher profit low cost industrial businesses. A product patent is of less importance when a manufacturing cost advantage exists.

Table 72, Average PROS vs. Patent Position for Low Relative Cost Industrial Businesses
(N= 176)

Process Patent	Yes	19% (N=37)	22% (N=28)
	No	16% (N=95)	17% (N=16)
		No	Yes
		Product Patent	

Product Position

Table 73 shows average profitability opposite product standardization and relative product quality. Unlike most businesses, relative product quality has little profit leverage in low cost industrial businesses producing products, which are more or less standard. However, product quality is much more important for low cost businesses producing custom designed products. The profit difference between standard and custom designed products was shown and discussed in the article No. 36.

Table 73, Average PROS vs. Product Standardization and Relative Product Quality for Low Relative Cost Industrial Businesses
(N=176)

Product Standardization	More or less Standardized	19% (N=65)	20% (N=65)
	Custom Design	10% (N=27)	15% (N=19)
		Low	High
		31%	
		Quality Relative to Competition (% superior - % Inferior)	

Summary

Thirteen percent of the industrial businesses in the SPI database report costs at least 5% lower than competitors. On average these businesses have a cost advantage of over 9 percentage points and achieve profit margins more than 7 percentage points above the other data. base industrial businesses. These low cost businesses are able to achieve even higher levels of profitability when they:

- Are ranked first in market share.
- Have few competitors.
- Were the first to have entered their market.
- Have little or no unionization.
- Have high levels of capacity utilization.
- Have patent (especially process patent) protection.

- Produce standardized products.

Low cost industrial businesses are likely to achieve only average levels of profitability when they:

- Are ranked second or lower in market share and are serving low or high growth markets.
- Have more than 10 competitors and were not the first to have entered their market.
- Are unionized and are operating at low levels of capacity utilization.
- Produce custom designed products with low to medium levels of quality relative to competition.

True-False Answers

1. **True**. Low cost industrial businesses serving moderate growth markets tend to achieve high levels of PROS whether they are the first ranked market share business or not. See Table 69.
2. **True**. Low cost industrial businesses typically earn higher levels of PROS if they are not unionized. See Table 71.
3. **True**. PROS is not very sensitive to relative product quality among low cost industrial businesses providing products which are more or less standard. See Table 73.

No. 39, November 1983

39 RELATING MARKETING EXPENSE TO PRODUCT R&D EXPENSE

Questions continually arise concerning the proper budgeting and allocation of marketing and R&D expense. Proper budgeting requires careful analysis of the particular situation and objectives of the business. However, the experience of analogous businesses can be useful in helping to think through appropriate spending levels. The Strategic Planning Institute (SPI) database can be useful as an aid in establishing expense norms.

As shown in Figure 71 below, a strong relationship exists between marketing expense and product R&D expense (see definitions at the end of the article). Businesses which spend heavily on product R&D expense relative to sales typically require higher levels of marketing expense to determine market needs, communicate their product offerings, and bring their products to market.

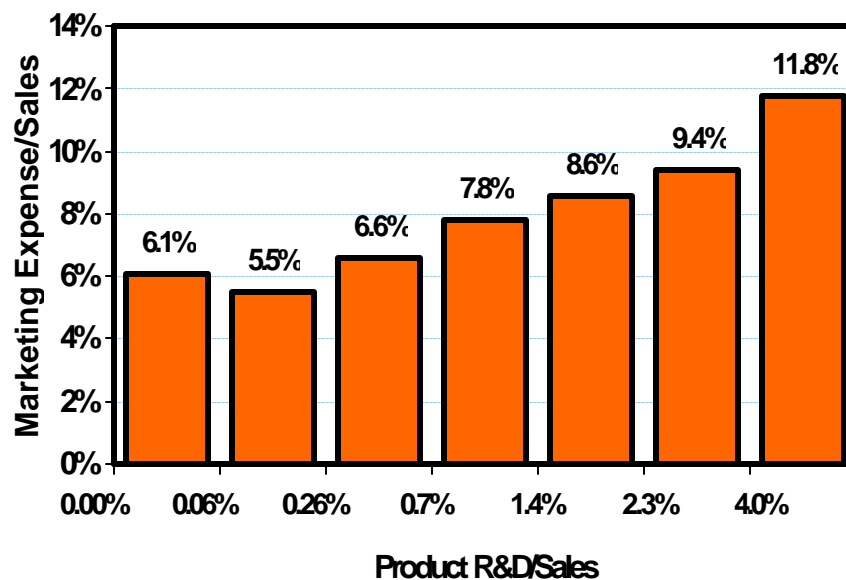


Figure 71, Relationship between Marketing Expense and Product R&D Expense
(Industrial Businesses N=1315)

Figure 71 suggests that examining the ratio of marketing expense to product R&D expense in the SPI database would be a useful test of the relationship between these two expense items for a business. This article examines the SPI industrial businesses which spend at least 0.5% of their sales on product R&D. The ratio was judged to be too erratic for analysis of spending levels less than this amount. Sixty-four percent (838/1315) of the industrial businesses spend at least 0.5% percent of their sales dollar on product R&D.

Even after removing low product R&D spending businesses, a large amount of variation still exists in the ratio. In order to be useful for comparative purposes, it is generally better to omit

unusual values and make comparisons on more "normal" values. Ten percent of the businesses had Marketing/Product R&D ratios below 1.1% and 10% had ratios above 11.7%. These extreme businesses were discarded and the analysis below is based on the 670 (80%) businesses having ratios between 1.1% and 11.7%.

The average (mean) value of Marketing Expense/Product R&D Expense for these 670 industrial businesses is 4.3%; the standard deviation is 2.7%. The distribution of this ratio is "skewed" and the median is 3.4%.

Variation by Number of Customers

The key business characteristic which differentiates high and low Marketing/Product R&D Expense ratios is the number of customers. Table 74 shows average ratio values opposite the number of end users and number of immediate customers. SPI defines immediate customers as those from whom the business receives purchase orders. End users are individuals, households, and other businesses that consume the product or services or incorporate them into other products or services. If immediate customers change the form of the products or services or incorporate them into other products, they are also the end users.

Table 74, Average Marketing Expense/Product R&D Expense Ratio vs. Number of End Users and Immediate Customers
(N=670)

Number of End Users	More than 10,000	*	4.9% (N=55)	5.8% (N=77)
	1,000 to 10,000	*	4.5% (N=80)	4.7% (N=130)
	Less than 1,000	3.3% (N=123)	3.6% (N=170)	*
		Less than 100	100 to 1,000	More than 1,000
Number of Immediate Customers				

* Sample too small for meaningful average.

As shown in Table 74, more marketing expense is required per dollar of product R&D expense

when more end users and/or immediate customers exist. This relationship is to be expected, of course. However, Figure 2 provides at least an initial estimate of the relationship between' marketing expense and the product R&D expense based on the experience of other businesses with similar numbers of customers.

Other Correlating Factors

Three other business characteristics show statistically significant differences in the Marketing/Product R&D ratio. These are outlined in Table 75.

Table 75, Average Marketing Expense/Product R&D Expense Ratio vs. Various Business Characteristics
(N=670)

<u>Business Characteristic and Level</u>	<u>Average Marketing Expense/Product R&D</u>	<u>Sample Size</u>
Number of Competitors:		
Five or Fewer	3.7%	196
More than Five	4.5%	474
Common Customers:		
Up to 25%	4.5%	308
25% to 75%	4.4%	143
More than 75%	3.9%	219
Shared Marketing Program:		
Up to 10%	4.5%	320
10% and more	4.1%	350

As can be seen in this table, the average Marketing/Product R&D ratio tends to be lower in more concentrated industries. This is somewhat related to the number of customers since industries where sellers are concentrated tend to sell to more concentrated buyers.

Another significant difference is the extent to which sales of this business were to customers also served by other businesses in the same corporation. Lower Marketing Expense/Product R&D Expense occurs when a large majority of sales are to customers also served by other businesses in the corporation.

Similarly, marketing efficiencies can also occur when the ~ products and services of the business are handled by the same sales force and/or promoted through the same advertising and sales promotion programs as those of other businesses in the corporation. As can be seen in Table 1, marketing efficiencies exist when even a small percentage (at least 10%) of products and

services share common marketing programs with other businesses in the corporation.

Summary

The strong relationship which exists between marketing expense and product R&D expense suggests that examining the ratio between these two discretionary expense items might be useful in the analysis of budget levels. While a great deal of variation exists in this ratio from business to business based on the individual situation and objectives of that business, ratios which deviate significantly from the norms provided in Table 74 and Table 75 should perhaps be questioned.

No. 40, December 1983

40 RELATING MARKETING EXPENSE TO WORKING CAPITAL

The last article showed that among industrial businesses in the Strategic Planning Institute (SPI) database, a strong relationship exists between marketing expense and product R&D expense. The ratio between these two discretionary expense items was examined to provide a "norm" which could be used to help analyze budget levels for a particular business.

A similar strong relationship exists between marketing expense and working capital (see definitions at the end of the article). Businesses which tend to have high levels of inventories and accounts receivable tend to be selling more products in more markets and, therefore, tend to be more marketing intensive. This relationship is shown in Figure 72 below.

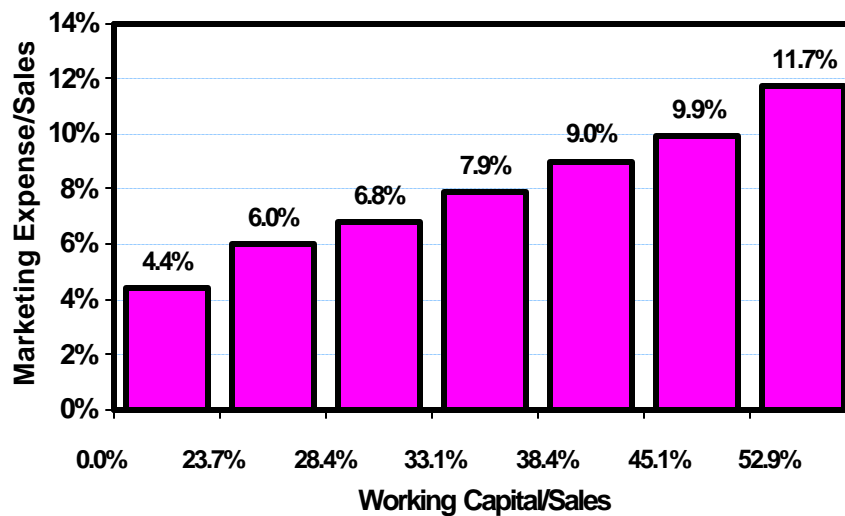


Figure 72, Relationship between Marketing Expense and Working Capital
(Industrial Businesses N=1315)

Figure 72 suggests a second ratio to test the marketing expense level.

Marketing Expense vs. Working Capital

The marketing expense/working capital ratio was examined and it was found that the median SPI industrial business had a ratio of .18 or 18%. Ten percent of the businesses had a ratio less than 6.1% and another 10% had a ratio greater than 40.2%.

After discarding these extreme businesses, the remaining 1052 (80%) of the industrial businesses showed an average (mean) marketing expense/working capital ratio of 19.4% with a standard deviation of 9.0%. The ratio was examined for different business characteristics and four were found significant as shown in Table 76.

Table 76, Average Marketing Expense/Working Capital vs. Various Business Characteristics
(N=1052)

<u>Business Characteristics and Levels</u>	<u>Average Marketing Expense/Working Capital</u>	<u>Sample Size</u>
Number of Immediate Customers:		
Less than 100	17%	259
100 to 1,000	19%	493
More than 1,000	22%	300
Life Cycle Stage:		
Growth	22%	269
Mature	19%	737
Decline	16%	40
Order of Market Entry:		
Pioneer	21%	577
Early Follower	19%	313
Late Entrant	17%	162
Type of Business:		
Capital Goods	20%	290
Raw, Semi-Finished Materials	15%	138
Components for Finished Products	18%	404
Supplies and Consumables	23%	220

As Table 76 shows, marketing expense as a percent of working capital tends to be higher for businesses which have a larger number of immediate customers. Also, the ratio tends to decrease over the product life cycle.

It is interesting that pioneer businesses tend to have a slightly ~) higher ratio than early followers, which have a higher ratio than late entrants. Perhaps later entrants tend to adopt a "niche" strategy and serve fewer markets, thus requiring less marketing expense. Another significant difference is type of business. Businesses producing raw and semi-finished materials tend to have a lower ratio; those producing supplies and consumables tend to have a higher ratio.

Marketing Expense vs. Working Capital & Product R&D

Both working capital and product R&D should be examined if there is interest in developing an appropriate marketing expense norm based on the SPI industrial businesses. Table 77 shows this relationship for three levels each of working capital/sales and product R&D/sales with the "break

points" splitting the businesses into roughly equal thirds in both directions. The strength of this joint relationship can be seen by noting that the high-high combination businesses typically spend three times their sales dollar on marketing expense as the low- low combination businesses. The fact that there are more businesses "on the diagonal" also shows the positive correlation between working capital and product R&D.

Table 77, Average Marketing Expense/Sales vs. Working Capital and Product R&D
(Industrial Businesses N=1315)

Working Capital Sales Revenue	42.9%	High	8.3% (N=108)	9.5% (N=121)	12.4% (N=203)
		Medium	6.6% (N=138)	7.5% (N=162)	10.1% (N=147)
		Low	4.1% (N=199)	5.9% (N=140)	7.0% (N=97)
			Low	Medium	High
			0.36%	2%	
			Product R&D/Sales		

Summary

The strong relationship between marketing expense and working capital suggests a second ratio that might be useful in analyzing marketing expense. Again it must be kept in mind that a great deal of variation exists business-to-business and the ratios only provide a means of flagging marketing expense budgets for further study.

No. 41, January 1984

41 SETTING MARKETING EXPENSE BUDGETS

In setting marketing expense budgets it may be better not to follow the practices of similar businesses. Many businesses do better when their level of marketing spending deviates from normal practice.

Developing A Marketing Expense Norm

Judging whether a budgeted level of expense is appropriate requires a comparative standard or norm. Such norms are often based on the practices of similar businesses.

Two different methods have been used to develop marketing expense norms for businesses from the Strategic Planning Institute (SPI) database. The method normally used when an individual business is analyzed is to select a sample of businesses from the database with business characteristics similar to the business being analyzed. The average of these businesses can be used for the norm. The relationship with profitability can be analyzed by looking at the differences in marketing spending between the high- and low-profit "look-alike" businesses.

A second approach is to look at the key factors which correlate with marketing expense and develop an equation based on these factors. Weights are established for each of these factors using statistical regression. Such an equation can then be applied to any relevant business. This permits generalization across businesses and was the procedure used for this analysis.

Some of these strong correlating factors were discussed in the last two articles. It was also found that marketing expense as a percent of sales tends to be higher when:

- Sales transactions with customers are relatively small in dollar terms (which usually requires more frequent customer contacts).
- Variable costs are small relative to fixed costs (which usually means higher incremental contribution margins and more incentive to increase demand).
- The market growth rate is high (again more incentive to increase demand).
- The business is new (more need to develop the market).
- There is less employee unionization (unionization often is a sign of a mature industry).
- Capacity utilization is low (sales usually decline more than marketing expense when business conditions are bad).

As usual, only the industrial businesses in the SPI database were included. Businesses in the introductory phase of their life cycle were excluded because of the difficulty in generalizing appropriate levels of marketing expense for these businesses. In addition, businesses which were operating at a loss were excluded. It was found that loss businesses tend to have a higher level of marketing expense, relatively. This is probably because it is difficult to reduce marketing expense as quickly as sales are lost when economic or business conditions are bad.

The equation developed to establish a marketing expense to sales norm included 13 factors and resulted in an equation which explained 52% of the variability. This equation provides a method to calculate "normal practice" for any business if information is available on the 13 correlating business characteristics.

Performance Consequences

While normal practice can be determined for any business based on the experience provided by the SPI database, the key question still remains: Is it beneficial to base marketing spending levels for your business or product/market segment on such a norm? In order to answer this question, the industrial businesses in the database (excluding introductory and loss businesses) were divided into five categories based on marketing spending relative to the norm.

Of the 1135 businesses examined, 285 businesses were spending within one percentage point of the norm and were considered "near normal." 174 were spending one to three percentage points above the norm and are labeled above." 202 "well above" businesses were spending at least three percentage points more than the norm. 262 were "below" (-1% to -3%) and 212 were "well below" (-3% and lower).

Figure 73, shows average pretax return on sales for the businesses in each of these five relative marketing spending categories. As the figure indicates, the 285 businesses within one percentage point of the norm have the lowest average PROS. Spending levels at least three percentage points below normal practice have the highest.

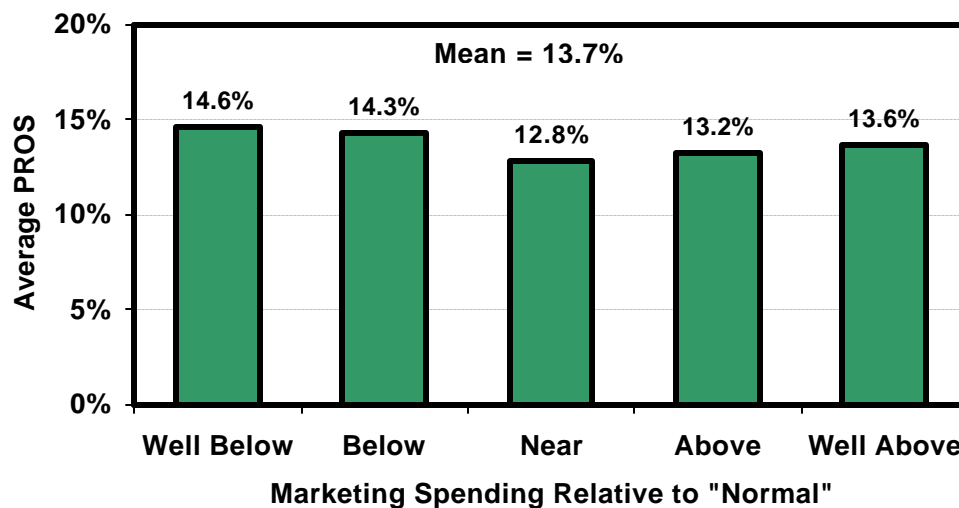


Figure 73, PROS vs. Relative Marketing Spending

Future as well as current profitability is important, of course. Figure 74 shows the average percentage point change in pretax return on sales for each of these five levels of relative marketing spending. On average businesses which spend either well below or well above the norm are better on this measure than those which spend near the norm.

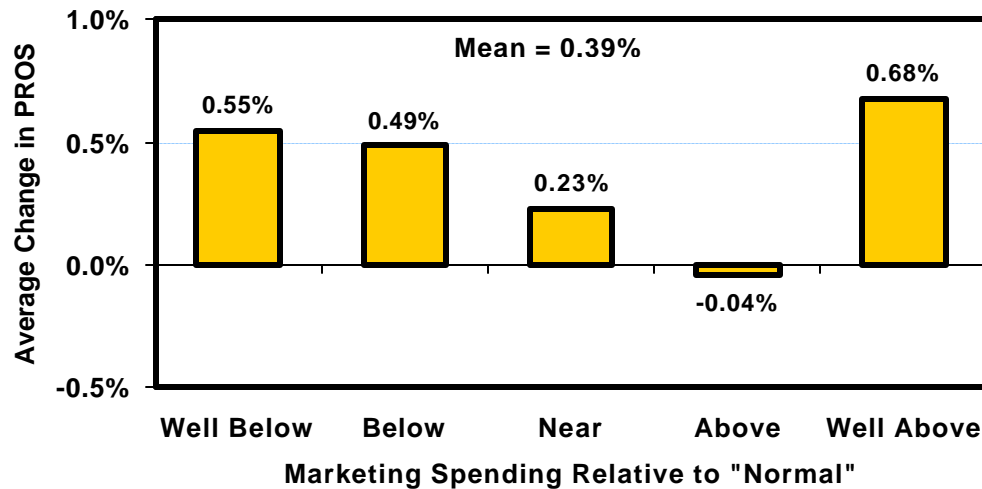


Figure 74, Change in PROS vs. Relative Marketing Spending

It is interesting to note how well very aggressive businesses do and how poorly slightly aggressive businesses do in Figure 74. While further study is needed, this may indicate that moderate marketing aggressiveness may simply encourage competitive retaliation while strong aggressiveness may discourage competitive retaliation.

Figure 75 shows average annual percentage point change in market share for each of the five relative marketing spending levels. This figure shows that more aggressive spending typically results in improved market share as one would expect.

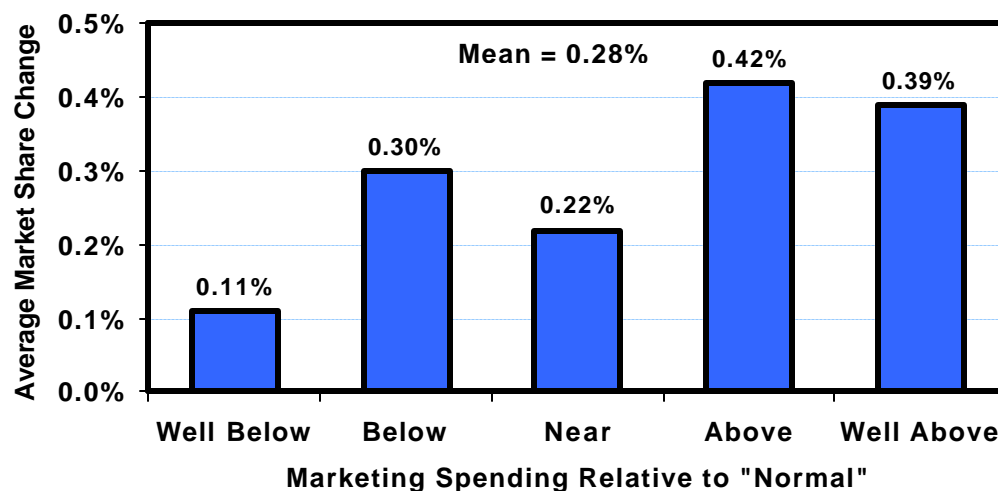


Figure 75, Change in Market Share vs. Relative Market Spending

Summary

Although it is possible to use the experience of the SPI database to develop a marketing spending

norm, analysis of the database indicates that businesses budgeting near this norm are apt to be less successful than businesses which deviate from it. Henderson has concluded that "differences between competitors is the prerequisite for survival in natural competition."²² Budget levels must consider the mission and goals of the business, the goals and capabilities of competitors and the specific business situation.

There is also an indication that businesses which choose to spend at levels above normal should spend well above normal rather than moderately above normal. This brings to mind a quote by Clausewitz: "Many assume that half efforts can be effective. A small jump is easier than a large one, but no one wishing to cross a wide ditch would cross half of it first."²³

Understanding what normal practice is is still important as a point of departure, of course. Across a portfolio of businesses it is useful to know how the businesses are distributed by degree of marketing aggressiveness.

²² "Understanding the Forces of Strategic and Natural Competition," The Journal of Business Strategy, Winter, 1981

²³ Clausewitz on Marketing Warfare, Advanced Management Research poster.

No. 42, February 1984

42 ASSESSING MARKETING EFFECTIVENESS

Above-normal levels of marketing spending payoff for many businesses. Contrary to common belief, aggressive marketing may be of more value to mature and decline businesses than to growth businesses. Businesses with a broad line of products also tend to benefit from higher than normal marketing budgets.

Measuring Marketing Effectiveness

The last article described a marketing expense norm and compared actual spending to this norm for Strategic Planning Institute (SPI) database businesses. It was found that many businesses do better when their level of marketing spending deviates from normal practice. The effect was shown for three different measures of performance: pretax return on sales (PROS), change in PROS, and change in market share.

Rather than using several performance measures in making such assessments, it is useful to have a single measure which combines the various marketing objectives and performance criteria which form the basis of judging marketing effectiveness.

While such criteria will vary somewhat with the mission of the specific business, normal marketing objectives are to increase market share, increase customer perception of the value of products and services, and, of course, to increase profitability. A composite measure was developed which includes four factors: change in PROS, change in market share, change in price relative to competition, and change in relative product quality. These were weighted 33%, 28%, 21%, and 18%, respectively.

Such composite measures unfortunately result in a number, which cannot easily be interpreted. For this reason, the marketing effectiveness measure was transformed to indicate how many businesses have above average levels on this composite measure for every 100 businesses that have below-average values.

Figure 76 shows average marketing effectiveness for industrial businesses in the database (excluding introductory and loss businesses) divided into the same five relative marketing spending categories as used last month. As the figure shows, businesses spending at least 3 percentage points above the norm ("well above") had 124 businesses with above-average marketing effectiveness for every 100 businesses with below average effectiveness. This level was significantly better than any of the other four categories.

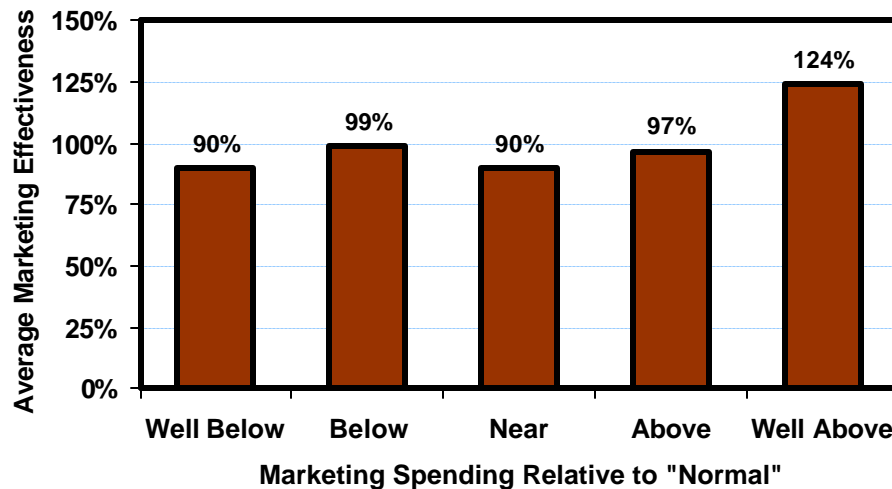


Figure 76, Marketing effectiveness vs. Relative Marketing Spending

Life Cycle Position

In further examining the relationship between marketing effectiveness and relative marketing spending, it was found that the relationship depended on the particular business situation. For example, significant differences were seen depending on product life cycle position. Figure 2 shows this result. ~

Table 78, Marketing Effectiveness vs. Relative Marketing Spending for Different Life Cycle Positions
(Industrial Businesses N=1155)

Product Life Cycle Position	Growth	100%	110%	102%
	Mature/Decline	89%	83%	116%
		Below	Near	Above
		Marketing Spending Relative to "Normal"		

As Table 78 shows, on average marketing effectiveness in growth businesses is roughly the same regardless of level of marketing spending relative to normal. In mature and decline businesses, however, marketing effectiveness is significantly higher for those businesses spending above the norm. (In this and subsequent figures above normal was defined as at least 1.6% above; and below normal, at least 1.6% below. This divides the businesses into roughly equal thirds.)

A similar analysis was done on the basis of market growth rate. This is shown in Table 79.

Table 79, Marketing Effectiveness vs. Relative Marketing Spending for Different Market Growth Rates
(Industrial Businesses N=1155)

Market Growth Rate	High	96%	105%	103%
	Moderate	114%	91%	122%
	Low	74%	77%	117%
		Below	Near	Above
Marketing Spending Relative to "Normal"				

In businesses operating in high growth markets, little difference is seen across the three levels of marketing spending. Businesses operating in moderate growth markets are better to deviate from normal practice but little difference is seen between above vs. below normal marketing budgets. However, a significant difference is seen favoring above average spending among businesses operating in a low market growth environment. Table 78 and Table 79 seem to indicate that aggressive marketing spending pays off for mature and decline businesses but not necessarily for growth businesses.

Breadth of Product Line

Table 80 shows how marketing effectiveness varies with relative marketing spending for different levels of product line breadth. The figure indicates that businesses with a product line equal to or broader than competition are better off with marketing budgets above the norm, while businesses with product lines less than competitors are better off spending a below normal amount on marketing. Apparently - and maybe obviously - businesses competing with a full line of product offerings need to support those offerings with a strong sales, promotion and service effort.

Table 80, Marketing Effectiveness vs. Relative Marketing Spending for Different Levels of Product Breadth
(Industrial Businesses N=1155)

Breath of Product Line Relative to Leading Competitor	Broader	79%	80%	111%
	Same	83%	85%	122%
	Less	100%	79%	77%
		Below	Near	Above
Marketing Spending Relative to "Normal"				

Summary

A single composite measure of marketing effectiveness, which combines normal marketing performance measures, was developed and applied to the SPI database. While above normal levels of marketing spending appear best or average, this strongly depends on the particular business situation. In particular, above normal marketing spending tends to be better for mature and decline businesses and for businesses with a product line equal to or broader than competition.

No. 43, March 1984

43 CUTTING MARKETING BUDGETS

As a cost reduction measure, it is tempting to reduce marketing spending in low-share, high-cost, low value-added, low turnover businesses, especially when competition is intense. Following such a practice often hurts, rather than helps, such businesses.

Competitive Position

The last article described a composite measure of marketing effectiveness which combines four typical marketing objectives: change in pretax return on sales, change in market share, change in price relative to competition, and change in relative product quality. Using this measure, it was shown that above normal levels of marketing spending payoff for many businesses, particularly those later in their life cycle and those with broader product lines. This month's article extends those results by looking at the relationship between marketing effectiveness and relative marketing spending depending on the competitive position, investment and cost structure, and competitive intensity of a business.

Table 81 shows average marketing effectiveness for industrial businesses in the Strategic Planning Institute (SPI) database (excluding introductory and loss businesses) depending on marketing spending relative to "normal" and market share rank. The values in the matrix indicate how many SPI businesses have above-average values on the composite marketing effectiveness measure for every 100 businesses that have below average values.

Table 81, Marketing Effectiveness vs. Relative Marketing Spending for different Values of Market Share Rank
(Industrial Businesses N=1155)

Market Share Rank	First	96%	88%	119%
	Second	115%	107%	126%
	Third or Lower	75%	76%	97%
		Below	Near	Above
Marketing Spending Relative to "Normal"				

Table 81 shows that it is easier to improve a business which is first or second in its industry.

More second-ranked businesses are above-average than below-average on the marketing effectiveness measure regardless of relative marketing spending level. First ranked businesses do well, especially if they spend at above-average levels, in spite of "regression toward the mean" tendencies cited in previous articles.

Businesses ranked third or lower are often in a more difficult situation. They are typically poor earners and often candidates for "harvesting," particularly if they are in a later stage of their life cycle. As Figure 1 indicates, near or below-normal levels of marketing spending usually result in making a poor situation poorer. Maintaining marketing spending at above normal levels at least prevents further deterioration in the average business situation.

Examining relative direct cost (mill cost relative to leading competitors) results in a similar conclusion. As Table 82 indicates, below-normal levels of marketing spending in high relative cost businesses typically result in further deterioration. Again it is easier to improve the marketing effectiveness of low-cost businesses, particularly if the business deviates from "normal."

Table 82, Marketing Effectiveness vs. Relative Marketing Spending for Different Levels of Relative Direct Cost
(Industrial Businesses N=1155)

Relative Direct Cost	High	79%	102%	107%
	Average	87%	79%	118%
	Low	112%	93%	121%
		Below	Near	Above
		Marketing Spending Relative to "Normal"		

Investment and Cost Structure

The investment and cost structure of a business also affect its profitability and long-term potential. High value-added and high turnover are generally preferable and it is tempting to reduce marketing expense on low value-added and low turnover businesses.

As Table 83 shows, above normal levels of relative marketing spending are typically much better than near or below-normal levels for low value-added businesses. Similarly, Table 84 shows that cutting marketing spending to below normal levels in low turnover businesses typically hurts an already poor situation. Note also in Figure 4 the poor average performance of high turnover

businesses which spend at near-normal levels.

Table 83, Marketing Effectiveness vs. Relative Marketing Spending for Different Levels of Value Added
(Industrial Businesses N=1155)

Value Added	High	83%	83%	112%
	Average	109%	106%	105%
	Low	88%	80%	134%
		Below	Near	Above
Marketing Spending Relative to "Normal"				

Table 84, Marketing Effectiveness vs. Relative Marketing Spending for Different Levels of Turnover
(Industrial Businesses N=1155)

Breath of Product Line Relative to Leading Competitor	High	97%	64%	101%
	Average	99%	95%	136%
	Low	80%	112%	116%
		Below	Near	Above
Marketing Spending Relative to "Normal"				

Competitive Intensity

It is also tempting to "pull in your horns" when competition gets intense. While there is no good single measure of competitive intensity in the SPI database, this factor was examined by looking at the number of competitors and whether a recent competitor entered the market.

As Table 85 indicates, it is typically more important to be aggressive in marketing spending when you have more than 10 competitors. Little difference in marketing effectiveness opposite relative marketing spending exists when there are 10 or fewer competitors.

Table 85, Marketing Effectiveness vs. Relative Marketing Spending for Different Numbers of Competitors
(Industrial Businesses N=1155)

Number of Competitors	More than Ten	74%	84%	128%
	Ten or Fewer	109%	96%	109%
		Below	Near	Above
Marketing Spending Relative to "Normal"				

Table 86 shows the situation depending on whether a major competitor entered the market within the past five years. In this situation the average business actually improved its marketing effectiveness when it spent an above-normal level on marketing spending; however, its position deteriorated if it spent a near or below-normal level.

Table 86, Marketing Effectiveness vs. Relative Marketing Spending Depending on the Recent Entry of New Competition
(Industrial Businesses N=1155)

Recent Competitive Entry	Yes	78%	79%	117%
	No	107%	99%	120%
		Below	Near	Above
Marketing Spending Relative to "Normal"				

Summary

While the appropriate level of marketing spending depends on a particular business situation and the missions and objectives of the business, it is important to question every decision. Natural

temptations to reduce marketing spending in low-share, high-cost, low value-added, low turnover, intensely competitive business situations may well lead to further deterioration of a weak or average situation.

No. 44, April 1984

44 PRICE INCREASES RELATIVE TO NORMAL

The ability to increase price depends on marketplace conditions. This article is the first of a series of articles which will examine market conditions which influence the ability to achieve price increases.

Volume Aggressiveness vs. Price Aggressiveness

Previous articles (No. 19-22, February-May, 1982) have discussed conditions under which the average industrial business is better off pursuing a volume aggressive vs. price aggressive strategy. In general, it was shown that a balanced strategy is better unless "perceived value" is increasing and the business is able to either increase share or increase price relative to competitors. It was shown that when "perceived value" is increasing, businesses are better off seeking increased share rather than increased premium. In addition, it was found that the preferred strategy depended on market growth rate, level of profitability, number of competitors, and whether a significant new competitor had recently entered the market.

Profitability is very sensitive to whether a business can increase price without losing volume. The key is market timing--knowing when the market, both customer and competitors, will accept a price increase.

Developing A Selling Price Growth Norm

In evaluating a selling price increase, it is often useful to compare the change to what is "normal" for the particular competitive situation. To do this, a selling price growth norm has been developed similar to the marketing expense norm discussed in article No. 41 (January, 1984). The resulting equation was based on factors strongly correlated with selling price growth.

It was found that selling price growth tends to be higher when:

- Costs are increasing faster;
- Market growth is slower;
- Profitability is lower;
- Sales revenues have been increasing longer term;
- Capacity has not been added recently;
- The product accounts for a high percentage of the purchases by immediate customers.

Actual selling price growth levels were compared to "normal" based on the equation relating the above factors. Selling price growth was considered well below normal if it was less than 3% below the norm. "Below" indicates 1 to 3% below; "near" indicates within 1%; "above" was defined as 1 to 3% above; and "well above" greater than 3% above normal.

Competitive reaction was examined first. Figure 77 shows the relationship between selling price change relative to competitors and relative selling price growth. Businesses with increased selling price well below the norm lost "price premium" as expected; competitive prices increased more than their price. Again as expected, businesses increasing selling price well above normal on average had price increases in excess of competition. While the general trend shown in Figure 1 is as expected, there is a good ~ deal of variability in the relationship.

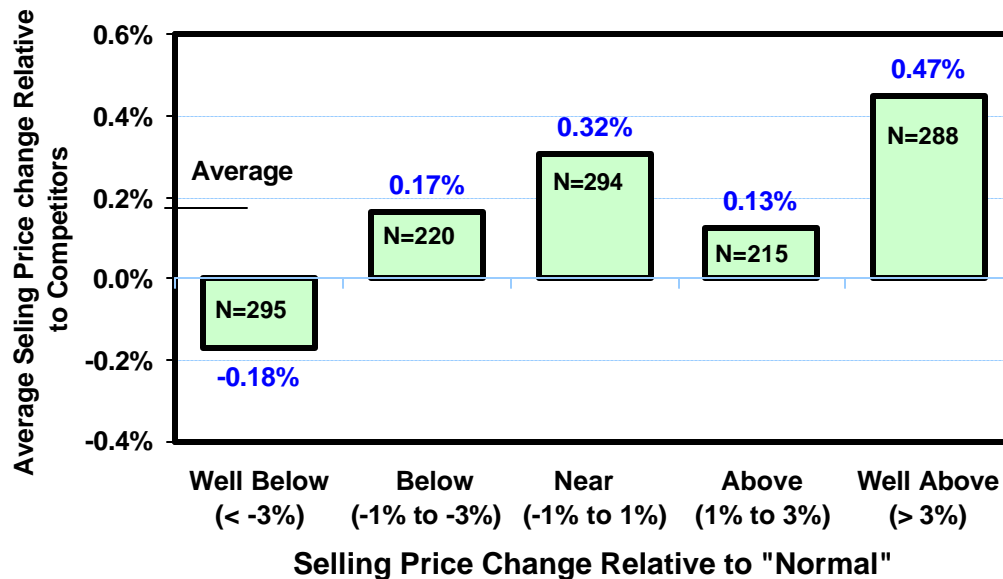


Figure 77, Selling Price Change Relative to Competitors vs. Relative Selling Price
(Industrial Products N=1312)

Looking next at customer reaction, Figure 78 shows the average change in market share opposite relative selling price growth. Surprisingly, the businesses with below and well below normal selling price growth do not exhibit the market share gains, which might be expected. These businesses will be examined in a future article.

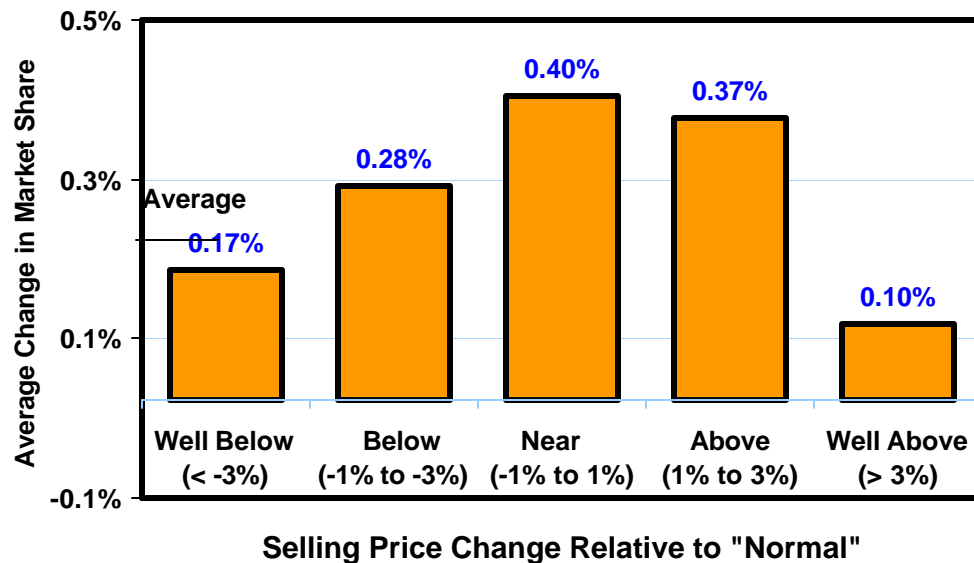


Figure 78, Change in Market Share vs. Relative Selling Price Growth
(Industrial Products N=1312)

Figure 79 shows the average change in pretax return on sales (PROS) opposite relative selling price growth. This figure indicates the profit implications of being able to increase selling price well above normal levels.

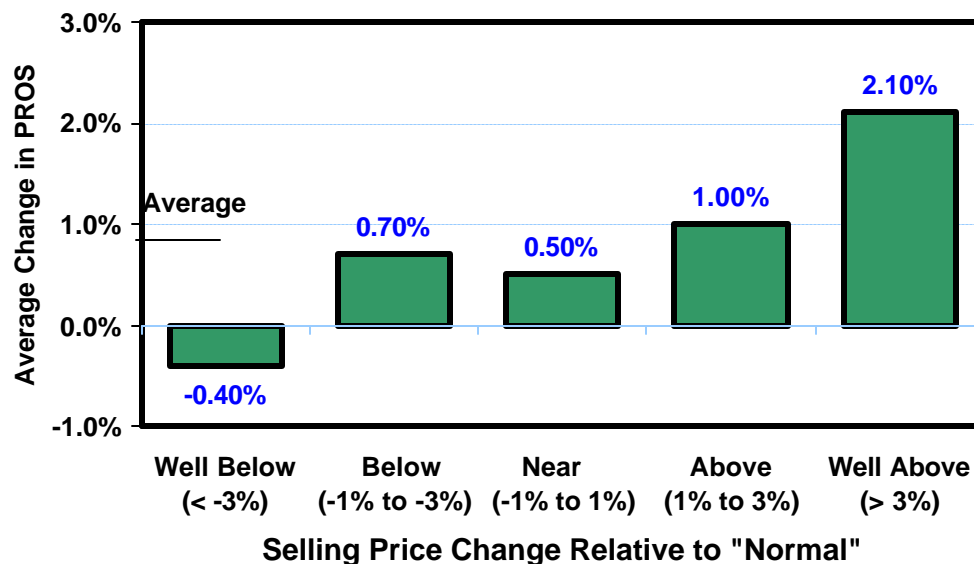


Figure 79, Change in PROS vs. Relative Selling Price Growth
(Industrial Products N=1312)

The "art of pricing" lies in the ability to sense when the market is ready for a price increase. While it may seem a rare situation when a business can both increase selling price more than normal and increase market share at the same time, a large number of industrial businesses in the SPI database did exactly that. As shown in Table 87, 154 (12%) of the industrial businesses were able to increase market share by at least half a percentage point and increase selling prices at least 1.8% higher than normal. On average, these businesses increased their profit margin by over 3%.

Table 87, Change in PROS vs. Change in Market Share and Relative Selling Price Growth
(Industrial Products N=1312)

Average Change in Market Share	0.5%	Increased	1.0% (N=150)	1.3% (N=234)	3.2% (N=154)
		Held	-0.2% (N=157)	0.6% (N=151)	1.6% (N=128)
	-0.5%	Decreased	-1.5% (N=106)	-0.6% (N=111)	04% (N=121)
			Lower	Near	Higher
			-1.8%	1.8%	

Selling Price Relative to Competition

Summary

In order to analyze selling price increases, a "norm" equation was developed. An analysis of changes in price premium, market share and profit for different levels of relative selling price growth reveals a good deal of variability which will be examined in future Articles. ~

No. 45, May 1984

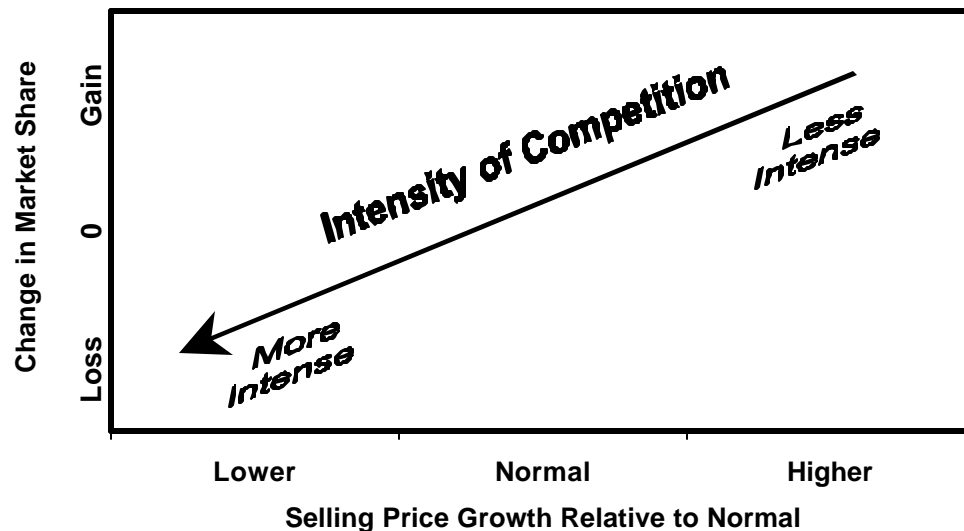
45 INTENSELY COMPETITIVE SITUATIONS

One measure of the intensity of competition is the extent to which price can be increased without loss of market share. An analysis of the industrial businesses in the Strategic Planning Institute (SPI) database shows that competition tends to be more intensive if a business has high market share or has recently had a competitor enter its served market. As an apparent result, these businesses tend to increase capacity at a slower rate than demand is growing.

Intensity of Competition

In last month's Article, a selling price growth "norm" was discussed. A comparison of the change in actual selling price to this norm was used as a measure of the extent to which a business was able to increase its selling price.

It was shown that many SPI industrial businesses are in an intensely competitive situation where they cannot achieve normal price increases nor sustain market share. Figure 80 suggests that the degree to which a business loses market share and also has lower than normal selling price



growth is perhaps a good measure of the intensity of competition.

Figure 80, Intensity of Competition as Related to Market Share Change and Relative Selling Price Growth

Table 88 is repeated from last month's article. As was discussed, the lower left-hand cell shows that 106 (8%) of the industrial businesses were ~ under such intense competition that they lost at least half a percentage point of market share and were lower than normal with respect to increasing selling prices. On average these businesses lost 1.5 percentage points of pretax return on sales.

Table 88, Changes in PROS vs. Change in Market Share and Relative Selling Price Growth
(Industrial Products N=1312)

Average Change in Market Share	0.5%	Increased	1.0% (N=150)	1.3% (N=234)	3.2% (N=154)
		Held	-0.2% (N=157)	0.6% (N=151)	1.6% (N=128)
	-0.5%	Decreased	-1.5% (N=106)	-0.6% (N=111)	04% (N=121)
			Lower	Near	Higher
			-1.8%	1.8%	
Selling Price Relative to Competition					

Intense Competitive Situations

Businesses in the lower left-hand cell of Table 88, Changes in PROS vs. Change in Market Share and Relative Selling Price Growth were compared to the average industrial business. Many factors were examined and the four factors shown in Table 89, Analysis of More Intense Competitive Situations were those which were most different statistically.

Table 89, Analysis of More Intense Competitive Situations

<u>Business Characteristic</u>	Average Value of Business Characteristics	
	<u>All Industrial Businesses</u>	<u>More Intense Situation</u>
Number of Businesses	1312	106
Average Change in PROS	0.8%	-1.5%
Market Share	25%	37%
Competitive Entry (% of Businesses)	26%	47%
Increase in Capacity	5.9%	3.1%
Market Growth Rate	4.5%	7.6%

As can be seen in Table 89, the average market share of the businesses in intensely competitive situations is 12 percentage points higher than the average industrial business in the database. Previous Articles have discussed the difficulty most high-share businesses have in maintaining that share. Because of the high volume of business and typically higher profit-ability of high-share businesses, it is perhaps not surprising that they become a target for smaller share competitors and are subject to more intense competition in general.

Almost twice as many businesses under intense competition reported recent competitive entry compared to the average industrial business. The disruption caused by a new competitor is often the most important cause of competitive intensity in many situations. New competitors frequently enter with a very aggressive strategy in order to gain share and existing competitors are forced to aggressively compete in order to maintain as much business as possible.

An important result, presumably, is the rate at which the business which realizes this competitive intensity increases its capacity relative to the growth of its market. As shown in Table 89, businesses in more intense competitive situations tended to have a lower rate of capacity increase and be in higher growth markets. On average they were increasing supply 4.5% less than demand was growing; the average industrial business in the database-was increasing supply 1.4% ~ than demand was growing.

Summary

Competitive intensity varies considerably across businesses and depends on both the characteristics of the business and the business situation at a particular point in time. High-share businesses and businesses with a recent competitive entry tend to be in more intense competitive situations. As an apparent result, these businesses tend to increase capacity at a slower rate than demand is increasing.

No. 46, June 1984

46 LESS INTENSE COMPETITIVE SITUATIONS

A number of Strategic Planning Institute (SPI) industrial businesses were able to simultaneously increase market share and selling price relative to normal. These businesses are apparently in a less intense competitive situation than is the average business. They tend to have a larger key competitor, to have a higher incidence of recent competitive exit, and to be in slower growth markets. More of these businesses tend to be improving their product quality relative to competition and fewer are in a worsening position with respect to product quality. More of these businesses produce customized products rather than standardized products. Perhaps as a result of less intense competition, these businesses tend to be increasing capacity at an above average rate.

Less Intense Competitive Situations

Last month's article discussed intensely competitive situations and showed that competition tends to be more intensive for businesses having high market share or recently having a competitor enter its served market. The businesses analyzed were those shown in the lower left-hand cell in Table 90.

Table 90, Change in PROS vs. Change in Market Share and Relative Selling Price Growth
(Industrial Businesses N=1312)

Average Change in Market Share	Increased	0.5%	1.0% (N=150)	1.3% (N=234)	3.2% (N=154)
			-0.2% (N=157)	0.6% (N=151)	1.6% (N=128)
	Decreased	-0.5%	-1.5% (N=106)	-0.6% (N=111)	04% (N=121)
			Lower	Near	Higher
			-1.8%		1.8%

Selling Price Relative to Competition

This month's article discusses a similar analysis of the 154 businesses in the upper right-hand cell of Table 90. These businesses managed to increase market share at least half a percentage point and were well above average with respect to achieving above normal selling price growth. On average these businesses increased pretax return on sales (PROS) by 3.2%.

Table 91 summarizes business characteristics which tend to differentiate these businesses in less intense competitive situations from all industrial businesses. First of all there was a slight tendency for these businesses to have a larger key competitor, perhaps suggesting that a large-share competitor can, in some cases, provide a "price umbrella." As one would expect, the recent exit of a significant competitor also has a tendency to reduce the intensity of competition. Also competition tends to be less intense in slower growth markets.

Table 91, Analysis of Less Intense Competitive Situations

<u>Business Characteristic</u>	Average Value of Business Characteristics	
	<u>All Industrial Businesses</u>	<u>Less Intense Situation</u>
Number of Businesses	1312	154
Average Change in PROS	0.8%	3.2%
Market Share Largest Competitor	26%	30%
Competitive Exit (% of Businesses)	19%	24%
Market Growth Rate	4.5%	3.1%
Change in Relative Quality:		
<i>Improving (% of Businesses)</i>	35%	43
<i>Worsening (% of Businesses)</i>	27%	19%
Produce Customized Products (% of Businesses)	29%	36%
Increase in Capacity	5.9%	9.4%

In addition, competition tends to be less intense for businesses which are improving their product quality relative to competition or, at least, not losing ground to competitors. Businesses producing customized products rather than standardized products also tend to benefit slightly. Perhaps as a result, businesses in less intense situations tend to be increasing their capacity at an above-average rate.

Note that the differences above are relatively small, yet these were the major differences of many which were examined. This indicates that it is difficult to generalize which business situations are likely to produce less competitive intensity. Sensing when the market is in a less intense competitive situation apparently requires analysis of the particular business by people experienced in the business.

Summary

Businesses in less intense competitive situations tend to have a larger key competitor and to be in slower growth markets. These businesses more often have had a recent competitive exit, are improving (or at least not worsening) their relative product quality, and are producing customized products. They tend to be increasing capacity at an above average rate. However, none of these factors show a particularly strong difference and thus it is difficult to generalize as to what makes a competitive situation less intense.

No. 47, July 1984

47 PRODUCT QUALITY

Product quality is usually a key element of competitive advantage. Industrial businesses in the Strategic Planning Institute (SPI) database show a strong correlation between relative product quality, profitability, and market share.

The Importance of Product Quality

Judging by the number of recent articles, American businesses seem to be paying more attention to product quality. A number of studies on product quality using the SPI database have been conducted. Product quality is difficult to operationally define and quantify. It is usually expressed in terms of the perceived benefits of your product offering relative to competitive offerings. Sometimes an economic value (value-in-use) can be estimated, but this is normally specific to a particular application and only part of the total value perceived by the customer. Many markets exhibit high variability in perceived value across customers.

SPI defines relative product quality for a business as the percentage of dollar sales judged superior to competition minus the percent judged inferior to competition. For example, if 30% of the dollar sales are perceived superior, 60% equivalent, and 10% inferior, relative product quality is +20% (30% minus 10%). The estimate includes services as well as the product itself and, presumably, reflects customer perceptions.

As with any definition of quality, this definition has limitations. It does not adequately define the three quality perception categories used, does not allow for variation across market segments, and does not include a measure of the conviction with which the quality perception is held. The measure does, however, correlate strongly with similar SPI measures such as price premium, product image/company reputation, and the quality of customer services.

Previous Findings

Relative product quality was discussed in the third article (October, 1980). Its relationship to profitability and other elements of competitive advantage was discussed. Other previously reported findings from these articles include the following:

- The entry of new competition makes it more difficult for a business to increase its relative product quality (No. 13, August, 1981).
- Increasing product quality is strongly associated with increasing market share (No. 15, October, 1981).
- Increasing product quality is strongly associated with increasing perceived value (No. 19, February, 1982).
- Businesses ranked first in market share tend to have significantly higher product quality than businesses ranked second and below (No. 28, December, 1982).

- When market shares are stable, profit margin changes often depend on changes in relative product quality (No. 33, May, 1983).
- High relative cost industrial businesses are unlikely to be profitable when they have no quality advantage (No. 37, September, 1983).
- Some association exists between less competitive business situations and improvement in relative product quality (No. 46, June, 1984).

Profitability and Product Quality

The previously reported strong relationship between profitability and relative product quality is shown in Figure 81. The strongest part of the association seems to be at the two extremes. Less sensitivity is seen in the middle ranges.

The pattern is broken somewhat at zero relative product quality. Most of these businesses probably provide undifferentiated products which compete more on the basis of cost than on product quality.

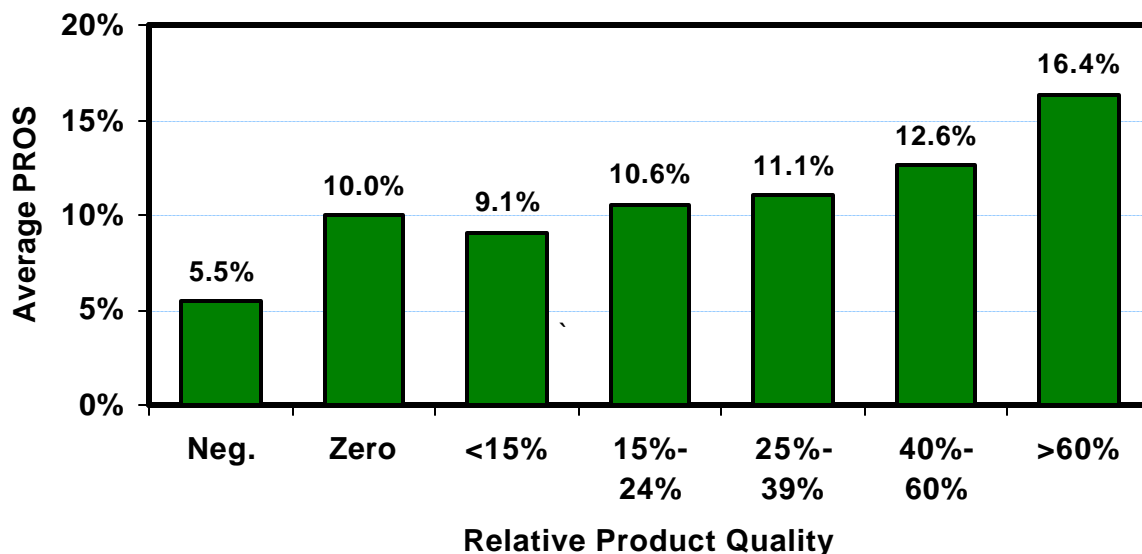


Figure 81, Average PROS vs. Relative Product Quality
(Industrial Products N=1312)

Market Share and Product Quality

Figure 82 shows the relationship between market share and product quality for industrial businesses. Again a strong positive correlation exists.

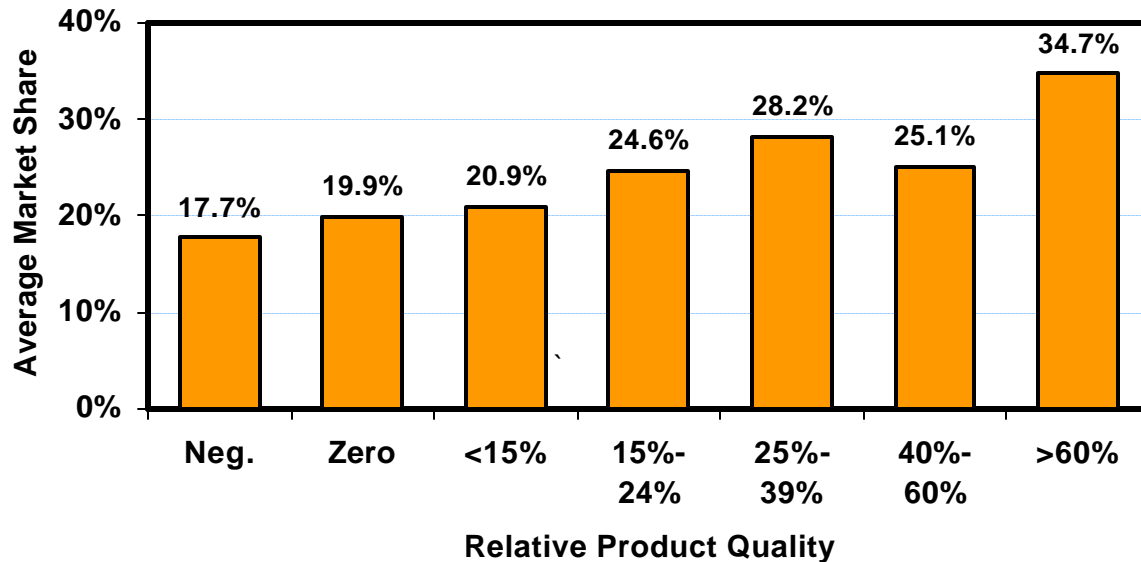


Figure 82, Average Market Share vs. Relative Product Quality
(Industrial Products N=1315)

Table 92 shows how pretax return on sales varies with both market share and product quality. While increasing relative product quality is important for all levels of market share, it tends to be more important for low-share and high-share businesses. Profitability tends to be less sensitive to relative product quality at medium levels of market share.

Table 92, PROS vs. Market Share and Relative Product Quality
(Industrial Products N=1315)

Average Market Share	High	12.4% (N=104)	13.5% (N=144)	17.5% (N=199)
	Medium	10.6% (N=131)	9.4% (N=159)	12.9% (N=161)
	Low	4.3% (N=198)	8.2% (N=115)	8.6% (N=104)
		Lower	Near	Higher
		8%	35%	
		Relative Product Quality		

Looking at Table 92 vertically shows a similar pattern. Medium quality product businesses tend to be less sensitive to market share than either low- or high-quality product businesses. Thus it appears that more share and quality leverage exist at extreme values of either of these two factors.

Future articles will re-examine and extend SPI findings with respect to product quality.

Summary

An analysis of the industrial businesses in the SPI database confirms the importance of relative product quality as a key element of competitive advantage. A strong association exists between profitability, market share, and product quality. The relationship between profitability and product quality exists for all levels of market share, but is stronger at low- and high-share levels.

No. 48, August 1984

48 PRODUCT QUALITY, MANUFACTURING COSTS, AND PRICE PREMIUMS

High-quality products typically cost more to produce than average-quality products, but command price premiums, which usually more than offset, this additional cost. However, poor-quality products lose in two ways; on a unit cost basis they typically cost more to produce and do not command premium prices.

Manufacturing Costs and Product Quality

Last month's article showed the strong association which exists between relative product quality, profitability, and market share among industrial businesses in The Strategic Planning Institute (SPI) database. Higher levels of product quality are typically associated with higher market share and higher profitability. This article examines the cost and price components of profitability.

Relative product quality is defined by SPI as the percentage of dollar sales judged superior to competition minus the percentage judged inferior to competition. For example, if 30% of dollar sales are perceived by customers to be superior to competition, 60% equivalent, and 10% inferior, relative product quality is +20%. The estimate includes services as well as the product itself.

Figure 83 shows the average direct cost disadvantage for SPI industrial businesses for seven levels of relative product quality. Direct cost is unit raw material, manufacturing, depreciation, and distribution costs relative to the three largest competitors.

It is interesting that the worst cost position occurs at the lowest quality level; it is expensive to produce and distribute low-quality products! Businesses with negative levels of relative product quality have costs 4% higher than leading competitors on average. In many cases, this is due to resulting lower levels of sales and market share. In some cases, it may reflect production problems.

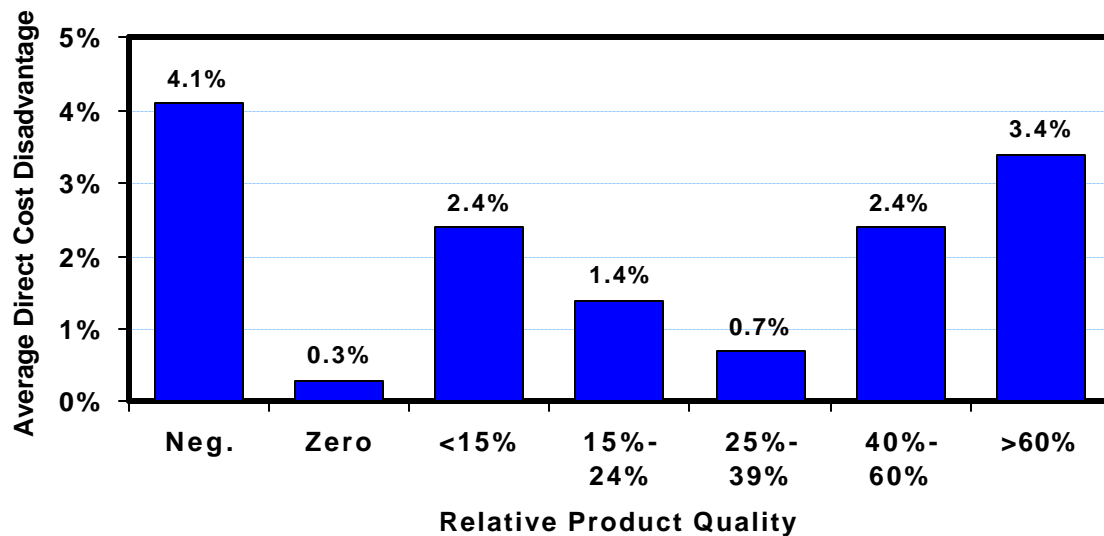


Figure 83, Direct Cost Disadvantage vs. Relative Product Quality
(Industrial Products N=1315)

With the exception of zero relative product quality, the relationship is "U-shaped." As mentioned last month, zero relative quality includes many businesses which provide undifferentiated products and compete more on the basis of cost than quality. For an average business there appears to be a minimum direct cost level of quality somewhere near 30%. Increasing product quality beyond this point typically incurs higher levels of direct cost relative to competition.

Price Premiums and Product Quality

Whether the additional costs incurred to achieve high levels of product quality are worthwhile depends in part on whether higher price premiums result from this higher quality level. Figure 84 shows average price premium for these SPI industrial businesses at each level of relative product quality.

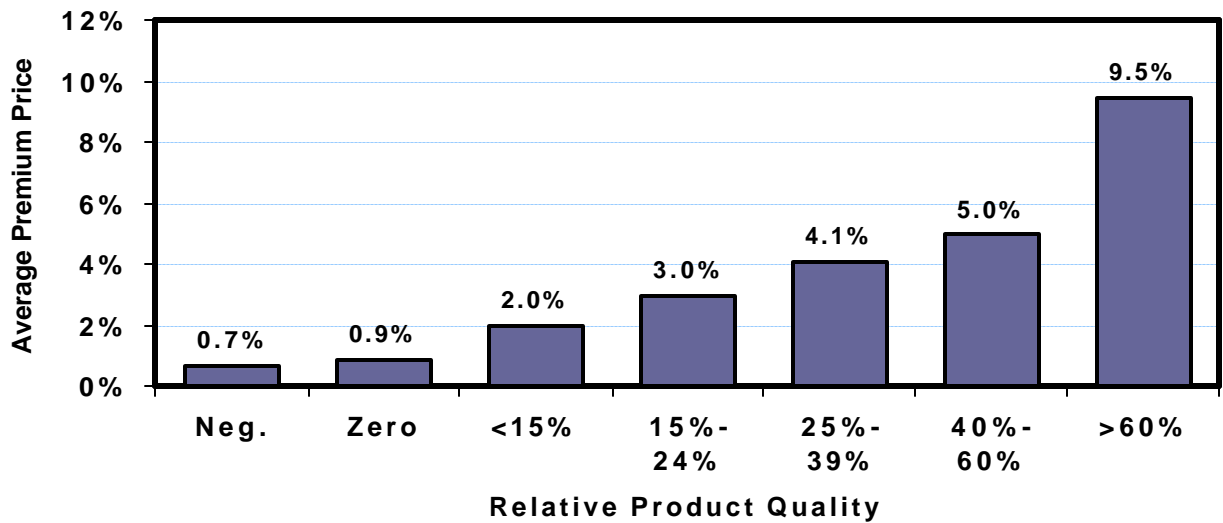


Figure 84, Price Premium vs. Relative Product Quality
(Industrial Products N=1315)

The strong positive association indicates that in most cases higher quality results in higher prices relative to competition. In particular, the highest level of quality typically results in very high premiums. Figure 3 shows average relative margin for each level of relative product quality. Relative margin is simply price premium minus direct cost disadvantage. The advantage of achieving dominant levels of relative product quality is again evident. This figure reinforces the findings shown last month as to the importance of product quality.

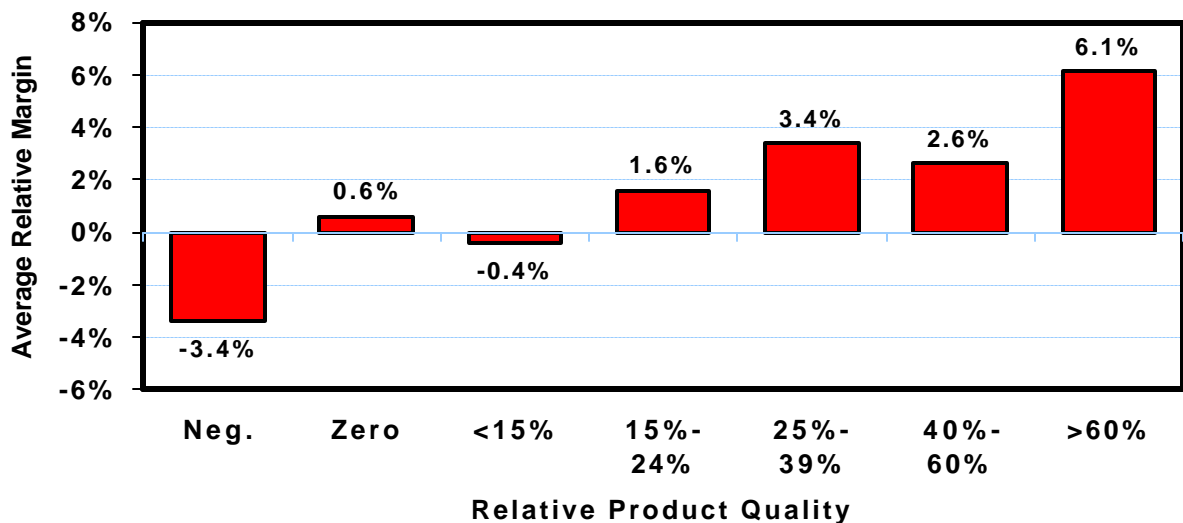


Figure 85, Relative Margin vs. Relative Product Quality
(Industrial Products N=1315)

Summary

While high levels of relative product quality typically result in higher production costs, the resulting higher levels of market share (shown last month) and price premium usually produce higher overall levels of profitability. Obviously, each individual product situation must be carefully examined as to the feasibility, cost, and likely result of increased quality.

Poor product quality usually produces poor results on all measures: costs are higher, premiums do not exist, share is lower, and profitability is lower.

No. 49, September 1984

49 PRODUCT QUALITY AND OTHER BUSINESS CHARACTERISTICS

Product quality relative to competition tends to be positively associated with value added, the existence of a product patent, and the level of customer service relative to competitors. Product quality is also positively associated with marketing expense for medium and high value added products. A stronger association with the existence of a product patent occurs later in the product life cycle; a stronger association with level of customer service occurs when services are important to end users.

Product Quality

The last two articles discussed product quality and highlighted the strong association which tends to exist between relative product quality, profitability, and market share among industrial businesses. While high-quality products typically cost more to produce than average-quality products, they command price premiums which usually more than offset this additional cost. Poor-quality products usually cost more and do not command premium prices.

Relative product quality is defined by the Strategic Planning Institute (SPI) as the percentage of dollar sales judged by customers to be superior to competition minus that judged inferior to competition after dividing sales into superior, equivalent, and inferior categories. The estimate includes services as well as the product itself.

This month's article focuses on three business characteristics which tend to be strongly associated with relative product quality, value added, the existence of a product patent, and the level of customer service relative to competitors.

Value Added

A positive association exists between product quality and value added. More high value added products show higher levels of product quality than low value added products. This is probably due to the fact that higher value added enhances the ability to increase product differentiation. Higher value added permits a larger variety of methods to process, distribute, and market as raw materials are processed into final products.

Table 93 shows the average relative product quality among SPI industrial businesses for different levels of marketing expense and value added. For each of the three levels of marketing expense, product quality tends to increase with value added.

Table 93, Average Relative Product Quality vs. Marketing Expense and Value Added
(Industrial Products N=1315)

Marketing Expense (% of Sales)	9.2%	High	20% (N=75)	31% (N=147)	33% (N=214)
		Medium	23% (N=138)	24% (N=146)	34% (N=147)
	4.6%	Low	18% (N=225)	23% (N=145)	25% (N=78)
			Low	Medium	High
			50%	65%	
Value Added (% of Sales)					

Looking at the table vertically, an interesting relationship exists with marketing expense. Little association with product quality is seen among businesses with low levels of value added. However, product quality shows a positive association with marketing expense for medium and high levels of value added. High product quality tends to be supported by high marketing expense for medium levels of product quality; when value added is high, high-quality products tend to be supported with either medium or high levels of marketing expense. In general, it appears that high quality products frequently need either high value added, high marketing expense, or both.

Product Patent

As is probably expected, a strong association exists between product quality, and the existence in the product patent. As shown in Table 94, product quality tends to be much higher when a product patent exists.

Table 94, Average Relative Product Quality vs. Existence of a Product Patent and Amount of New Product Sales
(Industrial Products N=1315)

Product Patents	Yes	39% (N=57)	42% (N=92)	35% (N=153)
	No	20% (N=425)	21% (N=312)	26% (N=276)
		None	Some	Many (>7.6%)
New Products (% of Sales)				

Table 94 shows the relationship at three different points in the product life cycle; when new products (those introduced in the previous three years) account for none of the sales, when they account for some of the sales (less than 7.6%), or when they account for many of the sales (greater than 7.6%). The relationship is typically much weaker earlier in the life cycle when new products are a large part of sales. A larger spread occurs when new products represent a smaller percentage of total sales. This suggests that the product patent may be more important later in the life cycle.

Customer Service

A very strong positive association exists between product quality and level of customer service relative to competitors. Table 95 shows this association at three different levels of importance of auxiliary services to end-users.

Table 95, Average Relative Product Quality vs. Level of and Importance of Service to Customers
(Industrial Products N=1315)

Level of Customer Service Relative to Competition	More	28% (N=118)	32% (N=301)	40% (N=262)
	Same	16% (N=112)	18% (N=235)	20% (N=146)
	Less	7% (N=27)	15% (N=56)	11% (N=58)
		Little or None	Some	Great
		Importance of Auxiliary Service to End Users		

A positive association also exists with respect to the importance of services. As would be expected, there is usually more 'leverage' with respect to customer service when services are of great importance. Two hundred sixty-two industrial businesses in the SPI database, providing more service than competitors when service is of great importance to end users, average 40% relative product quality, an exceptionally high value.

Summary

Care must be taken in these analyses in attributing cause and effect. For example, it cannot be concluded that increasing marketing expense will "cause" product quality to change as shown in Figure 1 or that changing the level of customer service will "cause" product quality to change as shown in Figure 3.

These tables do, however, suggest some important associations which tend to exist between product quality and other key characteristics of the business or product. In particular, value added, the existence of a product patent, and the level of customer service seem to be important determinants of product quality. The fact that high quality, high value added businesses are typically supported by higher levels of marketing expense and a stronger quality/customer service relationship is seen when services are important makes sense.

No. 50, October 1984

50 MANAGING HIGH PRODUCT QUALITY BUSINESSES

While high product quality industrial businesses are typically profitable, managing them for maximum profitability requires appropriate attention to manufacturing and marketing. Of particular importance are production efficiencies, product and market characteristics, and supporting marketing effort.

High Product Quality Businesses

The last three articles discussed relationships which exist between product quality and other business characteristics among industrial businesses in the Strategic Planning Institute (SPI) database. SPI defines relative product quality as the percentage of dollar sales judged by customers to be superior to competition minus that judged to be inferior to competition after dividing sales into superior, equivalent, and inferior categories. The estimate includes services as well as the product itself.

These articles have shown that high quality businesses tend to have higher market share and profitability than the average business. While their costs are typically higher, this tends to be more than offset by the higher price premiums which can be commanded. High quality businesses also tend to have higher value added, more frequently have a product patent, and typically have a higher quality of customer service relative to competitors.

This article examines situational and strategic factors, which correlate most strongly with profitability as measured by pretax return on sales (PROS). The analysis is based on 320 industrial businesses in the SPI database which report a relative product quality of +50~ or more.

Production Efficiencies

While most high quality product industrial businesses achieve at least average levels of profitability, high levels of profitability do not come automatically. As shown in Table 96, it is important to contain manufacturing costs and manufacturing inventories. The 92 businesses with raw material and work-in-process inventory exceeding 17% of sales revenue typically achieve ~ only average profit margins. Containment of manufacturing inventories appears to be particularly important to businesses with above average mill cost. While manufacturing inventories should have no "accounting" effect on profit margin, they are perhaps simply indicative of a well-managed business.

Table 96, PROS vs. Relative Mill Cost and Inventory
(High Quality Industrial Businesses N=320)

Mill Cost Relative to Competition	Higher	17.3% (N=36)	12.9% (N=57)	11.4% (N=59)
	Equal or Lower	19.5% (N=49)	19.3% (N=86)	13% (N=33)
		Low	Medium	High
		7%	17%	
Raw Material and Work-in-Process Inventory (% of Sales Revenue)				

Table 97 shows the relationship between profit margin and patent position. It is seen that a process patent has more impact on profitability than a product patent for high quality industrial businesses. This is likely due to the fact that product value is based on the inherent quality of the product whether or not it has a product patent. On the other hand, manufacturing costs can be significantly affected by a process patent.

Table 97, PROS vs. Patent Position

(High Quality Industrial Businesses N=320)

Product Patents	Yes	15.3% (N=49)	19.2% (N=69)
	No	14.2% (N=172)	18.4% (N=30)
		No	Yes
Process Patents			

Product and Market Characteristics

Profit margins in high quality industrial businesses are also affected by certain characteristics of the product and its market. Table 98 shows the relationship between profitability, raw material and energy purchases, and type of product. High quality standardized products are typically more profitable than those which are custom tailored for the specific customer. The difference is particularly strong when purchases account for a low percentage of total cost. These are higher

value-added products where an above average amount of processing costs are added to the raw materials. Thus higher profit margins typically accrue to high quality, high value-added products where they can be standardized for all customers.

Table 98, PROS vs. Raw Material and Energy Purchases and Type of Product
(High Quality Industrial Businesses N=320)

Type of Product	Custom Tailored	Low	Medium	High
	Standard	38%	50%	
		12.7% (N=31)	15.0% (N=30)	13.6% (N=35)
		18.9% (N=75)	16.4% (N=75)	15.1% (N=74)

Purchases as Percent of Total Costs

Table 99 shows how profitability varies with the number of immediate (direct) customers and the sales transaction amount. As the figure indicates, businesses with more than 100 immediate customers are typically more profitable when they sell in transaction amounts of less than \$10,000. With fewer than 100 customers, profit margins are usually higher when the product is sold in greater than \$10,000 amounts. Having relatively few customers buying large quantities each time they buy often results in distribution and marketing efficiencies.

Table 99, PROS vs. Sales Transaction Amount and Number of Immediate Customers
(High Quality Industrial Businesses N=320)

Sales Transaction Amount, Immediate Customers	\$10M	Custom Tailored	Low	Medium	High
		Standard	100	1,000	
			15.4% (N=55)	12.8% (N=66)	15.5% (N=28)
			12.6% (N=34)	18.9% (N=84)	17.7% (N=53)

Number of Immediate Customers

Supporting Marketing Effort

As already mentioned, high quality industrial businesses typically have a higher quality of customer service. As shown in Table 100, extremely high quality customer service tends to pay for businesses which are first in their market in terms of market share. Businesses ranked second or lower tend to have more average levels of profitability, almost independent of their quality of customer services.

Table 100, PROS vs. Market Share Rank and Relative Quality of Customer Service
(High Quality Industrial Businesses N=320)

Market Share Rank	First	17.4% (N=36)	16.2% (N=73)	20.0% (N=77)
	Second or Lower	13.1% (N=56)	12.5% (N=56)	13.6% (N=22)
		Less or Same	Higher	Much Higher

Quality of Customer Services Relative to Competition

Another factor closely related to and correlated with product quality is relative product image and company reputation. Table 101 divides the high product quality industrial businesses into those with very high image and those with less than very high image.

Businesses with less than very high product image and company reputation have higher levels of profit margins when they spend more than competitors on advertising and promotion. Businesses, which have already achieved a very high image level, do as well matching competitors on advertising and promotion as they do in exceeding competitors. However, profit margins are significantly lower for very high image, high product quality industrial businesses when they spend less than competitors on advertising and promotion.

Table 101, PROS vs. Product/Company Image and Relative Advertising and Promotion
(High Quality Industrial Businesses N=320)

Relative Product Image and Company Reputation	Very High	16.5% (N=49)	20.6% (N=32)	20.6% (N=44)
	High, Medium or Low	13.8% (N=100)	12.5% (N=58)	16.2% (N=37)
		Less	Same	More
Advertising and Promotion Relative to Competitors				

Summary

The achievement of high levels of profitability does not come automatically to businesses fortunate enough to be selling products perceived by their customers to be significantly superior to competitors' products. This article shows the interaction between pretax return on sales and 12 situational and strategic factors.

High quality industrial businesses are typically more profitable when:

- Manufacturing costs and investments are contained; - a process patent exists;
- Products have high value-added and are standardized for all customers;
- Products are sold to many customers in small transaction amounts or to few customers in large transaction amounts;
- They are ranked first in market share, especially when they have a much higher quality of customer services than competitors;
- They also have a high product image and company reputation and spend
- Appropriately on advertising and promotion relative to competitors.

No. 51 November, 1984

51 PRICING HIGH QUALITY PRODUCTS

Several industrial businesses are in the mature/decline phase of their life cycle, have few competitors, are first ranked in market share, sell standard products, and are supported with a very high product/company image. Industrial businesses which produce and market high quality products and have these characteristics tend to be more profitable if their products command a moderate price premium (4 to 10%) over competitive products.

High Product Quality Businesses

While high product quality businesses tend to be more profitable, the level of profitability varies widely and depends on other factors. Last month's article showed the relationship between pretax return on sales (PROS) and several business characteristics for industrial businesses in the Strategic Planning Institute (SPI) database which produce and market high quality products. Implications for managing such businesses were discussed.

SPI defines relative product quality as the percentage of dollar sales judged by customers to be superior to competition minus that judged to be inferior to competition after dividing sales into superior, equivalent, and inferior categories. The estimate includes services as well as the product itself. High product quality businesses are those industrial businesses in the SPI database, which report a relative product quality of +50% or more. This article examines the profit implications of different levels of price premium over competitive products in different business situations.

Life Cycle Position

Table 102 shows the relationship between PROS, life cycle stage, and price premium for high quality industrial businesses. Based on this measure of profitability, mature/decline businesses tend to be slightly more profitable when they are priced at a moderate premium (4 to 10%) above competitive products. Growth businesses tend to be more profitable when they are priced ~ at a high premium- more than 10% above competition. Such a pricing strategy for growth businesses may not necessarily be wise in that a high premium could lead to faster penetration by lower quality competitors or encourage entry of new competitors.

Table 102, PROS vs. Life Cycle Stage and Price Premium
(High Quality Industrial Businesses N=319)

Life Cycle Stage	Growth	16.8% (N=44)	16.8% (N=28)	17.8% (N=41)
	Mature, Decline	14.6% (N=66)	16.0% (N=62)	15.1% (N=78)
		Little or None	Moderate	High
		4%	10%	
Price Premium over Competitive Products				

Market Structure

Table 103 shows the profit margin/price premium relationship by number of competitors. When a business has no more than five competitors, a moderate price premium strategy is normally associated with a higher profit margin. Businesses with six to ten competitors on average do marginally better with high price premiums. When there are at least 11 competitors, high quality industrial businesses typically do slightly better when there is little or no price premium. Perhaps it is better to compete at a near-equal price when there are many competitive products and each is able to target a specific market niche.

Table 103, PROS vs. Number of Competitors and Price Premium
(High Quality Industrial Businesses N=319)

Number of Competitors	11 or More	15.7% (N=26)	14.4% (N=29)	15.0% (N=47)
	6 to 10	14.7% (N=29)	16.1% (N=41)	16.9% (N=32)
	1 to 5	15.7% (N=55)	19.3% (N=20)	16.5% (N=40)
		Little or None	Moderate	High
		4%	10%	

Price Premium over Competitive Products

Table 104 shows the relationship by market share rank. High quality industrial ~ businesses ranked first in market share tend to be more profitable when their products have moderate premiums; those ranked second or lower typically do better with little or no price premium. This perhaps suggests that a more volume aggressive strategy may be more appropriate when a strong quality advantage exists but the business has not yet become the market share leader.

Table 104, PROS vs. Market Share Rank and Price Premium
(High Quality Industrial Businesses N=319)

Market Share Rank	First	16.4% (N=58)	19.5% (N=51)	18.3% (N=77)
	Second or Lower	14.4% (N=52)	12.1% (N=39)	12.0% (N=42)
		Little or None	Moderate	High
		4%	10%	
Price Premium over Competitive Products				

Other Factors

Table 105 shows that high quality industrial businesses selling standardized products tend to be more profitable with moderate price premiums. However, those selling products custom tailored for individual customers are typically more profitable when their premiums are high relative to competitive products.

Table 105, PROS vs. Type of Product and Price Premium
(High Quality Industrial Businesses N=319)

Type of Product	Custom Tailored	12.3% (N=33)	13.8% (N=30)	15.2% (N=33)
	Standard	16.9% (N=77)	17.5% (N=60)	16.3% (N=86)
		Little or None	Moderate	High
		4%	10%	
Price Premium over Competitive Products				

Another difference exists with respect to relative product image and company ~ reputation. When product/company image is very high--as is frequently the case with material products--a

moderate price premium typically leads to higher profitability. When this image is not so high, profitability tends to be higher with little or no price premium.

Table 106, PROS and Product/Company Image and Price Premium
(High Quality Industrial Businesses N=319)

Relative Product Image and Company Reputation	Very High	15.3% (N=26)	21.2% (N=40)	19.1% (N=59)
	High, Medium or Low	15.5% (N=84)	12.3% (N=50)	13.1% (N=60)
		Little or None	Moderate	High
		4%	10%	
Price Premium over Competitive Products				

The level of capacity utilization also has an effect. High quality industrial ~ businesses in the SPI database operating at low levels of capacity utilization (less than 78%) are more profitable on average with a moderate price premium. However, those businesses at high levels of capacity utilization tend to be more profitable with high price premiums. This suggests that it is perhaps prudent for a business selling high quality products to adapt its pricing strategy to the business cycle and raise prices more in "good times" than in "bad times" to the extent that this can be done without upsetting market balances.

Table 107, PROS vs. Capacity Utilization and Price Premium
(High Quality Industrial Businesses N=319)

Capacity Utilization	78%	High	16.2% (N=63)	16.3% (N=45)	18.4% (N=53)
		Low	14.4% (N=47)	16.3% (N=45)	14.1% (N=66)
			Little or None	Moderate	High
			4%	10%	
Price Premium over Competitive Products					

Summary

The pricing strategy adopted by businesses producing and marketing high quality products is very important. These businesses typically have more latitude in setting price. High price premiums tend to be associated with higher levels of profitability for growth businesses, businesses with six to ten competitors, those selling custom tailored products, and those operating at high levels of capacity utilization. Moderate price premiums are often better for mature/decline businesses, those with one to five competitors, those first ranked in market share, businesses selling standardized products, those with a very high product/company image, and those operating at low levels of capacity utilization. Little or no price premium seems to be better when there are at least 11 competitors, the business is second or lower in market share, and product/company image is less than very high.

No. 53, January 1985

53 MANAGING INDUSTRIAL COMMODITY BUSINESSES

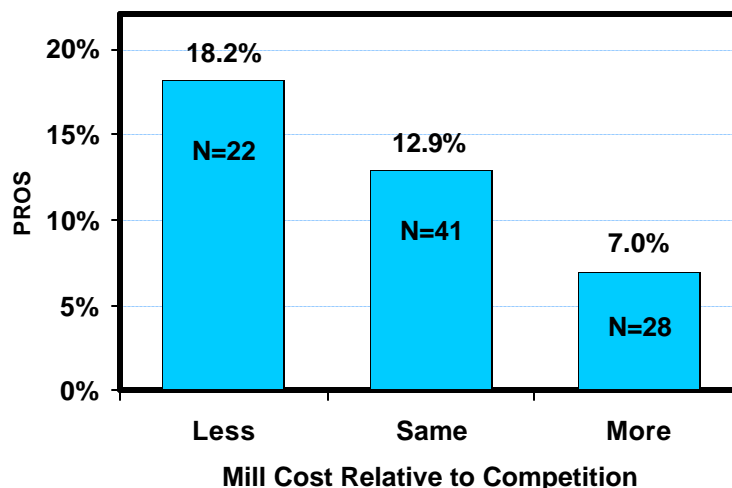
Commodity businesses are often considered to be businesses whose product quality and price are equal to that of competitive products. Industrial commodities tend to be more profitable when mill costs are low, a process patent exists, the business is not unionized, capacity utilization rates are high, products are standard rather than custom designed, and sales are negotiated in large quantities.

Industrial Commodity Businesses

Article No. 50 focused attention on high product quality businesses and discussed situational and strategic factors, which correlate most strongly with profitability. Many industrial businesses have matured to the point where there is little difference between a firm's and competitive product quality, and price premiums do not exist in the marketplace. This article focuses attention on 91 such industrial businesses in the Strategic Planning Institute (SPI) database.

The analysis substantiates the general belief that a strong competitive cost position is fundamental to the success of such businesses. Among all the factors in the SPI database, those correlating most strongly with profitability for industrial commodities are related to cost and production efficiencies.

As shown in Figure 86, a very strong relationship exists between pretax return on sales (PROS) and mill cost relative to competition. While such a relationship exists for almost all categories of



businesses, it is particularly strong for industrial commodities.

Figure 86, PROS vs. Mill Cost Relative to Competition

The existence of a process patent is particularly important for industrial commodities. As Figure 87 shows, the 16 businesses with a process patent had twice the PROS of the 75 businesses without a process patent.

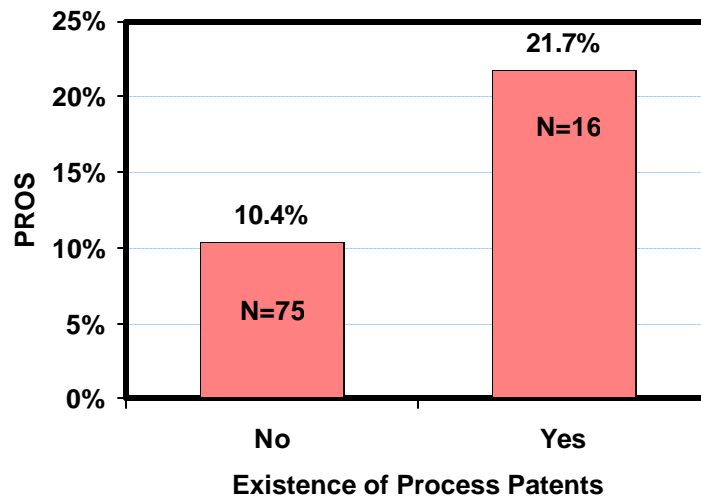


Figure 87, PROS vs. Existence of Process Patent

Degree of unionization is a factor which also shows strong correlation. While the nature of the cause/effect relationship can be argued, a higher level of employee unionization is associated with lower profitability among these industrial commodity businesses. This is shown in Figure 88.

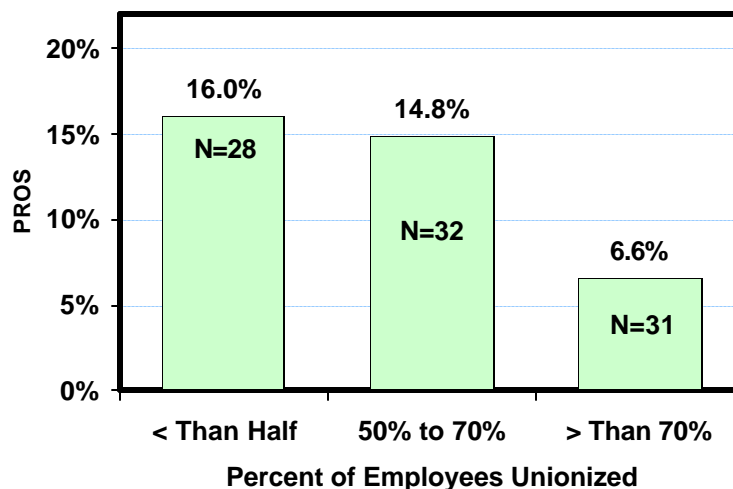


Figure 88, PROS vs. Percent of Employees Unionized

Capacity utilization is a key measure of production efficiency. As shown in Figure 89, the 30 businesses operating at 90% sales to capacity or better had significantly higher profitability than

their lower utilization counterparts.

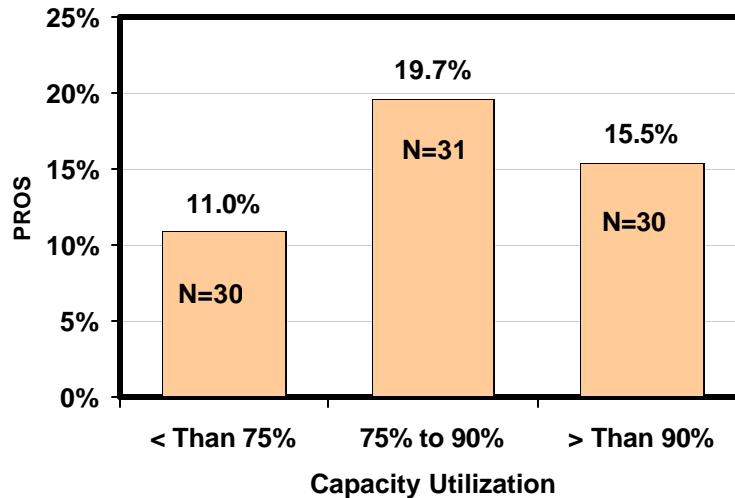


Figure 89, PROS vs. Capacity Utilization

Figure 90 indicates that an industrial commodity business is more likely to be successful when it has standardized its product offerings. The 18 industrial commodities, which were producing custom designed products had a profit rate less than half that of their counterparts producing standard products.

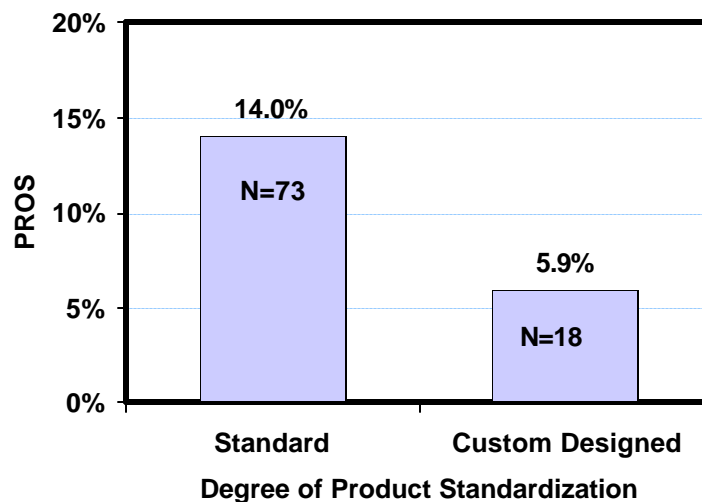


Figure 90, PROS vs. Degree of Product Standardization

The relationship between PROS and the average amount of a sales transaction varies depending on the business situation. Negotiating business ~ in smaller quantities typically means higher marketing costs per dollar of sales. However, large sales transaction amounts usually mean the customer will negotiate tighter margins. In the case of industrial commodities larger transaction

amounts are typically preferable as shown in Figure 91.

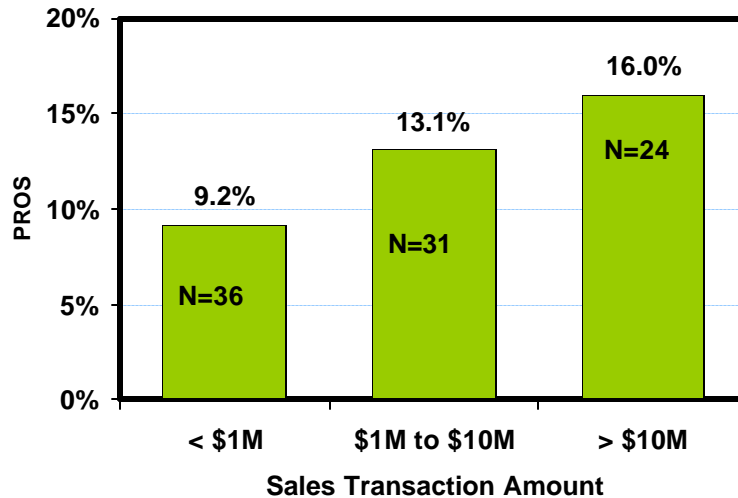


Figure 91, PROS vs. Sales Transaction Amount

Summary

The 91 industrial commodity businesses in the SPI database confirm the importance of a strong relative cost position to the success of such businesses. Manufacturing costs are particularly critical as is maintaining a high level of capacity utilization. It appears better to do business by selling standard rather than custom designed products and sell to customers in relatively large sales transaction amounts. A negative association exists between profitability and employee unionization.

No. 54, February 1985

54 INDUSTRIAL BUSINESS COST RELATIONSHIPS

The percent of total costs spent on different cost elements varies considerably from business to business. The Strategic Planning Institute (SPI) database is frequently used to determine whether cost elements of a specific business are "normal" given its characteristics. This article examines six cost elements.

Industrial Business Cost Statistics

Recently a sizable number of new businesses have been added to the SPI database. There are now over 1,500 industrial businesses, each with four years of data. This increases the number of available business analogs to provide cost and investment norms and examine the profit implications of structural and strategic changes.

One important characterization of a business is its cost structure. Frequently analyses are made of the relationship between fixed and variable costs, the amount of value added, and the amount of money allocated to marketing, R&D, and administrative expense. The SPI database can provide a suitable frame of reference if appropriate analogs are selected for comparisons.

Table 108 shows the mean and standard deviation of six key cost elements. Purchases of raw materials, energy, components, assemblies, supplies, and/or services represent nearly half the total cost of the average industrial business. Manufacturing and physical distribution costs -- the cost of bringing inputs of the business to final form, plus all logistics costs, such as warehousing, freight, insurance, and breakage -- add another 30%. Depreciation, marketing, R&D, and all other expenses account for roughly 22% of costs in the average industrial business.

However, a large amount of variation exists. This is shown both by the standard deviation in Table 1 and Table 109, which shows the distribution of these costs. Table 109 shows the percent of businesses, which exceed five different values of each cost element. The variability in research and development and all other expenses is particularly striking.

Table 108, Industrial Business Cost Statistics
(N=1524)

<u>Cost Element</u>	<u>Percent of Total Costs</u>	
	<u>Average (Mean)</u>	<u>Standard Deviation</u>
Purchases	47.7%	15.8%
Manufacturing and Physical Distribution	30.6%	12.4%
Depreciation	2.8%	2.5%
Marketing	9.0%	6.5%
Research & Development	2.9%	3.0%
All Others	7.1%	6.4%

Table 109, Industrial Business Cost Distribution
(N=1524)

<u>Cost Element</u>	<u>Percent of Businesses Exceeding Value:</u>				
	<u>90%</u>	<u>75%</u>	<u>50%</u>	<u>25%</u>	<u>10%</u>
Purchases	26.5%	35.4%	47.2%	59.4%	69.1%
Manufacturing and Physical Distribution	14.3%	22.2%	30.2%	39.0%	46.8%
Depreciation	0.7%	1.3%	2.2%	3.6%	5.4%
Marketing	2.0%	3.9%	7.5%	12.3%	18.3%
Research & Development	0.03%	0.54%	1.86%	4.12%	7.18%
All Others	1.5%	3.3%	5.8%	9.4%	13.8%

Table 110 shows the correlation among these six cost elements. Natural correlation occurs because the sum of the six must equal 100%. Thus correlations with purchases, the largest cost element, tend to be negative since high values here mean low values elsewhere and vice versa.

Table 110, Correlations Among Cost Elements

	Purchases	Manufacturing, Distribution	Depreciation	Marketing	R & D
Manufacturing, Distribution	-0.70				
Depreciation	-0.1	0.04			
Marketing	-0.45	-0.11	-0.16		
R & D	-0.38	0	0.4	.30	
All Others	-0.43	-0.10	-0.08	.22	.13

The negative correlation between marketing and depreciation indicates some tendency for a business to be either marketing intensive or investment intensive but not both. However, this correlation is not particularly strong. Of interest also is the positive correlation existing between R&D, marketing, and all other expense. This is discussed below.

Relationship to Profitability and Life Cycle Stage

Table 111 shows cost averages by business profitability. The industrial businesses are divided into five nearly equal segments on the basis of pretax return on sales. As can be seen in the table, high profit businesses tend to have less of their total cost in purchases (and thus have higher "value added") and more of their cost in marketing, research and development, and all other expense.

The higher values for marketing and R&D are typically justified in that a high profit business has more incentive to grow. The higher value for all other expense, principally administrative expenses, are likely due to allocation rules in companies (it is easier to "hide" overheads in profitable businesses) and rewards systems which are based at least partly on the number of people managed (it is easier to justify adding resources in profitable businesses).

Table 111, Cost Averages by Business Profitability

<u>Cost Element</u>	<u>Range of PROS</u>				
	Low		High		
	<u>Below 2.5%</u>	<u>2.5% - 8.5%</u>	<u>8.5% - 13.1%</u>	<u>13.1% - 18.9%</u>	<u>Above 18.9%</u>
Purchases	48.3%	52.4%	49.4%	46.1%	42.3%
Manufacturing & Distribution	29.7%	29.3%	30.9%	31.5%	31.3%
Depreciation	2.8%	2.5%	2.6%	2.8%	3.3%
Marketing	8.9%	7.6%	7.9%	9.6%	10.8%
R & D	3.0%	2.2%	2.5%	3.1%	3.5%
All Others	7.3%	6.1%	6.7%	6.8%	8.9%
Sample	305	306	302	305	306

Table 112 shows the cost averages by life cycle stage. Purchases, manufacturing, and distribution costs tend to increase over the life cycle of a business. Depreciation, marketing, R&D, and all other expenses tend to decrease.

Table 112, Cost Averages by Life Cycle Stage

<u>Cost Element</u>	<u>Life Cycle Stage</u>	
	<u>Introduction, Growth</u>	<u>Mature, Decline</u>
Purchases	45.6%	48.3%
Manufacturing and Distribution	27.6%	31.5%
Depreciation	3.1%	2.7%
Marketing	11.3%	8.2%
Research & Development	4.3%	2.4%
All Others	7.8%	6.9%

Summary

The SPI database can provide useful norms for comparison of cost elements if appropriate business analogs are selected from the database. The high variability in business cost structure is shown by the high variability of six specific cost elements.

High profit businesses tend to have lower purchases (higher value added) and higher marketing, R&D and administrative expenses. Costs are shown to vary across the business life cycle as would be expected.

No. 55, March 1985

55 EMPLOYEE UNIONIZATION

Business profitability tends to be lower in businesses which are heavily unionized. This article shows how unionization in businesses selling industrial products varies with the age of the business and how it correlates with business costs and profitability.

Unionization vs. Business Age

As would be expected, businesses which are older and further along in their life cycle position tend to be more heavily unionized. This relationship is quantified in Figure 92 and Figure 93. Figure 92 shows the average percent of employees unionized depending on life cycle position; Figure 93 shows the same relationship with respect to number of years in business.

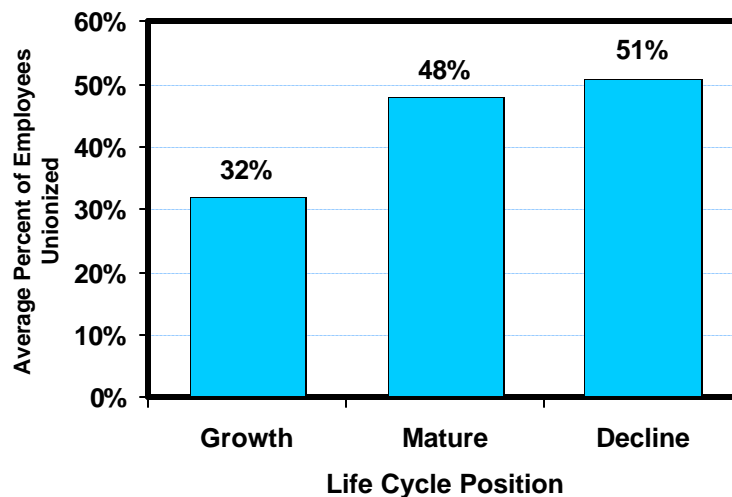


Figure 92, Percent of Employees Unionized vs. Life Cycle Position
(Industrial Businesses N=1524)

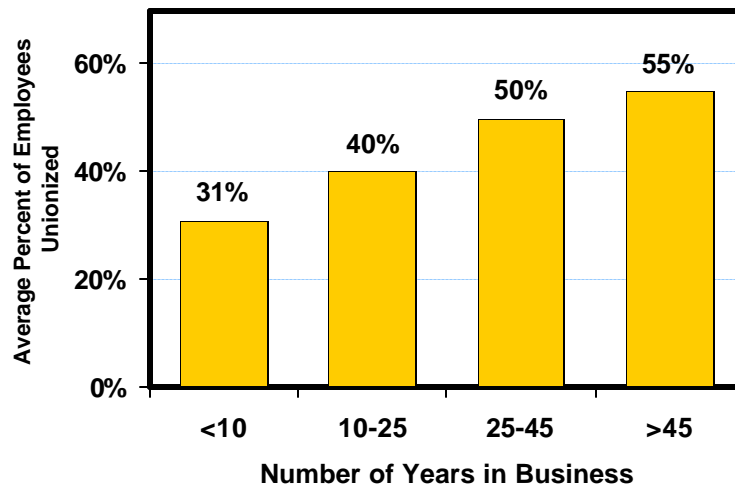


Figure 93, Percent of Employees Unionized vs. Number of Years in Business
(Industrial Businesses N=1524)

Unionization vs. Profitability

Figure 94 shows the negative correlation between profitability measured as average pretax return on sales and percent of employees unionized. Businesses not unionized tend to show profit margins significantly higher than those which are unionized. Businesses with more than half their employees unionized tend to show profit margins lower than those with half or fewer of their employees unionized.

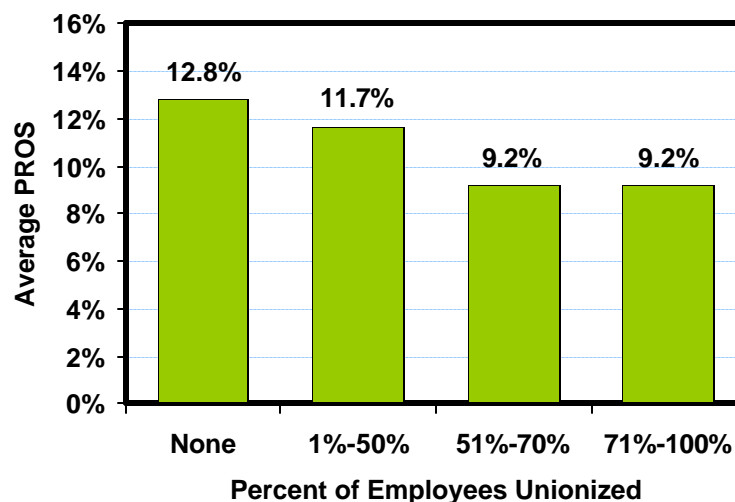


Figure 94, PROS vs. Percent of Employees Unionized
(Industrial Businesses N=1524)

Figure 93 and Figure 94 raise the question of whether lower profitability results from increased

unionization or simply from a business getting older. As shown in Table 113, businesses with more than half of their employees unionized show significantly lower average profitability regardless of number of years in the business. As can be seen in Table 113, businesses less than 10 years old show lower profitability than those more than 10 years old.

Table 113, PROS vs. Employee Unionization and Age of Business
(Industrial Businesses N=1524)

Percent of Employees Unionized	More than Half	6.6% (N=87)	10.2% (N=223)	9.3% (N=234)	9.1% (N=154)
	Half or Fewer	9.1% (N=174)	13.4% (N=308)	13.0% (N=235)	13.0% (N=93)
		< 10	10 - 25	25 - 45	> 45
Number of Years in Business					

Not only is there a negative correlation between level of profitability and employee unionization but also between change in profitability and employee unionization. This is shown in Figure 95. The average annual change in pretax return on sales is again much higher for those businesses not unionized vs. businesses heavily unionized.

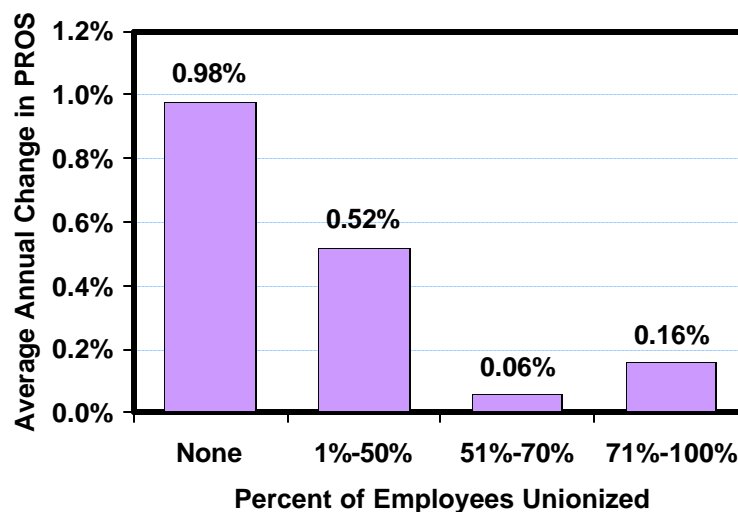


Figure 95, Change in PROS vs. Percent of Employees Unionized
(Industrial Businesses N=1524)

Unionization vs. Costs

As one would expect, the profit pressures brought by employee unionization is largely caused by the added cost pressures. As Figure 96 shows, the average annual increase in wage rates increases with the percent of employees unionized. While the differences shown are relatively small, such differences become much greater when they are compounded over a number of years.

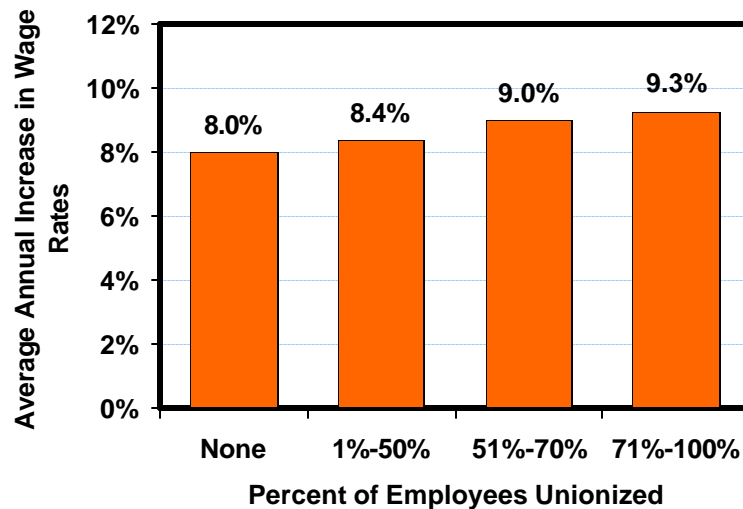


Figure 96, Increase in Wage Rates vs. Percent of Employees Unionized
(Industrial Businesses N=1524)

The effect of these wage rate increases over time is shown in Figure 97. Here we see that businesses which are heavily unionized tend to have higher employee compensation relative to competitors. Again these differences are small, but even a one percent disadvantage in wage rates will leverage against profitability, particularly in labor intensive businesses.

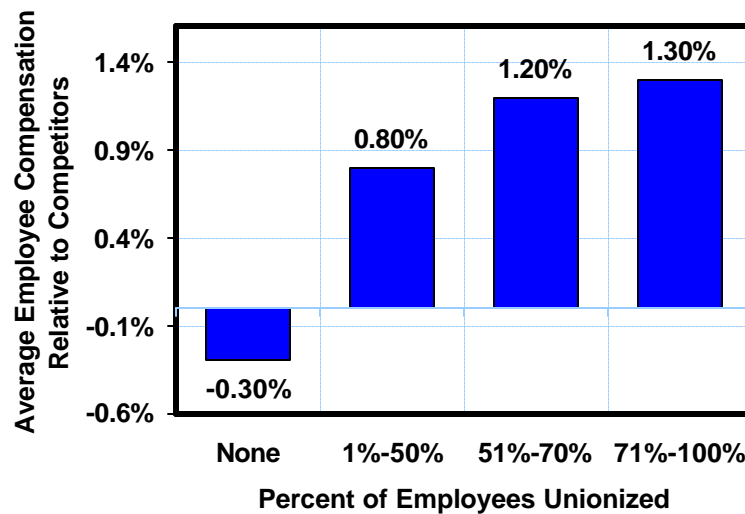


Figure 97, Relative Employee Compensation vs. Percent of Employees Unionized
(Industrial Businesses N=1524)

Summary

This article quantifies relationships between employee unionization, age of business, profitability, and costs. It shows that:

- Unionization increases with age of business;
- Profitability declines with unionization at all levels of age of business;
- Change in profitability also declines with unionization;
- Wage rates and relative employee compensation increase with employee unionization.

No. 56, April 1985

56 LABOR PRODUCTIVITY

Profitability is strongly associated with labor productivity as measured by value added per employee among industrial businesses in the Strategic Planning Institute (SPI) database. High value added per employee businesses tend to have higher market share, higher employee compensation, higher investment per employee, and lower employee unionization.

Profitability vs. Value Added per Employee

Last month's article discussed employee unionization and showed how business profitability tends to be lower in industrial businesses which are heavily unionized. This article extends those findings and discusses labor productivity and its association with profitability and other business characteristics.

Labor productivity is difficult to define and measure and there is no good single measure of it. Most studies of the SPI database have used sales per employee, value added per employee, or sales per salesman as labor productivity measures. For this article value added per employee is used. Value added is defined as sales revenue minus purchases of raw materials, energy, supplies, etc. Because employees have little impact on such purchases, it seems reasonable to deduct purchases and base labor productivity on value added rather than total sales.

Figure 98 shows how pretax return on sales varies with value added per employee. The industrial businesses in the SPI database were divided into roughly equal groupings on the basis of value added per employee. The "breaks" which divide the five groupings are shown on Figure 98.

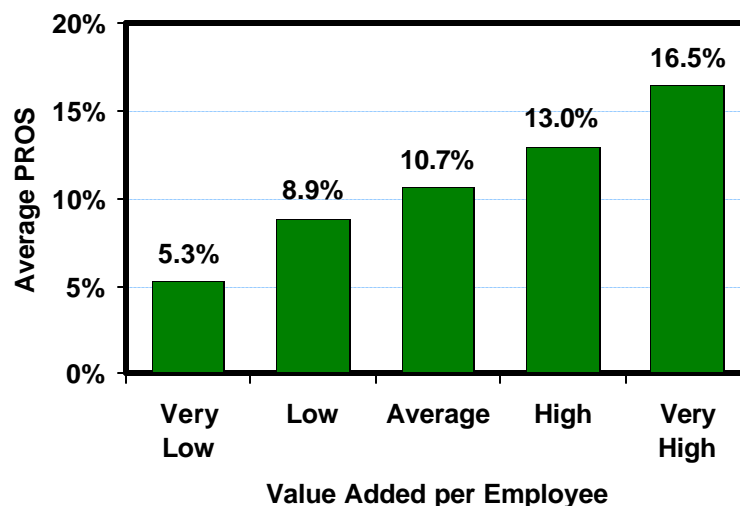


Figure 98, Average PROS vs. Value Added per Employee
(Industrial Businesses N=1524)

The strong relationship shown in Figure 98 is partially due to the fact that profitability is

included in value added. Value added includes profit as well as conversion costs and other costs to bring raw materials to the market. If the relationship were shown on the basis of cost added rather than value added, the correlation, while still positive, would be weaker.

Market Share, Compensation, and Investment

Figure 99 shows the relationship between market share and value added per employee. Note that high value added businesses tend to have somewhat higher market share on average.

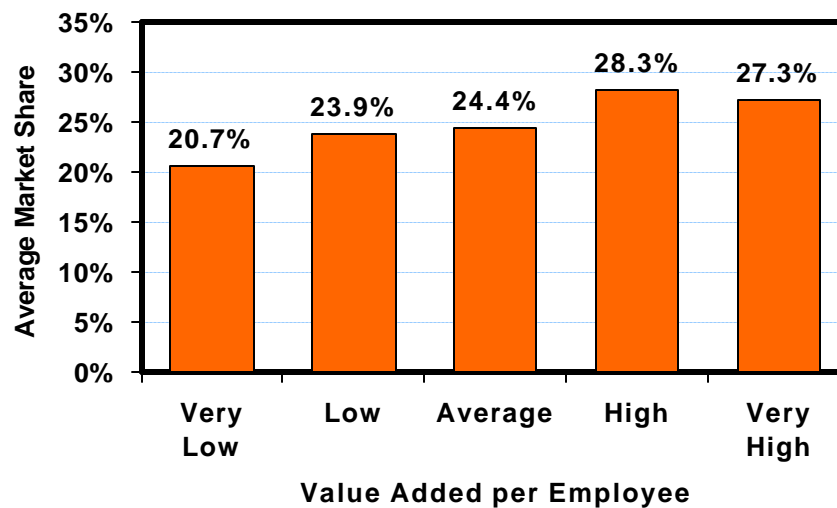


Figure 99, Average Market Share vs. Value Added per Employee
(Industrial Businesses N=1524)

High value added businesses also tend to pay their employees more relative to competitors. These differences, while not large, are statistically significant. Figure 100 is particularly interesting when compared with Figure 97 from last article. That figure showed that compensation increased with employee unionization which suggested that perhaps high compensation means lower profitability. This figure suggests that higher compensation can be associated with higher profitability.

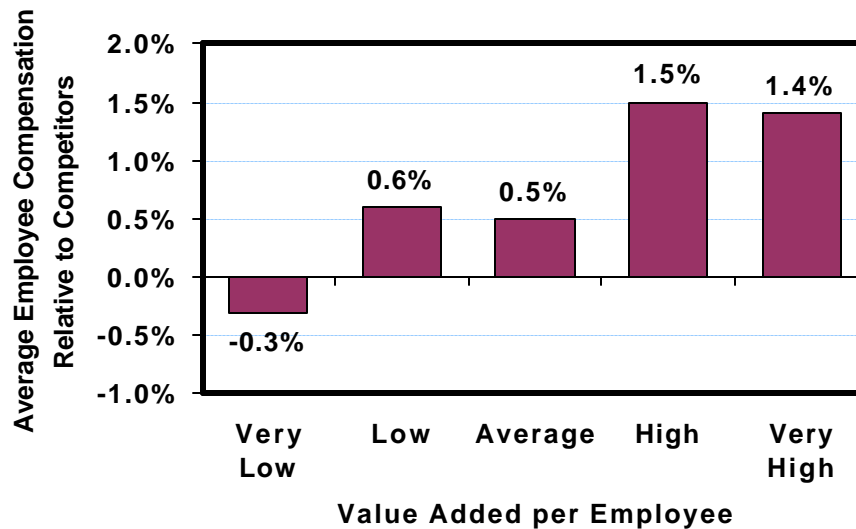


Figure 100, Relative Employee Compensation vs. Value Added Per Employee
(Industrial Businesses N=1524)

High value added per employee industrial businesses also tend to have higher investment per employee. This supports the frequently discussed labor/capital tradeoff. Figure 102 shows that very high investment is typically associated with very high value added. These businesses tend to have relatively few employees for the size of the business and therefore, on a per employee basis, show very high levels of both investment and value added.

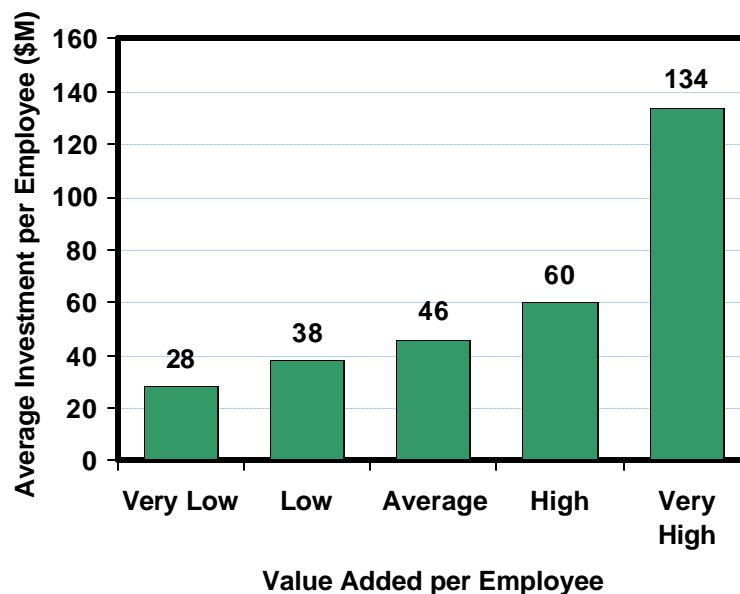


Figure 101, Average Investment per Employee vs. Value Added per Employee
(Industrial Businesses N=1524)

Employee Unionization

Figure 102 shows that average employee unionization tends to decrease slightly with value added per employee. This corresponds to our finding that profitability decreases with unionization but increases with value added per employee.

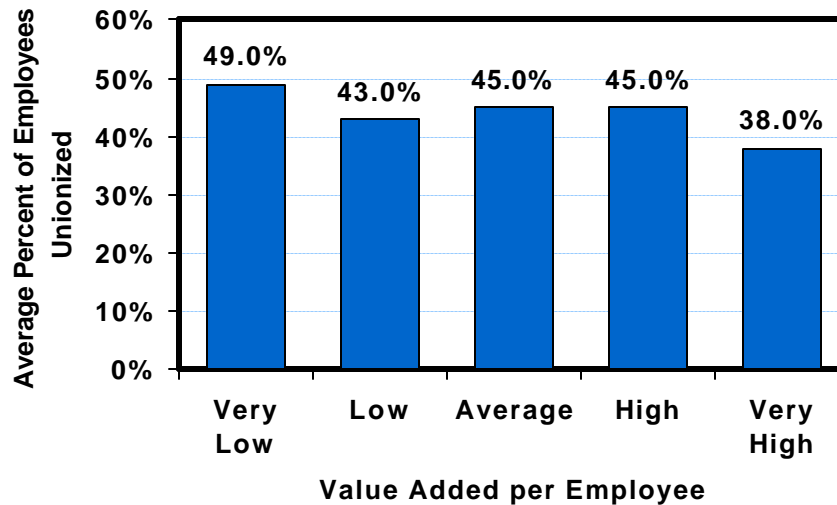


Figure 102, Average Employee Unionization vs. Value Added per Employee
(Industrial Businesses N=1524)

Of more significance is the effect that unionization has at different levels of value added per employee. Table 114 shows how profitability both employee unionization and value added per employee. As Table 114 indicates, avoiding unionization is more important for high value added businesses. In particular, the 201 businesses with very high levels of value added per employee and half or fewer of its employees unionized show significantly higher levels of pretax return on sales than other businesses.

Table 114, Average PROS vs. Employee Unionization and Value Added per Employee
(Industrial Businesses N=1524)

Percent of Employees Unionized		Value Added per Employee				
		Very Low	Low	Average	High	Very High
	More than Half	6.2% (N=167)	7.0% (N=149)	10.2% (N=152)	11.6% (N=140)	12.4% (N=106)
	Half or Fewer	4.2% (N=138)	10.8% (N=151)	11.1% (N=162)	14.2% (N=158)	18.6% (N=201)

Summary

This article summarizes some key findings with respect to labor productivity as measured by value added per employee. In particular, industrial businesses with high value added per employee tend to have:

- Higher profitability;
- Higher market share;
- Higher employee compensation;
- Higher investment per employee;
- Lower employee unionization.

Avoiding unionization seems to be more important for high value added per employee businesses.

No. 57, May 1985

57 LABOR PRODUCTIVITY AND PROFITABILITY

Last month's article showed a strong association between profitability and labor productivity as measured by value added per employee among industrial businesses in the Strategic Planning Institute (SPI) database. This article examines how profitability varies with labor productivity depending on type of business, market structure, and marketing factors.

Type of Business

As mentioned last month there is no good single measure of labor productivity. Value added per employee was used as a reasonable measure. Value added is sales revenue minus purchases of raw materials, energy, supplies, etc. Employees are full-time equivalents. The profit measure used is pretax return on sales (PROS). The strong relationship between PROS and value added per employee was shown in the last article. It was pointed out that part of the strong association is due to profit being included in value added.

Table 115 shows how this relationship varies by type of business. The industrial businesses in the database were broken into roughly equal "thirds" on the basis of value added per employee. "Medium" businesses are those with value added per employee between \$24.1M and \$37.8M. "Low" businesses are below this range and "high" businesses are above this range.

As Table 115 shows, the pattern for raw and semifinished materials differs from the other types of industrial businesses. Medium levels of value added per employee show significantly lower profit levels for raw and semifinished materials. For such businesses, high value added significantly increases the odds of having high profitability.

Table 115, Average PROS vs. Value Added per Employee and Type of Business
(Industrial Businesses N=1524)

Type of Business		Value Added per Employee		
		Low	Medium	High
	Capital Goods	5.6% (N=140)	10.9% (N=150)	12.7% (N=125)
	Raw and Semifinished Materials	7.6% (N=45)	6.8% (N=51)	14.8% (N=128)
	Components, Supplies, Consumables	6.8% (N=320)	10.9% (N=306)	17.2% (N=259)

Market Structure

Table 116 shows how profitability varies with market share rank and value added per employee. The combined importance of these two factors is evident from the figure. Businesses first ranked in market share having high value added per employee tend to be highly profitable. Low value added businesses ranked third or lower in market share barely break even on average.

Table 116, Average PROS vs. Value Added per Employee and Market Share Rank
(Industrial Businesses N=1524)

Market Share Rank	First	10.0% (N=173)	13.0% (N=203)	19.3% (N=227)
	Second	6.7% (N=115)	10.1% (N=122)	13.7% (N=122)
	Third or Lower	3.7% (N=217)	7.9% (N=182)	11.6% (N=163)
		Low	Medium	High
		Value Added per Employee		

Table 117 shows the relationship between number of competitors and value added per employee. High value added businesses tend to have more profit "leverage" with respect to number of competitors and are more profitable with fewer.

Table 117, Average PROS vs. Value Added per Employee and Number of Competitors
(Industrial Businesses N=1524)

Number of Competitors	More Than 10	5.5% (N=202)	10.0% (N=191)	13.5% (N=173)
	6 to 10	6.8% (N=171)	10.0% (N=194)	15.1% (N=178)
	Less Than 6	7.8% (N=132)	12.1% (N=122)	18.1% (N=161)
		Low	Medium	High
		Value Added per Employee		

Another market structure variable is the number of direct customers. Low value added businesses tend to be less profitable if they sell to few customers; medium value added businesses tend to be better off if they sell to many customers.

Table 118, Average PROS vs. Value Added per Employee and Number of Direct Customers
(Industrial Businesses N=1524)

Number of Direct Customers	1,000 or More	7.5% (N=139)	12.7% (N=153)	16.7% (N=133)
	100 to 999	7.2% (N=236)	9.6% (N=225)	14.8% (N=241)
	Less Than 100	4.3% (N=130)	9.3% (N=129)	15.5% (N=138)
		Low	Medium	High
		Value Added per Employee		

Marketing Factors

Table 119 shows how profitability varies with the amount of customers' purchases from the business and value added per employee. High value added businesses tend to be more profitable when they account for no more than 1% of the total purchases of their customers.

Table 119, Average PROS vs. Value Added for Employee and Amount of Customers' Purchases (Industrial Businesses N=1524)

Amount of Customers' Purchases	More Than 1%	6.5% (N=359)	10.6% (N=355)	14.1% (N=379)
	1% or Less	6.6% (N=146)	10.2% (N=152)	19.6% (N=133)
		Low	Medium	High
		Value Added per Employee		

Table 120 shows the relationship between profitability, marketing expenses and value added per employee. As the figure indicates, low value added businesses tend to be slightly better off with medium to low levels of marketing expense; on the other hand, high value added businesses tend to be slightly better off with higher levels of marketing expense.

Table 120, Average PROS vs. Value Added per Employee and Marketing Expenses (Industrial Businesses N=1524)

Marketing Expenses (% of Sales)	High 9.2%	5.5% (N=161)	9.9% (N=104)	16.5% (N=165)
	Medium	7.2% (N=193)	11.5% (N=183)	15.8% (N=148)
	Low 4.5%	6.7% (N=151)	9.8% (N=140)	14.5% (N=199)
		Low	Medium	High
		Value Added per Employee		

Summary

- High value added businesses tend to be more profitable than low value added businesses. They tend to be particularly profitable when they are first ranked in market share, have few competitors, and account for less than 1% of their customers' purchases.
- Low value added per employee businesses tend to be even less profitable when they are third or lower in market share and have fewer ~ than 100 direct customers.
- Raw and semi finished material businesses tend to need high value added V per employee to be successful.
- Value added per employee tends to have more profit leverage in industries having few competitors.
- Low value added businesses on average tend to do a little better with low or medium marketing expense while high value added per employee businesses do better with high levels of marketing expense.

No. 58, June 1985

58 R&D/MARKETING EXPENSE ALLOCATION: SUCCESSFUL INGREDIENT PRODUCERS

Successful ingredient producers vary considerably in how they allocate funds between R&D and Marketing; on average they spend 56¢ on R&D for every dollar spent on Marketing. High market share firms, those with few competitors, and those with few customers tend to spend more on R&D relative to Marketing. A shift from R&D to Marketing spending tends to occur over the life cycle of a business as market growth declines. Businesses in markets growing at less than 6% per year in physical volume tend to spend much less on R&D relative to Marketing than businesses in markets growing at greater than 6%.

Budget and Allocation Decisions

One important use of the Strategic Planning Institute (SPI) database has been in testing budget and allocation decisions opposite practices of other comparable businesses. Such analyses are never definitive since a business should not necessarily follow the practices of its peers. However, studying the practices of businesses with characteristics similar to your business can often lead to important insights. In doing this, it is generally better to examine the practices of successful businesses.

Many industrial businesses produce ingredient products -- those consumed by customers in their manufacturing operations. This article examines how successful ingredient businesses divide budgets between R&D and Marketing. These are defined as 390 producers of raw materials, semifinished products, and components for finished products in the SPI database who earned at least a 13% pretax return on investment (PROI). These businesses average 25.8% PROI; 48% are ranked first in their industry in market share.

R&D/Marketing Expense Allocation

On average, successful ingredient producers spend ~ on Research and Development for every dollar spent on Marketing. (Marketing and R&D expenditures are defined at the end of this article.) As expected, this amount varies substantially depending on other business characteristics.

One important difference is life cycle position. Businesses in the growth of their life cycle average 62¢ R&D per dollar of Marketing. Businesses in the mature phase of their life cycle average 52¢. Thus, successful ingredient producers tend to shift more money to Marketing relative to R&D as their business matures.

This is confirmed by looking at market growth. Businesses in markets growing at 6% per year or more (in physical volume) average 68¢ R&D per dollar of Marketing. Businesses in markets growing at less than 6% average 47¢. Thus, a shift from R&D to Marketing tends to occur when market growth diminishes.

Market share rank and number of competitors have a significant influence. As shown in Table

121, businesses first ranked in share and those with fewer competitors tend to spend more on R&D relative to Marketing.

Table 121, Average R&D/Marketing Expenditure by Share Rank and Number of Competitors

		<u>Number of Competitors</u>	
		<u>Up to 10</u>	<u>11 or More</u>
	First	68¢	53¢
Market Share Rank	Second and Lower	54¢	39¢

The amount of customer purchases which your product represents also has an influence. If your product represents less than 5% of your customers' total purchases, R&D averages 48¢ per dollar of Marketing. If your product represents 5% to 25% of customers' purchases, R&D averages 59¢. If your product represents more than 25%, R&D averages 76¢ per dollar of marketing.

Very large differences occur depending on the number of customers. As the number of customers increases -- both direct customers and end users -- the amount spent on R&D relative to Marketing dramatically decreases as shown in Table 122 and Table 123.

Table 123Table 122, Average R&D/Expenditures by Number of Direct Customers

<u>Number of Direct Customers</u>	<u>Sample Size</u>	<u>Average R&D per Marketing Dollar</u>
Up to 20	46	119¢
20 to 99	83	66¢
100 to 999	189	44¢
1,000 or More	72	35¢

Table 123, Average R&D/Expenditures by Number of End Users

<u>Number of End Users</u>	<u>Sample Size</u>	<u>Average R&D per Marketing Dollar</u>
Up to 99	95	98¢
100 to 999	141	48¢
1,000 to 9,999	88	39¢
10,000 or More	66	34¢

Variation in Profitability

A last issue examined was how PROI varied depending on the R&D/Marketing ratio for these 390 successful ingredient producers. They were divided into five roughly equal segments based on R&D/Marketing. As Table 124 shows, PROI was highest for those businesses spending between 44¢ and 83¢ of R&D per dollar of Marketing. Second highest were those spending little or nothing on R&D. High R&D/Marketing spending businesses showed below average results.

Table 124, Average Profitability Depending on the R&D/Marketing Allocation

<u>Average R&D per Dollar of Marketing</u>	<u>Sample Size</u>	<u>Average PROI</u>
Up to 7¢	76	27.4%
7¢ to 24¢	82	24.9%
24¢ to 44¢	76	23.0%
44¢ to 83¢	76	31.0%
Over 83¢	80	23.0%
Total	390	25.8%

Summary

Successful ingredient producers' average 56¢ on R&D spending for every dollar spent on

Marketing. They tend to spend more on R&D relative to Marketing if they:

- Are early in their life cycle;
- Have markets growing at more than 6% (physical volume);
- Are first ranked in market share;
- Have few competitors;
- Have few direct customers and end users.
- They tend to be more profitable when spending very low amounts or slightly
- Above average amounts on R&D relative to Marketing.

No. 59, July 1985

59 R&D AND MARKETING EXPENSES: SUCCESSFUL INGREDIENT PRODUCERS

Successful ingredient producers average eight percent of sales revenue on R&D and Marketing. The amount spent varies considerably depending on life cycle position, manufacturing characteristics, and customer characteristics.

Budget and Allocation Decisions

The last article described how successful ingredient producers tend to divide budgets between R&D and Marketing. As was pointed out, the Strategic Planning Institute (SPI) database has proven useful for studying the budgeting practices of businesses with characteristics similar to your business.

This article extends that analysis by examining the budgeting practices of successful ingredient producers with respect to R&D and Marketing. Previous articles (Nos. 39-41) have examined marketing budgeting practices for all industrial businesses. These articles focus on successful ingredient businesses only. These are producers of raw materials, semifinished products, and components for finished products in the SPI database, which have at least a 13 percent pretax return on investment (PROI). There are 390 such businesses in the database; they average 25.8% PROI and almost half are ranked first in their industry in market share.

Life Cycle Position

As expected, the total amount of money successful ingredient producers spend on Marketing and R&D tends to decline over the life cycle of the business. Growth businesses average 10.4¢ on Marketing and R&D per dollar of sales revenue; mature businesses average 7.0¢. Businesses in markets growing at 6% per year or more (in physical volume) average 8.9¢; those in markets growing at less than 6% average 7.4¢.

As shown in Table 125, businesses with a larger percent of their total sales accounted for by new products, those introduced within the past three years, tend to spend more money on Marketing and R&D per dollar of sales revenue.

Table 125, Average Marketing and R&D Expenditures per Dollar of Sales Revenue by percent of sales Accounted by Products Introduced in Past Three Years

<u>Percent of Sales Accounted for by Products Introduced in the last 3 years</u>	<u>Sample Size</u>	<u>Average Marketing and R&D Expenditures per Dollar of Sales Revenue</u>
None	150	6.1¢
Up to 4.7%	83	8.3¢
4.7% to 12.3%	79	9.3¢
More than 12.3%	78	10.1¢

Manufacturing Characteristics

A number of manufacturing characteristics correlate with the amount of money successful ingredient producers spend on Marketing and R&D. As shown in Table 126, higher levels of employee unionization are typically associated with lower levels of Marketing and R&D spending. This is at least partly a life cycle phenomenon in that unionization tends to increase with the age of a business (see article No. 55).

Table 126, Average Marketing and R&D Expenditures per Dollar of Sales Revenue by Percent of Employees Unionized

<u>Percent of Employees Unionized</u>	<u>Sample Size</u>	<u>Average Marketing and R&D Expenditures per Dollar of Sales Revenue</u>
1% or Less	125	9.3¢
2% to 27%	33	9.2¢
28% to 58%	70	8.5¢
59% to 75%	88	7.3¢
76% or Greater	74	5.5¢

Another manufacturing characteristic associated with life cycle position is the amount of value added in manufacturing. This is measured by the amount of money spent on manufacturing conversion costs for each dollar spent on purchases of raw materials, energy, components, assemblies, supplies, and services. Manufacturing conversion costs include the cost of bringing these inputs to final form and includes physical distribution costs, warehousing, and

depreciation. As can be seen in Table 127, higher levels of manufacturing value added are associated with higher levels of Marketing and R&D on average.

Table 127, Average Marketing and R&D Expenditures per Dollar of Sales Revenue by Manufacturing Conversion Cost per Dollar of Cost of Purchases

Manufacturing Conversion Cost per Dollar of Cost of <u>Purchases</u>	<u>Sample Size</u>	<u>Average Marketing and R&D Expenditures per Dollar of Sales Revenue</u>
35¢ or Less	77	5.9¢
35¢ to 58¢	80	7.4¢
58¢ to 83¢	78	7.2¢
83¢ to \$1.30	77	9.2¢
More than \$1.30	78	10.2¢

Still another manufacturing characteristic strongly associated with Marketing and R&D expenditures is capacity utilization. As shown in Table 128, lower levels of capacity utilization are normally associated with higher levels of Marketing and R&D spending. This occurs primarily because business cycle fluctuations tend to have a much larger impact on production and sales levels than on Marketing and R&D spending.

Table 128, Average Marketing and R&D Expenditures per Dollar of Sales Revenue by Capacity Utilization

<u>Capacity Utilization</u>	<u>Sample Size</u>	<u>Average Marketing and R&D Expenditures per Dollar of Sales Revenue</u>
Less than 67%	78	11.2¢
67% to 78%	79	8.1¢
78% to 84.5%	72	8.2¢
84.5% to 93%	83	6.3¢
93% or More	78	6.1¢

Customer Characteristics

Successful ingredient producers tend to spend more money on Marketing and R&D per dollar of sales revenue when they have more customers. This is shown in Table 129 (direct customers) and Table 130 (end users).

Table 129, Average Marketing and R&D Expenditures per Dollar of Sales Revenue by Number of Direct Customers

<u>Number of Direct Customers</u>	<u>Sample Size</u>	<u>Average Marketing and R&D Expenditures per Dollar of Sales Revenue</u>
Less than 100	129	6.7¢
100 to 999	189	8.3¢
1,000 or More	72	9.5¢

Table 130, Average Marketing and R&D Expenditures per Dollar of Sales Revenue by Number of End Users

<u>Number of End Users</u>	<u>Sample Size</u>	<u>Average Marketing and R&D Expenditures per Dollar of Sales Revenue</u>
Less than 100	95	6.4¢
100 to 999	141	7.2¢
1,000 or More	154	9.7¢

Another correlating customer characteristic is the size of the average customer sales transaction. As shown in Table 131, when a successful ingredient producer tends to sell to his customer in large sales transactions, he typically spends less on Marketing and R&D.

Table 131, Average Marketing and R&D Expenditures per Dollar of Sales Revenue by Size of Average Customers Sales Transaction

<u>Size of Average Customer Sales Transaction</u>	<u>Sample Size</u>	<u>Average Marketing and R&D Expenditures per Dollar of Sales Revenue</u>
Less than \$1M	54	11.8¢
\$1M to \$10M	154	8.5¢
\$10M - \$100M	127	6.6¢
More than \$100M	55	5.9¢

There is also an association with your importance as a supplier to your customer. When your sales represent a small part of your customer's purchases, you typically have to spend more money on Marketing and R&D. When your purchases represent a sizable portion of your customer's purchases, the amount spent on Marketing and R&D is typically much lower. In the latter situation your customer base is usually smaller and more concentrated.

Table 132, Average Marketing and R&D Expenditures per Dollar of Sales Revenue by Amount of Customer Purchases Your Product Represents

<u>Amount of Customers' Purchases that Your Products Represent</u>	<u>Sample Size</u>	<u>Average Marketing and R&D Expenditures per Dollar of Sales Revenue</u>
1% or Less	98	10.5¢
1% to 5%	114	8.2¢
5% to 25%	121	7.1¢
25% or More	57	5.2¢

Variation in Profitability

Table 133 shows how average profitability among these successful ingredient producers varies by the Marketing and R&D spending level. While high levels spent on Marketing and R&D tend to be associated with higher levels of pretax return on investment, this does not necessarily mean that one causes the other. There is undoubtedly some mutual cause and effect as well as association with some of the factors previously cited.

Table 133, Average Profitability by Marketing and R&D Spending Level

Marketing and R&D Expenditures per Dollar of <u>Sales Revenue</u>	<u>Sample Size</u>	<u>Average PROI</u>
Less than 2.9¢	76	25.0%
2.9¢ to 5.7¢	79	21.8%
5.7¢ to 8.6¢	80	25.1%
8.6¢ to 12.2¢	76	27.3%
More than 12.2¢	79	30.0%

Summary

Successful ingredient producers on average spend 8¢ on Marketing and R&D spending for every dollar of sales revenue. They tend to spend more on Marketing and R&D if they:

- Are early in their life cycle;
- Have a high percent of their sales accounted for by new products;
- Have low employee unionization;
- Add more value in manufacturing;
- Have low capacity utilization;
- Have many direct customers and end users;
- Sell to customers in small sales transactions;
- Represent a small amount of what their customers buy in total.

Using this article together with last month's, it is possible to develop rough "norms" for both R&D and Marketing spending by successful ingredient producers. This is done by developing estimates of the characteristics shown in the tables of these two articles, finding the associated budget and allocation values from the tables, and taking averages of these values. Again such analyses are not definitive since a business should not necessarily follow the practices of its peers -- even those which have been successful.

No. 60, August 1985

60 RELATIVE MARKETING EXPENDITURES: SUCCESSFUL INGREDIENT PRODUCERS

Successful ingredient producers tend to provide better customer service, spend near equal amounts on their sales force, and spend less on advertising relative to competition. However, those who outspend competitors on advertising have an average pretax return on investment (PROI) six percentage points higher.

Relative Marketing Expenditures

The previous two articles focused on R&D and marketing budgeting and allocation practices of successful ingredient producers. These are producers of raw materials, semifinished products, and components for finished products in the Strategic Planning Institute (SPI) database which have at least a 13% PROI. There are ~ such businesses in the database; they average 25.8% in PROI and almost half are ranked first in their industry in market share.

As shown in Table 134, 61% of these businesses believe they provide better customer service to end users than their competitors provide; only 7% believe they provide service worse than competitors. Thus successful ingredient producers tend to be very concerned with customer service. However, as Table 134 also indicates, there is essentially no association between the quality of customer service provided and profitability as measured by PROI.

Table 134, Customer Service Relative to Competition

<u>Relative Customer Service</u>	<u>Number (%) of Businesses</u>	<u>Average PROI</u>
Worse than Competition	28 (7%)	25.8%
About the Same as Competition	125 (32%)	25.6%
Better than Competition	237 (61%)	26.0%

Table 135 shows that successful ingredient producers on average spend about the same amount of money on their sales force effort (as a percent of sales) as competitors spend. Distribution is evenly balanced with roughly one-third of the businesses in each of the three categories shown. Those spending more than competitors tend to show a slightly higher level of profitability.

Table 135, Sales Force Expenditures Relative Competition

<u>Relative Sales Force</u>	<u>Number (%) of Businesses</u>	<u>Average PROI</u>
Worse than Competition	124 (32%)	24.5%
About the Same as Competition	144 (37%)	25.9%
Better than Competition	122 (31%)	37.1%

Only one successful ingredient producer in five outspends its competition on advertising measured by media expenditures as a percent of sales. This may be due in part to the economy of scale realized by these larger, more successful producers. However, those outspending competitors in advertising tend to realize higher profitability. As Table 136 indicates, these 75 businesses have an average PROI six percentage points higher than the other businesses.

Table 136, Advertising Expenditures Relative to Competition

<u>Relative Advertising</u>	<u>Number (%) of Businesses</u>	<u>Average PROI</u>
Worse than Competition	158 (41%)	24.5%
About the Same as Competition	157 (40%)	24.8%
Better than Competition	75 (19%)	30.8%

Relative Product Image/Company Reputation

As shown in Table 137, two out of three of these successful ingredient producers believe their product image and/or company reputation among end users is better than competitors. One-third are "About the same" or "Worse" with most reporting, "About the same." Surprisingly, there is little difference in average profitability.

Table 137, Product Image/Company Reputation Relative to Competitors

<u>Relative Image</u>	<u>Number (%) of Businesses</u>	<u>Average PROI</u>
About the Same or Worse than Competitors	133 (34%)	25.0%
Better than Competition	257 (66%)	26.3%

Interaction between Image and Relative Marketing Effort

As shown in Table 138, a strong, positive association exists between image and both relative customer service and relative advertising. Very little association exists between image and relative sales force expenditures.

Table 138, Interaction between Image and Relative Marketing Effort

	<u>Number of Businesses</u>	<u>Number with Image Relative to Competitors</u>		<u>Percent of Businesses with Better Image</u>
		<u>Same/Worse</u>	<u>Better</u>	
<u>Relative Customer Service:</u>				
Same or Worse than Competition	153	94	59	44%
Better than Competition	237	39	198	84%
<u>Relative Sales Force Expenditures:</u>				
Less than Competition	124	39	85	69%
About the Same as Competition	144	62	82	57%
More than Competition	122	32	90	74%
<u>Relative Advertising Expenditures:</u>				
Less than Competition	158	67	91	48%
About the Same as Competition	157	57	100	64%
More than Competition	75	9	66	88%

As mentioned previously, successful ingredient producers believe they have a "Better" image than competitors (relative to "About the same" or "Worse") in a 2-to-1 ratio. Those that are perceived by end users to have better customer service believe they have a better overall image in a 5-to-1 ratio. However, this ratio increases to 7-to-1 among those businesses, which outspend competition on advertising.

As pointed out in previous articles, care must be taken in attempting to infer cause and effect from such associations. It is impossible to determine the extent to which spending practices

affect profitability and image and the extent to which profitability and image affect budgeting practices.

Summary

Successful ingredient producers on average believe they have better customer service than competition, near equal sales force expenditures (as a percent of sales), and lower advertising expenditures (as a percent of sales). Those which outspend competitors in advertising tend to have significantly higher profitability as measured by pretax return on investment.

Two-thirds of these businesses believe they have a product image and/or company reputation better than competitors. A positive association exists between image and both the quality of customer service and the amount of money spent on advertising.

No. 61, September, 1985

61 ADVERTISING AND PROMOTION PRACTICES: SUCCESSFUL INGREDIENT PRODUCERS

Seventy-eight percent of successful ingredient producers spend some amount of their marketing budget on advertising and promotion. They are more likely to spend on advertising and promotion if they are introducing new products, have a large customer base, sell to direct customers in small transaction amounts, account for a small percentage of their customers' purchases, have high value added, and have high sales force expenses.

Advertising and Promotion Practices by Type of Business

Budget decisions are typically a two-part process: (1) determining whether to spend on a specific budget item and (2) determining to spend on that budget item. This article focuses on the first question with respect to advertising and promotion spending. Next month's article will examine the second question, the amount spent on advertising and promotion.

Whether a business spends on advertising and promotion depends in part on what type business it is. Table 139 summarizes the percent of businesses spending on advertising and promotion by type of business. These data are from the Strategic Planning Institute (SPI) database.

As can be seen in Table 139, almost all consumer nondurable and capital goods businesses spend some portion of their marketing budget on advertising and promotion. Nine out of ten consumer durable, supplies, and consumables businesses allocate funds to advertising and promotion. However, only three out of four ingredient product businesses spend on A&P.

Table 139, Advertising and Promotion Practices by Type of Business Percent

<u>Type of Business</u>	<u>Sample Size</u>	<u>Percent of Businesses Spending on Advertising & Promotion</u>
Consumer Durables	280	90%
Consumer Nondurables	370	97%
Capital Goods	415	96%
Ingredient Products	778	75%
Supplies and Consumables	321	90%

Advertising and Promotion Practices for Successful Ingredient Producers

The previous three articles focused on R&D and marketing budgeting and allocation practices of successful ingredient producers. These are producers of raw materials, semifinished products,

and components for finished products in the SPI database which have at least a 13% pretax return on investment. There are 390 such businesses in the database; they average 25.8% in PROI and almost half are ranked first in their industry in market share. Seventy-eight percent of successful ingredient producers spend at least some amount of money on advertising and promotion; 72% of ingredient producers earning less than a 13% PROI spend on A&P.

The chances of a business spending money on advertising and promotion varies considerably depending on the specific characteristics of the successful ingredient producer business. Key business characteristics which seem to have the most influence on whether a business spends on A&P are summarized in Table 140.

Table 140, Successful Ingredient Producer Advertising and Promotion Practices

<u>Business Characteristics</u>	<u>Range</u>	<u>Sample Size</u>	<u>Percent Businesses Spending on A/P</u>
Percent New Products	None	150	69%
	Some	240	83%
Number of End Users	Less than 100	95	54%
	100 to 999	141	80%
	1,000 to 9,999	88	90%
	10,000 or More	66	92%
Number of Direct Customers	Less than 100	129	61%
	100 to 999	189	82%
	1,000 or More	72	97%
Sales Transaction Amount	Less than \$1,000	54	91%
	\$1M to \$10M	154	85%
	\$10M to \$100M	127	70%
	More than \$100M	55	64%
Percent of Customer Purchases	Less than 1%	98	87%
	1% to 25%	235	78%
	More than 25%	57	61%
Value Added as Percent of Sales Revenue	Up to 49%	103	65%
	49% to 63%	125	77%
	More than 63%	162	87%
Sales Force Expenses as Percent of Sales Revenue	Up to 2.5%	154	66%
	2.5% to 5.5%	143	82%
	More than 5.5%	93	91%
Physical Volume Growth of Market	Less than 2%	134	73%
	2% to 8%	101	78%
	More than 8%	155	82%

The first business characteristic shown is percent new products. A business is considered to have introduced a new product if it has sales of product(s) introduced during the preceding three years. Eighty-three percent of businesses having some new product(s) spend on A&P only 69% of those without new product(s) spend on Advertising and Promotion.

Probably the most important characteristic related to whether a business spends on A&P is the number of customers which the business has. Table 140 shows strong correlation with both end users and direct customers. A business with at least a thousand direct customers is almost certain to spend on Advertising and Promotion. Another important customer characteristic is the size of the average customer sales transaction. Successful ingredient producers who sell to direct customers in large sales transaction amounts are less likely to spend on A&P.

A successful ingredient producer is more likely to spend on A&P if his sales represent a small part of his customer's purchases. Seven out of eight spend on A&P in situations where his sales represent less than 1% of what the direct customers purchase.

Strong association exists between spending on A&P and value added as a percent of sales revenue. Value added is defined as sales revenue minus total purchases of raw materials, energy, supplies, etc. For those businesses whose value added is less than 49% of sales revenue, less than two of three spend on A&P.

Businesses which have high sales force expenses also tend to advertise and promote. Two out of three businesses spend on A&P if their sales ~ force expenses are less than 2.5% of sales revenue. Nine of ten successful ingredient producers spend on A&P if their sales force expenses are more than 5.5% of sales revenue.

Some association also exists with respect to physical volume growth of the market served by the business. The odds of spending on A&P are higher if the market is growing faster. However, the difference between high growth and low growth businesses is not as great as might be expected.

Summary

If an ingredient producer is undecided whether Advertising and Promotion should be part of his "marketing mix," it may be useful to examine the practices of successful ingredient producers. Such businesses are more likely to spend on A&P if:

- They are introducing new products;
- They have many end users and direct customers;
- They sell to their direct customers in small sales transaction quantities;
- Their sales account for a small percentage of their customer purchases;
- They have high value added as a percent of sales revenue;
- They spend heavily on sales force expenses as a percent of sales revenue;
- They are in higher growth markets.

No. 62, October 1985

62 ADVERTISING AND PROMOTIONAL SPENDING: SUCCESSFUL INGREDIENT PRODUCERS

Seventy-eight percent of successful ingredient producers spend some amount of their marketing budget on Advertising and Promotion. These businesses average 0.77% of their total sales revenue on A&P. They tend to spend above average amounts if they:

- Are early in their life cycle;
- Have a large number of end users, direct customers, or competitors;
- Have relatively high product R&D and sales force expenditures;
- Produce standard products;
- Sell in small sales transaction amounts;
- Have high value added;
- Are not heavily unionized.

Advertising and Promotion Spending

As discussed in last article, budget decisions are typically a two-part process:

- (1) Determining whether to spend and
- (2) Determining how much to spend.

Last month's article examined business characteristics which relate to whether a business spends on A&P. This article is focused on the amount spent by 304 successful ingredient producers in the Strategic Planning Institute (SPI) database who spend some amount of money on Advertising and Promotion. These are producers of raw materials, semifinished products, and components for finished products which have at least a 13% pretax return on investment.

On average these businesses spend 0.77% of their total sales revenue on Advertising and Promotion. However, the amount spent varies considerably depending on a number of specific business characteristics. Two such characteristics are position in the life cycle and the number of end users. End users include direct customers plus any other downstream customers who are aware the source of ingredients in that the product.

As shown in Table 141, growth businesses with more than one thousand end users spend on average 1.43% of their sales revenues on Advertising and Promotion. On the other hand, mature/decline businesses with less than one hundred end users average only one-quarter percent A&P/Sales.

Table 141, Average Advertising and Promotion Expenditures as a Percent of Sales Revenue vs. Life Cycle Stage and Number of End-users

(Successful Ingredient Producers Who Spent on A/P N=304)

Life Cycle Stage	Growth	0.57% (N=17)	0.71% (N=31)	1.43% (N=45)
	Mature, Decline	0.26% (N=34)	0.55% (N=82)	0.89% (N=95)
		Less than 100	100 to 1,000	More than 1,000
Number of End-Users				

Table 142 shows how A&P/Sales varies depending on the number of competitors and number of direct customers. Advertising and Promotion expenditures tend to be higher when there are more competitors and more direct customers, although the correlation with direct customers is not nearly as strong as it is with end users.

Table 142, Average Advertising and Promotion Expenditures as a Percent of Revenue vs. Number of Competitors and Direct Customers

(Successful Ingredient Producers Who Spent on A/P N=304)

Number of Competitors	5 or Less	0.46% (N=40)	0.65% (N=42)	* (N=11)
	More than 5	0.75% (N=39)	0.85% (N=113)	0.87% (N=59)
		Less than 100	100 to 1,000	More than 1,000
Number of Direct Customers				

* Too few observations

Advertising and Promotion expenditures tend to correlate strongly with both product R&D expenditures and sales force expenditures. Table 143 illustrates this correlation.

Table 143, Average Advertising and Promotion Expenditures as a Percent of Revenue vs. Product R&D and Sales Force Expenditures

(Successful Ingredient Producers Who Spent on A/P N=304)

Product R&D Expenditures (% of Sales Revenue)	1% or Less	0.28% (N=69)	0.75% (N=37)	1.14% (N=44)
	More than 1%	0.50% (N=56)	0.86% (N=42)	1.32% (N=56)
		Less than 3%	3% to 5%	More than 5%
Sales Force Expenditures (% Revenue)				

A&P expenditures tend to be higher for standard rather than custom-tailored products and when sales are made to direct customers in small sales transaction amounts. This is shown in Table 144.

Table 144, Average Advertising and Promotion Expenditures as a Percent of Revenue vs. Type of Product and Sales Transaction Amount

(Successful Ingredient Producers Who Spent on A/P N=304)

Type of Product	Standard	1.49% (N=34)	0.92% (N=98)	0.49% (N=79)
	Custom Tailored	1.28% (N=15)	0.52% (N=33)	0.42% (N=45)
		Less than \$1,000	\$1,000 to \$10,000	More than \$10,000
Sales Transaction Amount				

High value added products and businesses that are not heavily unionized tend to average higher amounts of spending on Advertising and Promotion. This is shown in Table 45.

Table 145, Average Advertising and Promotion Expenditures as a Percent of Revenue vs. Value Added and Employee Unionization
(Successful Ingredient Producers Who Spent on A/P N=304)

Value Added (% of Sales Revenue)	More than 60%	1.01% (N=109)	0.68% (N=59)
	60% or Less	0.67% (N=89)	0.50% (N=47)
		60% or Less	More than 60%
Percent Employees Unionized			

Summary

This article, used in conjunction with last month's article, may help an ingredient producer business decide whether to spend on Advertising and Promotion and how much to spend. If it is decided that A&P should be part of the "marketing mix," Table 141 through Table 145 can be used to establish a rough norm on spending levels. Obviously, characteristics unique to the business must also be considered.

No. 63, November 1985

63 PRODUCT DIFFERENTIATION

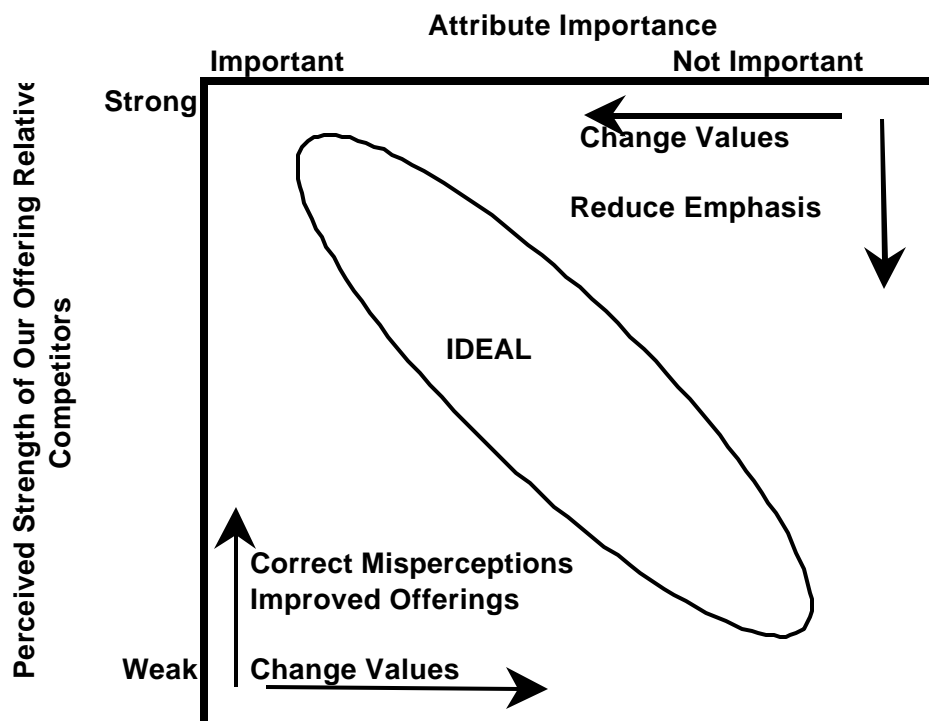
A special study conducted by the strategic Planning Institute has shown a strong positive correlation between profitability and product differentiation. One implication is that businesses may often be better advised to focus on improving their strengths (thus increasing differentiation) rather than improving their weaknesses (thereby becoming less differentiated).

Product and Product Positioning Strategies

Improving a product or the "position" of a product in the minds of its customers requires knowledge of customer perceptions of the product relative to its competition. This is frequently measured by marketing research studies, which assess customer perceptions of various key attributes of the product offering and the relative importance of each of the attributes.

Once attributes are measured as to their importance and perceived relative strength opposite competition, they can be arrayed as shown in Figure 103. As shown, the ideal situation is where an offering is perceived strong on the important attributes; if weaknesses occur, they should ideally occur among the lesser important attributes.

Figure 103, Normally Desirable Product or Product Positioning Changes



Attributes which are perceived to be weak but important (lower left) typically may be improved through product changes or correcting misperceptions through communications. An alternative

but usually unproductive strategy is to try to change customer values by convincing them that an attribute is really not important. This is typically a difficult "sell."

Attributes which are perceived to be strong but not important (upper right) may also present opportunities for change. If the business feels it can reduce emphasis on such attributes and achieve cost savings more than commensurate with losses in sales volume or price premium, such a change could increase profitability. Another alternative is to try to convince customers that such strengths are really more important than they are perceived to be -- again typically a hard "sell."

Product Quality and Product Differentiation

Several previous articles (e.g., Nos. 47 through 51) have focused attention on product quality and its strong relationship with profitability. SPI defines relative product quality for a business as the percentage of its dollar sales judged superior to competition minus the percent judged inferior to competition by customers. The estimate includes services as well as the product itself. Relative product quality is frequently estimated through marketing research studies of attribute importance and perceived relative strength.

In addition to being better than competition, it may also be desirable to be different from competition. A market which is offered a wide variety of product types and features can usually choose an offering better suited to its needs. Suppliers to that market can target their offering to appeal to customers needing the specific features provided by its offering. Such variety often takes the focus of attention away from price, which can result in higher margins for all competitors.

The Strategic Planning Institute recently conducted a special study of product quality and differentiation. Data submitted to this study were of the type previously discussed -- relative importance and perceived strengths across important product attributes.

Differentiation was defined as the average absolute difference between the rating of the business and its competitors across product attributes weighted by their importance. A hypothetical example is shown in Table 146.

Table 146, Hypothetical Attribute Importance Scores and Performance Ratings

<u>Product Attribute</u>	<u>Relative Importance</u>	<u>Firm's Ratings*</u>	<u>Competitor Rating*</u>	<u>Difference</u>	<u>Importance Difference</u>
Quality Assurance	.25	7.8	7.3	0.5	.125
Technology Assistance	.22	9.3	8.0	1.3	.286
Product Cost	.20	5.5	7.0	-1.5	-.300
Delivery Time	.14	7.5	8.6	-1.1	-.154
Breadth of Product Line	.11	8.1	6.8	1.3	1.43
Marketing Assistance	.08	6.9	7.4	-0.5	-.040
Total	1.00				0.060
Absolute Total (ignoring signs)					1.048

* Average customer rating on a zero to ten rating scale.

This example shows six product attributes in order of their relative importance. As shown in this hypothetical example, this business is stronger than competition in quality assurance, technical assistance, and breadth of product line; it is weaker in product cost, delivery time, and marketing assistance. Weighting the differences shown by their relative importance produces a "quality" score of .06, slightly positive. This is determined by adding up the right-hand column.

If the right-hand column is added ignoring signs, the result provides the differentiation score. This score, measured by the absolute difference between the ratings, would increase if we improved our stronger attributes and would decrease if we improved our weaker attributes.

Figure 104 shows the results of the SPI study. Different return on investment levels are shown for different combinations of market (product) differentiation and relative quality, shown here as a percentile relative to the businesses in this special database. Note that in general ROI is improved with increases in differentiation as well as quality. The amount of improvement varies depending on the current position of the business.

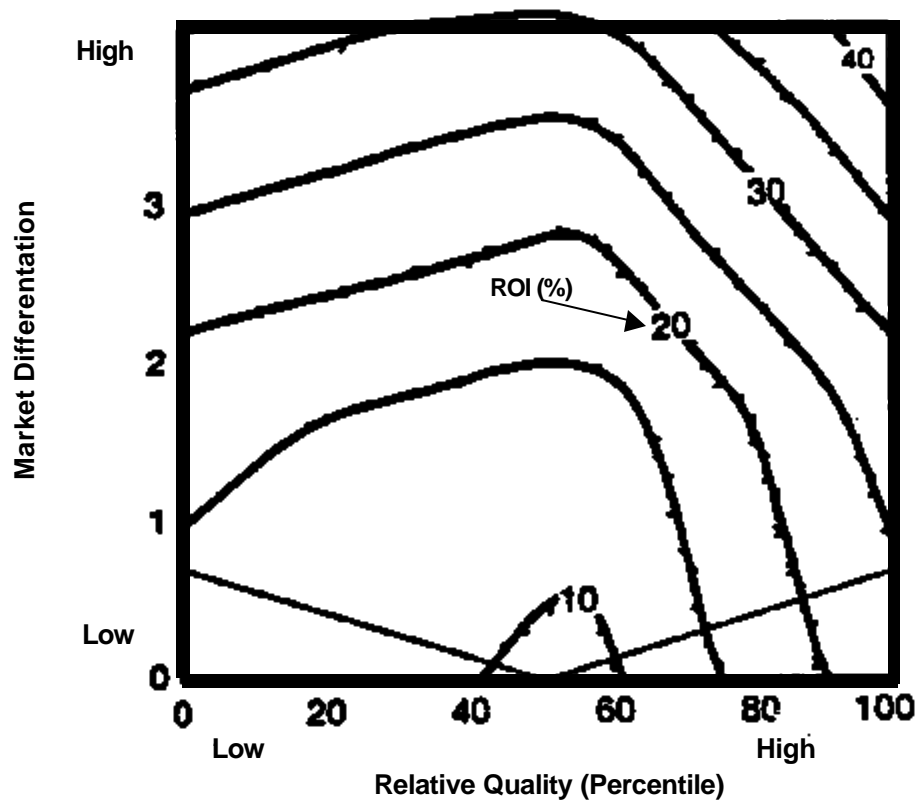


Figure 104, Return on Investment vs. Market Differentiation and Relative Quality

Source: SPI's Quality/Differentiation Database

Implications for Product and Product Positioning Strategies

The implication of these results is that it may be better in many situations to focus efforts on improving strengths rather than improving weaknesses of product attributes. While improvements of either increase relative quality, only improving strengths increases product differentiation. Obviously, other factors must be considered such as the importance of the attribute, the cost to make perceptible changes, and the current level of the ratings.

Figure 105 illustrates for the example in Table 146 the potential profit change opposite two improvement strategies. Improving quality assurance increases both quality and differentiation and moves the business more closely to the 15% profit line. Improving delivery time increases quality but decreases differentiation and, presumably, has less of an impact on profitability than quality assurance improvement.

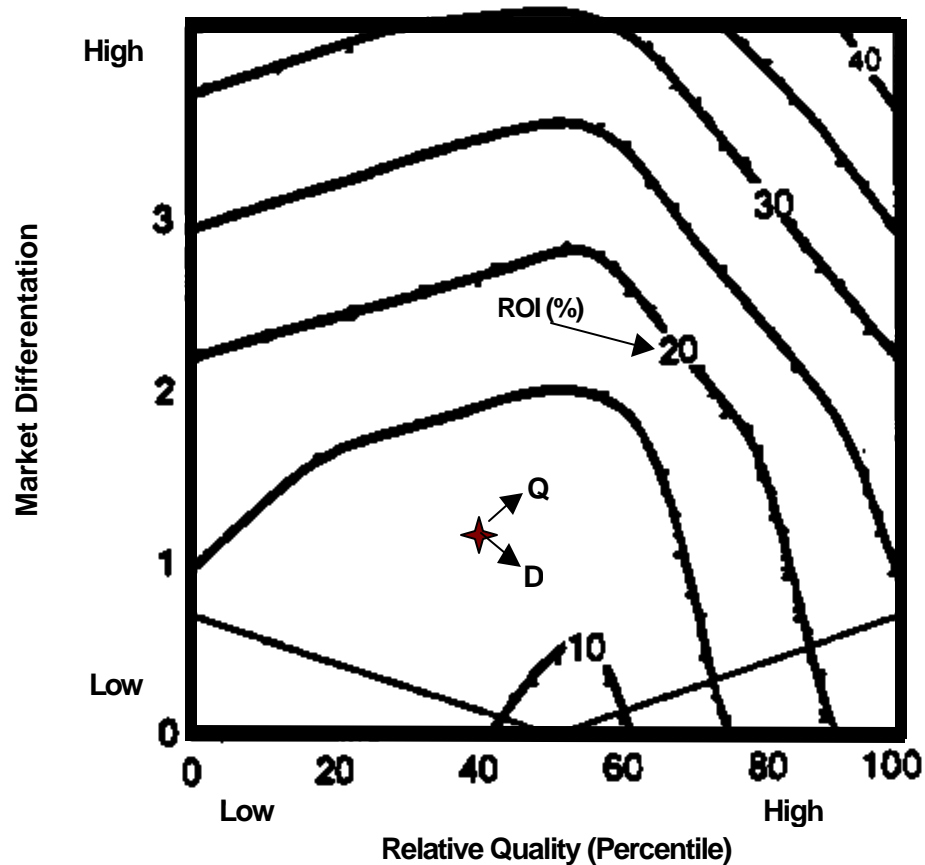


Figure 105, Potential Change in ROI Opposite Two Improvement strategies

Summary

Product and product positioning improvement strategies must take their lead from a thorough understanding of customer perceptions. This usually requires a measurement of the relative importance of various attributes of the product offering and the perceived strength of these attributes relative to competitive offerings.

While overall improvements to quality are almost always desirable, there can also be an advantage of just being different from competitors. Implications of a recently conducted study by the

Strategic Planning Institute indicate that a more differentiated set of product offerings into a market will enhance the profitability of the suppliers in that market. An implication is that it is frequently more desirable, where possible, to increase differentiation by improving strengths rather than improving weaknesses. Because there are obviously many other factors to consider, such decisions need thorough analysis before embarking on a specific product or product positioning change.

No. 64, December 1985

64 INCREASES IN PRETAX EARNINGS

Among ingredient producers, change in pretax earnings is very strongly associated with change in sales volume and strongly associated with change in selling price. There is very little association between change in earnings and change in unit cost of sales. In fact, the correlation between these two factors is positive, contrary to expectations, for ingredient producers with low volume growth. These results suggest that "revenue enhancement" programs are generally likely to be more successful than "cost reduction" programs.

Association between Revenue and Earnings

This article examines the relationship between change in pretax earnings and change in its component parts for ingredient producer businesses in the Strategic Planning Institute (SPI) database. In order to avoid businesses in which large earnings increases were due to poor initial conditions, businesses with less than a 5% initial pretax return on sales were excluded. Changes reported are average annual changes over a two-year time frame.

As expected, a very strong correlation exists between increase in pretax earnings and increase in sales revenue. If sales revenue is divided into physical volume sales and selling price, the former shows the stronger association. This relationship is shown in Figure 106.

One hundred ninety-seven businesses showing a decline in physical volume sales had on average a 20% decline in pretax earnings. At the other extreme, 69 businesses whose physical volume sales grew at least 20% per year averaged a 72% increase in earnings. While this relationship is very strong, there is still a lot of variability within these groups; this one factor accounts for only 15% of the variability in change in pretax earnings.

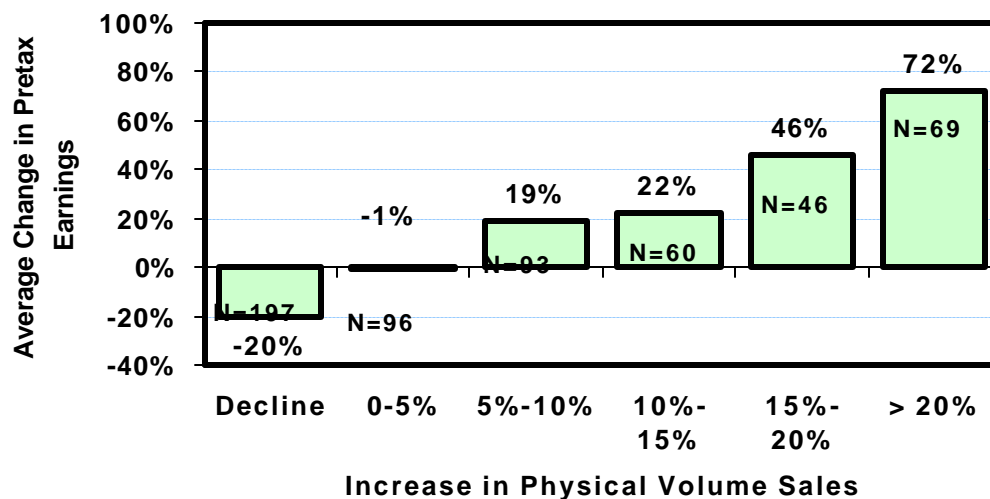


Figure 106, Change in Earnings vs. Increase in Physical Value
(Ingredient Producers N=561)

A strong relationship also exists between change in pretax earnings and change in selling price. This is shown in Figure 107.

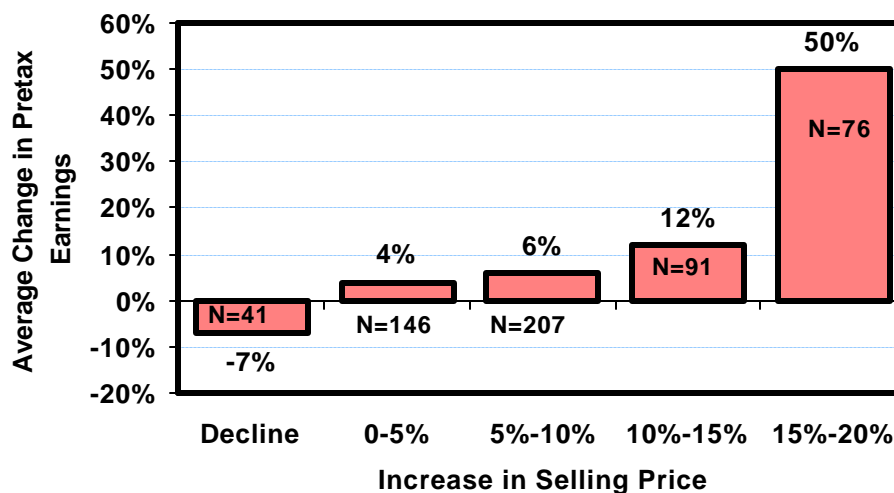


Figure 107, Change in Earnings vs. Increase in Selling Price
(Ingredient Producers N=561)

The association, while not as strong as the correlation with volume, is still significant. In particular, the 76 ingredient producers who increased price at least 15% realized on average a 50% increase in pretax earnings.

Association between unit Cost and Earnings

As shown in Figure 108, there is little association between change in pretax earnings and change in unit cost of sales. The 45 ingredient producers whose unit cost of sales increased by more than 20% realized the highest increase in pretax earnings. This is likely due to a change in product mix (more higher price, higher value products produced) or differential inflation effects (e.g., significantly higher raw material costs); a very strong association exists between unit price and unit cost as shown in article No. 17.

It is surprising that ingredient producers showing small increases in unit cost did not show larger increases in pretax earnings. It was expected that businesses showing low increases in unit cost would be largely businesses showing large increases in sales volume, and thus it would be expected that such businesses would show large increases in earnings. Such was not the case. Perhaps many of these businesses are businesses in trouble trying to turn themselves around through cost reduction efforts.

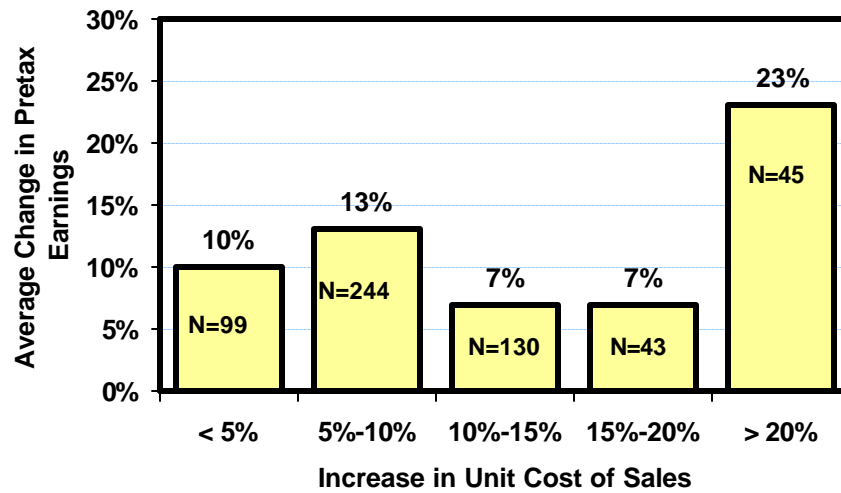


Figure 108, Change in Earnings vs. Increase in Unit Cost of Sales
(Ingredient Producers N=561)

Table 147 shows change in earnings opposite both increase in unit cost and increase in sales volume. As Table 147 shows, businesses whose physical volume sales are growing at least 12% per year do well regardless of how unit costs of sales are changing. Surprisingly, businesses growing less than 12% per year actually do better in terms of average change in earnings when the unit cost of sales is increasing more. In the face of declining physical volume sales, the average ingredient producer realizes less loss in earnings in situations when his unit costs are increasing by at least 12% per year. This is an unexpected finding and requires further study.

Table 147, Change in Earnings vs. Increase in Unit Cost and Sales Volume
(Ingredient Producers N=561)

Increase in Unit Cost of Sales	> 12%	-4% (N=70)	15% (N=61)	45% (N=32)
	6% to 12%	-30% (N=85)	11% (N=103)	57% (N=66)
	< 6%	-27% (N=42)	3% (N=45)	50% (N=57)
		Decline	0% to 12%	> 12%
Increase in Physical Volume Sales				

Summary

This article examined the relationship between change in pretax earnings and change in its component parts. A very strong relationship was shown between earnings change and sales volume change and a moderately strong relationship was shown between earnings change and change in unit price.

The relationship between change in earnings and change in unit cost was very weak and resulted in some unexpected findings. For lower levels of physical volume growth the sample of ingredient producers actually performed better in terms of change in pretax earnings when unit costs were increasing faster. This result requires further study.

No. 65, January 1986

65 EARNINGS INCREASES AMONG MODERATE GROWTH INGREDIENT PRODUCERS

An evaluation of moderate growth ingredient producers has shown that earnings increases tend to be higher when a business becomes more cost efficient relative to competitors, increases its capacity utilization and sales per employee, and spends at least as much as competitors spend on marketing.

Association Between Earnings and Cost Increases

Last month's article showed a very strong correlation between increases in pretax earnings and increases in sales volume and selling price for ingredient producers. Less association was shown with unit cost of sales. Contrary to expectations, the correlation between earnings change and cost change was positive for ingredient producers with low volume growth. This article focuses on ingredient producers showing increases in physical volume sales between zero and 12%.

Figure 109 shows the relationship between change in earnings and increase in unit cost of sales for 209 moderate growth ingredient producers. This figure repeats the middle column of Figure 108 in last month's article. The figure shows positive correlation between change in pretax earnings and change in unit cost of sales for these businesses.

As expected, it was found that increases in sales volume and selling price more than made up for cost increases among the high unit cost increase businesses in this sample. When other business factors were related to change in earnings, change in unit cost was no longer a significant factor.

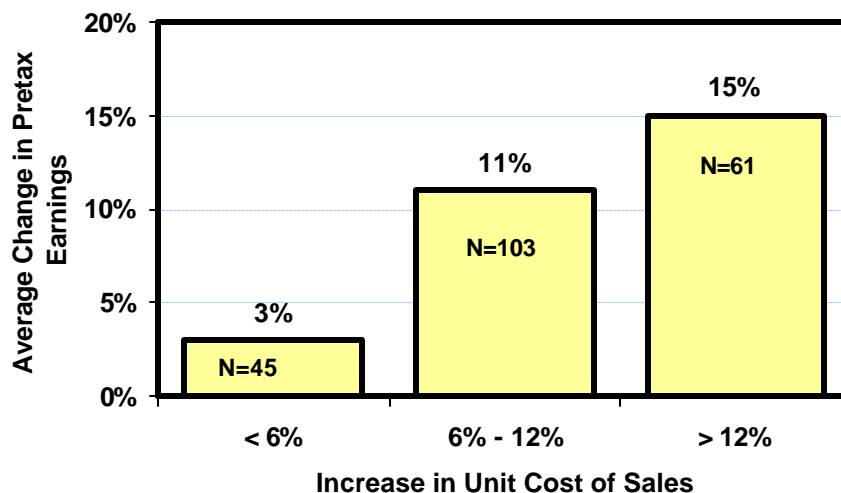


Figure 109, Change in Earnings vs. Increase in Unit Cost of Sales
(Modest Growth Ingredient Producers N=209)

A much more relevant factor than change in cost is change in cost relative to competitors. As shown in Figure 110, 39 businesses which were able to improve their cost position relative to leading competitors on average showed a 26% increase in pretax earnings. Fifty-three businesses whose cost position slipped relative to competitors showed essentially no change in pretax earnings on average.

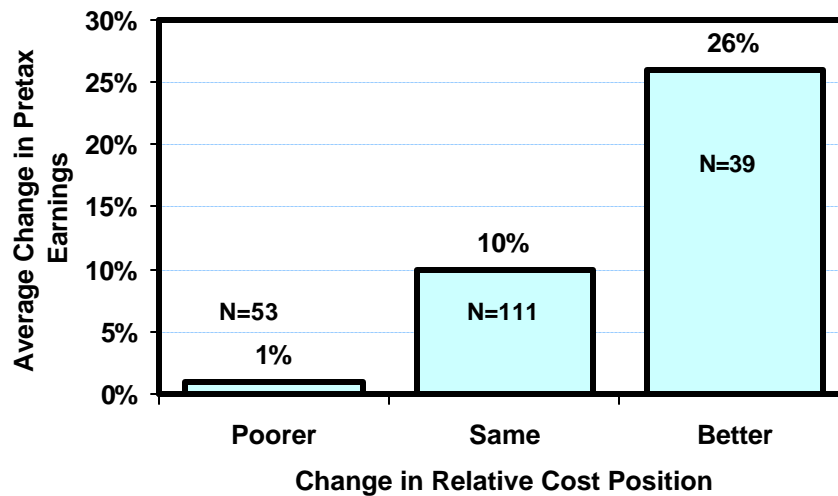


Figure 110, Change in Earnings vs. Change in Relative Cost
(Modest Growth Ingredient Producers N=209)

Association between Earnings Increases and Productivity

Again, as expected, change in capacity utilization is strongly related to change in earnings for moderate growth ingredient producers. This relationship is shown in Figure 111. Fifty-nine such businesses showing at least a 3% increase in capacity utilization on average realized a 23% increase in earnings.

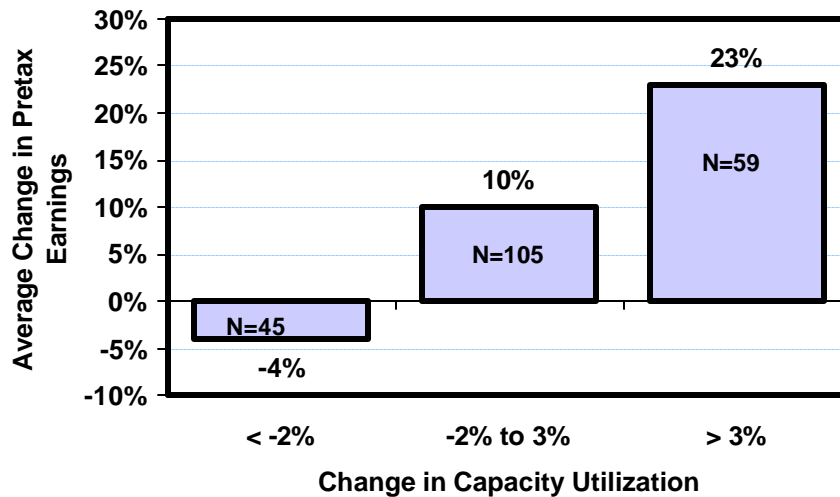


Figure 111, Change in Earnings vs. Change in Capacity Utilization
(Modest Growth Ingredient Producers N=209)

Another measure of business efficiency associated with sales revenue is change in sales per employee. As shown in Figure 112, a very strong association exists between increase in earnings and increase in sales per employee. Sixty-one businesses whose sales per employee increased by at least 13% showed an average increase in earnings of 46%. This increase is due much more to increases in sales revenue than to decreases in number of employees.

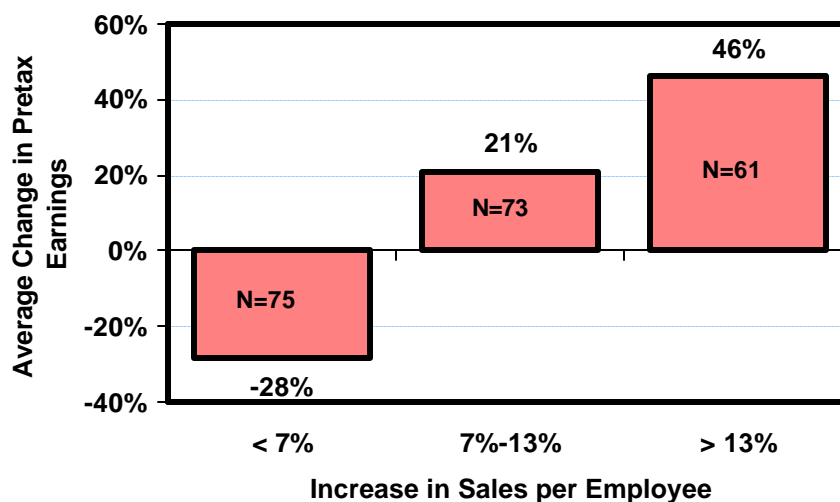


Figure 112, Change in Earnings vs. Increase in Sales per Employee
(Modest Growth Ingredient Producers N=209)

Association Between Earnings Increases and Relative Marketing Spending

Another factor, which relates strongly to change in earnings, is marketing spending relative to competitors. Table 148 shows change in earnings vs. relative marketing spending for four different spending categories.

Table 148, Change in Earnings vs. Marketing Spending Relative Competitors
(Modest Growth Ingredient Producers N=209)

Spending Category	Sales Force	5% (N=56)	19% (N=86)	5% (N=67)
	Advertising	-7% (N=81)	23% (N=85)	20% (N=43)
	Sales Promotion	-9% (N=65)	18% (N=103)	23% (N=41)
	Customer Service	* (N=8)	4% (N=80)	13% (N=121)
		Less than Competitors	Same as Competitors	More than Competitors
Marketing Spending				

* Too few observations

As Table 148 shows, businesses spending about the same as competitors on their sales force showed higher increases in earnings than those spending either less or more. Eighty-six businesses spending about the same as competitors on their sales force expenses average an earnings increase of 19%.

A strong correlation exists in spending on advertising and sales promotion, and Table 148 shows very similar results for both. Moderate: growth ingredient producers which spend about the same or more than competitors on advertising and sales promotion show earnings increases of about 20% per year. Those businesses spending less than competitors show earnings decreases.

Very few moderate growth ingredient producers claim to spend less than competitors on customer services. Those spending more than competitors show significantly higher levels of

earnings increases relative to those spending about the same as competitors. As usual, these results report correlations only and do not necessarily imply cause and effect.

Summary

This article examines the relationship between change in pretax earnings and other business characteristics for moderate growth ingredient producers. It was found that earnings increases do not significantly depend on changes in costs but to more fundamental factors related to competitive position, productivity, and commitment. In particular, these businesses tended to have stronger increases in earnings when they:

- Were able to improve their relative cost position;
- Showed increases in capacity utilization;
- Increased their sales per employee;
- Spent about the same as competitors on their sales force expenditures;
- Spent the same or more than competitors on advertising and sales promotion;
- Spent more than competitors on customer services.

No. 66, February 1986

66 PRODUCTIVITY MEASURES

A variety of productivity measures are used to assess the efficiency with which resources are deployed. Many such measures are ratios of some measure of benefit to some measure of "cost." For three specific reasons cited, improvements in such productivity measures do not guarantee improved business performance.

Productivity Measures

The article No. 64 examined change in pretax earnings and concluded that earnings are more sensitive to revenues than to costs. The last article examined moderate growth ingredient producers and found a positive correlation between change in earnings and change in productivity measures such as capacity utilization and sales per employee.

Such productivity measures are frequently used to assess how efficiently resources are being deployed and to measure progress over time. Most of these productivity measures are ratios where the numerator is a measure of benefit (e.g., sales, value added) and the denominator is a measure of "cost", (e.g., capacity, investment, number of employees).

Such measures suffer from three important problems, which limit their usefulness as analytical tools:

1. They typically compare total benefit to total cost rather than comparing incremental benefit to incremental cost. Whether a program or function should exist at all depends on a total cost analysis; it should only exist if total benefit exceeds total cost. However, the level at which it is funded should be based on a comparison of incremental values; as long as an additional resource unit contributes more than it costs, it should be added.
2. They are typically constructed as ratios rather than differences. Focusing on ratios rather than differences can lead to very conservative management of businesses, which have "revenue enhancement" opportunities. An example is shown in Table 149

Table 149, Example Resource Budgeting Situation
(Ingredient Producers N=561)

<u>Resource Level</u>	<u>Total Resource Cost</u>	<u>Incremental Resource Cost</u>	<u>Total Contribution</u>	<u>Incremental Contribution</u>	<u>Total Contribution /Total Cost</u>	<u>Total Contribution - Resource Cost</u>
Very Low	20		50		2.50	30
Low	25	5	60	10	2.40	35
Medium	30	5	68	8	2.27	38
High	35	5	74	6	2.11	39
Very High	40	5	78	4	1.95	38

Table 149 shows a hypothetical example of a business, which can be managed at five resource levels. Each level incurs an incremental cost of five "units." Contribution is shown in typical diminishing return fashion where the next highest resource level contributes incrementally less.

Managing this "business" on the basis of maximizing the total contribution to total cost ratio would result in a "very low" resource level. Managing the business on the difference between contribution and cost results in a "high" resource level.

3. They do not show the relationships, which exist between benefits and costs. Proper budgeting and allocation require an explicit understanding of how changes in resources affect earnings contribution through sales enhancement and cost reduction.

Labor and Productivity Relationships

The strategic Planning Institute (SPI) database was used to examine some of these relationships for ingredient producer businesses. Change in pretax earnings was compared to change in sales revenue, change in number of employees, and change in investment. In order to avoid businesses in which large earnings increases were due to poor initial conditions, businesses with less than a 5% initial pretax return on sales were excluded. Changes reported are average annual changes over a two-year time frame. As stated in article No. 64, a very strong correlation exists between change in pretax earnings and change in sales revenue. This is shown in Figure 113.

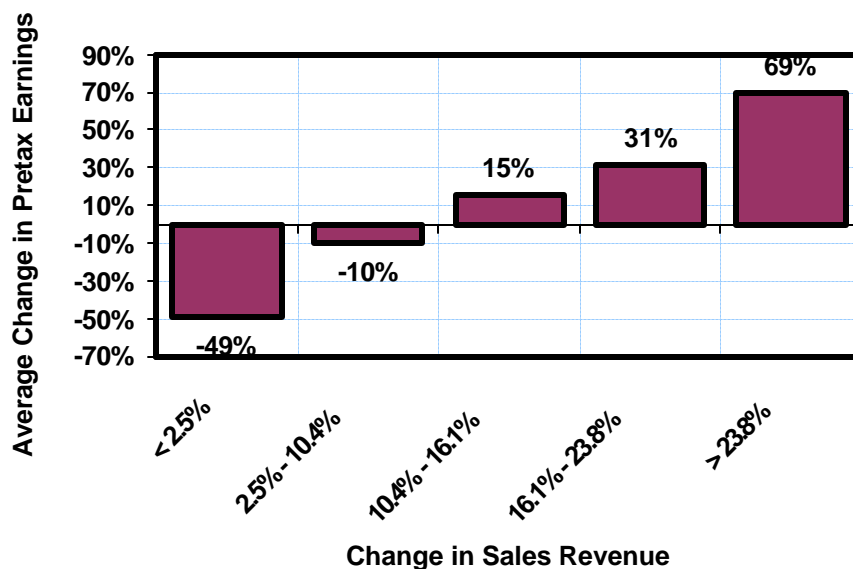


Figure 113, Change in Earnings vs. Change in Revenue
(Ingredient Producers N=559)

A positive correlation also exists (but is not shown) between change in pretax earnings and both change in sales per employee and change in sales per dollar of investment. While these correlations are expected, it is more interesting that there is also a positive correlation between change in earnings and change in number of employees (as shown in Figure 114) and between change in earnings and change in investment (as shown in Figure 115). These correlations occur because additional sales revenue requires the support of additional labor and capital resources.

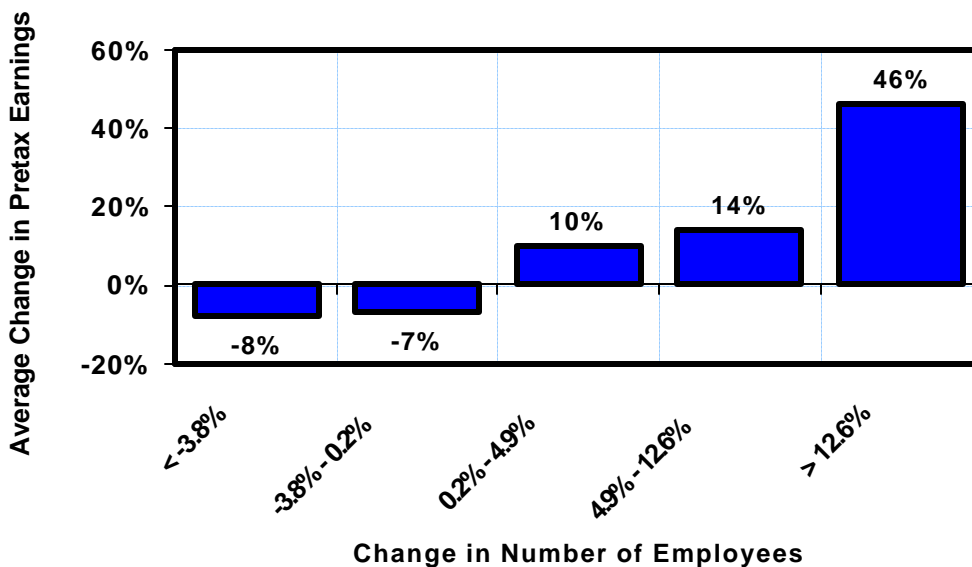


Figure 114, Change in Earnings vs. Change in Number of Employees
(Ingredient Producers N=559)

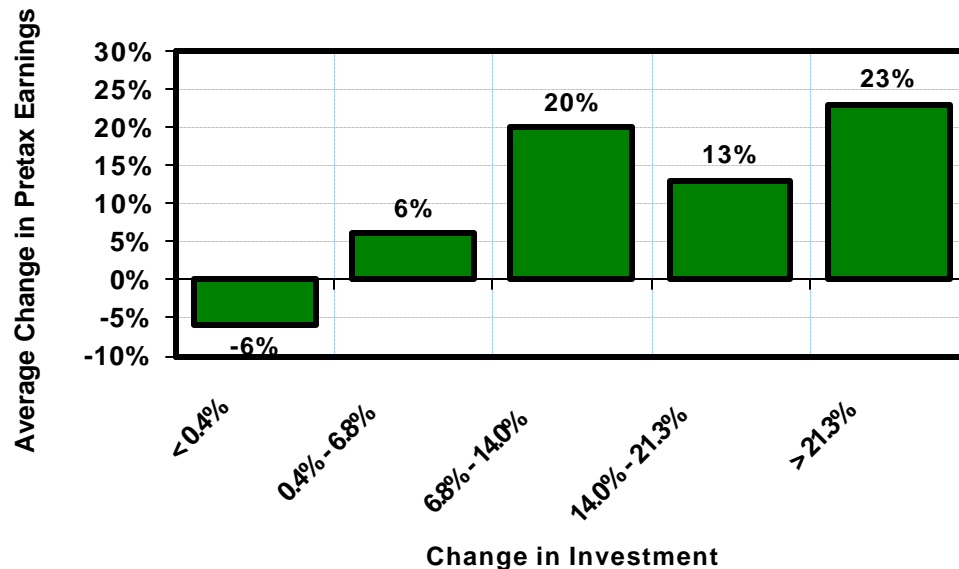


Figure 115, Change in Earnings vs. Change in Investment
(Ingredient Producers N=559)

The strong positive correlation which exists between all of these factors for this sample of SPI ingredient producer businesses is summarized in Table 150.

Table 150, Correlation Matrix

Percent Change in:	Sales Revenue	Number of Employees	Investment
Pretax Income	.50	.24	.13
Sales Revenue		.74	.60
Number of Employees			.58

The strongest correlation shown is between sales revenue and number of employees (labor) with a strong correlation also existing between sales revenue and investment (capital). Such relationships must be considered in any determination of the resources to employ in an individual business.

Statistical regression was used to isolate the individual effects of the different factors. The regression equation relating change in earnings to change in sales revenue, number of employees, and investment is shown below.

Change in Earnings Regression Equation**Percent Change in Pretax Earnings =****4.90 · Percent Change in Sales Revenue**

- **1.52 · Percent Change in Number of Employees**
- **1.25 · Percent Change in Investment**
- **36.6**

 $R^2 = 32\%$, Coefficients significant at 0.999 level

This equation explains 32% of the variation in change in earnings. The coefficients are highly significant. In addition to showing the strong impact of change in sales revenue, it also shows that pretax earnings can be improved with reductions in labor and capital resources. Again, the key is to understand the relationship between sales revenue and these resources.

(Note - the regression was performed using ordinary least squares. It would have been preferable to use a bias regression method (such as ridge regression) considering the multilinearity. However, this is not available in analyzing the SPI database.)

Summary

Proper budgeting and allocation of resources require an explicit understanding of the relationships between sales, costs, and the resources deployed. Merely striving to increase typical productivity ratios is insufficient and may lead to inappropriate budgeting

No. 67, March 1986

67 SEPARATING FIXED AND VARIABLE COMPONENTS OF COSTS AND INVESTMENT

Determining an appropriate amount to spend on a program or function depends on comparing incremental benefits with incremental costs. For such analyses it is therefore necessary to separate fixed and variable costs. An analysis of the Strategic Planning Institute (SPI) database shows that many costs we often consider fixed have a large variable component. This could cause underestimation of variable costs and, therefore, overestimation of incremental margins.

Revenue, Cost, and Investment Changes

The last three articles have examined changes in earnings, revenues, costs, investments, and productivity measures. As was pointed out last month, funding decisions for discretionary programs and functions require comparing incremental benefits with incremental costs. In general, for such decisions the following formula is useful:

$$\begin{aligned} &\text{Change in Sales Volume} \cdot (\text{Price} - \text{Variable Cost}) \\ &+ \text{Change in (Price - Variable Cost)} \cdot \text{Sales Volume} \\ &\text{Must Exceed Additional Costs} \end{aligned}$$

Obviously, the use of this formula depends on isolating the variable components of cost. This is not as straightforward as it might seem because costs which are variable in the short run and over small changes in sales volume are not necessarily variable over longer periods of time and larger changes in sales volume.

Table 151 shows the average annual percentage increase in sales revenue, costs, and investment for ingredient producer businesses in the SPI database. Purchase materials and energy costs are highly variable and show the highest average annual percentage increase. Other manufacturing and distribution costs are partially variable and partially fixed. R&D, sales force, and advertising and promotion expenses are often considered predominantly fixed expenses. Thus, it appears that variable costs increased more during the past fifteen years than did fixed costs, and therefore incremental margins apparently decreased more than total margins for most businesses.

Table 151, Average Annual Percentage Increase in Revenue Cost and Investment
(All Ingredient Producers N=788)

	Average Annual Increase
Sales Revenue	14.8%
Costs:	
Purchased Materials & Energy	16.7%
Other Manufacturing, Distribution	13.9%
R&D	12.3%
Sales Force Expenses	12.1%
Advertising and Promotion	10.5%
Investments:	
Working Capital	14.2%
Permanent Investment	11.8%

Purchased Materials and Energy

Figure 1 shows the relationship between change in purchased materials and energy and change in sales revenue for ingredient products. The coefficient in the regression equation, 0.98, shows that a 1% change in sales revenue results in almost a 1% change in purchases. This confirms that purchased materials and energy costs should be considered variable costs.

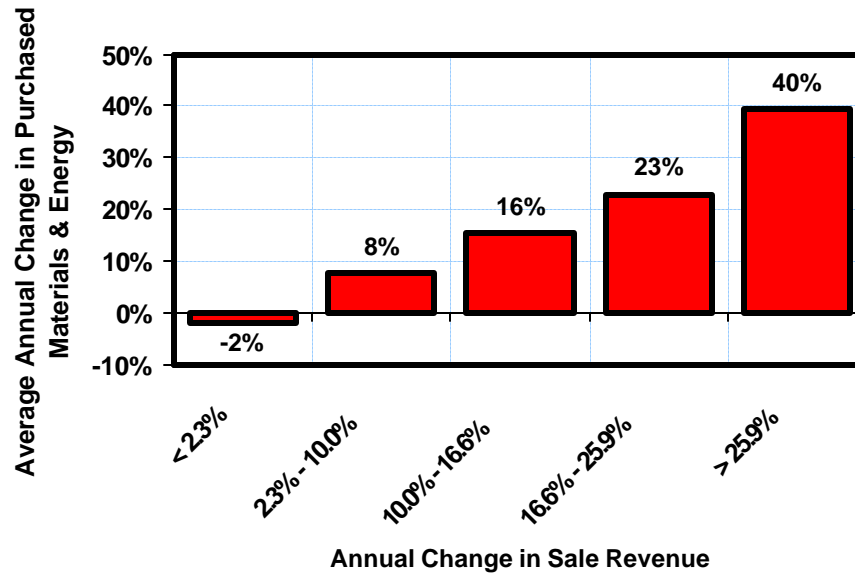


Figure 116, Change in Purchases vs. Change in Sales Revenue
(All Ingredient Producers N=788)

The Regression equation for the Figure 116 is:

$$\text{Change in Purchase} = 2.10 + 0.98 \cdot \text{Change in Sales Revenue}$$

Fixed vs. Variable Costs

A similar regression equation was developed for each of the cost and investment items shown in Table 151. The result of these relationships is summarized in Table 152.

Table 152, Relationship between Change in Costs and Investments and Change in Sales Revenue
(All Ingredient Producers N=788)

	<u>Constant</u>	<u>Coefficient · Change in Sales Revenue</u>
Costs:		
Purchased Materials & Energy	2.10	0.98
Other Manufacturing, Distribution	2.85	0.74
R&D	7.95	0.29
Sales Force Expenses	4.38	0.52
Advertising and Promotion	4.75	0.39
Investments:		
Working Capital	2.86	0.76
Permanent Investment	5.57	0.42

As can be seen from the coefficients above, other manufacturing and distribution costs and working capital are about three-fourths variable; a 1% increase in sales revenue on average across these ingredient producers results in a three-fourths percent increase in these two items. Sales force expenses are about half variable on average. Advertising and promotion and R&D are more fixed than variable, but still have perhaps a larger variable component than is often attributed to them. These coefficients provide a rough indication of how these costs and investment components typically split between fixed and variable costs for ingredient product businesses and can be used as guides when better information is not available.

Summary

If we underestimate variable costs and thus overestimate incremental margins, we may tend to fund discretionary programs and functions that are not worth funding. This, together with the fact that incremental margins seem to have decreased more than total margins during the past 15 years, argues for:

- Prudent examination of discretionary expenditures,
- Reduction of those where the incremental benefits do not exceed the incremental costs (based on the formula above), and
- Ascertaining that true variable costs are used in these analyses.

No. 68, April 1986

68 CALIBRATING THE COST (?) OF GAINING MARKET SHARE

In an article published by the Strategic Planning Institute, Robert D. Buzzell shows that market share gains are usually associated with a profit, not a cost. His analysis confirms previous findings from articles (see #20, 31-34). Buzzell, Sebastian S. Kresge Professor. of Marketing at the Harvard Business School and Director of Academic Research at SPI, cites several reasons for the positive correlation between market share change and profit change.

Findings

According to the conventional wisdom, a manager who sets out to build a business's market share should be prepared to pay a price, at least in the short term. After all, an increase in market share is like an increase in assets -- both can be expected, eventually, to yield incremental profits. To increase fixed assets, a business must make a capital investment; to increase share, it must introduce new products, improve quality, increase marketing outlays, or even cut prices. All of these things serve to reduce profit margins and should be reflected in reduced returns on investment.

The logic of the argument that gaining share costs money is hard to dispute. But does it really work that way? An analysis of the experiences of businesses in the PIMS database allows us to see how year-to-year changes in market share and profitability are actually related. Figure 117 displays a pattern that seems to contradict the conventional wisdom: It shows that gains in share are usually accompanied by increases in return on investment (ROI). Not only that, but the bigger the increase in share, the more ROI tends to rise. How can this be? Is there really no short-term cost associated with building share?

Editor's comment: the ROI is not defined in this article, however, it is probably PROI

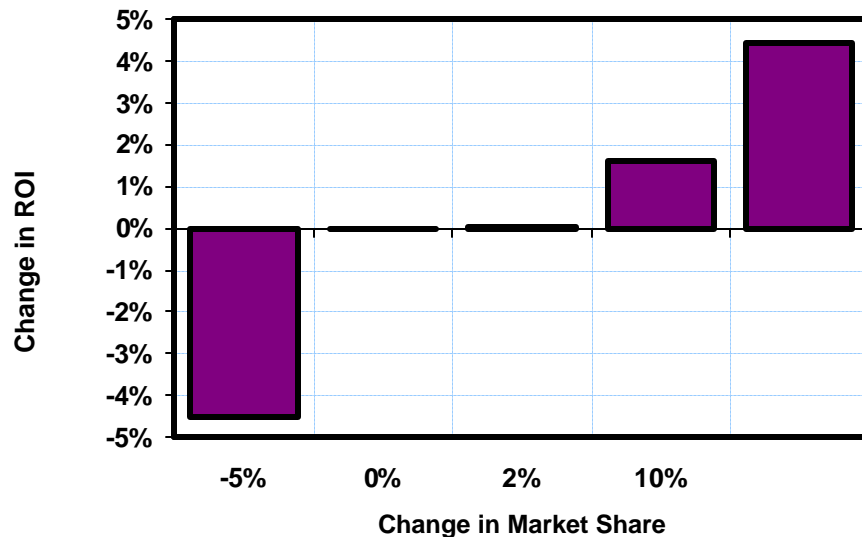


Figure 117, Changes in ROI vs. Changes in Market Share

Note: Changes are from year to year. The figures shown for ROI are differences between the ROI increases or decreases for each business and the overall average change in ROI among PIMS businesses for a given year.

Editor's Comment: the label was missing on the original

The answer to this seeming paradox lies in the analysis of how PIMS businesses accomplished their market share gains -- and losses. Since the early stages of The PIMS Program, we have been working on the development and refinement of models that relate market share changes to business strategies. The principal factors included in the most recent version of SPI's market share change model are listed in Table 153. They include measures of a business unit's competitive position at the beginning of a particular time period; measures of changes in key marketing strategy factors during the period over which market share changes were observed; and "uncontrollable" events (entry and exit of competitors).

Table 153, Factors Related to Market Share Changes

<u>Variables</u>	<u>Observed Impact on Market Share*</u>
Beginning Competitive Position:	
Market Share, Beginning of Period	-
Relative New Products	+
Relative Product Quality	+
Relative Customer Service	+
Change During Period:	
Relative New Products	+
Relative Product Quality	+
Relative Customer Service	+
Sales Force Expenditures**	+
Advertising Expenditures**	+
Promotion Expenditures**	+
Other Marketing Expenditures*	+
Uncontrollable Events	
Entry of New Competitors	-
Exit of Competitors	+

*Market share changes are from year to year. The measure used is the percentage change from the preceding year. For example, an increase of 2 share points is a 10% change for a business with a beginning market share of 20%.

**Changes in sales force, advertising, and promotion expenditures are relative to the growth rate of the business unit's served market.

The statistical model for predicting market share changes which includes the factors listed in Table 153 explains about 50% of the total variation in market share in the PIMS database. Given the diversity of the PIMS sample, the model performs very well²⁴. But if we can attribute 50%

²⁴ Statistical models of market share change for individual product categories often explain 80-90% of variance. We are not aware of other cross-sectional, multi-market studies comparable to the PIMS database. A major disadvantage of models calibrated on individual product categories

of the market share gains and losses to current competitive actions, the implication is that the other 50% is unexplained.

What causes "unexplained" changes in market share? No doubt there are many possible answers to this question. For one thing, our analysis shows that when a business gains share in one year, it usually continues to gain share for one, two, or three additional years. The same pattern appears for businesses that lose share. In other words, changes in market position typically occur over periods of several years. It seems to be far less common for a business to achieve a sudden gain (or suffer a sudden loss) in a single year, and then to stabilize its position in succeeding years. An implication of this pattern of multiyear trends is that share gains in a given year may reflect policies or programs begun one, two, or several years earlier. A quality improvement, for example, might be the result of R&D spending five years earlier and improvements in production technology two years later on. The costs of these activities would not be reflected in current ROI.

Another explanation for "unexplained" gains or losses in market share, in some instances, is that the PIMS database doesn't include measures of everything that might affect the market position of a business. A reorganization of a business, a new type of sales training, or a novel and highly effective advertising campaign could affect market share dramatically, but none of these kinds of competitive moves is captured by our data collection procedures.

A final source of unexplained gains in market share is what might be called "windfalls" -- gains arising from the incompetence or inattention of competitors. Since most of the share-influencing factors in Table 153 are defined and estimated for each business relative to its major competitors, improvements in them don't necessarily involve any cost to the business itself. Relative quality, for example, can increase either because a business spends money on quality improvements ~ because a competitor's quality deteriorates.

Recognizing the limitations of our ability to explain market share gains and losses in terms of current competitive activity, we can subdivide the actual year-to-year changes and allocate them into two parts:

- The portion attributable to known, current changes in quality, new products, etc.; and
- The "unexplained" portion, which presumably reflects some combination of actions and "all other factors."

There is a big difference between these two kinds of market share changes! When a market share gain is achieved primarily by the kinds of changes listed in Table 153, it generally does have a price tag attached to it. But when an increase is due mostly to "unexplained" factors, it typically is accompanied by rising profitability. Table 154 shows year-to-year changes in ROI, classified according to both their actual market share changes and the changes that we predicted, based on the factors listed in Table 153.

is that they cannot be used to estimate the likely response to market share tactics that have not yet been used in that product category historically.

Table 154, Annual Changes in ROI vs. Market Share Changes, Predicted and Actual

Actual Changes in Share	Gain (+5% or More)	8.5%	2.8%	1.7%
	Steady (\pm 5%)	4.5%	0.4%	-2.4%
	Lose (-5% or More)	-0.3%	-4.2%	-7.5%
		Lose (-5% or More)	Steady (\pm 5%)	Gain (+5% or More)
		Predicted Changes in Share		

Notes: Predicted changes are based on a regression equation incorporating factors listed in Table 153. Changes in ROI are differences between the average for each group and the overall average change in the PIMS database for each year.

By comparing the changes in ROI for the groups shown in Table 154, we can determine how much current share-building programs affect profitability. The businesses whose results are shown in the middle column of Table 154 are those that "behaved" as if they were merely holding share -- i.e., their predicted share changes were near zero. If we compare these businesses with those in the right-hand column -- who "behaved" as if they were trying to build share -- we can see a real difference. On average, changes in ROI for the "share-builders" were between 1% and 3% lower than those of the "share-holders." Similarly, businesses in the left-hand column (who "behaved" as if they were harvesting their market positions) typically enjoyed increases in ROI, relative to the "share-holders" of between 4% and 5.5%.

Table 154 also shows how profitable it can be to gain market share via past efforts, costless programs, or windfalls. Those who gained share in spite of behaving as if they were harvesting -- the upper left corner of Table 154 -- improved ROI by nearly 8.5% points! These "lucky winners" can be contrasted with the "unlucky losers" who suffered losses in share despite energetic efforts to improve their positions. As shown in the lower right corner, ROI for unlucky losers fell by an average of 7.5%.

The moral seems to be: "An ideal strategy is to behave as if you were harvesting share, but gain anyway." Unfortunately, no one has yet devised a foolproof way to implement this advice.

These findings suggest that common experience may be a poor guide for making decisions about major share-changing strategies. Managers who have lived through "lucky" periods in previous

situations may habitually underestimate the true normal costs of earning a stronger position. Similarly, victims of a market-share rout may, out of hand, reject carefully managed harvest strategies, despite their appropriateness in some circumstances.

The PIMS cross-sectional database is a powerful tool for calibrating the profit implications of changing market share for your business. The estimates are based not just on overall relationships in the database but on customized analyses that reflect your business's specific competitive circumstances.

It is important to use the proper techniques to pick out the relevant precedents for your situation. You should select look-alikes that start with positions similar to yours, and who have employed tactics for changing share that parallel what you want to do. The average profit change of the businesses that look most like yours shows the expected profit impact for you. A range of possible outcomes can be estimated by selecting, from the group of look-alikes, the biggest share-gainers and the biggest share-losers. Because all of the look-alikes were employing similar tactics, the big gainers will typically be the "lucky" businesses, and they will show higher profits than the "unlucky" losers. Analysis of the experience of the "normal," "lucky," and "unlucky" cases gives managers a range of realistic profit expectations for a contemplated share-change strategy.

No. 69, May 1986

69 ENTERING NEW INDUSTRIAL BUSINESSES

In an analysis of the Strategic Planning Institute (SPI) database of start-up businesses, Ian MacMillan and Diana Day confirm previous findings that aggressive investment and marketing entry strategies for industrial businesses tend to payoff²⁵. MacMillan is Professor and Director of the Center for Entrepreneurial Studies, New York University. Day is Assistant Professor at the Wharton School, University of Pennsylvania. The findings from their research are reported in this article.

Strategic Decisions and Performance

In his original work on start-up businesses, Ralph Biggadike found that firms which invested in large scale entry achieved greater, and faster returns on investment than firms which were more fainthearted²⁶.

Hobson and Morrison found that firms that made marketing decisions which were in line with large share aspirations succeeded achieving large share in the early years of operations²⁷. They also found a high correlation between share achievement and ROI. Thus it may be possible for firms that think big to achieve large market share, and also achieve greater profitability than firms that make strategic decisions that reflect a small share objective. For instance, investing in capacity can lead to significant economies of scale if share is achieved and the necessary plant utilization is attained.

Similarly, with marketing "investments" -- the outlays for aggressive spending in advertising, sales promotion, and product and service quality and sales force can be outstripped by gains in revenues if rapid share gain is accomplished. Using SPI's Start-up database, we drew a subsample of industrial firms, which had submitted at least four years of performance data. To explore the association between initial strategic decisions and subsequent performance, we developed the series of cross-tables depicted in Table 155 and Table 156. For each strategic option (e.g., high vs. low relative sales promotion in Table 155) the sample was partitioned into two groups. Those observations for which the value of the strategic option variable was below the sample mean were allocated to the low group (e.g., low relative sales promotion). Those ranking above the median were assigned to the high group. In each case the year 1 observation

²⁵ *PIMSLETTER* #38. Entering New Industrial Businesses: Aggressive Strategies That May Pay Off.

²⁶ Biggadike, R. "The Risky Business of Diversification," Harvard Business Review, May-June 1979, pp. 103-111.

²⁷ Hobson, E. L., and Morrison, R. M. "How Do Corporate Start-up Ventures Fare?" Frontiers of Entrepreneurship Research, Wellesley: Babson College, 1983.

was used, reflecting the investment or marketing strategy which the businesses had selected at start-up.

For each subsample we then calculated the mean and standard deviation of year 4 market share and year 4 return on investment²⁸. We then compared the means for year 4 market share to see if there was a significant difference between the market share obtained 4 years later for businesses selecting the low and high levels of the strategic option. As can be seen from Table 155, in the case of relative sales promotion this was the case. It shows that firms which start-up in year 1 with high relative sales promotion have significantly more market share four years later than those that start-up in year 1 with low relative sales promotion.

We then repeated the analysis for year 4 ROI. In the case of relative sales promotion, once again it appears that firms which start-up in year 1 with high relative sales promotion end up years later with significantly higher ROI than those that start-up in year 1 with low relative sales promotion.

These analyses were repeated for all the variables listed in Table 155 and Table 156. The results are most encouraging.

Very few strategic options appear to call for a trade-off in the first year of operations between gaining large market share at the cost of ROI, or vice versa. This appears to be the case for only relative quality and fixed capital intensity (measured by gross book value/sales).

²⁸ Note the negative values for ROI. The start-up businesses in the SPI database take six to eight years on average before showing a profit.

Table 155, Start-up marketing strategy and performance

Relative Spending Level in Year 1		<u>Average in Year 4</u>		<u>Comments</u>
		<u>Market Share</u>	<u>ROI</u>	
Sales Promotion	- Low	14.8%	-15.0%	Double Benefits
	- High	19.4%	-2.9%	
Sales Force	- Low	14.3%	-11.2%	Double Benefits
	- High	20.8%	-7.4%	
Advertising	- Low	12.5%	-12.0%	Double Benefits
	- High	24.4%	-4.4%	
Relative Quality	- Low	17.9%	-5.3%	Trade-Off
	- High	19.7%	-11.2%	
Service Quality	- Low	10.1%	-21.6%	Double Benefits
	- High	19.0%	-5.9%	
Image	- Low	10.9%	-13.7%	Double Benefits
	- High	21.3%	-6.8%	
Relative Price	- Low	16.8%	-19.8%	Not Significant
	- High	17.3%	-18.7%	

Table 156, Initial investments and performance

Relative Spending Level in Year 1		<u>Average in Year 4</u>		<u>Comments</u>
		<u>Market Share</u>	<u>ROI</u>	
Gross Book Value of Plant & Equipment (% of Sales)		18.4%	-12.6%	Trade-Off
- Low				
- High		15.1%	-7.0%	
Plant Capacity (% of Served Market)		8.1%	-11.2%	Double Benefits
- Low				
- High		25.3%	-8.4%	

Note: All of the differences in market share and ROI, with the exception of those for low vs. high relative price, are statistically significant ($P = .05$).

Editor's Comment - The values were assumed to be percentages on these charts

In the majority of cases it appears that it may be possible to "invest" heavily in high levels of effort to gain share without losing on year 4 ROI. (This, of course, assumes that market share benefits can be sustained and their discounted values exceed the initial expenditures.) Firms that initially selected high relative service quality, high relative sales force expenditures, or high plant capacity/served market did better than their less aggressive counterparts, both in year 4 market share year 4 ROI. Apparently, their success in share gains leads to scale benefits which then also payoff in ROI.

These results are particularly relevant to the large established firm, which has the resources for, and thus can afford to make, the early "investments" in initial marketing effort and/or high plant capacity/served market.

It would seem that for such a firm an appropriate strategy for a new venture in an industrial market would be to:

- Set aggressive market share targets.
- Develop aggressive sales force, sales promotion, advertising, and/or service quality programs relative to competitors, as appropriate.
- Commit resources to install significant plant capacity in relation to the size of the served market.

The indications from the research are that such a strategy can payoff in terms of both ROI and market share. To some extent, the patterns shown in Table 155 and Table 156 reflect the fact that start-up strategies are determined by managers' assessments of a venture's profit and growth potential. In other words, ventures perceived as more promising are supported with more resources than those with smaller expected returns or growth potential.

Summary

Once a decision is made to commit to a new industrial business or market entry, aggressive entry is generally preferable. Obviously, thorough analysis of the market and competitive situation is always needed prior to such commitment. Biggadike sums up his HBR article (reference #2) as follows:

The data in this article tell us, more precisely than we knew before, about the risks in corporate ventures. The odds are unattractive. Indeed, many managers will find them daunting. But, at the same time, managers know that they have to build a balanced corporate product portfolio.

I believe that the way to improve the odds and build the portfolio is to commit substantial resources to each venture and to defer immediate financial performance in favor of market position. Launching new businesses takes large entry scale and continual commitment; it is not an activity for the impatient or for the fainthearted.

No. 70, June 1986

70 MARKET PIONEERING AND SUSTAINABLE MARKET SHARE ADVANTAGES

A recent study of the Strategic Planning Institute (SPI) database reinforces previous findings on the long-term market share leadership advantages usually realized by pioneers (first entrants) in a market. Reasons for and implications of this finding are discussed in *PIMSLETTER* #39 which is summarized below. The study was conducted by W. T. Robinson, Assistant Professor of Management at Purdue and C. Fornell, Professor of Marketing at the University of Michigan.

Background

Some market pioneers such as Birdseye, Campbell's Soup, Coca-Cola, and Eastman Kodak have been market leaders for literally decades. But other pioneers such as Reynolds International Pen (ballpoint pens) and Bowmar Instruments (handheld electronic calculators) have fallen rapidly from their initial leadership positions. Given these examples and counter-examples, do market pioneers tend to develop sustainable market share advantages, and if so, how?

If a market pioneer can develop a long-term market share advantage, then the potentially high costs and risks associated with attempting to pioneer a market may be justified. If, on the other hand, pioneers do not develop sustainable advantages, then it may be more profitable to be a later entrant.

Order of Entry and Market Share

Examining mature businesses in the SPI database, we find that market share is related to order of market entry (pioneer, early follower or late entrant) for consumer and industrial goods businesses (Table 157). For mature consumer goods businesses (N = 506), market pioneers have an average market share of 29% versus 13% for late entrants. For mature industrial goods businesses (N = 1088), pioneers again have an average market share of 29% versus 15% for late entrants. Thus, in both consumer and industrial goods industries, pioneers have substantially larger average market shares than late entrants, even after a market has matured.

Table 157, Order of Market Entry and Market Share

	<u>Average Market Share</u>	
	<u>Consumer Goods</u>	<u>Industrial Goods</u>
Pioneer*	29%	29%
Early Follower	17%	21%
Late Entrant	13%	15%

*Three categories are provided for order of entry in the SPI database. A business is classified as either (1) one of the pioneers in first developing such products or services,

(2) an early follower of the pioneer(s) in a still growing, dynamic market, or (3) a later entrant into a more established market situation.

Of course, this does not mean that all pioneers have large market shares and that all late entrants have small market shares. For the consumer goods businesses, 16% of the pioneers have a market share less than 20%, while 7% of the late entrants have a market share of 30% or larger. For the industrial goods businesses the corresponding figures are 12% and 11%.

The market share advantages of pioneers deteriorate slowly over time (Table 158). For consumer goods industries, after 20 years or more in the market, average share levels of pioneers drop from 35% to 27%, while late-entrant share levels increase from 11% to 16%. For industrial goods industries, average share levels of pioneers drop from 32% to 28%, while late-entrant share levels increase marginally from 15% to 16%. Consequently, there is some deterioration of pioneer share advantages over time, but share levels do not tend to equalize. How have so many pioneers retained substantial market share advantages after literally decades in the market?

Table 158, Average Market Share by Time in Market

	<u>Consumer Goods</u>		<u>Industrial Goods</u>	
	<u>Less than 20 Years</u>	<u>20 Years or More</u>	<u>Less than 20 Years</u>	<u>20 Years or More</u>
Pioneer	35%	27%	32%	28%
Early Follower	17%	17%	22%	20%
Late Entrant	11%	16%	15%	16%

First-Mover Advantages

A number of competitive advantages can arise for the first mover in a market. These advantages can be related to both business and industry characteristics. Dimensions where first-mover share advantages were found are discussed below, while characteristics where advantages were not found are presented in the next section. First-mover share advantages are all measured relative to late entrants.

Two important dimensions of a business's offerings are relative quality and product-line breadth. Market pioneering can lead to higher perceived relative quality, where quality includes objective product characteristics, customer service, and image. Being the first mover in the market, the pioneer can benefit from proprietary experience by participating in the definition of industry standards or simply by having a favorable product/service image or reputation. In both consumer and industrial markets pioneers tend to have higher relative quality, with these advantages increasing market share by roughly 3 to 5 points. These relative quality advantages show significant deterioration, however, after the pioneer has been in the market 20 years or longer.

For product-line breadth, pioneers can develop and position offerings for the largest and most lucrative segments, while leaving smaller and less desirable market niches for later entrants. This

can provide pioneers with important product-line breadth advantages. From a product-market perspective, early market entry can provide pioneers with an opportunity to develop an industry-wide product-market scope, while late entrants may be forced to follow a focus or market niche strategy.

In both consumer and industrial markets many pioneers have product-line breadth advantages, with the market share impact ranging from 3% to 8%. In addition, these advantages show limited deterioration over time. From a marketing-mix perspective, product-line breadth advantages appear to be among the most sustainable advantages for pioneers in both consumer and industrial markets.

In consumer markets, pioneers have the greatest advantages in markets where consumers buy in small amounts (Table 159). For low-priced purchases, pioneers have an average share advantage relative to late entrants of 18%, while for high-priced purchases this advantage drops to 12%.

Table 159, Average Market Share by Purchase Amount in Consumer Goods Industries

	<u>Average Purchase Amount</u>	
	<u>Less Than \$10.00</u>	<u>\$10.00 and Higher</u>
Pioneer	33%	23%
Early Follower	20%	15%
Late Entrant	15%	11%

Both brand name and distribution advantages help explain these higher shares in industries with low-priced products. For brand ~ name advantages, being first is an effective way to gain a position in the customer's mind. These brand name advantages can be very important, especially when consumers buy out of habit. For high-priced products consumers may spend a significant amount of time gathering information and evaluating alternative brands, while habitual purchase is more likely for low-priced products. Since it is more difficult for a late entrant to gain trial when consumer are buying out of habit, this can benefit the pioneer.

An indication of the brand name advantage enjoyed by pioneers is that their advertising and promotion outlays were lower (by about 1.5% of sales) than those of late entrants in low-priced product markets.

Distribution can be especially important for convenience goods, which tend to be low-priced products. Here consumers tend to shop in only one outlet when making a purchase. Being the first-mover, the pioneer may be able to gain more intensive distribution and tie up scarce retail shelf space. These distribution advantages can also contribute to explaining the higher shares for pioneers in industries with low-priced products.

Where Pioneering Matters Least

Patents and trade secrets appear to have little connection to the advantages of market pioneering, at least in the long run. Although a significantly greater percentage of pioneers benefit from product patents or trade secrets, the associated market share impact is small. A similar result holds for process patents or trade secrets.

If market pioneers tend to achieve significant direct cost savings from purchasing, manufacturing, or physical distribution, and if a portion of these cost savings is used to strengthen the marketing mix, then market share can increase. For example, Anthony O'Reilly, President of H. J. Heinz Co., stated, "By widening our margins we have created reinvestable funds that we have spent on advertising. We figure that is a far better way of marketing our products lastingly than to engage in a price war."²⁹

Based on economies of scale, pioneers do have average cost savings of roughly 1% to 2%, and a portion of these savings is channeled into providing a strong marketing mix. But the associated market share impact is estimated at less than 1 share point.

In industrial goods industries pioneers do not spend significantly more on sales force expenditures as a percent of sales than late entrants. From a pricing standpoint in consumer goods and industrial goods industries, pioneers tend to charge up to 2% more than late entrants for their higher relative quality. These small price differences do not have a meaningful influence on market share.

We expected the share advantage of pioneers to be greater in advertising-intensive consumer goods markets, but the share advantage was not significantly higher. In industrial goods industries the share advantage of pioneers is also not estimated to be greater in industries where switching cost advantages can arise, i.e., where the product is customized, customer service is important, and the product has low purchase importance to the end user.

Implications

These findings have implications for managers, both prior to and following market entry. Of course, the results above are general tendencies and it can be risky to apply a general tendency to a specific business situation. Instead, a customized SPI look-alike analysis that is tailored to reflect a business's specific situation is typically used to reality-test and refine business plans. Nevertheless, considering the enormous uncertainty associated with many decisions, the general results presented here may help reduce this uncertainty.

Since market pioneers tend to receive long-term market share rewards, major expenditures to attempt to pioneer a new market may be justified. Specific industry examples are provided in a recent book by David Powers Clearly (1981) entitled Great American Brands. Brief case

²⁹ "Potato Peel and Prime Time," Forbes, Oct. 11, 1982, pp. 112-14.

histories for 34 brands in consumer goods industries are provided. These brands (each of which was the originator or principal developer of its category) are listed in Table 160. Even after generations many are still market leaders.

As for late entrants, they should recognize that the odds are stacked against achieving a large market share. Realistic market share objectives should be set with a market niche strategy given serious consideration. For example, in biotechnology the major players were largely established by 1984, and consequently venture capital activity was being directed to highly specialized companies.³⁰

Table 160, Great American Brands

<u>Low Purchase Amount</u>	<u>High Purchase Amount</u>
(1) Birdseye Frozen Foods	(1) Armstrong Floors
(2) Budweiser Beer	(2) Bissell Carpet Sweepers
(3) Camel Cigarettes	(3) Black' Decker Power Tools
(4) Campbell's Soup	(4) Buster Brown Shoes
(5) Coca-Cola	(5) Columbia Bicycles
(6) Gerber Baby Foods Motors	(6) Evinrude Outboard
(7) Gillette Razors	(7) Ford Cars
(8) Hallmark Cards s	(8) Goodyear Tire
(9) Hershey's Milk Chocolate Bars	(9) Hart, Schaffner & Marx Suits
(10) Ivory Soap	(10) Jantzen Swimsuits
(11) Kleenex Tissue	(11) Kitchenaid Dishwashers
(12) Maxwell House Coffee	(12) Lane Cedar Chests
(13) Parker Pens	(13) Levi Jeans
(14) Ralston Purina Foods' Feeds	(14) Piper Aircraft
(15) Spalding Sporting Goods	(15) RCA TV/Radio/Stereo
(16) Wrigley's Chewing Gum	(16) Sherwin-Williams Paints
	(17) Simmons Beautyrest Mattresses
	(18) Singer Sewing Machines

*Low purchase amount is defined as roughly \$10.00 or less for a typical purchase.

³⁰ Business Week (1984), "Biotech Comes of Age," Jan. 23, pp. 84-91.

If a late entrant does attempt to gain a large market share, then it can be very costly to overcome the disadvantages associated with late entry. Recognizing the problems associated with late entry, Procter and Gamble recently increased the emphasis placed on early entry. Business Week (1983) states, while making certain that a product wins a leading market share over the long haul had been more important than being first, Smale now stresses both." (Mr. Smale is the President and CEO of Procter.)³¹

Following market entry, pioneers should recognize the great importance *of* product line extensions. Although new products often cannibalize existing products, in the long run this may be a small price to pay for sustaining a strong market position. For example, Campbell's condensed soup was introduced in the late 1890's, and in 1984 continued to hold a market share of 80% in the canned soup market.³² Although new Campbell's soups heavily cannibalize existing brands, line extensions are still aggressively pursued.

Patent protection is probably more important for pioneers in the early years *of* the market's development than in market maturity. To the extent that this initial protection is provided, pioneers should attempt to develop sustainable competitive advantages. Over the long-term, sustainable competitive advantages are gained much more frequently in the marketplace than in the patent office.

Summary

This study pointed out the strong association, which exists between order of market entry and long-term market share. Another very recent study of consumer brands confirms this finding, but also finds that market share is strongly associated with relative preference for the product and the amount spent on advertising relative to competition.³³

³¹ Business Week (1983), "Why Procter and Gamble Is Playing It Even Tougher," July 18, pp. 176-86.

³² Business Week (1984), "Campbell Soup's Recipe for Growth: Offering Something for Every Palate," Dec. 24, pp. 66-67.

³³ Management Science (Vol. 32, No.6, June 1986), "Market Share Rewards to Pioneering Brands: An Empirical Analysis and Strategic Implications," by Glen L. Urban, Theresa Carter, Steven Gaskin, and Zofia Mucha, p. 645

No. 71 July, 1986

71 DISTRIBUTION PRACTICES: SUCCESSFUL INGREDIENT PRODUCERS

Successful ingredient producers on average ship 75% of their sales direct to end users; the other 25% goes through distributors and other intermediaries. Such businesses tend to ship a higher percentage direct to customers when there are few customers, when customers buy in large transaction amounts, when products are custom designed, and when there are few competitors.

Distribution Practices

This article examines the distribution practices of successful ingredient producers. The analysis is based on 390 producers of raw materials, semifinished products, and components for finished products in the Strategic Planning Institute (SPI) database, which have at least a 13% pretax return on investment. These businesses average almost 26% PROI and almost half are ranked first in their industry in market share.

The SPI database distinguishes the percent of sales on a dollar basis sold direct to end users, to end users via company-owned distribution facilities, to wholesalers, and to retailers. On average, successful ingredient producers ship three-fourths of their sales direct to end-users. Almost 40% of these businesses ship all of their sales direct. The percent of businesses shipping varying amounts direct to end-users is shown in Figure 118.

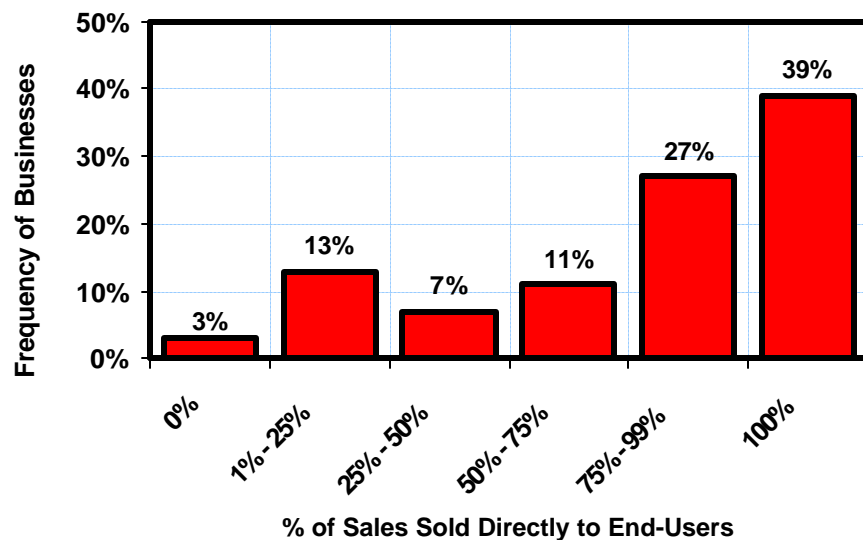


Figure 118, Histogram of Percent of Sales Sold Direct
(Success Ingredient Producers N = 390)

Number and Concentration of Direct Customers

As would be expected, a larger percentage of sales is shipped direct to end users when there are few customers and these customers are concentrated. Figure 119 shows how the percent of sales

sold direct varies depending on the number of direct customers. Businesses with fewer than fifty direct customers sell 90% direct on average.

Figure 120 shows a similar plot based on the number of direct customers accounting for half the sales. As expected, when few customers account for half the sales, a successful ingredient producer tends to sell a larger percentage of sales direct.

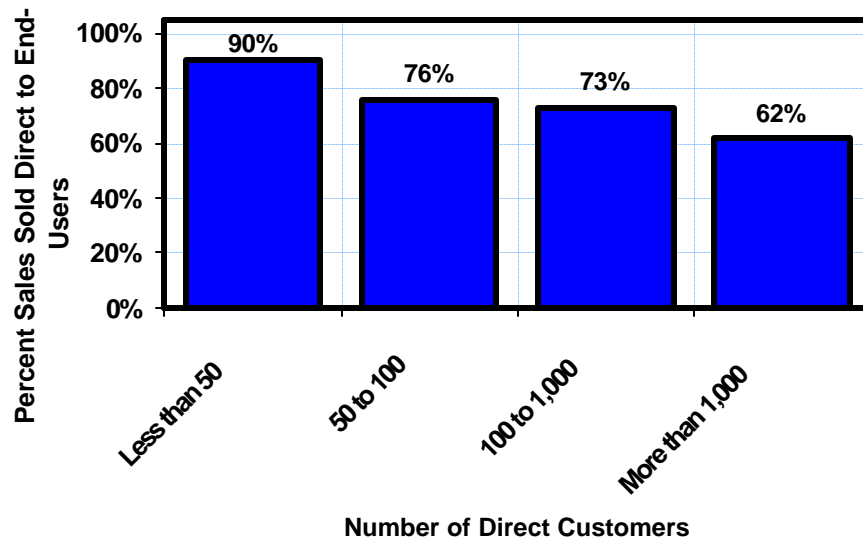


Figure 119, Percent of Sales Sold Direct vs. Number of Direct Customers
(Success Ingredient Producers N = 390)

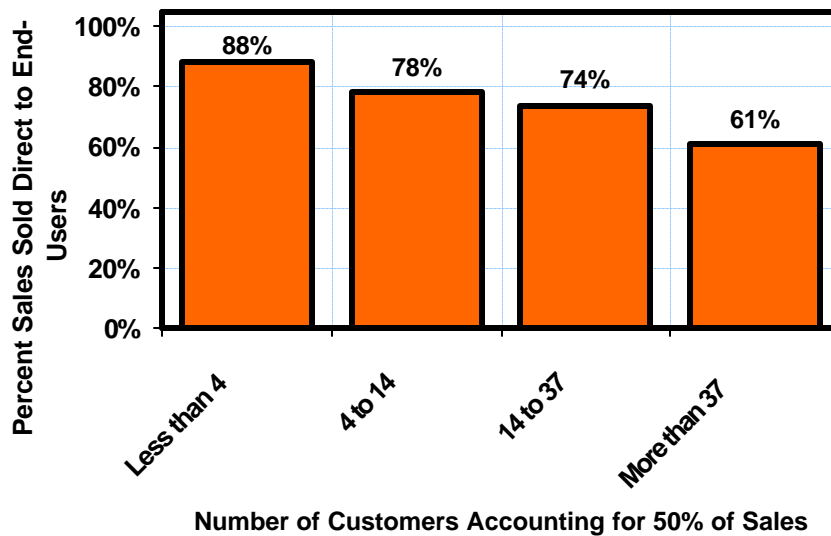


Figure 120, Percent of Sales Sold Direct vs. Direct Customer Concentration
(Success Ingredient Producers N = 390)

Sales Transaction Frequency and Size

Again, as expected, successful ingredient producers tend to sell a larger percent direct to their customers when these customers purchase less frequently and in larger transaction amounts. These results are quantified in Figure 121 and Figure 122. Roughly 90% of sales are sold direct when orders are placed two or fewer times per year or when sales transaction amounts average more than \$100,000.

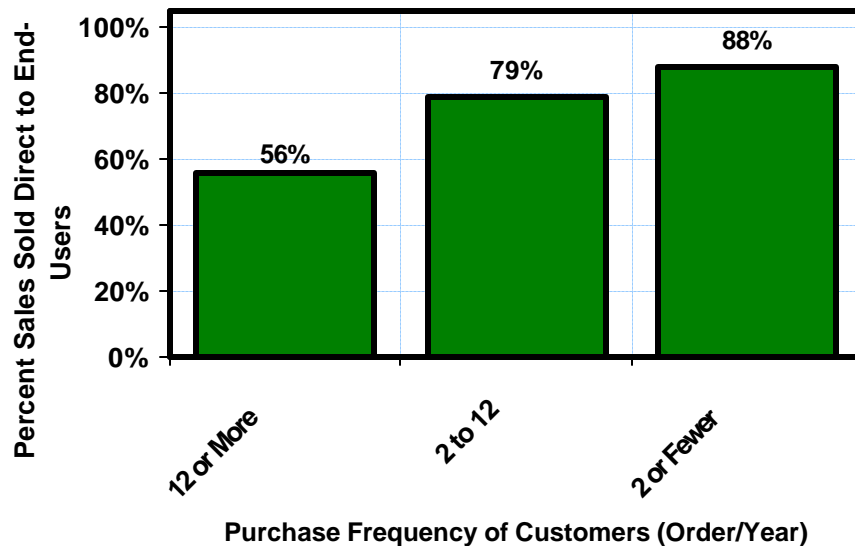


Figure 121, Percent of Sales Sold Direct vs. Purchase Frequency
(Success Ingredient Producers N = 390)

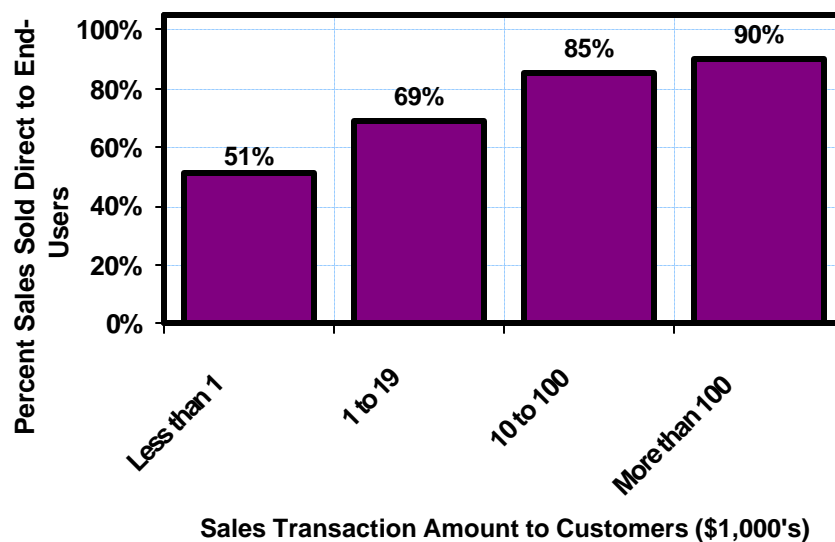


Figure 122, Percent of Sales Sold Direct vs. Sales Transaction Amount
(Success Ingredient Producers N = 390)

Type of Product and Number of Competitors

Table 161 shows how percent of sales sold direct varies with type of product and number of competitors. About 85% of sales are sold direct when either the product is custom designed or there are five or fewer competitors. Successful ingredient producers selling standardized products, when there are six or more competitors, average only 62% of sales sold direct.

Table 161, Percent of Sales Sold Direct vs. Type of Product and Number of Competition
(Success Ingredient Producers N = 390)

Type of Product	Custom Designed	84% (N=32)	88% (N=87)
	Standardized	85% (N=93)	62% (N=178)
		5 or Fewer	More than 5
Number of Competitors			

Summary

This article shows the distribution practices of successful ingredient producers and characteristics, which seem to influence these practices. The graphs and figures shown can be used as a benchmark for comparing and analyzing the distribution practices of your business.

No. 72, August 1986

72 RELATING MARKETING EXPENSE AND PROFITABILITY TO DISTRIBUTION PRACTICES

Ingredient producers with a high percentage of direct sales generally realize:

- Higher sales per salesperson, and
- Lower marketing expense than those selling through intermediaries.

However, profitability tends to be higher for ingredient producers who sell at least partially through intermediaries.

Efficiencies of Selling Direct

This article is an extension of the last article on the distribution practices of ingredient producers. The analysis is based on 788 producers of raw materials, semi finished products, and components for finished products in the Strategic Planning Institute (SPI) database. The SPI database distinguishes percent of sales on a dollar basis sold direct to end users, to end users via company-owned distribution facilities, to wholesalers, and to retailers. Last month's article characterized the distribution practices of ingredient producers earning at least a 13% pretax return on investment. This article examines all ingredient producers.

Such businesses tend to realize marketing expense efficiencies when selling a larger percent of sales direct to end users. As is shown in Figure 123, ingredient producers selling all sales direct to end users, on average, have twice the sales per salesperson as those who sell at least 30% through intermediaries. Figure 124 shows a similar result with respect to the amount of money spent on marketing expense as a percent of sales revenue. Thus, it would appear that a business can gain marketing efficiency by selling more direct and less through intermediaries.

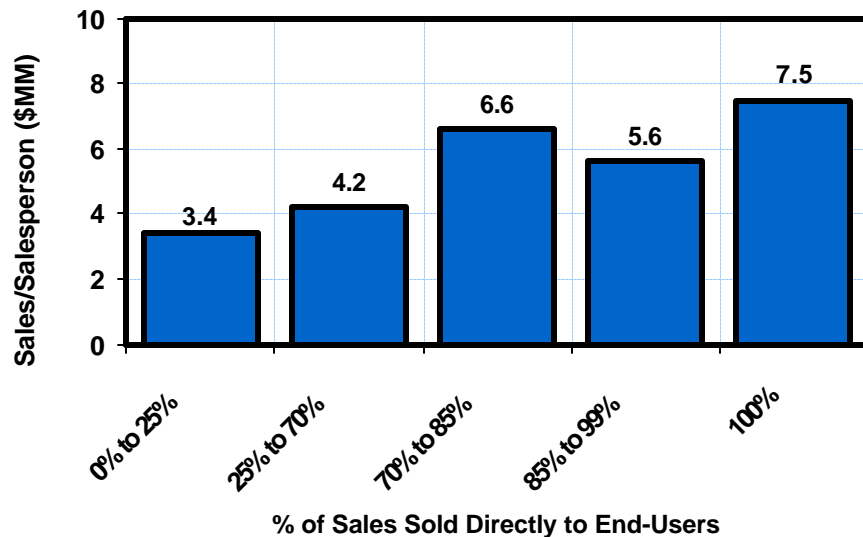


Figure 123, Sales per Salesperson vs. Percent of Sales Sold direct
(Ingredient Producers N = 788)

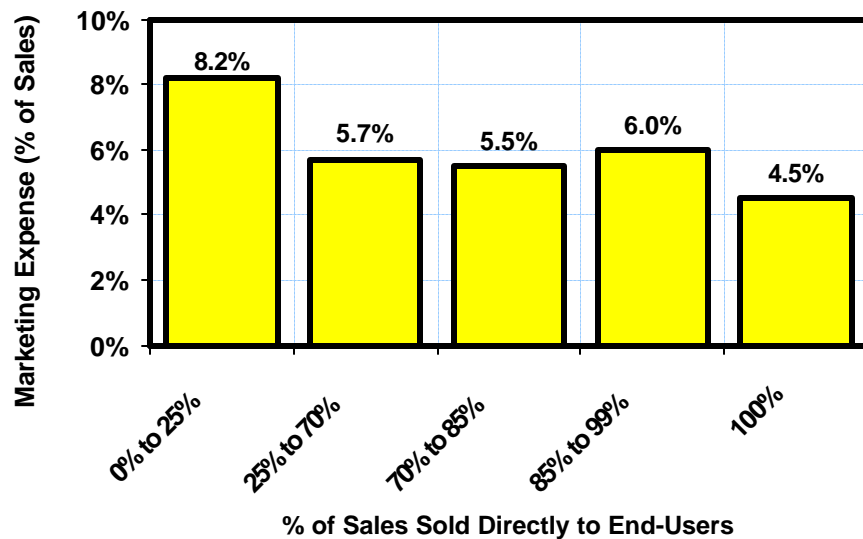


Figure 124, Marketing Expense vs. Percent of Sales Sold direct
(Ingredient Producers N = 788)

Profit Relationships

When looking at overall profitability, however, ingredient producers who sell predominantly or exclusively direct to end-users realize lower returns on average than those selling more through intermediaries. This relationship is shown in Figure 125 which plots pretax return on investment

vs. percent of sales sold direct. While there are many factors to consider in determining distribution practices, some of which were pointed out in last month's article, a business which is driven to sell more direct because of marketing expense efficiencies may be making wrong decisions. Values provided by intermediaries often more than offset their costs, sometimes in ways which are only partially understood. Figure 125 also suggests that selling exclusively through intermediaries is less profitable in general.

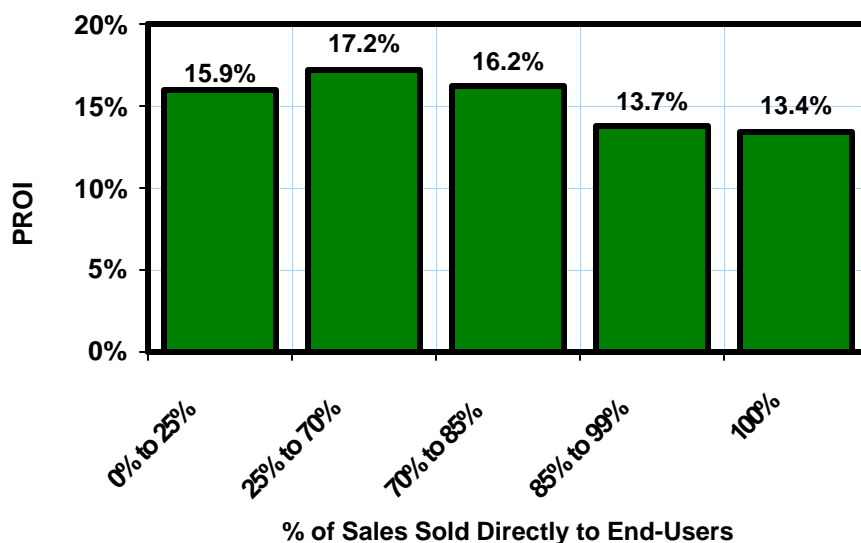


Figure 125, Profitability (PROI) vs. Percent of Sales Sold direct
(Ingredient Producers N = 788)

Table 162 contrasts the marketing expense practices of high vs. low profit ingredient producers depending on the percent of sales sold direct. As can be seen in Table 162, high profit businesses tend to spend more money on marketing expense than low profit businesses when they sell more through intermediaries. However, when a significant portion of their sales (70 to 99%) is sold direct, the high profit ingredient producers tend to spend less on marketing expense relative to their low profit counterparts. ~ (Less difference occurs for those selling exclusively direct to end users.) This suggests that adapting marketing expense to distribution practices is an important business consideration.

Table 162, Marketing Expenses vs. Percent of Sales Sold Direct for High and Low Profit Businesses

(Ingredient Producers N = 788)

PROI	High ($\geq 13\%$)	7.9% (N=113)	5.3% (N=124)	4.3% (N=153)
	Low ($< 13\%$)	6.9% (N=89)	6.5% (N=124)	4.8% (N=185)
		0 to 70	70 to 99	100
		% of Sales Sold Direct to End-Users		

Summary

Although selling a larger proportion of sales direct to end-users tends to result in efficiencies in marketing expense, it is frequently more profitable to sell at least some portion through intermediaries for most ingredient producers. High profit ingredient producers tend to adapt their marketing expense depending on the percent sold direct more than do low profit ingredient producers. Distribution practices are a critical element to marketing strategy and must be thought through very carefully for each business with due consideration given to how we complement the distributors' roles for maximum profitability.

No. 73, September, 1986

73 MARGINS AND BUYER/SELLER POWER IN CAPITAL-INTENSIVE BUSINESSES

Peter Cowley, a management consultant in the United Kingdom, has analyzed changes in profit margins for capital intensive businesses focusing on factors such as buyer/seller power and capacity utilization. The relationships shown can be helpful in forecasting the likely impact of capacity expansions and changes in business conditions on profit margins, given specific business conditions. Cowley's research is based on the Strategic Planning Institute database and the findings were published recently in *PIMSLETTER* No. 40. This article is a summary of that *PIMSLETTER*.

Background

Sensible decisions on investments in R&D, marketing, or new capacity all require assessments of the profit prospects of the business. Often the most uncertain part of the exercise is what will happen to prices and margins in future years. Capital-intensive manufacturers of commodity-like products have particular problems because their investments in new plant typically involve units of large capacity, with high fixed costs and long lead times. It is widely recognized that these investments usually have the effect of temporarily reducing average industry capacity utilization, and often lead to reduced prices while producers compete to fill spare capacity. In the past, however, there has not been adequate information available to relate changing patterns of profits and prices to structural features of the market, such as the relative strengths of buyers and sellers. The PIMS database allows an analytical examination of this area of competitive behavior.

A Simple Model

It is helpful to consider a simple model of what might happen between buyers and sellers of "near-commodity" products, i.e., those in which buyers can purchase large volumes of undifferentiated products from several sources at about the same price. What factors will influence the profitability of the sellers?

Obviously, we might expect profits to be lower if there are more (less concentrated/more fragmented) sellers, or if there are large, concentrated buyers. (Bigger buyers are likely to be more skilled in negotiation and pose a bigger threat of lost business if they switch to another seller.) If industry capacity utilization of the sellers is lowered by recession, or foreseen to be lowered by a new plant coming on-stream, then buyers will enjoy increased power and real prices may decline. Potentially, the whole gross margin could be bargained away if weak sellers face strong buyers, and some extreme cases are known where unit prices decline to levels which approach the variable costs of the sellers.

This *PIMSLETTER* presents some findings relevant to this sort of competitive behavior. We discuss briefly the kinds of seller and buyer structures that exist, the variables that are relevant, the effects observed in different stages of the product life cycle, and particularly the short-term effects of shifts from "sellers' markets" to "buyers' markets."

The Data

We focus on two consecutive periods, 1973-74 and 1975-76, of first high and then low capacity utilization -- periods expected to favor sellers and buyers, respectively. The database contained 828 businesses for these four years. These included 273 capital-intensive businesses (of which, 140 businesses showed large decreases in capacity utilization between the beginning and ~ ending periods). The capital-intensive businesses were selected so that "total capital employed" relative to "revenues at 100% capacity utilization" is greater than 60%. "Capital employed" is defined here as the gross book value of plant and equipment plus net working capital.

Buyer and Seller Structures

Sellers will be described by their fragmentation, measured as

$$S = 1 / \text{Sum of (market share)}^2$$

for the four largest sellers in the market. This is a more sensitive measure of seller structure than typical measures of industry concentration, as illustrated below:

Measure of Seller Fragmentation

<u>Market Share Structure</u>	<u>Sum of the 4 Largest Sellers</u>	<u>Fragmentation, S</u>
50-30-20 (Concentrated)	100%	2.6
40-30-20-10	100%	3.3
30-20-10-5	65%	7.0
10-15-10-5 (Fragmented)	50%	13.3

Buyer fragmentation is represented by the number of buyers taking 50% of the sales of the business. Like seller fragmentation, buyer fragmentation is weighted by the larger members of the group. Buyer behavior in a bargaining situation needs at least one additional descriptor. The PIMS variable, "importance of the purchase to the customer," is measured on a scale of 1 to 5, increasing as the purchase represents a larger proportion of the customer's total purchases. The reason for including this is that a buyer typically does not argue about price for trivial items, but is more price-sensitive on larger purchases.

Margins and Structure Long Term

Detailed statistical analysis showed that gross margin on sales and profit (return on sales and return on gross investment) are lower, as expected, if sellers are fragmented or if the purchase is important to buyers. Gross margin on sales is also lower when buyers are most concentrated, but this did not directly affect profitability. The observed increase in gross margin on sales, as buyers

become more fragmented, appears to result from increases in sellers' below-the-line expenses (e.g., marketing), which tend to be higher in markets where the number of buyers to be serviced is large. Gross margin on sales was also found to decrease through the product life cycle. This is not due to changing profit levels; it is attributable to marked reductions in the nonvariable costs included in gross margin such as marketing and administrative expenses. We now proceed to examine more closely what happens in the shorter term between consecutive periods of high- and low-capacity utilization.

Short-term Changes in Margins

It is no surprise that gross margin on sales declines when capacity utilization falls. What is less obvious is that the impact of a given change in capacity utilization is greatest when it declines from an already low level. Among the 273 capital-intensive businesses studied, gross margin on sales declined by:

- 0.15 points per 1% decline in capacity utilization during 1975-76, when the average level of utilization was 77%;
- 0.11 points per 1% decline in capacity utilization during 1973-74, when the average level was 89%.

Table 163 shows the changes in gross margin on sales between 1973-74 and 1975-76:

Table 163, Changes in Gross Margin and Capacity Utilization 1973-74 and 1975-76

<u>Averages</u>	<u>Full Sample (N=828)</u>	<u>Capital Intensity</u>		<u>Capital Intensive + Big Decline in Capacity Utilization (N=140)</u>
		<u>Low (N=555)</u>	<u>High (N=273)</u>	
Gross Margin 1973-74	26.79%	26.75%	26.88%	27.58%
Gross Margin 1975-76	26.59%	26.74%	26.29%	26.17%
Change	-0.20%	-0.01%	-0.59%	-1.41%
Change in Capacity Utilization	-8.0%	-6.3%	-11.5%	-21.7

Editor's Comment: This is probably a point where the results may be statistical significant but not important!

Overall, the mean gross margin on sales of the 828 businesses showed only a very small change. Businesses gaining margin roughly cancelled out businesses losing margin, despite the fact that mean capacity utilization decreased from 79% to 71%.

Of course, most businesses will be seeking tolerably stable gross margin on sales, and most seem able to achieve it. However, some important margin declines did occur. These were more marked in the 273 capital-intensive businesses, and particularly in the subset of 140 businesses that had also lost capacity utilization most heavily.

Regressions of the changes in gross margin on sales for the 140 businesses showed that declining margins were significantly associated with high capital intensity, low capacity utilization, low concentration of sellers, high concentration of buyers, high importance of purchase to buyers, and a later position in the life cycle. The directions of these effects are all consistent with the simple model put forward above.

Table 164 and Table 165 illustrate some of these effects. For Table 164 buyer fragmentation and importance of purchase to the buyer are combined into a single measure, customer bargaining power. Many buyers and/or low purchase importance, indicate lower customer bargaining power. Margin changes are shown in Table 164 for varying levels of seller fragmentation and customer bargaining power.

Table 164, Change in Gross Margin on Sales as Capacity Utilization Declines, vs. Seller Fragmentation and Customer Bargaining Power

Few Sellers, Many Buyers, Low Purchase Importance

Fragmentation of Sellers	Concentrated	0.0%	0.5%	-1.2%
	Intermediate	0.2%	-0.7%	-1.0%
	Fragmented	0.6%	-0.7%	-3.0%
		Low		High
		Customer Bargaining Power		

Table 165, Change in Gross Margin on Sales vs. Seller Fragmentation and Decline in Capacity Utilization

Fragmentation of Sellers	Concentrated	-0.2%	2.4%
	Fragmented	-0.8%	1.4%
		Small	Large
		(< = 11.5%)	(> 11.5%)
Decline in Capacity Utilization			
(between 1973-74 and 1975-76)			

Note: Based on 124 capital-intensive businesses that faced buyers to whom the purchase was important.

Editor's Comment: Indices defining Fragmentation and Customer Bargaining Power levels for these charts were not given.

Businesses with few sellers and many buyers/low purchase importance (top left box) were able to maintain stable margins; in contrast, those with many sellers facing few buyers and high purchase importance (bottom right box) showed the largest declines in margin. Note that a change of three points corresponds to about a 15% drop in initial gross margin on sales for businesses in that box and would represent a much bigger percentage drop in net profit.

Table 165 shows the effects of seller fragmentation and of changes in capacity utilization for businesses facing buyers for whom the purchase is important. There was little change in gross margin on sales with seller fragmentation for small losses in capacity utilization, but marked margin decreases for large capacity declines, particularly when sellers were also fragmented.

These results show clearly that within the database there are groups of businesses whose response in recession is markedly different from others, depending essentially on the way the structure of the market influences the relative bargaining position of buyers and sellers.

How do these findings relate to the main divisions of the PIMS database by type of business? Table 166 shows the mean change in gross margin on sales by type of business, together with some descriptions of the structural features of the markets in which these types operate.

Table 166, Market Structure Factors and Changes in Gross Margin by Type of Business (1973-74 vs. 1975-76)

#	<u>Type of Business</u>	Mean Change in Gross Margin	Mean Capital Intensity	Median Change in Utilization	Mean Purchase Importance	Median Fragmentation	
						Buyers	Sellers
79	Raw & Semifinished Materials	-2.7%	84%	-19%	3.8	12	5.2
204	Components	-1.0%	50%	-10%	3.1	12	4.8
174	Suppliers	-0.5%	47%	-6%	2.9	53	5.4
199	Consumer Goods	-0.1%	42%	-5%	2.9	76	5.6
172	Capital Goods	2.1%	49%	-8%	2.9	30	5.1
828	Total						

The largest declines in gross margin on sales occurred in raw material and semifinished products and in manufacturers of components for other businesses. These groups are, of course, likely to contain commodity-like products sold to other industrial users.

They tended to show large declines in capacity utilization, and also faced high purchase importance and more concentrated buyers than the other types of businesses. These results may apply only for the particular period of years examined corresponding to the conditions of the first "oil crisis." However, we might expect to see similar results whenever unstable conditions exist, e.g., when rates of exchange and inflation are volatile, or new foreign competition disturbs former home industry behavior. Whether decreased margins are recouped in the next upturn is a topic for further research.

The effects of buyer and seller concentration and purchase importance are broadly comparable for all businesses, but the effects of changing capacity utilization are more specific. For most businesses with low capital intensity, capacity utilization has little effect on margins. For highly capital-intensive businesses, low capacity utilization is associated with lower margins, particularly where sellers are fragmented and buyers are concentrated and price-sensitive. Managers of capital-intensive businesses must take all of these factors into account when assessing the likely behavior of customers and competitors when industry utilization is lowered by recession or capacity expansion.

No. 74, October 1986

74 THE IMPORTANCE OF PRODUCT IMAGE AND COMPANY REPUTATION

Profitability is strongly associated with product image/company reputation among industrial businesses in the strategic Planning Institute (SPI) database. Various measures of competitive advantage are also positively associated with image/reputation. Although these data do not isolate cause/effect relationships, product image/company reputation still shows a positive association with profitability after "accounting for" the effects of competitive advantage and other profit correlates.

Image of the Company

For many years industrial companies have emphasized maintaining and enhancing their corporate reputation. In recent years a strong corporate advertising program has stressed the value of the corporation and its products in providing value.

Recently, the overall corporate image was measured in a study of 1,200 "upscale" men (75%) and women (25%) in the general population. Among the many questions asked in the telephone survey, respondents were asked to name up to three American corporations they considered to be "outstanding." Table 167 shows the top 16 corporations named in this survey; many more were named, of course.

Table 167, Percent Citing Company as Outstanding

1.	IBM	48%	9.	Apple Computer	5%
2.	Chrysler	28%	10.	Hewlett Packard	5%
3.	Chrysler	26%	11.	Exxon	5%
4.	AT&T	19%	12.	Du Pont	4%
5.	General Electric	14%	13.	Eastman Kodak	4%
6.	Ford	11%	14.	Procter & Gamble	3%
7.	Xerox	7%	15.	3M	3%
8.	Sears, Roebuck	7%	16.	RCA	3%

Editors' Comment: " Oh! How the mighty have fallen"

Assessing the Value of a Company Image

Quantifying the value of company reputation is extremely difficult. As Dick Woodward, former director of DuPont's Corporate Advertising, had said: "Rational men accept that a good name is a valuable asset, and precise appraisals are not required. However, rational men do argue about how much to spend in support of a reputation, and in a budgeting process, precision is required." Most people acknowledge that a good reputation can be helpful in recruitment and retention of

staff, in helping introduce new products and enter new markets, in developing and maintaining customer loyalty, and in government and investor relations. However, the bottom line impact is difficult to quantify.

The association between profitability and company reputation was examined using the Strategic Planning Institute database. Database businesses were asked to assess the image of their products and the reputation of their company relative to their three leading competitors. The question was asked on a five-point scale. Such questions, of course, suffer from a possible "self-assessment" bias.

As can be seen in Figure 126, there is a strong, positive association between pretax return on investment (PROI) and product image/company reputation for industrial businesses. Only a few businesses felt their image was much worse than leading competitors, so the "much worse" and "somewhat worse" categories were combined. As can be seen in Figure 126, most businesses felt their reputation was the "same as" or "somewhat better" than leading competitors.

As the figure shows, "much better" businesses average 24% PROI; "worse" businesses average 7% PROI.

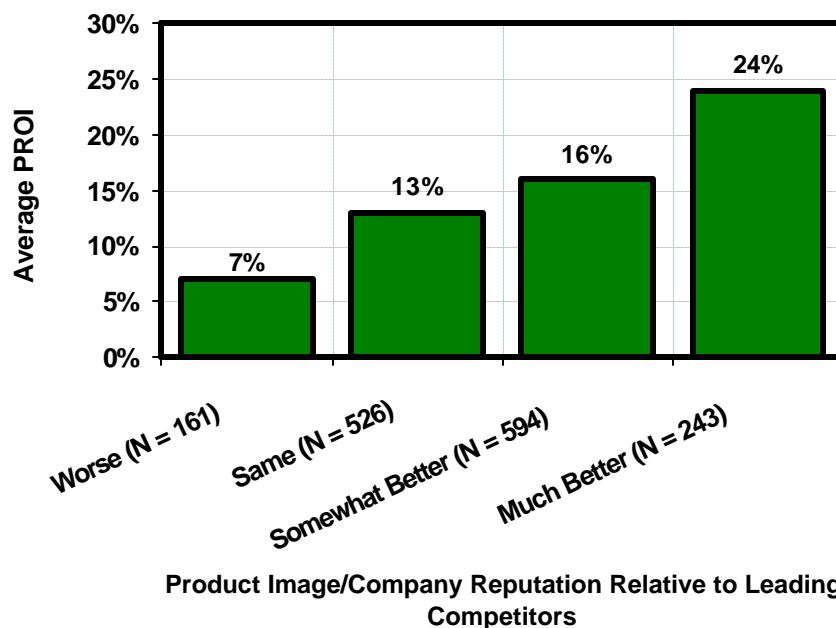


Figure 126, Profitability vs. Relative Product Image/Company Reputation

Strong, positive correlations also exist between product image/company reputation and other elements of competitive advantage. Figure 127 shows the relationship between market share and image/reputation. Figure 128 shows the association between relative product quality and image/reputation. Businesses also tend to be able to charge a price premium when they have strong reputations.

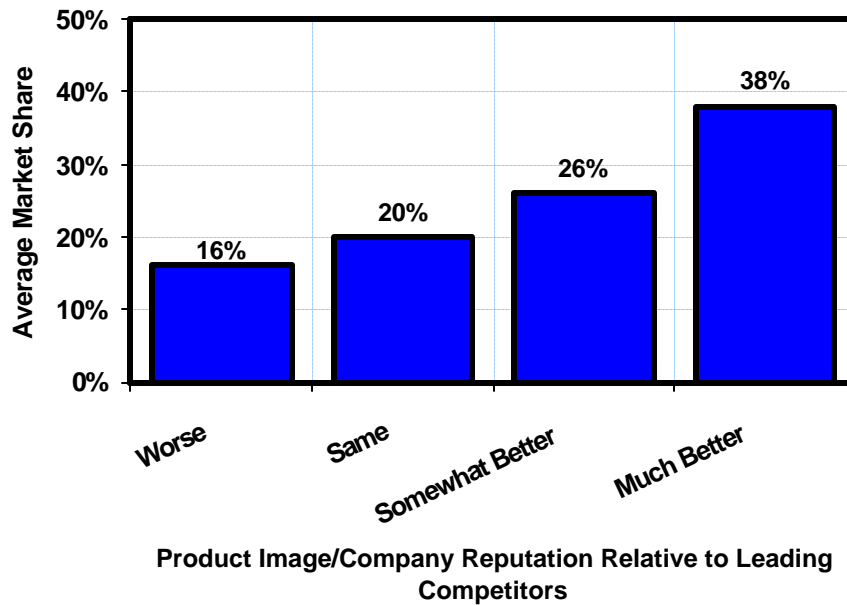


Figure 127, Market Share vs. Relative Product Image/Company Reputation

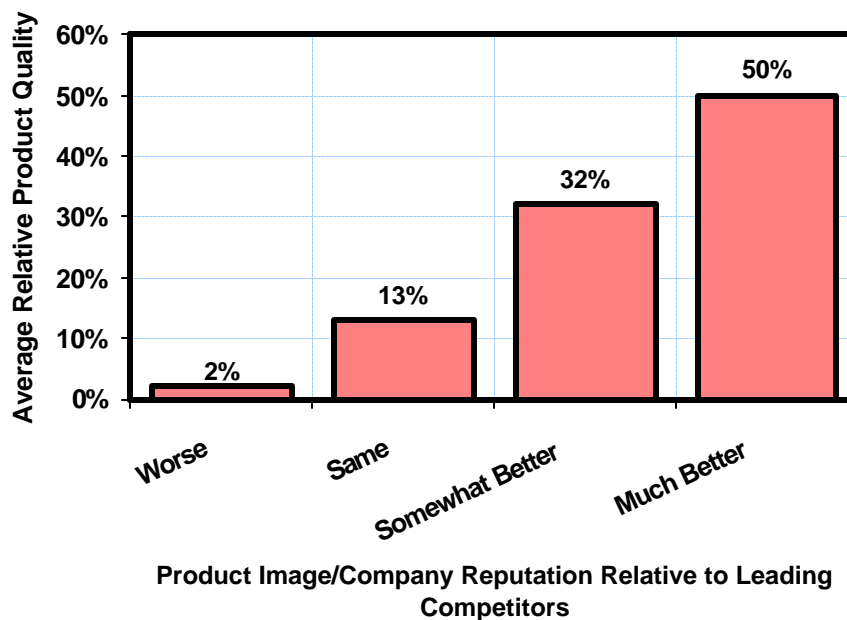


Figure 128, Relative Product Quality vs. Relative Product Image/Company Reputation

However, we have a situation in which it is impossible to attribute cause and effect. For example, the strong association between product quality and product image/company reputation is not

unexpected, but it is difficult to determine the extent to which either "causes" profitability (or whether profitability "causes" higher quality and image).

One type of analysis that can help sort out the individual "contributions" to profitability of the key correlating factors is multiple regression analysis. Table 168 shows the results of a multiple regression analysis using pretax return on investment as the dependent variable. The sign (whether higher levels of the factor have a positive or negative effect on PROI) and the statistical significance level are shown.

As can be seen, nine factors are highly significant; all have been discussed in previous articles. While not as significant in explaining the variability in PROI, relative product image/company reputation still shows a positive impact. The coefficient from the regression was 0.5 implying that moving from one level to the next (e.g., from "same" to "somewhat better") is worth half a percentage point of PROI. If this is a reasonable estimate, it would represent a tremendous amount of potential earnings leverage.

Table 168, Regression Equation for PROI

	<u>Factor</u>	<u>Sign</u>	<u>Significance Level</u>
1.	Sales/Investment (Turnover)	+	.999
2.	Value Added/Sales	+	.999
3.	Relative Market Share	+	.999
4.	Capacity Utilization	+	.999
5.	Percent New Products	-	.999
6.	Relative Direct Costs	-	.999
7.	Percent Employee Unionized	-	.999
8.	Relative Product Quality	+	.999
9.	Sales Transaction Amount	-	.99
10.	Relative Product Image/Company Reputation	+	.86

The next article will continue this analysis and focus on the relationship between change in profitability and change in relative product image/company reputation.

Summary

It is difficult to determine how much advertising (and other) effort should be placed behind maintaining and enhancing our reputation. The SPI database shows some evidence of a positive association between profitability and relative product image/company reputation.

No. 75, November, 1986

75 ASSOCIATIONS AMONG PROFITABILITY, PRODUCT QUALITY, AND IMAGE

An analysis of the industrial businesses in the Strategic Planning Institute (SPI) database shows a strong positive association between change in pretax return on sales (PROS) and both change in relative product quality and change in relative product image and company reputation. Increases in both PROS and market share occur more frequently when increases in relative quality or relative image (or both) occur.

Association between Change in Profitability and Change in Image

Last month's article showed a strong positive association between profitability and relative product image/company reputation based on findings from the industrial businesses in the SPI database. Even after accounting for the impact of other correlating factors, which are strongly associated with profitability, relative image still showed a positive impact. This article continues that analysis by looking at change in profitability vs. change in product image/company reputation and change in relative product quality. These latter two measures are defined at the end of this article.

Among the 1,524 industrial businesses in the SPI database, 291 (19%) reported that their relative product image/company reputation increased over a two-year period of time. As shown in Figure 129, these 291 businesses also reported an increase in pretax return on sales of almost two percentage points. On average, businesses showing no change in image reported only a slight increase in profitability; those showing a decrease in image showed a very slight decrease. PROS is used rather than PROI because changes in the latter measure are strongly influenced by large plant expansions and other investment changes.

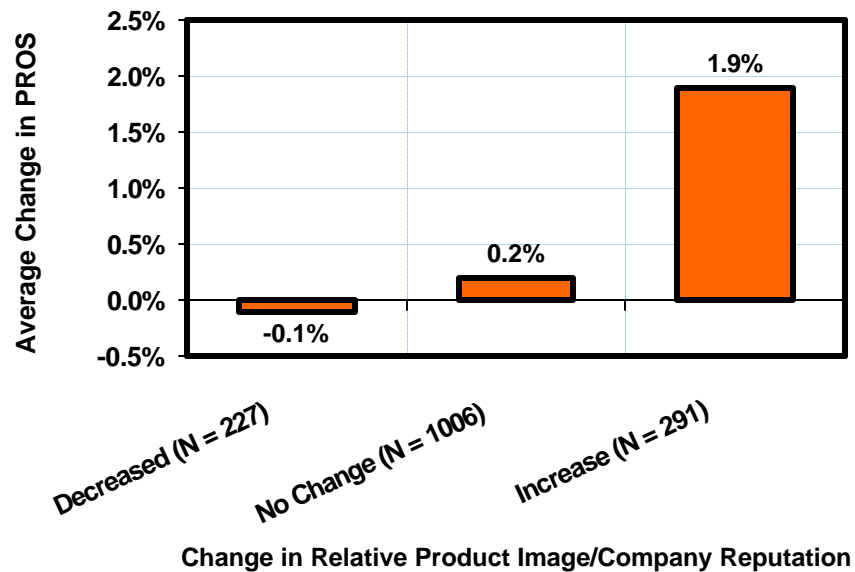


Figure 129, Change in Profitability (PROS) vs. Change in Relative Product Image/Company Reputation
(Industrial Businesses N=1,524))

As pointed out last month, product image/company reputation tends to be correlated with other elements of competitive advantage. In particular, as might be expected, a strong association is found between relative image/reputation and relative product quality.

Association between Change in Profitability and Change in Quality

When examining change in profitability opposite change in relative product quality, an association similar to that found for image/reputation is seen. This is shown in Figure 130.

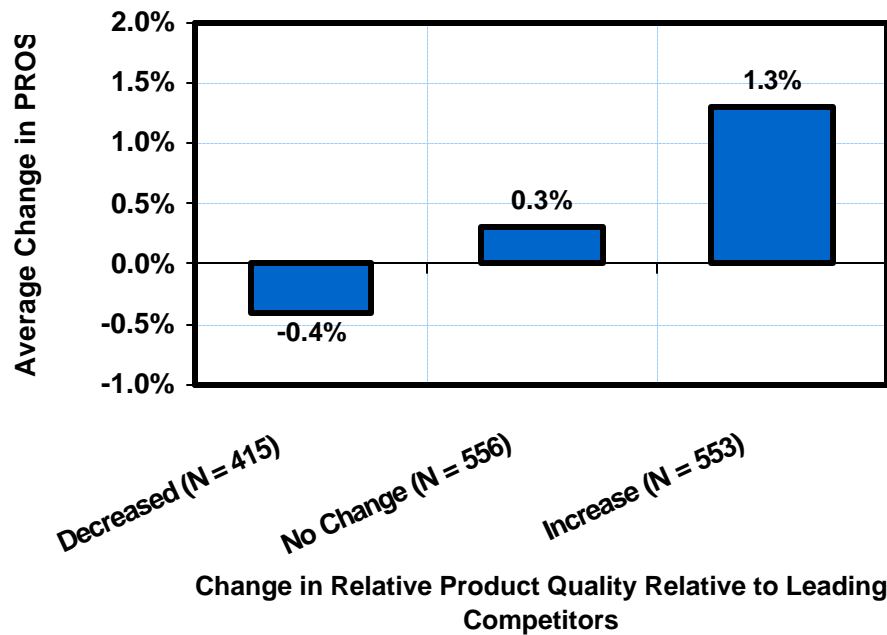


Figure 130, Change in Profitability (PROS) vs. Change in Relative Product Quality (Industrial Businesses N=1,524))

Changes in product quality tend to be more frequent than those in image as can be seen by the sample sizes associated with the three categories. Increases in product quality are associated with about a one percentage point increase in PROS relative to no change. Note that a one percentage point change in PROS is equivalent to about a 10% increase in pretax earnings since PROS averages about 10% across these industrial businesses.

Interaction between Quality and Image

Table 169 shows the change in PROS opposite change in both relative image and relative quality. While a good deal of variability exists in these averages (some of these numbers are based on relatively small sample sizes), the figure indicates that both image/reputation and product quality are associated with (and presumably influence) profitability. Regardless of whether relative product quality has increased, decreased, or not changed, higher average changes in PROS are found for those businesses where image/reputation has increased.

One aberration occurs in the lower right-hand corner of this figure. However, this average is based on only 47 businesses.

Table 169, Change in Profitability (PROS) vs. Change in Relative Image and Relative Quality
(Industrial Businesses N=1,524))

Change in Relative Image/Reputation	Increase	-0.2% (N=36)	1.5% (N=63)	2.4% (N=192)
	No Change	-0.3% (N=244)	0.2% (N=448)	0.6% (N=314)
	Decrease	-0.8% (N=135)	0.4% (N=45)	1.4% (N=47)
		Decrease	No Change	Increase
		Change in Relative Product Quality		

A similar result is found for change in market share as shown in Table 170. Thus, increases in both profitability and market share tend to occur when either relative product quality or relative product image/company reputation (or both) increase.

Table 170, Change in Market Share vs. Change in Relative Image and Relative Quality
(Industrial Businesses N=1,524))

Change in Relative Image/Reputation	Increase	0.4%	0.4%	0.7%
	No Change	-0.3%	0.2%	0.6%
	Decrease	-0.7%	0.2%	0.3%
		Decrease	No Change	Increase
		Change in Relative Product Quality		

Summary

An examination of the industrial businesses in the Strategic Planning Institute database indicates a strong association between change in profitability and market share and change in relative product image/company reputation. While such evidence is not conclusive, it strongly supports the thought "that a good name is a valuable asset" and provides a rough estimate of its link to profitability.

No. 76, December 1986

76 STRONG VS. WEAK IMAGE CORPORATIONS AND BUSINESSES PROI

The last two articles discussed the association between profitability, product quality, and product image/company reputation for industrial businesses in the SPI database. This article discusses characteristics, which differentiate between strong image and weak image corporations and businesses. Two highly important factors are superior customer service and superior product quality. Other key factors are market leadership, quality of management, adaptability to the marketplace, honesty and ethics, and good communications.

"Winning" Companies

A 1986 Yankelovich, Clancy, and Schulman study conducted for Brouillard Communications explored the characteristics of firms with "winning reputations" and the resulting benefits of a winning reputation. The study titled "Winning" indicates that companies with excellent reputations derive many benefits from being viewed as "winners." The study was summarized in the October, 1986, issue of *MARKETING NEWS*.

While varying somewhat by different audiences, the characteristics cited for a firm with a winning reputation are:

- Superior quality products,
- Quality service to customers,
- Flexibility (ability to adapt to marketplace changes),
- High-caliber management, and
- Honesty and ethics in business practices.

(With the exception of flexibility, all of these characteristics were found to be associated with "outstanding" companies in a recently completed corporate image study.)

A second phase of the Brouillard study examined the association between the rating of a specific company as a "winner" and the perception of that company on specific attributes. In this analysis a somewhat different list of characteristics emerged. Three key attributes that differentiated winners from other companies were:

- high-caliber management,
- market leadership, and
- good communications.

The attributes cited by respondents as important to a winning company (in general) differed somewhat from the attributes of companies specifically considered to be outstanding companies. For example, good communications was not cited as an attribute of a winning company, but was associated with specific companies considered outstanding.

SPI Database Analysis

The industrial businesses in the strategic Planning Institute (SPI) database were examined to find the factors which provide the strongest differentiation between strong image and weak image businesses. (The definition of relative product image/company reputation was given in the last article.) strong image businesses were defined as those with somewhat better or much better image/reputation than leading competitors and weak image businesses were defined as those which had images/reputations that were about the same, somewhat worse, or much worse.

Table 171 summarizes the differences between strong and weak image industrial businesses in the database. As can be seen in the table, the factor showing the greatest difference in percent of businesses with strong vs. weak image is superior customer service. Seventy-three percent of the strong image businesses credit themselves with superior customer service; only 26% of the weak image businesses believe they have superior customer service.

The next three items -- superior product quality, first ranked in market share, and realizing a significant price premium -- are strongly intercorrelated. As previous articles have shown, these are all important elements of competitive advantage and are highly correlated with profitability. Strong image businesses also tend to have a broader product line.

All of these key differentiating factors relate to marketing. Most of the manufacturing oriented factors -- such as degree of vertical integration, having patent protection, and having lower manufacturing and distribution costs -- do not significantly differentiate between strong and weak image businesses. It is also interesting that it makes no difference whether the business is in a growing market.

Table 171, Differences between Strong and Weak Image Businesses in the SPI Database

<u>Factor</u>	Strong Image <u>(N = 837)</u>	Weak Image <u>(N = 687)</u>	<u>Difference</u>
Relative to Competitors, Percent of Businesses			
With Superior Customer Service	73%	26%	47%
With Superior Product Quality	56%	19%	37%
Ranked First in Market Share	55%	20%	35%
Realizing more than a 3% Price Premium	60%	34%	26%
Having a Broader Product Line	46%	23%	23%
Outspending Competitors on Personal Selling	37%	22%	15%
Outspending Competitors on Advertising	21%	8%	13%
Having Lower Manufacturing and Distribution Costs	31%	18%	13%
Introducing More New Products	38%	28%	10%
Having a Product Patent	26%	19%	7%
Being More Backward Integrated	28%	12%	6%
Having a Process Patent	26%	22%	4%
Being More Forward Integrated	10%	9%	1%
Being in Growing Markets	40%	39%	1%

Summary

Measuring the bottom-line impact of a good corporate reputation is difficult. However, the evidence indicates that reputation is important. The payoffs of being seen as a "winner" include selling products, getting support for your stock, recruiting employees, gaining community support for plant location and convincing joint venture partners.

The attributes of winners are reasonably well understood, both for corporations and for individual businesses. Product quality and customer service are particularly important.

No. 77, January 1987

77 THE IMPORTANCE OF CUSTOMER SERVICE

The amount of customer service provided relative to competitors is strongly associated with profitability and competitive advantage among industrial businesses in the Strategic Planning Institute (SPI) database. The association exists for different types of products in different stages of their life cycles. However, the sensitivity of profitability to relative customer service varies somewhat with these and other factors.

Overall Profitability and Market Share

The last article, describing differences between strong vs. weak image industrial businesses, showed a strong association between image and relative customer service. Seventy-three percent of the strong image businesses believe they have superior customer service; only 26% of the weak image businesses believe they have superior customer service.

Table 172 shows the strong correlation that occurs between customer service relative to competitors and profitability and market share. Relative customer service is broken into four categories: less than competitors, the same as competitors, more than competitors, and much more than competitors. As the table indicates, businesses which believe they provide much more service than competitors have roughly twice the profitability and market share as those which believe they provide less customer service than competitors. It cannot be concluded, of course, that customer service causes these effects; it is more likely that these factors interact to produce a business, which is, overall, a strong or weak business. Nevertheless, insight can be gained by examining conditions under which customer service is more strongly or more weakly correlated with profitability.

Table 172, Average PROS, PROI and Market Share vs. Relative Customer Service
(Industrial Businesses N=1524)

Customer Service Relative to Competitors	Average Level of:			
	<u>PROS</u>	<u>PROI</u>	<u>Market Share</u>	<u>Sample Size</u>
Less	7.2%	9.7%	18.0%	158
Same	10.0%	13.9%	20.0%	576
More	11.5%	15.9%	26.6%	559
Much More	13.7%	20.0%	37.6%	231

Lifecycle position

It might be expected that profitability would be less strongly associated with relative customer service as a business matures. As customers become familiar with the use of the products and

services provided, they should be less willing to pay for customer service and this would be expected to become less of a differentiating factor.

As Table 173 indicates, this does not appear to be true. The sensitivity of pretax return on sales is about the same for mature and decline businesses as it is for introductory and growth businesses among SPI industrial businesses. In particular, it may be dangerous to assume that you can provide less service than competitors in a mature or declining market situation.

Table 173, Average PROS vs. Relative Customer Service and Life Cycle Position
(Industrial Businesses N=1524)

Life Cycle Position	Introductory, Growth	8.9% (N=37)	10.3% (N=144)	12.2% (N=110)	14.5% (N=77)
	Mature, Decline	6.7% (N=121)	10.0% (N=432)	11.3% (N=449)	13.4% (N=154)
		Less	Same	More	Much More
		Customer Service Relative to Competition			

Type and Breadth of Product

Some variation in profit sensitivity occurs for different types of products. Table 174 shows the relationship between PROS and type of product. Perhaps surprisingly, the greatest degree of sensitivity occurs for raw and semifinished materials. While it may be surprising that less sensitivity exists for capital goods, largely "high-ticket" items, such products do not have the processing problems which can occur with raw and semifinished materials.

Table 174, Average PROS vs. Relative Customer Service and Type of Product
(Industrial Businesses N=1524)

Type of Product	Capital Goods	6.8% (N=57)	8.8% (N=145)	11.1% (N=148)	10.9% (N=65)
	Raw or Semifinished Materials	5.3% (N=22)	12.9% (N=78)	10.2% (N=95)	16.7% (N=29)
	Component Parts	7.9% (N=47)	9.2% (N=196)	11.6% (N=224)	13.3% (N=97)
	Supplies, Consumables	8.0% (N=32)	10.8% (N=157)	13.3% (N=92)	17.4% (N=40)
		Less	Same	More	Much More
Customer Service Relative to Competition					

Table 175 shows similar profit sensitivity by type of product design. As would be expected, slightly more sensitivity occurs with custom-tailored product designs than with standard designs. In particular, custom-tailored products where less customer service is provided relative to competitors tend to be associated with very low profit margins.

Table 175, Average PROS vs. Relative Customer Service and Type of Product Design
(Industrial Businesses N=1524)

Type of Product Design	Standard	8.2% (N=118)	10.8% (N=412)	12.3% (N=387)	14.0% (N=165)
	Custom Tailored	4.3% (N=40)	8.2% (N=164)	9.7% (N=172)	13.0% (N=66)
		Less	Same	More	Much More
Customer Service Relative to Competition					

Table 176 shows the same relationship depending on the breadth of product line relative to competitors. Again, profit sensitivity exists for all three levels. However, somewhat less sensitivity occurs when the product line breadth is the same as competition. This perhaps suggests that customer service is more important when your business is differentiated on product breadth (less or more). Those businesses with a broader product line than competitors, and, which provide much more customer service than competitors, tend to have the highest profit margins.

Table 176, Average PROS vs. Relative Customer Service and Relative Product Breadth
(Industrial Businesses N=1524)

Breadth of the Product Line Relative to Competitors	More	7.9% (N=35)	11.8% (N=153)	12.7% (N=238)	15.3% (N=122)
	Same	7.0% (N=52)	11.4% (N=239)	9.8% (N=184)	11.9% (N=68)
	Less	7.0% (N=71)	6.8% (N=184)	11.9% (N=137)	12.4% (N=41)
		Less	Same	More	Much More
Customer Service Relative to Competition					

The Importance of Auxiliary Services

It would be expected that the customer service profit leverage would be higher when auxiliary services are perceived to be more important. As Table 177 indicates, slightly more profit sensitivity exists among businesses who perceive their services to be of great importance relative to those perceiving their services to be of some importance, although this difference is not great.

However, it is surprising that businesses who perceive their services to be of little or no importance have the greatest amount of profit leverage. While based on a relatively small sample of businesses, such businesses which provide less service than competitors are barely breaking even on average; those which provide much more service than competitors who are doing extremely well.

Thus, it appears dangerous to give less service and potentially lucrative to give much more service in situations where such service is perceived to be unimportant. Perhaps this is because in such situations competitors are less likely to provide service and such service becomes a visible means of differentiation.

Table 177, Average PROS vs. Relative Customer Service and Importance of Auxiliary Services
(Industrial Businesses N=1524)

Importance of Auxiliary Services	Great Importance	8.1% (N=65)	9.3% (N=164)	11.1% (N=190)	14.1% (N=111)	
		Some Importance	8.7% (N=62)	10.9% (N=274)	13.0% (N=245)	13.0% (N=99)
	Little or No Importance		2.2% (N=31)	9.3% (N=138)	9.3% (N=124)	15.5% (N=21)
				Less	Same	More
Customer Service Relative to Competition						

Summary

This article shows the high degree of association between relative customer service and profitability. Although such association does not prove causality, the associations are strong enough to suggest that customer service is an extremely important component of competitive advantage. The data suggests that it may be dangerous to cut back customer service as a business matures or as services are perceived to be of little or no importance. Profit sensitivity occurs for different types of products, product designs, and product line breadth.

No. 78, February 1987

78 VALUE OF A PATENT POSITION

Industrial businesses in the Strategic Planning Institute (SPI) database tend to be more profitable and have a higher market share when they benefit from a product and/or process patent or "trade secret." Product patents seem to be more important for businesses producing component parts and capital goods. Process patents seem to be more important to raw and semifinished material businesses. Product patents show more profit sensitivity for mature/decline businesses than for growth businesses.

Profit and Share Advantages of a Patent Position

The industrial businesses in the SPI database were examined to see what differences exist in profitability and market share among businesses with and without a patent position. The database includes information on both product and process patents. Patents are considered to exist if the "business benefits to a significant degree from patents, trade secrets, or other proprietary methods of production or operation."

Table 178 shows the value of a product patent on three different measures. Twenty-three percent of the industrial businesses claim to have a product patent (as defined above) and on average show significantly higher levels of pretax return on investment, pretax return on sales, and market share.

Table 178, Value of a Product Patent
(Industrial Businesses N=1524)

<u>Factor</u>	<u>Existence of a Product Patent</u>	
	<u>Yes</u>	<u>No</u>
Average PROI	19.7%	13.8
Average PROS	14.3%	9.9%
Average Market Share	29.2%	23.6%
Sample Base	343 (23%)	1181

Table 179, Value of a Process Patent
(Industrial Businesses N=1524)

<u>Factor</u>	<u>Existence of a Process Patent</u>	
	<u>Yes</u>	<u>No</u>
Average PROI	17.8%	14.3
Average PROS	14.3%	9.8%
Average Market Share	29.3%	23.5%
Sample Base	368 (24%)	1156

Table 179 shows similar information for a process patent. With the exception of pretax return on investment, the values for a process patent are nearly identical to those for a product patent. Less sensitivity is seen in Table 179 for pretax return on investment because businesses with a process patent tend to have higher degrees of investment intensity.

Profit Differences by Life Cycle Position

As shown in Table 180, growth businesses have a much higher percentage of product patents than do businesses in the mature/decline life cycle stage. However, compared to the businesses in the growth category, the existence of a product patent among mature/decline businesses indicates a greater degree of profit sensitivity. It may be that early in the life cycle it is easier to differentiate products from those of the competition; whereas, later in the life cycle, a product patent may provide the only source of differentiation.

Essentially no difference exists by life cycle stage for the profit sensitivity of a process patent. As shown in Table 181, the average pretax return on sales is very similar for both stages of the life cycle shown.

Table 180, Product Patent Profitability (PROS) by Life Cycle Stage
(Industrial Businesses N=1524)

Existence of Product Patent	Yes	13.5% (N=146)	14.8% (N=197)
	No	10.4% (N=222)	9.7% (N=959)
		Growth	Mature, Decline
Life Cycle Stage			

Table 181, Process Patent Profitability (PROS) by Life Cycle Stage
(Industrial Businesses N=1524)

Existence of Process Patent	Yes	14.5% (N=146)	14.1% (N=197)
	No	9.6% (N=222)	9.8% (N=959)
		Growth	Mature, Decline
Life Cycle Stage			

Profit Differences by Type of Industrial Business

Profit sensitivity differs somewhat depending on type of industrial business. The SPI database categorizes industrial businesses into capital goods, raw and semi finished materials, component parts, and supplies and consumables,

Table 182 shows the profit sensitivity for a product patent for each of these four types of industrial businesses. As can be seen in Table 182, the greatest sensitivity exists for component parts. A fair amount of sensitivity also exists for capital goods. Many businesses produce and market raw and semi finished materials, and for this type of business the existence of a product patent makes less difference.

Table 183 is an identical table for a process patent. As can be seen, a large amount of difference exists for raw and semifinished material businesses. Thus, it appears that a process patent should be expected to have more value than a product patent. Again, these figures are averages and such a conclusion obviously may not hold in individual situations. Sensitivity of profitability to the existence of a process patent for component parts is also fairly high.

Table 182, Product Patent Profitability (PROS) by Type of Business
(Industrial Businesses N=1524)

Existence of Product Patent	Yes	13.0% (N=108)	13.2% (N=45)	16.0% (N=131)	13.5% (N=59)
	No	8.5% (N=307)	11.1% (N=179)	9.2% (N=433)	11.8% (N=262)
		Capital Goods	Raw, Semifinished Materials	Component Parts	Supplies, Consumables
Type of Industrial Business					

Table 183, Process Patent Profitability (PROS) by Type of Business
(Industrial Businesses N=1524)

Existence of Process Patent	Yes	10.9% (N=47)	16.7% (N=85)	14.6% (N=155)	13.1% (N=81)
	No	9.5% (N=368)	8.3% (N=139)	9.3% (N=409)	11.7% (N=240)
		Capital Goods	Raw, Semifinished Materials	Component Parts	Supplies, Consumables
Type of Industrial Business					

Summary

Businesses claiming to benefit from a product or process patent; or "trade secret" on average have higher levels of profitability and market share than businesses without such patent protection. Profitability tends to be more sensitive to a product patent for businesses later in their life cycle and for component parts and capital goods businesses. Profit sensitivity is higher with a process patent for raw and semi finished materials as well as component parts.

No. 79, March 1987

79 ANALYZING THE ELEMENTS OF INVESTMENT

The main elements of investment for most industrial businesses can be viewed as manufacturing oriented (plant and equipment; raw material and work-in-process inventory) and marketing oriented (finished product inventory; accounts receivable). An analysis of the Strategic Planning Institute (SPI) database shows that a very low level of investment intensity (investment per dollar of sales) is associated with:

- High levels of profitability (PROI) for manufacturing oriented investment, but with
- Below average levels of profitability for marketing oriented investment.

Thus, while it may be desirable to strive for investment reduction in manufacturing, similar reduction for marketing oriented investment may be ill advised.

The Elements of Investment

The industrial businesses in the SPI database were examined to see what differences exist in the key elements of investment and how they relate to profitability. As shown in Table 184, the average industrial business has most of its investment tied up in plant and equipment. On average, this investment (valued at original cost) is almost 50% of annual sales revenue. Inventories are usually about 20% of sales revenues with more inventory typically in raw materials and work in process than in finished products. Accounts receivable represent another 15% of sales on average.

Table 184, Average Values of Different Types of Investment
(Industrial Businesses N=1524)

<u>Type of Investment</u>	<u>Average (Mean)</u>	<u>Standard Deviation</u>
Manufacturing Oriented		
Plant and Equipment (Orig. Cost)	47.6%	32.6%
Raw Material, W-I-P Inventory	12.9%	9.1%
Marketing Oriented		
Finished Product Inventory	7.8%	7.3%
Accounts Receivable	15.4%	7.6%
Total -	83.7%	

Considerable differences exist in these average values depending on the type of business. As Table 185 shows, capital goods businesses tend to have relatively lower levels of investment in plant and equipment and higher levels of investment in inventory and accounts receivable. Raw

and semifinished material businesses are the opposite -- more investment in plant and equipment and less in inventory and accounts receivable.

Table 185, Average Values of Different Types of Investment as a Percent of Sales by Type of Business
(Industrial Businesses N=1524)

<u>Type of Investment</u>	<u>Capital Goods</u>	<u>Raw, Semifinished Materials</u>	<u>Component Parts</u>	<u>Supplies Consumables</u>
Plant and Equipment (Orig. Cost)	32.0%	77.8%	46.9%	48.0%
Raw Material, W-I-P Inventory	18.4%	8.2%	12.4%	10.0%
Finished Product Inventory	8.1%	6.6%	7.1%	8.1%
Accounts Receivable	19.9%	13.9%	13.9%	14.4%
Total -	77.5%	106.5%	80.3%	80.5%
Sample Size	415	224	564	321

Association between Profitability and the Elements of Investment

Figure 1 shows the relationship between pretax return on investment (PROI) and plant and equipment investment as a percent of sales. In constructing this and subsequent figures, the 1524 industrial businesses in the database were divided approximately equally. Each bar thus represents the average of about 300 businesses.

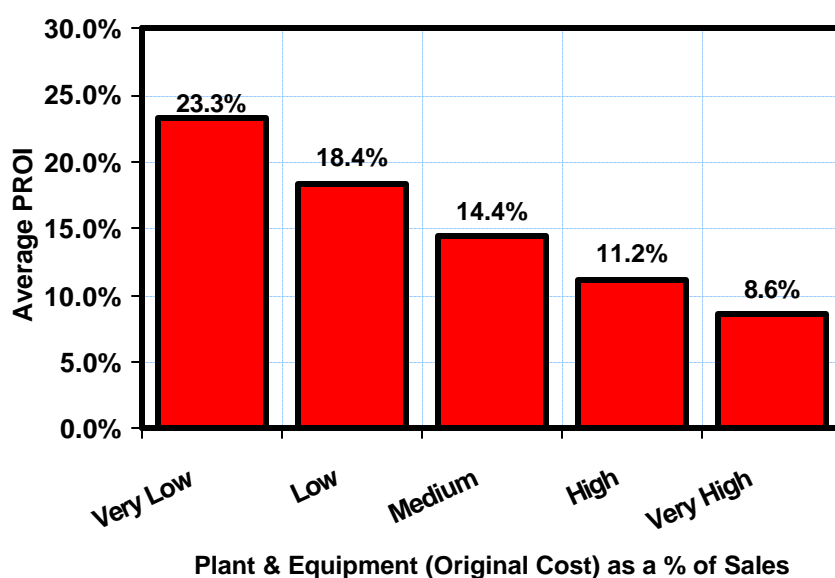


Figure 131, Profitability vs. Plant and Equipment Investment at Original Cost
(Industrial Businesses N=1524)

Note the strong negative relationship between PROI and the amount of plant and equipment investment. Previous Articles and several journal articles have commented about the negative relationship between PROI and investment intensity. The implication of Figure 131 is that industrial businesses are typically better off if they can reduce the amount of plant and equipment investment per dollar of sales.

Figure 132 shows a similar relationship with respect to raw material and work in process inventory. The fact that the highest level of PROI occurs at the lowest level again implies that industrial businesses are usually more profitable when these types of inventories are reduced if the reduction doesn't jeopardize sales.

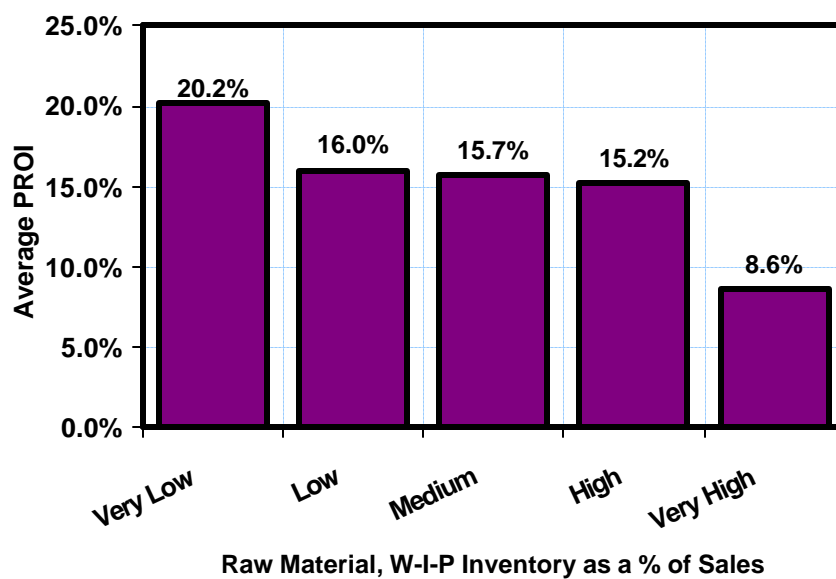


Figure 132, Profitability vs. Raw Material and W-I-P Inventory
(Industrial Businesses N=1524)

Figure 133 and Figure 134 show similar relationships with respect to finished product inventory and accounts receivable. These two types of investment are needed mainly to provide product availability, quick delivery, and credit to customers. Thus, they are marketing oriented rather than manufacturing oriented investment.

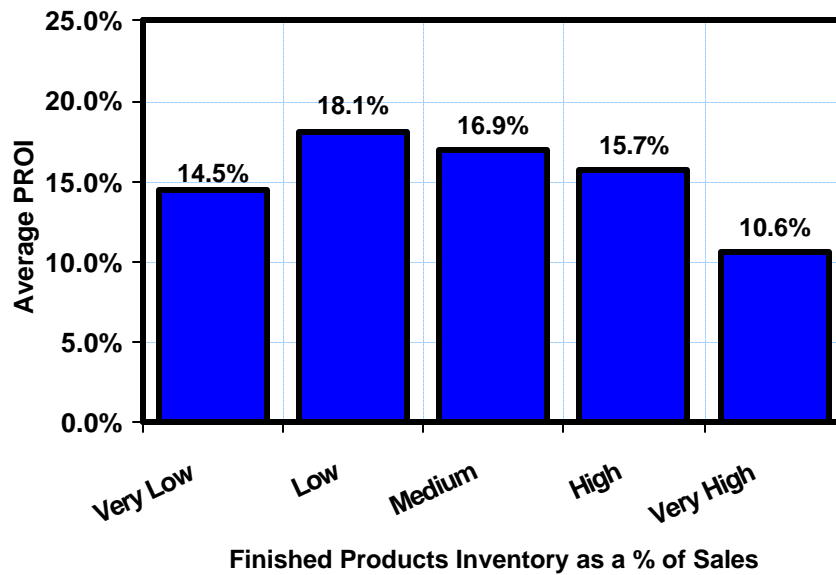


Figure 133, Profitability vs. Finished Product Inventory
(Industrial Businesses N=1524)

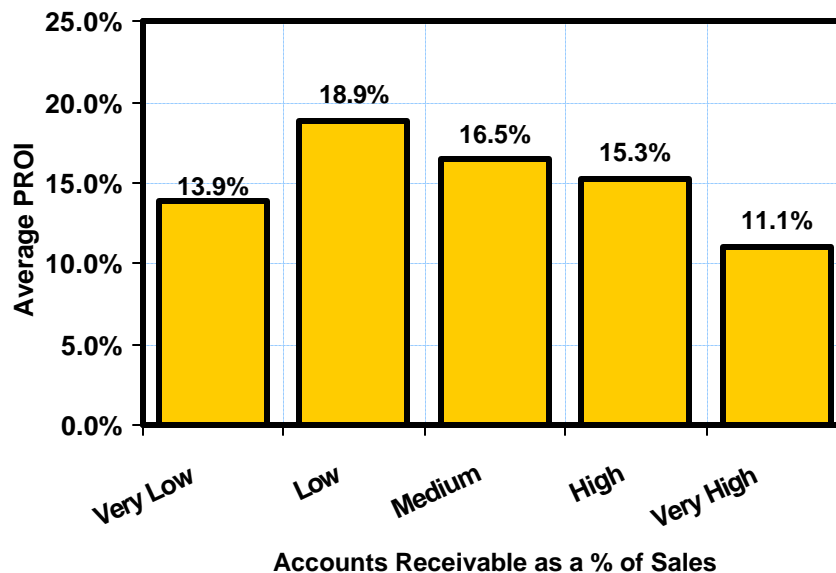


Figure 134, Profitability vs. Accounts Receivable
(Industrial Businesses N=1524)

As can be seen in both Figure 133 and Figure 134, PROI tends to be below average at the lowest levels of these two elements of investment. The figures indicate that, while it is important to keep

these two elements of investment under control, it may be counterproductive to reduce them to very low levels.

Summary

During the past 15 years a large number of articles on strategic planning have discussed the virtues of reducing investment intensity. While proper control of investment (as well as cost) is always prudent, each element of investment should be analyzed separately. In particular, when investment reductions are being considered, marketing-oriented investment -- that incurred to provide suitable service to customers -- should be viewed very different from manufacturing-oriented investment.

No. 80, April 1987

80 SALES REVENUE GROWTH

Changes in the sales revenue of an industrial business depend most strongly on changes in the sales of the market it serves. The differential change between the growth of the sales of the business vs. the growth of its served market is associated most strongly with how aggressively the business increases its marketing effort and its capacity.

Growth in Sales Revenue

The relationship between the growth in sales revenue of an industrial business and other characteristics of that business were examined using the Strategic Planning Institute (SPI) database. In order to avoid distortions caused by changes from a small base, introductory businesses and businesses with beginning market shares less than 5% were omitted from the analysis. The analysis is based on 1,539 industrial businesses in the SPI database beyond the introductory phase of their life cycle and beginning with market shares greater than 5%.

As one would expect, the growth in the sales revenue of a business is most strongly correlated with the growth in sales of its served market. The growth of a business is therefore tied very strongly to the growth of the market it chooses to serve and the economic factors, which affect the growth of that market. Figure 135 shows the relationship between change in sales revenue and change in the total revenue of the served market. The data were divided into seven equal groupings; "break-points" are shown.

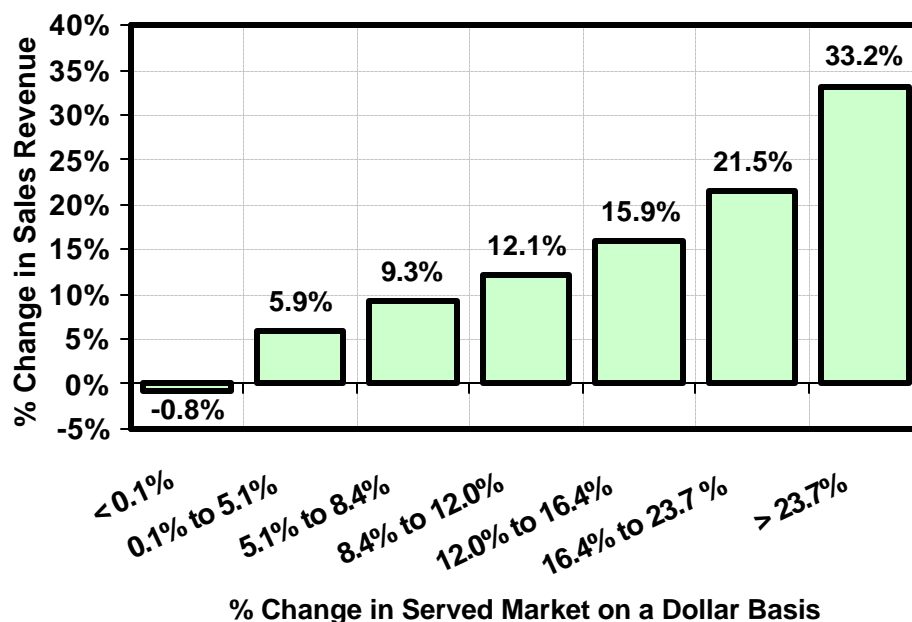


Figure 135, Change in Sales Revenue vs. Change in Served Market
(Industrial Businesses N=1524)

As Figure 135 shows, there is approximately a one to one correspondence between the change in sales revenue of business vs. the market. Fifty-two percent of the variation in sales revenue is "explained" by this one factor.

On average, businesses in the SPI database are increasing sales revenue a little faster than their served market is increasing. This is shown in Table 186 below, which also includes statistics on changes in marketing expense and capacity on a dollar basis.

Table 186, Statistics on Business and Market Annual Changes

	<u>Mean</u>	<u>Standard Deviation</u>
Change in Sales Revenue of Business	13.8%	14.8%
Change in Served Market, Dollar Basis	11.9%	12.7%
Change in Marketing Expense	11.5%	14.2%
Change in Capacity, Dollar Basis	13.9%	13.2%

Growth in Sales Revenue Relative to Growth in Served Market

In examining the differential change in growth of sales revenue vs. growth in served market, two factors showed a very strong association. These are aggressiveness in increasing marketing effort and aggressiveness in increasing capacity.

Figure 136 relates the differential change in sales revenue to the differential change in marketing expense on a percentage point basis. The database was divided into equal groupings so each bar represents the average of over 300 businesses. The most marketing aggressive group increased their marketing expense more than 9.4% higher than their served market increased. These businesses showed on average a sales revenue increase almost 9 % higher than their served market. While it cannot be asserted that the change in marketing caused the change in sales revenue, the association is strong enough to at least suggest that sales growth must be supported by adequate marketing resources.

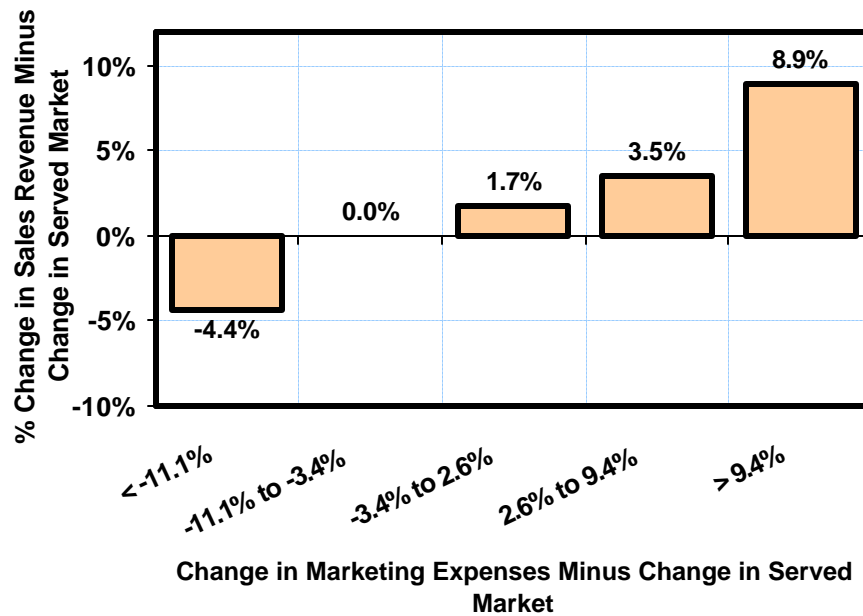


Figure 136, Differential Change in Sales Revenue vs. Marketing Expense
(Industrial Businesses N=1524)

A similar relationship exists on the supply side as well as the ~ demand side. Figure 137 shows the relationship between differential change in sales revenue and capacity on a dollar basis. Conclusions from this figure are similar to those from Figure 136.

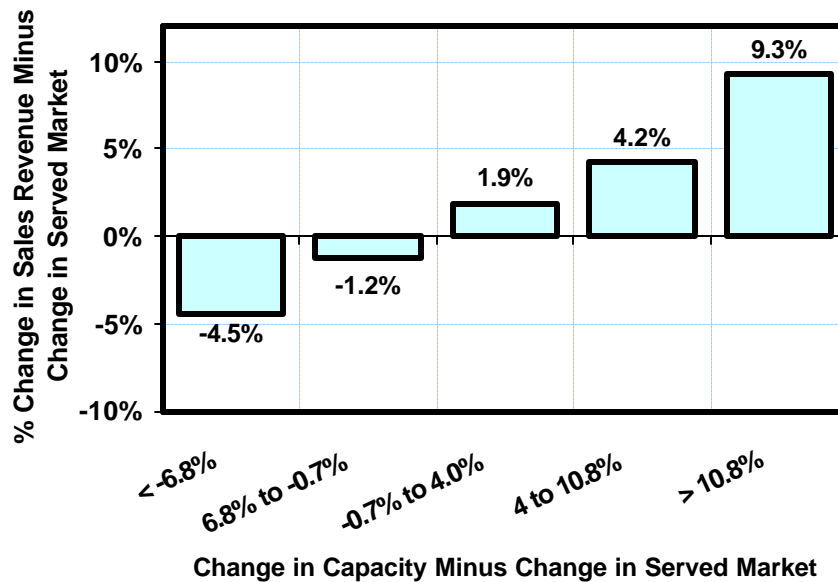


Figure 137, Differential Change in Sales Revenue vs. Capacity
(Industrial Businesses N=1524)

The statistical regression equation relating change in sales revenue to the three factors discussed "explains" 66% of the variation in sales revenue. Other important factors which relate to change in sales revenue will be discussed in next article.

Summary

Variation in the sales revenue growth of a business can be largely "explained" by three factors:

- Change in the sales of the served market.
- Aggressiveness in increasing the marketing effort.
- Aggressiveness in increasing capacity.

Businesses planning for growth, therefore, need to target growing markets and invest adequate resources in marketing and in capacity.

No. 81, May 1987

81 SALES REVENUE GROWTH, PART II

The last article showed that variations in the sales revenue growth of an industrial business can be largely explained by the growth of the served market and the aggressiveness of the marketing effort and capacity expansions. Sales revenues also tend to increase more when the business has: low market share, competitors exiting, high product quality, improving product quality, decreasing costs relative to competition, and more new product introductions relative to competition.

Market Structure

As the last article indicated, 66% of the variation in sales revenue among industrial businesses in the Strategic Planning Institute (SPI) database can be explained by three factors:

- Change in the sales of the served market;
- Aggressiveness in increasing the marketing effort; and.
- Aggressiveness in increasing capacity.

The analysis is based on 1,539 industrial businesses beyond the introductory phase of their life cycle and beginning with market shares greater than 5%. Another factor strongly associated with the change in the sales revenue of such businesses relative to the revenue growth of its served market is market structure -- the association among and changes in the market shares of the competitors. As some previous articles have indicated, small-share businesses tend to gain share and large-share businesses tend to lose share. Another related factor is whether there has been a major competitive entry or exit.

Table 187 shows the average change in sales revenue minus change, in served market depending on initial market share and competitive entry or exit. As the figure indicates, low-share businesses tend to grow faster and, as one would expect, competitive exits help and entries hurt. (At least 5% of the market is required for a competitor to qualify as an entry or exit.)

Table 187, Differential Change in Sales Revenue vs. Initial Market Share & Entry or Exit of Competitors

Major Competitive Entry or Exit	Entry	1.8% (N=72)	1.3% (N=93)	-3.3% (N=118)
	Neither	3.9% (N=372)	2.4% (N=362)	0.1% (N=368)
	Exit	6.0% (N=64)	5.0% (N=57)	2.4% (N=33)
		Low	Medium	High
			16%	30%
		Initial Market Share		

Product Quality

The quality of the products and services offered by the business also have a strong association with the differential change in sales revenue. Both level and change are important. As is shown in Table 188, businesses with high product quality tend to increase sales revenue more as do businesses with increasing relative product quality.

Table 188, Differential Change in Sales Revenue vs. Level of and Change in Relative Product Quality

Change in Relative Product Quality	Increase	4.1% (N=207)	3.1% (N=197)	5.4% (N=130)
	Same	1.2% (N=211)	2.0% (N=181)	3.1% (N=176)
	Decrease	-2.4% (N=95)	-1.0% (N=126)	0.1% (N=216)
		Low	Medium	High
			8.8%	34.5%
		Initial Relative Product Quality		

Change in Relative Cost

An association also exists with change in manufacturing and distribution costs relative to leading competitors. As shown in Figure 138, businesses which are able to decrease these costs relative to competitors show greater differential change in sales revenue than those showing no change or an increase.

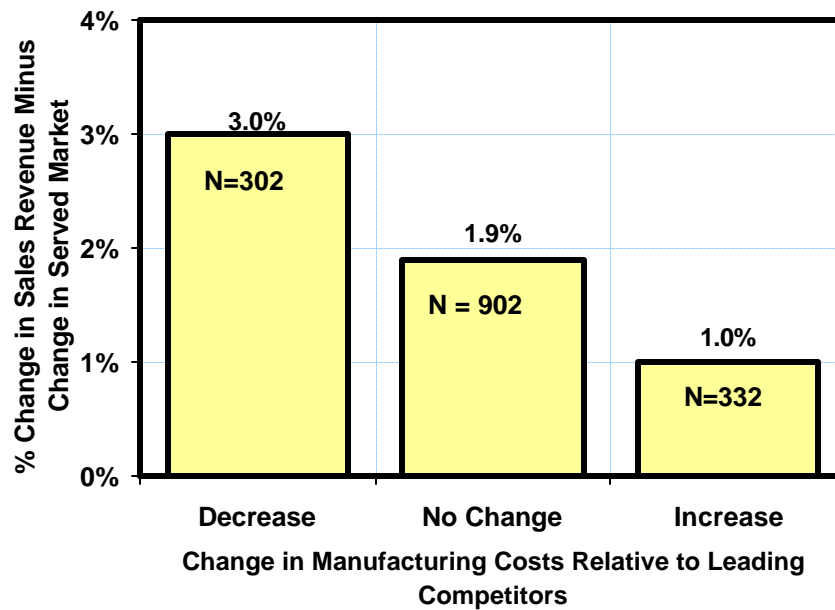


Figure 138, Differential Change in Sales Revenue vs. Change in Relative Manufacturing and Distribution Costs

New Product Introductions

Businesses having a higher level of new product introductions relative to competition tend to show larger differential increases in sales revenue. SPI defines new products as the percentage of total sales accounted for by products introduced in the preceding three years.

As shown in Table 189, the sensitivity is particularly strong for low profit businesses. This indicates that the normal temptation to reduce product research and development in low profit businesses may often be a poor policy.

Table 189, Differential Change in Sales Revenue vs. Initial PROS and Relative New Product Introductions

New Product Introduction Relative to Competition	More	6.1% (N=134)	3.8% (N=143)	1.7% (N=134)
	Same	2.4% (N=284)	1.5% (N=265)	1.8% (N=264)
	Less	-1.0% (N=95)	0.4% (N=105)	-0.9% (N=115)
		Low	Medium	High
		6.2%		15.2%
		Initial Pretax Return on Sales, PROS		

Summary

The sales revenue growth of a business is strongly associated with several factors. In addition to the three key factors discussed the last article -- market growth, marketing aggressiveness, and capacity aggressiveness -- other strong correlates include market share, competitive market share, competitive entry or exit, level of product quality, change in product quality, change in relative costs, and relative new product introductions. In planning and forecasting future changes in sales revenues, these factors should be explicitly considered.

No. 82, June 1987

82 PRICE AGGRESSIVENESS AND COMPETITIVE RESPONSE

Key factors related to sales revenue growth cited in the last two articles did not include price as might have been expected. Studies of the Strategic Planning Institute (SPI) database find that aggressive price cutting usually does not lead to market share increases. In most instances competitors match price moves regardless of how aggressive they are.

Price Aggressiveness -- Sales on a Dollar Basis

The last two articles analyzed 1,539 industrial businesses in the SPI database beyond the introductory phase of their life cycle and beginning with market shares greater than 5%. These articles found that sales revenue growth was strongly associated with factors such as market growth, marketing aggressiveness, capacity aggressiveness, market share relative to competitors, product quality, etc. Factors cited did not include price.

Price aggressiveness is defined in this article as the difference between change in unit price and change in unit cost. Businesses which increase price much less than costs increase are considered to be "Aggressive." Those which raise price well beyond cost increases are considered to be "Not Aggressive."

Table 190 shows the distribution of change in unit price minus change in unit cost. Ranges shown include about 20% of the industrial businesses described above. As shown, the average business increased price 1.3% less than costs increased.

Table 190, Distribution of Change in Unit Price Minus Change in Unit Cost

Range	Average	No. of Businesses	
Less than -4.8%	-8.2%	312	(Aggressive)
-4.8% to -2.1%	-3.3%	302	
-2.1% to -0.3%	-1.1%	304	
-0.3% to 2.0%	0.7%	313	
Greater than 2.0%	5.2%	308	(Not Aggressive)
Mean = -1.3%		Standard Deviation = 4.9%	

Figure 139 shows the differential change in sales revenue (relative to market growth) vs. this measure of price aggressiveness. Note that sales revenue growth was significantly higher for the businesses which were not aggressive than for the aggressive businesses.

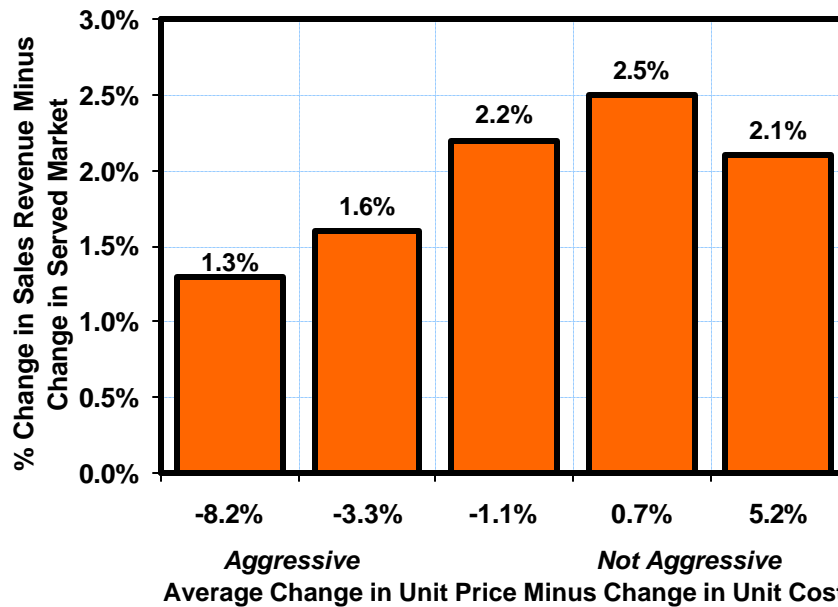


Figure 139, Differential Change in Sales Revenue vs. Price Aggressiveness

Price Aggressiveness -- Sales on a Volume Basis

It might be expected that price aggressiveness would lead to increases in physical volume of sales (relative to market volume growth) if not in differential sales revenue. As Figure 140 shows, this is not the case among this set of industrial businesses. In fact, differential sales volume increases were somewhat higher among the businesses, which raised price more in line with cost increases!

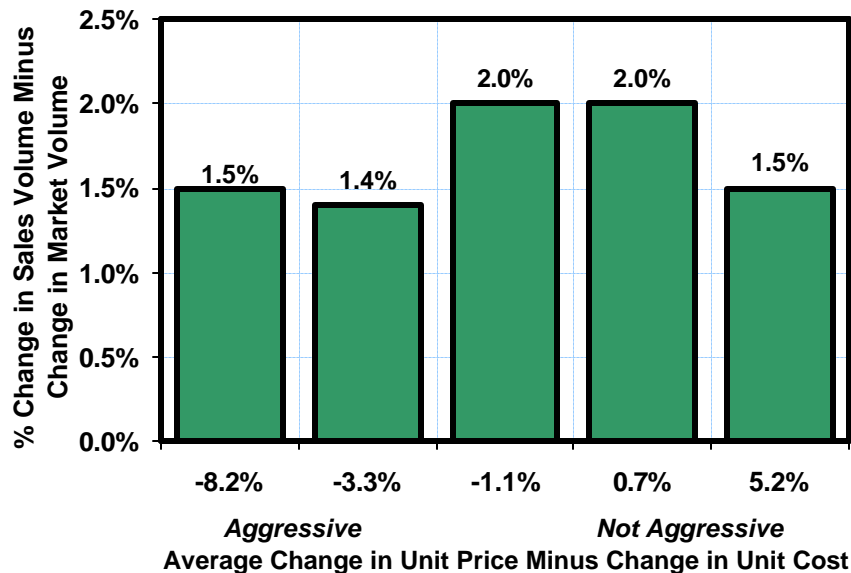


Figure 140, Differential Change in Sales Volume vs. Price Aggressiveness

Competitive Response

The key reason why aggressive price cutting usually does not lead to share increases on either a dollar or volume basis is that competitors tend to respond to price moves regardless of how aggressive they are. Table 191 shows the percent of competitors whose price changes were lower, the same, or higher than the businesses in the database after sorting these businesses by their degree of price aggressiveness. As the table indicates, competitive response is very similar for all five categories of price aggressiveness. Only 10% more instances of lower competitive prices occurred among the "Not Aggressive" businesses than among the "Aggressive" businesses.

Table 191, Competitive Reaction vs. Price Aggressiveness

<u>Average Change in Unit Price Minus Change in Unit Cost</u>	<u>Percent of Competitors Whose Price Changes were:</u>		
	<u>Lower (Aggressive)</u>	<u>Same</u>	<u>High Not Aggressive</u>
-8.2% (Aggressive)	22%	57%	21%
-3.3%	25%	55%	20%
-1.1%	27%	55%	18%
0.7%	29%	52%	18%
5.2% (Not Aggressive)	32%	47%	21%

Summary

Industrial businesses in the SPI database are usually unable to increase sales revenue or sales volume through aggressive price cutting. The key reason for this is that competitors usually respond to price moves with only minor differences at various levels of price aggressiveness.

No. 83, July 1987

83 THE ILLUSION OF POSITIVE PRICE/VOLUME RELATIONSHIPS

Figure 140 in the last article showed a (slight) positive relationship between differential change in sales volume and differential change in price. This does not imply that higher prices cause higher volume, but simply reaffirms the dynamic nature of price/volume curves. Because price/volume curves shift with time as the market environment and competitive conditions change, attempting to quantify price/volume curves from historical data usually does not work.

Volume vs. Price

The last three articles analyzed 1,539 industrial businesses in the Strategic Planning Institute (SPI) database beyond the introductory phase of their life cycle beginning with market shares greater than 5%. Figure 140 in the last month's article showed a slight positive relationship between sales volume change and price change after adjusting the former for market volume change and the latter for cost change. Figure 1 shows the same relationship with the data broken into three rather than five equal groupings on the basis of average change in unit price minus change in unit cost. Price aggressive businesses are considered to be those which raise price much less than costs increase.

At first glance the implication is that businesses increase their sales volume more if they raise their price more! This, of course, is not true. We are looking at three different groupings of businesses in different market environments and competitive situations. Article No. 19 as well as some subsequent articles have examined the dynamics of price/volume relationships.

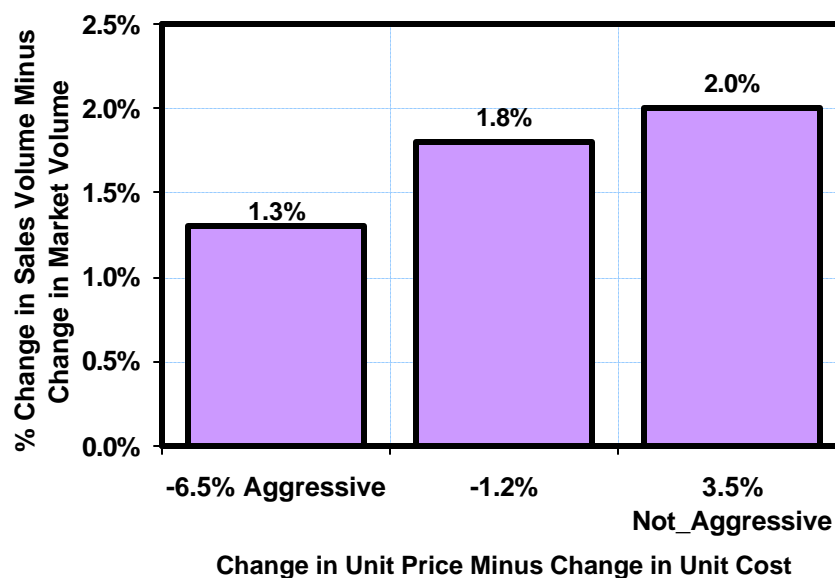


Figure 141, Differential Change in Sales Volume vs. Price Aggressiveness

Impact of Quality Changes

One extremely important factor which impacts price/volume curves is change in product quality relative to competitors. Table 192 shows the average differential change in sales volume opposite changes in relative product quality and price aggressiveness. As can be seen in Table 192, sales volume is very sensitive to changes in product quality.

Table 192, Differential Change in Sales Volume vs. Change in Product Quality and Price Aggressiveness

Change in Relative Product Quality	Increase	3.3% (N=157)	3.5% (N=177)	4.1% (N=200)
	Same	2.3% (N=181)	1.7% (N=185)	1.4% (N=202)
	Decrease	-1.7% (N=161)	0.0% (N=154)	-0.5% (N=122)
		-6.5%	-1.2%	3.5%
		Aggressive		Not Aggressive
Average Change in Unit Price Minus Change in Unit Cost				

The middle row of Table 192 shows those businesses in which there was no change in relative product quality. For these businesses the normal negative relationship between volume change and price change is seen. The more price aggressive businesses tend to increase their volume more than those which are not as price aggressive when there is no change in product quality.

However, the top row -- those showing an increase in product quality relative to the competition -- implies a positive relationship between volume change and price change. Again, it must be kept in mind that each of these three cells represents different situations. When a business is in a situation where it is able -- because of market conditions -- to increase volume and/or price, it is usually better to take part of the advantage in volume and part in price. The 200 businesses in the upper right cell of Table 192 were, on average, in the best position -- able to raise price beyond cost increases and also to increase sales volume 4% more than market volume increased.

The shifting nature of price/volume curves based on Table 192 data is shown conceptually in Figure 142. The figure also gives an indication of the benefit of product quality improvements.

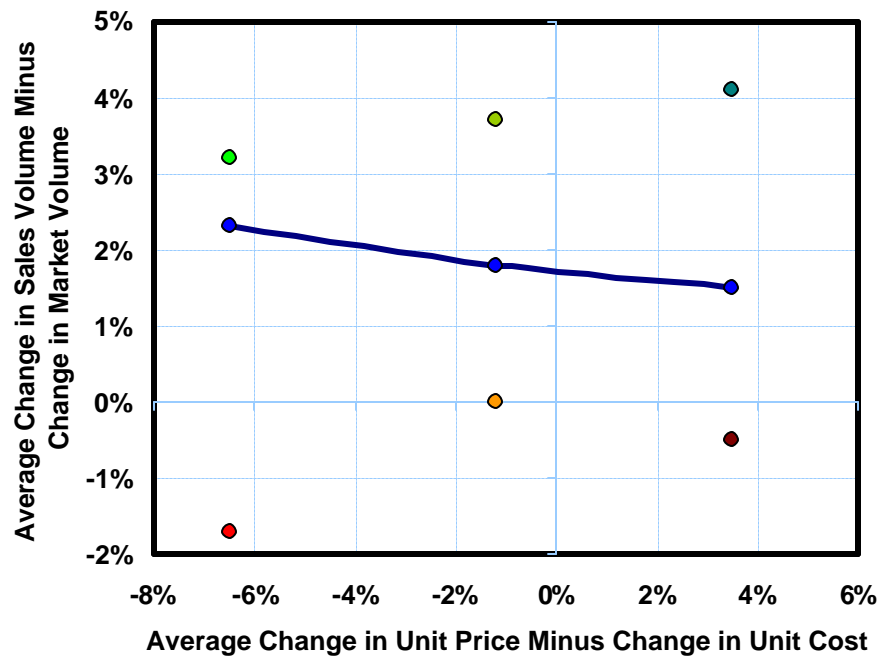


Figure 142, Differential Change in Sales Volume vs. Differential Change in Unit Price

Attempts have been made to estimate price/volume relationships from historical data. Because of the dynamic nature of price/volume curves, such analyses may lead to erroneous conclusions.

Summary

Changes in the market environment and competitive situation cause shifts in the price/volume relationship of individual products. Because of these dynamics, attempts to deduce price/volume relationships from historical data can lead to faulty conclusions. .

No. 84, August 1987

84 CONTRASTING NORTH AMERICAN AND WESTERN EUROPEAN BUSINESS

The Strategic Planning Institute (SPI) now has 359 Western European businesses in its database of 2,609 businesses. Compared to the North American businesses in the database, the Western European businesses have lower levels of profitability, higher levels of relative market share and capacity utilization, add less value as a percent of sales, sell to customers in smaller transaction amounts and introduce fewer new products as a percent of total sales. The most significant difference, however, is that Western European businesses are much more heavily unionized than their North American counterparts.

The SPI Database

The SPI database now consists of 2,609 businesses, each with at least four years of data. The data span the period of time from 1969 to 1984. Three hundred fifty-nine of these businesses (14%) serve Western Europe exclusively. Many of these are U. K. businesses. Table 193 outlines the number of businesses available for analysis by type of business and location of served market.

Table 193, Number of SPI Businesses by Type of Business and Location of Served Market

<u>Location of Served Market</u>	<u>Consumer</u>	<u>Type of Business</u>		
		<u>Capital Goods</u>	<u>Industrial Materials*</u>	<u>Service, Distribution</u>
North America:				
United States (all)	374	184	545	33
Canada (all)	25	18	40	8
U.S. and Canada	93	141	204	5
Regional in U.S. or Canada	95	23	219	75
Western Europe:				
United Kingdom	86	3	71	13
Common Market	13	4	58	5
Regional within Europe	28	10	52	16
Others:	35	38	89	9

* Includes raw and semifinished materials, components, supplies and consumables

Contrasting North American and Western European Businesses

The large number and diversity of businesses in the database permit a wide variety of analyses on a business segment basis. This article contrasts North American and Western European businesses.

As shown in Table 194, with the exception of consumer businesses, the Western European businesses in the database tend to have lower levels of pretax return on investment (PROI). For industrial materials businesses the North American businesses have levels of PROI almost 4 percentage points above those in Western Europe.

Table 194, Average PROI by Type of Business and Location of Served Market

<u>Location of Served Market</u>	<u>Consumer</u>	<u>Type of Business</u>		
		<u>Capital Goods</u>	<u>Industrial Materials</u>	<u>Service, Distribution</u>
North America	15.0%	14.2%	15.7%	17.9%
	(N=587)	(N=366)	(N=1005)	(N=121)
Western Europe	15.2%	9.5%	11.9%	14.3%
	(N=127)	(N=17)	(N=181)	(N=34)

Note: Figures are pretax earnings as a percent of total investment.

The lower levels of profitability seen in Western Europe are not due to differences in the market shares of the businesses in the database. In fact, with the exception of capital goods businesses (and there are only seventeen of these), market shares relative to leading competitors are higher in the Western European businesses. This is shown in Table 195.

Table 195, Average Relative Market Share by Type of Business and Location of Served Market

<u>Location of Served Market</u>	<u>Consumer</u>	<u>Type of Business</u>		
		<u>Capital Goods</u>	<u>Industrial Materials</u>	<u>Service, Distribution</u>
North America	56%	70%	61%	53%
Western Europe	77%	54%	70%	62%

Note: Figures are the market share of the reporting business as a percent of the sum of the shares of its three leading competitors.

Other differences found in contrasting North American and Western European businesses in the database show that the Western European businesses tend to:

- Have higher levels of capacity utilization;
- Add less value as a percent of sales;
- Sell to customers in smaller sales transaction amounts; and
- Introduce fewer new products as a percent of total sales.

Employee Unionization

The biggest difference found between North American and Western European businesses, however, is the percent of employees unionized. Significantly higher levels of employee unionization occur in Western Europe as shown in Table 196.

Table 196, Average Percent of Employees Unionized by Type of Business and Location of Served Market

<u>Location of Served Market</u>	<u>Consumer</u>	<u>Type of Business</u>		
		<u>Capital Goods</u>	<u>Industrial Materials</u>	<u>Service, Distribution</u>
North America	39%	38%	45%	15%
Western Europe	54%	62%	68%	40%

Studies of the SPI database have shown that higher levels of unionization are associated with lower levels of profitability (see article No.55). As shown in Table 197, the pattern is similar in Western Europe except at high levels of unionization.

Table 197, Average PROI by Percent of Employees Unionized and Location of Served Market

<u>Location of Served Market</u>	<u>Percent of Employees Unionized</u>			
	<u>None</u>	<u>1% to 50%</u>	<u>51% to 71%</u>	<u>71% to 100%</u>
North America	18.0%	17.2%	12.8%	12.1%
	(N=686)	(N=469)	(N=483)	(N=441)
Western Europe	21.0%	14.2%	8.8%	13.1%
	(N=29)	(N=106)	(N=73)	(N=151)

Summary

Three hundred fifty-nine Western European businesses are now in the SPI database. In contrasting these businesses with North American businesses, we find that they tend to:

- Have lower levels of pretax return on investment;
- Have higher levels of relative market share;
- Have higher levels of capacity utilization;
- Are much more heavily unionized;
- Add less value as a percent of sales revenue;
- Sell in smaller transaction amounts; and
- Introduce fewer new products.

No. 85, September 1987

85 NORTH AMERICAN VS. WESTERN EUROPEAN BUSINESSES - II

Analysis of the Industrial Material businesses in the Strategic Planning Institute (SPI) database indicates that it seems to be more important for a North American business to be a market leader than its Western European counterpart. Profit margins for North American businesses are more sensitive to whether or not the business was first into the market, its market share rank, the breadth of its product line, and its cost position relative to competitors.

North American vs. Western European Industrial Material Business

The last article contrasted North American and Western European businesses. This month's article continues that analysis, but focuses only on the Industrial Material businesses in the SPI database. These businesses include raw and semifinished materials, components, supplies, and consumables.

Table 198 shows the average pretax return on sales and relative market share for the North American and Western European businesses in the database. Relative market share is the market share of the reporting business as a percent of the sum of the shares of its three leading competitors.

As was mentioned in the last article, North American businesses report a higher level of profitability, but Western European businesses report a higher level of relative market share. It was suggested to me that perhaps Western European businesses overstate their market share because they may focus on their home country where their share is likely to be higher. In any event, Western European businesses may have more difficulty in estimating their market share and that of their competitors.

Table 198, Average PROS and Relative Market Share by Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Number of Businesses</u>	<u>Average PROS</u>	<u>Average Relative Market Share</u>
North America	1005	11.0%	61%
Western Europe	181	8.4%	70%

Market Entry and Rank

Table 199 and Table 200 show how pretax return on sales varies depending on order of market entry and market share rank. As can be seen in these two tables, North American businesses seem to be more sensitive to how quickly they entered the market and their ultimate market share rank. As reported in article No. 70, there is a great deal of correlation between these two factors.

Table 199, PROS by Order of Market Entry and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Order of Market Entry</u>		
	Pioneer	Early Follower	Late Entrant
North America	13.0% (N=514)	9.7% (N=321)	7.7% (N=170)
Western Europe	9.9% (N=97)	6.4% (N=68)	7.5% (N=16)

Note: Figures are pretax earnings as a percent of total sales.

Table 200, PROS by Market Share Rank and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Market Share Rank</u>		
	<u>First</u>	<u>Second</u>	<u>Third or Lower</u>
North America	15.3% (N=377)	10.7% (N=235)	7.1% (N=393)
Western Europe	11.0% (N=69)	6.9% (N=42)	6.7% (N=70)

Note: Figures are pretax earnings as a percent of total sales.

Product Strategy

Product sensitivity also varies between North American and Western European businesses depending on their product strategy. Table 201 shows profit margin variation by percent of new products. While based on a sample of only 26 businesses, the table indicates that profit margins are lower for Western European businesses when new products account for a large percentage of total sales.

Table 201, PROS by Percent of New Products and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Percent of New Products</u>		
	<u>None</u>	<u>1% to 9%</u>	<u>Great than 9%</u>
North America	10.8%	11.9%	10.4%
	(N=447)	(N=315)	(N=243)
Western Europe	8.4%	9.8%	4.1%
	(N=80)	(N=75)	(N=26)

Note: Figures are pretax earnings as a percent of total sales.

Table 202 shows profit variation by breadth of product line relative to competition. Profitability tends to increase with relative breadth of product line for North American businesses but not for their Western European counterparts.

Table 202, PROS and By Breadth of Product Line Relative to Competition and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Breadth of Product Line Relative to Competition</u>		
	<u>Less</u>	<u>Same</u>	<u>More</u>
North America	8.9%	10.9%	13.1%
	(N=305)	(N=372)	(N=328)
Western Europe	9.7%	6.9%	9.3%
	(N=34)	(N=75)	(N=72)

Note: Figures are pretax earnings as a percent of total sales.

Cost Position

As is shown in Table 203, profit margins are much more sensitive to manufacturing and distribution costs relative to competition for North American businesses. Relative cost position is one of the most important profit correlates for North American businesses but not for their Western European counterparts. Perhaps it is difficult for Western European businesses to estimate this factor since they are frequently in competition with businesses from other countries.

Table 203, PROS by Manufacturing & Distribution Costs Relative to Competition and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Manufacturing & Distribution Costs Relative to Competition</u>		
	<u>Lower</u>	<u>0% to 5%</u>	<u>Greater than 5%</u>
North America	16.0%	10.6%	7.6%
	(N=246)	(N=459)	(N=300)
Western Europe	10.5%	7.1%	9.0%
	(N=44)	(N=86)	(N=51)

Note: Figures are pretax earnings as a percent of total sales.

Table 204 shows how profit margin varies by whether a process patent exists and reinforces the previous finding. It appears from Table 204 that North American businesses benefit more from a process patent than their Western European counterparts.

Table 204, PROS by Existence of a Process Patent and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Process Patent Exists</u>	
	<u>No</u>	<u>Yes</u>
North America	9.6%	14.9%
	(N=729)	(N=276)
Western Europe	7.7%	10.8%
	(N=142)	(N=39)

Note: Figures are pretax earnings as a percent of total sales.

Summary

In contrasting Industrial Material businesses in North America vs. Western Europe, indications are that it is more important to be a market leader in North America. For North American businesses profitability is more sensitive to:

- Order of market entry;
- Market share rank;

- Relative product line breadth;
- Relative manufacturing and distribution costs; and
- The existence of a process patent.

In addition, Western European businesses tend to be less profitable when they invest heavily in introducing new products.

No. 86, October 1987

86 NORTH AMERICAN VS. WESTERN EUROPEAN BUSINESSES - III

This article continues last month's contrast between North American and Western European industrial material businesses in the Strategic Planning Institute (SPI) database. Profitability of the Western European businesses tends to be more sensitive to the market growth rate, sales/investment turnover, percent of our customers' purchases this business represents, and the existence of a product patent. The profitability of North American industrial material businesses is somewhat more sensitive to capacity utilization. North American businesses tend to be more profitable if they are more backward integrated than competitors; the reverse is true for Western European businesses.

Market Growth and Sales Turnover

This article continues last month's analysis of industrial material businesses in the SPI database. These businesses include raw and semifinished materials, components, supplies, and consumables.

Table 205 shows how profitability, as measured by pretax return on sales, varies by physical volume market growth for North American and Western European businesses. As can be seen, profitability is insensitive to market growth for North American businesses. However, the 33 Western European businesses in markets growing in excess of 8% per year show significantly higher levels of profitability than their counterparts in slower growing markets.

Table 206 shows how profitability varies by sales turnover. As the table indicates, profitability is sensitive to the amount of sales generated per unit of investment, but more so among Western European businesses than North American businesses. This finding is reinforced by Table 207, which shows how profitability relates to original cost of plant and equipment as a percent of sales. This, of course, is the inverse of turnover but based only on permanent investment rather than total investment. Thus, pretax return on sales is greater, especially for Western European businesses, when sales are high relative to both total and permanent investment.

Table 205, PROS by Physical Market Volume Growth and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Market Growth (Physical Volume, %/year)</u>		
	<u>Less than 0%</u>	<u>0% to 8%</u>	<u>Greater than 8%</u>
North America	10.4% (N=380)	11.4% (N=337)	11.4% (N=288)
Western Europe	6.7% (N=96)	7.4% (N=52)	14.9% (N=33)

Note: Figures are pretax earnings as a percent of total sales.

Table 206, PROS by Sales as a Percent of Total Investment and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Sales to Investment</u>		
	<u>Less than 100%</u>	<u>100% to 160%</u>	<u>Greater than 160%</u>
North America	8.8% (N=286)	11.6% (N=450)	12.5% (N=269)
Western Europe	5.1% (N=60)	8.5% (N=91)	14.7% (N=30)

Note: Figures are pretax earnings as a percent of total sales.

Table 207, PROS by Original Cost of Plant and Equipment as a Percent of Sales and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Original Cost of Plant and Equipment/Sales Revenue</u>		
	<u>Greater than 50%</u>	<u>30% to 50%</u>	<u>Less than 30%</u>
North America	10.1% (N=428)	10.9% (N=325)	12.8% (N=252)
Western Europe	5.6% (N=79)	9.1% (N=56)	12.4% (N=46)

Note: Figures are pretax earnings as a percent of total sales.

Other Factors

Table 208 shows how profitability varies by percent of customer purchases that this business represents. Little sensitivity is shown among North American businesses. However, Western European businesses selling products that account for a large percentage (greater than 5%) of customer sales show significantly lower profit margins. This perhaps indicates that customers are more sensitive to the size of their purchases and negotiate harder with their larger suppliers.

Table 208, PROS by Percent of Customer Purchases this Business Represents and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Percent of Customer Purchases this Business Represents</u>		
	<u>Less than 1%</u>	<u>1% to 5%</u>	<u>Greater than 5%</u>
North America	11.8% (N=256)	10.4% (N=297)	11.0% (N=452)
Western Europe	12.0% (N=45)	9.5% (N=44)	6.1% (N=92)

Note: Figures are pretax earnings as a percent of total sales.

Profitability among Western European businesses also seems to be somewhat more sensitive to whether a product patent exists. As shown in Table 209, there is a 4 point profit margin difference among North American businesses, but a 6 point profit margin difference among Western European businesses.

Table 209, PROS by Existence of a Product Patent and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Product Patent Exists</u>	
	<u>No</u>	<u>Yes</u>
North America	10.2% (N=807)	14.4% (N=198)
Western Europe	7.2% (N=198)	13.4% (N=36)

Note: Figures are pretax earnings as a percent of total sales.

As Table 210 indicates, profitability is not particularly sensitive to capacity utilization rates among Western European businesses. However, North American businesses tend to be more profitable when operating at higher levels of capacity utilization.

Table 210, PROS by Capacity Utilization and Location of Served Market for Industry Material Businesses

<u>Location of Served Market</u>	<u>Capacity Utilization</u>		
	<u>Less than 69%</u>	<u>69% to 83%</u>	<u>Greater than 83%</u>
North America	9.4% (N=322)	9.3% (N=309)	13.8% (N=374)
Western Europe	9.6% (N=31)	7.9% (N=69)	8.3% (N=81)

Note: Figures are pretax earnings as a percent of total sales.

Table 211 shows how profitability varies by degree of backward integration relative to competition. The table indicates that in North America higher profit margins tend to be achieved

among businesses more backward integrated than competition. The reverse is true in Western Europe where profit margins are higher among businesses less backward integrated than competition.

Table 211, PROS by Degree of Backward Integration Relative to Competition and Location of Served Market for Industry Material Businesses

<u>Backward Integration Relative to Competition</u>			
<u>Location of Served Market</u>	<u>Less</u>	<u>Same</u>	<u>More</u>
North America	9.1% (N=249)	11.0% (N=617)	14.5% (N=139)
Western Europe	10.9% (N=36)	8.3% (N=119)	5.5% (N=26)

Note: Figures are pretax earnings as a percent of total sales.

Summary

The last two articles have shown interesting contrasts between industrial material businesses in North America vs. Western Europe. Implications are that the market environment and demand side factors are perhaps more important in Western Europe. Profitability in Western Europe tends to be more sensitive to factors such as market growth, sales turnover, customer sensitivity to the size of their purchases, and the existence of a product patent.

In North America competitive position and supply side factors seem to be more important. As was shown in the two articles, profitability among North American businesses tends to be more sensitive to relative cost position, market share rank, capacity utilization, the existence of a process patent and being more backward integrated competitors. Obviously, care must be taken in applying these generalizations to the management of an individual business. They are based on a specific set of businesses and, in a few cases, on a fairly small sample.

No. 87, November 1987

87 IMPORTANCE OF CUSTOMER PURCHASES

The Strategic Planning Institute (SPI) database measures the importance of customer purchases by the proportion of customers' annual purchases accounted for by purchases of the types of products and services sold by the business. When a particular product represents a large proportion of what a business buys, it would be expected that customers would try to negotiate harder for more favorable prices. Profit margins do tend to be lower in such instances. More importantly, indications are that suppliers whose products represent a large proportion of their customers' purchases are typically more profitable when they have a cost advantage and operate efficiently; product advantages tend to be relatively less important.

Overall Impact

In general, it would be expected that "large ticket items" would come under closer scrutiny in negotiating for more favorable prices than lower cost items. Also, products which represent a large proportion of what businesses buy are probably more likely to have second and third sources of supply. For both these reasons we would expect profit margins to be lower in businesses whose products and services represent a large proportion of their customers' purchases.

As shown in Table 212, pretax return on sales tends to be somewhat lower for suppliers whose sales represent more than 1% of their customers' purchases.

Table 212, PROS vs. Percent of Customer Purchases this Business Represents for Industrial Material Businesses

Percent of Customer Purchases this Business <u>Represents</u>	Average <u>PROS</u>	Number of <u>Business</u>
Less than 1%	11.8%	326
1% to 5%	10.3%	363
Greater than 5%	10.3%	586

Under certain conditions, however, we have found that profitability is more sensitive to percent of customer purchases. For example, in the last article it was shown that Western European businesses tend to be sensitive to this factor. Examining this profit sensitivity can give some insight into how to manage businesses depending on the "importance" (in terms of amount sold) of their products and services to their customers.

Product Advantage

Previous articles have shown the strong relationship which exists between profitability and product quality relative to competitors. SPI measures this factor by the percent of product sales perceived to be superior minus the percent perceived to be inferior by its customers.

As Table 213 indicates, profitability tends to be more sensitive to relative product quality when customer purchases are a small proportion and less sensitive when customer purchases are a large proportion. The top line in Table 213 shows a nine percentage point difference; the bottom line, only a four percentage point difference between high and low relative product quality businesses. Thus, indications are that achieving high levels of relative product quality are less important for businesses whose products and services represent a larger proportion of their customers' purchases.

Table 213, PROS by Product Quality Relative to Competitors and percent of Customer Purchases this Business Represents for Industrial Material Businesses

Percent of Customer Purchases this Business Represents	< 1%	6.4% (N=93)	12.7% (N=120)	15.2% (N=113)
	1% to 5%	7.3% (N=124)	9.3% (N=124)	14.6% (N=115)
	Greater than 5%	8.2% (N=202)	10.5% (N=225)	12.5% (N=159)
		Low (< 7%)	Medium	High (> 35%)
		(7% - 35%)		
		Relative Product Quality		

Note: Figures are pretax earnings as a percent of total sales

This finding is reinforced by Table 214, which shows profit sensitivity depending on price relative to competitors. Being able to command large price premiums tends to be more profitable for those suppliers whose customer purchases represent less than 1% of what they buy.

Table 214, PROS by Price Relative to Competitors and Percent of Customer Purchases this Business Represents for Industrial Material Businesses

Percent of Customer Purchases this Business Represents	< 1%	9.6% (N=114)	9.4% (N=87)	15.4% (N=125)
	1% to 5%	9.5% (N=149)	9.4% (N=85)	11.8% (N=129)
	Greater than 5%	10.6% (N=240)	9.9% (N=200)	11.5% (N=146)
		Lower or Same	Small Premium (<5%)	Large Premium (>5%)
Relative Price				

Note: Figures are pretax earnings as a percent of total sales

A similar finding is seen with respect to breadth of product line relative to competitors. As Table 215 indicates, having a broader product line than competitors pays off more when the types of products the business supplies represents less than 1% of customer purchases

Table 215, PROS by Breadth of Product Line Relative to Competitors and Percent of Customer Purchases this Business Represents for Industrial Material Businesses

Percent of Customer Purchases this Business Represents	< 1%	9.2% (N=88)	10.0% (N=124)	15.7% (N=114)
	1% to 5%	9.1% (N=113)	9.8% (N=120)	11.7% (N=130)
	Greater than 5%	9.1% (N=152)	10.4% (N=239)	11.1% (N=195)
		Less	Same	More
Relative Product Breadth				

Note: Figures are pretax earnings as a percent of total sales

Capacity Utilization and Relative Cost Position

Operating at high levels of capacity utilization and developing a favorable cost position relative to competitors seem to be more important than product advantages in general when customers' purchases are a larger percentage. Table 216 shows pretax return on sales for three levels of capacity utilization. Profit margins tend to be squeezed more when utilization levels drop from high to medium levels and the products represent more than 5% of what the customer buys. Profitability is less sensitive to changes in capacity utilization when purchases account for less than 1%.

Table 216, PROS by Capacity Utilization and Percent of Customer Purchases this Business Represents for Industrial Material Businesses

Percent of Customer Purchases this Business Represents	< 1%	11.2% (N=126)	10.8% (N=112)	13.8% (N=88)
	1% to 5%	7.3% (N=116)	10.3% (N=118)	13.0% (N=129)
	Greater than 5%	8.9% (N=141)	8.1% (N=198)	12.8% (N=247)
		Low (< 70%)	Medium (70% - 84%)	High (> 84%)
Capacity Utilization				

Note: Figures are pretax earnings as a percent of total sales

Table 217 shows how profit margins vary by costs relative to competitors. As the table indicates, cost advantage is highly correlated with higher levels of profitability independent of the importance of customer purchases.

Table 217, PROS by Cost Relative to Competitors and Percent of Customer Purchases this Business Represents for Industrial Material Businesses

Percent of Customer Purchases this Business Represents	< 1%	16.4% (N = 72)	12.6% (N=132)	8.1% (N=122)
	1% to 5%	14.0% (N=92)	10.6% (N=136)	7.4% (N=135)
	Greater than 5%	15.4% (N=138)	9.3% (N=223)	7.4% (N=205)
		Lower	Near Equal	Higher
Relative Production Distribution Costs				

Note: Figures are pretax earnings as a percent of total sales

Summary

Profitability and the sensitivity of profitability to elements of competitive advantage vary depending on whether the products and services offered by a business represent a small or large proportion of customer purchases. Indications from the Strategic Planning Institute database are that suppliers whose products represent a large proportion of customer purchases do better when they develop a cost advantage relative to competition and operate at high levels of capacity utilization. Their profit margins are less sensitive to product advantage.

No. 88, December 1987

88 FUNDING STRONG VS. WEAK BUSINESSES

Strategic planning for portfolios of businesses generally assumes that it is more profitable to fund strong businesses more heavily than weak businesses. However, an analysis of the industrial businesses in the Strategic Planning Institute (SPI) database indicates that quality improvements and cost reductions tend to increase the profitability of weak businesses more than strong businesses. This raises serious questions with respect to the allocation of resources between strong and weak businesses.

Strong vs. Weak Businesses

The health and profitability of a business depends fundamentally on its competitive position. Studies of the SPI database indicate that product quality and manufacturing/distribution costs relative to competitors are the two factors which correlate most strongly with profitability and market share. Several previous Articles have quantified these relationships for industrial businesses.

This article summarizes an analysis of the 1,696 industrial businesses in the database segmented on the basis of relative product quality and relative manufacturing/distribution costs. Table 218 shows the average pretax return on sales for the four combinations of low and high relative quality and relative cost. Low relative cost includes all businesses which reported manufacturing and distribution costs equal to or lower than their leading competitors; those reporting costs higher than leading competitors are in the high column.

The dividing point between low and high relative product quality is +20%. SPI defines relative product quality as the percent of products perceived to be superior to competition minus the percent perceived to be inferior to competition after dividing all sales into three categories -- superior, about the same, and inferior.

On average, strong businesses -- those with high quality and low cost -- have about three times the pretax return on sales as weak businesses -- those with low quality and high costs.

Table 218, Average PROS by Product Quality and Manufacturing & Distribution Costs Relative to Competitors

Relative Product Quality	Low	10.3% (N = 458)	4.7% (N=455)
	High	14.2% (N=440)	10.7% (N=343)
		Low	High
Relative Production/Distribution Costs			

Note: Figures are pretax earnings as a percent of total sales

Similarly, the average market share for strong businesses is about twice that of weak businesses. This is shown in Table 219.

Table 219, Average Market Share by Product Quality and Manufacturing & Distribution Costs Relative to Competitors

Relative Product Quality	Low	23.5%	17.2%
	High	32.4%	26.8%
		Low	High
Relative Production/Distribution Costs			

Note: Figures are percent market share on a dollar basis

Quality Improvements

Each of these four groups of businesses was then further divided based on whether their relative product quality increased, stayed the same, or decreased from one two-year period to the next two-year period. (Four years of data are available on each business.) Table 220 shows the average change in pretax return on sales depending on change in relative product quality for each of these four business segments.

The difference in this profit change between those increasing and those decreasing their relative product quality is shown on the bottom line of Table 220. This is one indication of the leverage on profitability which exists by changing quality. Note that this difference for strong businesses (high quality, low cost) is only about one percentage point whereas the difference for weak businesses (low quality, high cost) is more than three percentage points.

This analysis does not include the cost to change quality level since such data do not exist in the database, but there is little reason to believe that, on average, the costs of improving product quality for weak vs. strong businesses should be substantially different.

Table 220, Change in PROS by Product Quality and Manufacturing & Distribution Costs
Relative to Competitors and Change in Relative Product Quality

Change in Relative Product Quality	Increase	+ 0.96% (N=140)	+ 1.25% (N=88)	1.22% (N=171)	1.73% (N=200)
	Same	0.58% (N=136)	0.84% (N=120)	0.24% (N=205)	-0.18% (N=157)
	Decrease	+ 0.04% (N=161)	- 1.01% (N=135)	- 0.16% (N=32)	- 1.50% (N=88)
	Increase - Decrease	+0.94%	+2.26%	+1.38%	+3.23%
Relative Quality		High	High	Low	Low
Production Cost		High	Low	High	Low
		(Strong)		(Weak)	
Relative Quality and Cost Combinations					

Note: Figures are average percent point change in PROS

Cost Reduction

A similar analysis was done for change in relative cost and is shown in Table 221. Again the four segments of businesses were divided on the basis of whether their relative costs from one two—year period to the next two-year period decreased, stayed the same, or increased.

The net difference in change on pretax return on sales between those decreasing and those increasing their relative costs is shown on the bottom line. Again, for strong businesses the net difference is less than one percentage point; whereas, for weak businesses the net difference is about three percentage points.

This indicates that changes in relative cost have more leverage on the profitability of weak vs. strong businesses assuming that the investment and cost required to realize these cost reductions are not substantially different between strong and weak businesses.

Table 221, Change in PROS by Product Quality and Manufacturing & Distribution Costs
Relative to Competitors and Change in Relative Cost

Change in Relative Cost	Increase	1.20% (N=53)	0.69% (N=99)	1.55% (N=38)	1.83% (N=159)
	Same	0.44% (N=296)	0.46% (N=162)	0.34% (N=334)	0.05% (N=197)
	Decrease	0.34% (N=91)	- 0.82% (N=82)	0.86% (N=86)	- 1.20% (N=99)
	Increase - Decrease	0.86%	1.51%	2.41%	3.03%
Relative Quality		High	High	Low	Low
Production Cost		High	Low	High	Low
		(Strong)		(Weak)	
Relative Quality and Cost Combinations					

Note: Figures are average percent point change in PROS

Summary

This article raises serious questions regarding the normal practice of funding strong businesses more heavily than weak businesses. While the analysis is unable to consider the investment and cost required to improve quality and reduce manufacturing and distribution costs, it does show that cost and quality improvements, on average, have substantially more impact on the profitability of weak vs. strong businesses.

No. 89, January 1988

89 FUNDING STRONG VS. WEAK BUSINESSES - II

Industrial businesses in the Strategic Planning Institute (SPI) database tend to follow the generally accepted practice of funding more profitable businesses more heavily than less profitable businesses. However, low profit businesses on average increase their pretax return on sales more than high profit businesses when they are able to increase their product quality, customer service, and/or product image and company reputation relative to competitors. This reinforces the findings of the last article, again questioning the wisdom of funding strong businesses more heavily than weak businesses.

Funding Practices of Industrial Businesses

The 1,696 industrial businesses in the SPI database were split approximately in half based on pretax return on sales (PROS) with the break-point set at 10%. There are 850 industrial businesses with a PROS less than 10%; these average 4.9% PROS. There are 846 industrial businesses above 10% PROS averaging 19.3%. Table 222, Differences in Funding Practices of Low vs. High Profit Industrial Businesses shows the differences in funding practices of these low vs. high profit industrial businesses.

Table 222 shows the average percent per year increase in marketing expense, R&D expense, working capital, and permanent investment. The first two columns show the differences on an absolute basis; the other two columns show the differences relative to market growth.

As can be seen in the table, high profit businesses tend to increase these cost and investment items faster than the market growth. With the exception of working capital, low profit businesses tend to increase these cost and investment items less than market growth.

Table 222, Differences in Funding Practices of Low vs. High Profit Industrial Businesses

<u>Cost & Investment Items</u>	<u>Absolute</u>		<u>Relative to Market Growth</u>	
	<u>Low Profit</u>	<u>High Profit</u>	<u>Low Profit</u>	<u>High Profit</u>
Marketing Expense	10.5%	13.2%	-1.1%	1.2%
R&D Expense	9.1%	13.5%	-2.5%	1.5%
Working Capital	11.9%	14.3%	0.3%	2.5%
Permanent Investment	10.2%	13.4%	-1.4%	1.4%
Served Market Growth	11.6%	12.0%		

Relative Profit Leverage

Table 223 shows the profit leverage with respect to change in relative product quality for low vs. high profit industrial businesses in the database. Because of "regression toward the mean"

tendencies, low profit businesses tend to increase profitability while it tends to be difficult to sustain profit levels in high profit businesses; previous Articles have discussed this issue.

Leverage, however, depends on the differences in profit which exist between two levels of a factor which affects profit. One measure of leverage with respect to relative product quality is the PROS difference between businesses increasing their relative product quality vs. those decreasing. The bottom line in Table 223 shows this difference. By this measure, low profit businesses have substantially more profit leverage than high profit businesses.

Table 223, Average Change in PROS vs. Profitability and Change in Relative Product Quality

Change in Relative Product Quality	Increase	2.56% (N=352)	-0.41% (N=247)
	Same	1.72% (N=304)	-0.98% (N=322)
	Decrease	0.38% (N=194)	- 1.29% (N=277)
	Increase - Decrease	2.18%	0.88%
		Low Profit	High Profit
Relative Profitability			

A similar examination of relative customer services shows the same pattern. This can be seen Table 224. The low profit businesses again show a “profit leverage” more than twice that of high profit businesses.

Table 224, Average Change in PROS vs. Profitability and Change in Relative Customer Services

Change in Relative Customer Services	Increase	3.05% (N=156)	-0.94% (N=126)
	Same	1.60% (N=579)	- 0.75% (N=630)
	Decrease	0.83% (N=115)	- 2.01% (N=90)
	Increase - Decrease	2.22%	1.07%
		Low Profit	High Profit
Relative Profitability			

An even stronger difference can be seen with respect to change in relative product image and company reputation. This difference is shown in Table 225 below.

Table 225, Average Change in PROS vs. Profitability and Change in Relative Product Image and Company Reputation

Change in Relative Product Image & Company Reputation	Increase	3.44% (N=200)	-0.99% (N=117)
	Same	1.31% (N=525)	-0.72% (N=603)
	Decrease	0.97% (N=125)	- 1.77% (N=126)
	Increase - Decrease	2.47%	0.78%
		Low Profit	High Profit
Relative Profitability			

Summary

An analysis of the profit leverage differences between low and high profit businesses reinforces findings from last month's Article and again raises serious questions regarding the normal practice of funding strong businesses more heavily than weak businesses. Again, the analysis is unable to consider the investment and cost required to improve quality, service, and image.

It was also shown that industrial businesses do tend to follow the generally accepted practice of funding more profitable businesses more heavily than less profitable businesses.

No. 90 February, 1988

90 INCREASING SELLING EXPENSE BUDGETS

The amount of selling expense appropriate for a business depends largely on assessing the desired tradeoff between short—term and long-term profitability. Less aggressive increases in selling expense typically show better short-term profitability, but more aggressive increases show improvement in market share and, as a result, better long—tern profitability. Being “average” is often worse than being either more aggressive or less aggressive. Weak businesses in particular need to make a conscious decision as to whether to be very aggressive or very nonaggressive with respect to changes in selling expense budgets.

Background

Previous Articles based on analyzing the industrial businesses in the Strategic Planning Institute (SPI) database have shown that:

- It is often better to be different from the “norm” when setting selling expense budgets (see article No. 41, January, 1984);
- The profitability of weak businesses is often more sensitive to improvements in product quality and cost position than that of strong businesses (see article Nos. 88 and 89, December, 1987 and January, 1988).

These findings seriously question the normal practice of funding strong businesses more than weak businesses and in seeking standards or norms for setting selling expense budgets.

Marketing Aggressiveness

This article reports on an analysis of the industrial businesses in the SPI database with respect to their degree of marketing aggressiveness. Marketing aggressiveness is defined by the degree to which selling expense budgets were increased relative to the growth in the market served by the business. Very high levels of marketing aggressiveness were defined by businesses in which selling expense was increased by at least 10% more than the served market grew. Other levels were defined as follows:

- **High** 3% to 10% above served market growth rate
- **Moderate** -3% to 3%
- **Low** - 10% to - 3%
- **Very Low** selling expense increasing at least 10% below the served market growth rate

These “cut points” divided the 1,696 industrial businesses in the SPI database into approximately

equal groupings.

Profit and Share Changes

Average percentage point changes in pretax return on sales (PROS) and market share were examined opposite each of these five levels of marketing aggressiveness. Figure 143 plots the result. As is shown, market share increases are much more likely to occur in businesses which are more aggressive in increasing their selling expense budgets. Profit margin increases are more likely to occur for businesses which are much less aggressive in increasing their selling expense budgets.

Note that on average very high levels of marketing aggressiveness dominate moderate levels, since average change in both profit margins and market share are higher for the more aggressive businesses. This provides support for the earlier finding that “being average” with respect to selling expense budgets is generally poor practice.

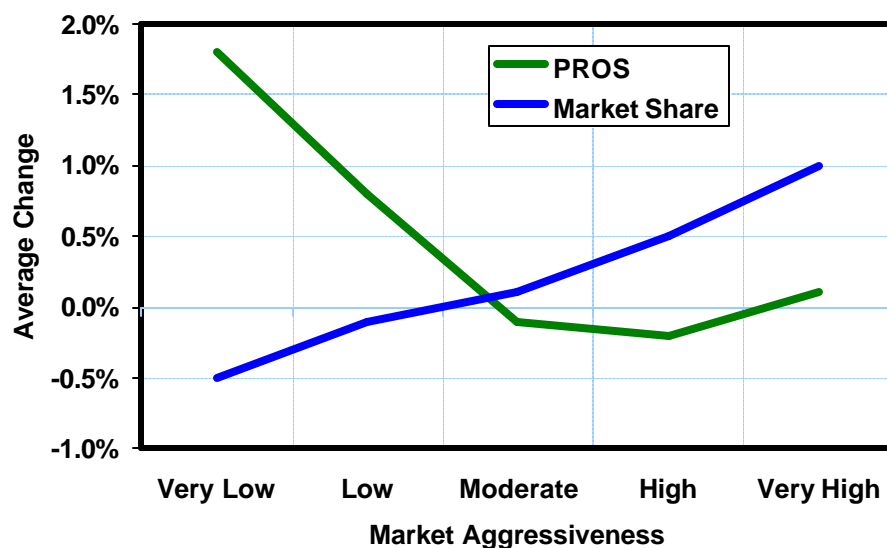


Figure 143, Average Change in PROS and Market Share vs. Degree of Marketing Aggressiveness

Low vs. High-Profit Businesses

The industrial businesses in the database were then divided approximately in half on the basis of their pretax return on sales, 10% being the “cut point.” Figure 144 plots average percentage point change in PROS and market share opposite degree of marketing aggressiveness and level of profitability.

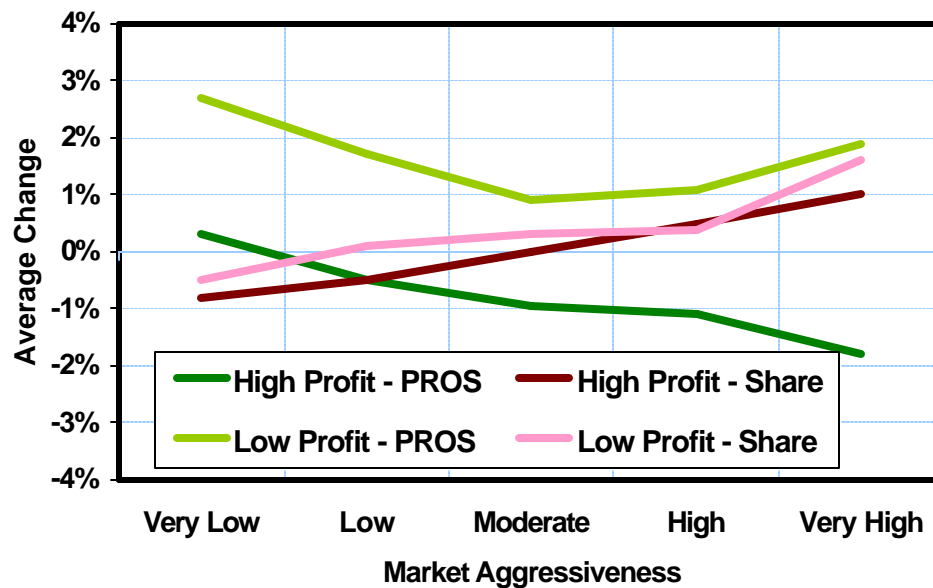


Figure 144, Average Change in PROS and Market Share vs. Degree of Marketing Aggressiveness and Level of Profitability

As Figure 144 indicates, little difference exists with respect to change in market share. The increasing pattern shown in Figure 143 applies almost equally to both high- and low-profit businesses.

Significant differences exist, however, with respect to changes in profit margin. High PROS businesses show a decreasing trend. Thus, stronger, more profitable businesses typically have a tradeoff to consider between short-term profitability and longer term profitability resulting from improvements in market position.

Low-profit businesses, on the other hand, show a definite “U shape” pattern with respect to change in profit margin. Unless a weaker, low-profit business is in a “harvest” mode and wishes to maximize short-term profits at the expense of market position, on average it is most appropriate to be very aggressive in terms of marketing expense. This finding reinforces those from the two most recent Articles suggesting that it is often appropriate to strongly fund weak businesses.

Increasing selling expense in line with served market growth --the “no-brainer” -- is typically not a good strategy for weak, low profit businesses because they typically show the poorest results with respect to profit margin change. Therefore, a conscious decision as to whether to harvest or aggressively pursue a weak business needs to be made.

Summary

The above analysis reinforces previous findings. It is often better to be:

- Different than the “norm” with respect to selling expense budgets and
- Very aggressive in many cases in funding low-profit or weak businesses than is typically done.

Weak businesses in particular need to decide whether their overall strategy should be one of “harvesting” or aggressively trying to improve their position; a “middle-of-the-road” strategy is likely to be the poorest strategy.

91 QUALITY, SERVICE, AND IMAGE CHANGES

Based on an analysis of the Strategic Planning Institute (SPI) industrial businesses, changes in relative product quality are much less frequent in “commodity” product businesses³⁴, than in their more differentiated counterparts. However, changes in relative customer service and relative product image and company reputation occur almost as frequently in commodity businesses as in more differentiated industrial businesses. Perhaps surprisingly, commodity businesses show a high degree of profit sensitivity to all three factors when changes occur.

Background

The article No. 89 showed that low profit businesses on average increased their pretax return on sales more than high profit businesses when they increase their product quality, customer service quality, and/or product image and company reputation relative to competitors. This article prompted a question about changes in these factors and the associated profit leverage with respect to commodity industrial businesses. This article reports that analysis.

The best measure of degree of product differentiation in the SPI database is based on the definition of relative product quality. SPI defines relative product quality on the basis of the percent of your product sales that are perceived by customers to be: (1) superior to competition, (2) about the same as competition, and (3) inferior to competition. (These three categories must add to 100%.) Relative product quality is defined as the difference between the percent perceived superior and the percent perceived inferior. Degree of product differentiation is based on the amount perceived to be about the same as competition.

For this analysis I (arbitrarily) considered commodity products to be those where at least 80% of the products were perceived to be about the same as competition. The remaining businesses were broken into a “moderate” category which included businesses where 50% to 80% of the products were perceived to be about the same as competition and a “high” category defined as businesses where less than half of the products were considered about the same as competition. Only the industrial businesses in the database were used in the analysis.

Change in Quality, Service and Image

The percent of industrial businesses showing changes in quality, service, and image depending on degree of product differentiation is shown in Table 226. Relative to moderate and high product differentiation businesses, fewer commodity industrial businesses show an increase or decrease in product quality. While changes in customer service and image/reputation as defined by SPI occur less frequently, there is less difference (although some difference) between

³⁴ "Commodity" product businesses refer to those whose products are difficult to differentiate from competition.

commodity businesses and their more differentiated counterparts.

Table 226, Percent of Industrial Businesses Showing Changes in Quality, Service, and Image Depending on Degree of Product Differentiation

Degree of Product Differentiation	Low (Commodity)	355 (21%)	41%	23%	28%
	Moderate	642 (38%)	10%	28%	38%
	High	699 (41%)	67%	32%	32%
	Total	1696			
		Sample	Product Quality	Customer Service	Image/ Reputation
Percent Showing Change* in Relative					

* Change can be an increase or a decrease.

Profit Leverage

Table 227 shows the average change in pretax return on sales (PROS) depending on degree of product differentiation and change in relative product quality. This table shows that commodity industrial businesses which are able to increase their relative product quality show profit leverage about equal to their more differentiated counterparts. Highly differentiated industrial products show more profit leverage than those moderately differentiated.

Table 227, Average Change in PROS vs. Degree of Product Differentiation and Change in Relative Product Quality

Change in Relative Quality	Increase	1.14% (N=90)	0.99% (N=277)	1.83% (N=232)
	Same	- 0.14% (N=208)	0.53% (N=190)	0.59% (N=228)
	Decrease	- 0.90% (N=57)	- 0.58% (N=175)	- 0.54% (N=239)
	Increase - Decrease	2.04%	1.57%	2.37%
		Low Commodity)	Moderate	High
Degree of Product Differentiation				

Table 228 shows a similar chart for change in relative customer services. This table indicates that commodity businesses are more sensitive to change in relative customer service than the more differentiated product businesses. This, together with previous work on customer service reported in article No. 77, provides support for the belief that it is extremely important for commodity product businesses to try to differentiate on the basis of customer service.

Table 228, Average Change in PROS vs. Degree of Product Differentiation and Change in Relative Customer Services

Change in Relative Services	Increase	1.10% (N=50)	0.80% (N=104)	1.71% (N=128)
	Same	0.05% (N=274)	0.48% (N=461)	0.46% (N=474)
	Decrease	- 1.55% (N=31)	- 0.39% (N=77)	- 0.08% (N=97)
	Increase - Decrease	2.65%	1.19%	1.79%
		Low	Moderate	High
		Commodity)		
Degree of Product Differentiation				

Table 229 shows a similar result for relative product image and company reputation. This table shows that highly differentiated product businesses have potentially the most to gain by increasing their product image and/or company reputation. It seems reasonable to believe that developing a strong reputation around a unique product would provide the most opportunity to extract the value of that product. Also, there is a good deal of profit leverage for commodity and moderately differentiated businesses as well.

Table 229, Average Change in PROS vs. Degree of Product Differentiation and Change in Relative Image & Company Reputation

Change in Relative Image	Increase	1.60% (N =57)	1.23% (N=147)	2.66% (N=113)
	Same	-0.18% (N=235)	0.33% (N=400)	0.36% (N=473)
	Decrease	-0.55% (N=43)	-0.38% (N=95)	-0.51% (N=113)
	Increase - Decrease	2.15%	1.61%	3.03%
		Low	Moderate	High
		Commodity)		
		Degree of Product Differentiation		

Summary

An analysis of the profit leverage for quality, service, and image based on differences in product differentiation among the industrial businesses in the SPI database lead to the following conclusions:

- It is more difficult for “commodity” businesses to increase their relative product quality compared to their more differentiated counterparts.
- A good deal of profit leverage exists when improvements in relative product quality, customer service, and product image and company reputation are made regardless of degree of product differentiation.
- For commodity businesses a high degree of profit sensitivity exists with respect to customer service, implying that such businesses can often differentiate themselves on the basis of service.
- Product image and company reputation show a high degree of profit leverage for highly differentiated product businesses, implying that a strong image can help a unique product extract the value that exists in that product.

No. 92, April 1988

92 STRATEGIES OF LATE ENTRANTS

Businesses which are late in entering markets tend to enter those markets on a relatively small scale with a narrow product line and no particular product advantage. They tend to be less profitable than “Pioneers” and “Early Followers.” However, their profitability tends to be higher if they have a strong cost position, higher levels of customer services, and a higher product image and company reputation than their competitors.

Typical Entry Strategies

Businesses in the Strategic Planning Institute (SPI) database are classified in tens of entry position as a “Pioneer,” “Early Follower,” or “Late Entrant.” A recent study by Mary Lambkin, University College, Dublin, found that these three types of businesses tended to pursue different entry strategies. Pioneers tended to enter markets on a larger scale with a broader product line and superior products and services than Early Followers and Late Entrants. These typical entry strategies are summarized in Table 230.

Table 230, Typical Entry Strategies

<u>Factor</u>	<u>Entry Position</u>		
	<u>Pioneer</u>	<u>Early Follower</u>	<u>Late Entrant</u>
Market Entry Scale	Large	Average to Small	
Amount of Capacity **	High	Low	Very Low
Product Line *	Broad	Average	Narrow
Product Advantage *	Advantage	Disadvantage	Neutral
Product Quality *	Superior	Inferior	Inferior
Marketing Expenditures *	High	Low	Average to High
Customer Services *	Superior	Average to Inferior	
Manufacturing/Distribution Costs*	Varies	High/Average	Low/Average
Price *	High/Average	Low	Average

* Relative to Competitors

** Relative to Market Size

Almost half the Pioneer businesses in the SPI database are first ranked in tens of market share. They tend to be more profitable as shown in Table 231.

Table 231, PROI vs. Entry Position for Industrial Businesses

<u>Entry Position</u>	<u>Sample</u>	<u>Average PROI</u>
Pioneer	398	16.8%
Early Follower	551	12.9%
Late Entrant	247	12.2%

There is obviously more risk in being a Pioneer. Studies of a special sample of startup businesses by SPI have shown that Pioneer businesses tend to lose more money in their first four years than Early Followers and Late Entrants. Late Entrants in particular have the advantage of being better able to assess market conditions before committing resources to a new business. In considering whether or not to enter under such conditions, it is important to understand the factors which tend to make such businesses profitable.

Profit Sensitivity of Late Entrants

In examining several factors which relate to business profitability, three stood out in which Late Entrant businesses tended to show high profit sensitivity. The first of these is manufacturing and distribution costs relative to competition. As shown in Table 232, the pretax return on investment of Late Entrants is very sensitive to relative costs. Late Entrants which realize lower costs than competitors tend to be highly profitable; those with a cost disadvantage tend to be unprofitable.

Table 232, PROI vs. Entry Position and Relative Cost for Industrial Businesses

Entry Position		Relative Manufacturing/Distribution Costs		
		Lower	Near Equal	Higher
Entry Position	Pioneer	22.1% (N=235)	16.3% (N=343)	13.6% (N=320)
	Early Follower	19.3% (N=131)	14.6% (N=209)	7.2% (N=211)
	Late Entrant	23.2% (N=151)	13.0% (N=89)	6.3% (N=107)

A second profit-sensitive factor is relative customer services. As Table 233 shows, having higher levels of customer service relative to competitors seems to be more important for Late Entrants.

Table 233, Average PROI vs. Entry Position and Relative Customer Services for Industrial Businesses

Entry Position	Pioneer	11.9% (N=81)	15.0% (N=329)	18.9% (N=488)
	Early Follower	7.6% (N=57)	12.9% (N=234)	14.0% (N=260)
	Late Entrant	4.5% (N=29)	9.3% (N=98)	16.5% (N=120)
		Lower	Near Equal	Higher
Relative Customer Services				

The third factor is product image and company reputation relative to competitors. Table 234 shows that Late Entrants which have a higher product image and company reputation than competitors have considerably higher profitability than those with lower levels of image and reputation.

Table 234, Average PROI vs. Entry Position and Relative Product Image and Company Reputation

Entry Position	Pioneer	9.9%* (N=67)	14.9% (N=285)	18.7% (N=546)
	Early Follower	5.3% (N=76)	11.0% (N=205)	16.5% (N=270)
	Late Entrant	4.0% (N=30)	7.4% (N=100)	18.4% (N=117)
		Lower	Same	Higher
Relative Product Image & Company Reputation				

Summary

Among elements of differential advantage, cost position, level of customer services, and image/reputation seem to be particularly important to Late Entrants. Because of new product research and development is traditional in many large material companies, Late Entrant strategies is often not considered.. However, the strong reputation of some firms and solid image of their products, process technologies, and manufacturing and technical service capabilities suggest that Late Entrant strategies may be an opportunity.

No. 93, May 1988

93 STRATEGIES OF LATE ENTRANTS - II

The late article discussed industrial businesses, which were late in entering markets. It was shown that their profitability tends to be higher if they have a strong cost position, better customer service, and a better product image and company reputation than their competitors. This article extends that analysis and shows that “Late Entrants” also tend to be more profitable if they have a process or product patent, sell to their customers in large transaction sizes, and price at a slight premium over competition.

Patent Position

The last article contrasted industrial businesses in the Strategic Planning Institute (SPI) database on the basis of entry position. While “Late Entrants” tend to be less profitable than businesses which enter markets sooner, under certain conditions above average profitability can be achieved by “Late Entrants.”

An examination of the industrial businesses in the SPI database shows that the profitability of “Late Entrants” tends to be more sensitive to the existence of a patent position. SPI defines a patent position as a patent, trade secret or other proprietary method of production or operation which benefits the business to a significant degree. As shown in Table 235 and Table 236, the existence of a process or product patent tends to help the profitability of “Late Entrants” considerably more than it helps either “Pioneers” or “Early Followers.”

Table 235, Average PROI vs. Entry Position and Existence of a Process Patent for Industrial Businesses

Entry Position	Pioneer	16.1% (N=656)	19.0% (N=242)
	Early Follower	12.1% (N=452)	16.2% (N=99)
	Late Entrant	9.9% (N=201)	22.2% (N=46)
		No	Yes
		Process Patent	

Table 236, Average PROI vs. Entry Position and Existence of a Product for Industrial Businesses

Entry Position	Pioneer	15.8% (N=652)	18.6% (N=246)
	Early Follower	11.8% (N=471)	19.1% (N=80)
	Late Entrant	10.4% (N=211)	23.1% (N=46)
		No	Yes
		Product Patent	

Typical Sales Transaction Size

Previous articles have shown that profit margins tend to be lower for businesses which sell in large transaction amounts. The rationale is that customers who buy larger quantities of goods and services will have more incentive to negotiate tighter margins for those goods and services. Table 237 shows that this is true for “Pioneers” and “Early Followers” but not for “Late Entrants.” “Late Entrants” on average are slightly more profitable if they sell in larger sales transaction sizes. This may be because “Late Entrants” tend to be more “niche” oriented businesses which may be better off when they find a smaller, more targeted customer base.

Table 237, Average PROI vs. Entry Position and Typical Sales Transaction Size for Industrial Businesses

Entry Position	Pioneer	18.3% (N=656)	15.4% (N=242)
	Early Follower	15.5% (N=452)	10.6% (N=99)
	Late Entrant	10.6% (N=201)	13.7% (N=46)
		Less than or Equal \$10,000	More than \$10,000
		Typical Transaction Size	

Editor's Comment: The original indicated categories of Less than and Greater than, it was here corrected

Price Relative to Competitor

The profit pattern for “Late Entrants” is also different from that of “Pioneers” and “Early

Followers” with respect to relative price. As Table 238 indicates, “Pioneers” and “Early Followers” tend to be more profitable when their prices are either lower than or equal to competitors or a substantial price premium exists. On the other hand, “Late Entrants” tend to be more profitable with moderate price premiums. This may indicate that “Late Entrants” may be better not to be price leaders, but to establish a nonaggressive but competitive pricing strategy.

Table 238, Average PROI vs. Entry Position and Relative Price for Industrial Businesses

Entry Position	Pioneer	15.6% (N=288)	14.6% (N=246)	19.3% (N=364)
	Early Follower	12.6% (N=225)	11.6% (N=172)	14.7% (N=154)
	Late Entrant	11.4% (N=106)	16.3% (N=65)	9.9% (N=76)
		Lower or Equal	Up to 5% Premium	More than 5% Premium
Price Relative to Competition				

Summary

This and last month’s articles seem to indicate that the success of “Late Entrants” depends on the following four factors:

- A smaller, more targeted customer base;
- A strong competitive cost position;
- Some means by which to differentiate its offering through customer service, a product patent position, or a strong reputation;
- A nonaggressive yet competitive pricing strategy.

No. 94, June 1988

94 SALES PER EMPLOYEE

Sales per employee ratios were examined for the 1,803 industrial businesses in the SPI database. Over the 15 years of database experience, sales per employee increased 7.7% per year on average. At this rate of increase, the average SPI industrial business would realize \$204M of sales revenue per full-time employee in the 1988-91 time frame.

Sales per Employee

Because of inflation and productivity gains, year-to-year increases in sales per employee are to be expected. The SPI database includes four years of experience on each business and includes data from 1970-73 through 1984-87. During this time span a 7.7% per year average increase in sales per employee was observed across the 1,803 industrial businesses.

Extrapolating the reported sales per employee ratios forward at this 7.7% per year increase results in an average sales per employee value of \$204M among these businesses in the 1988-91 time frame.

Factors Related to Sales per Employee

A great deal of variation exists across these businesses, of course. A number of factors were found to be strongly correlated with sales per employee; four are reported here.

A strong association exists between sales per employee and purchases of raw materials and energy as a percent of sales revenue. When purchases represent a large percentage of sales revenue, less "value" is added to the raw materials. Fewer employees are required under these conditions to produce, distribute, and market each dollar of sales, thus increasing the sales per employee. This relationship is shown in Table 239.

Table 239, Average Sales per Employee (1988-91) vs. Purchases as a Percent of Sales Revenue

<u>Purchase/Sales Revenue</u>	<u>Average Sales/ Employee (\$1,000)</u>	<u>Number of Businesses</u>
Up to 30%	\$136	363
30 to 41%	\$146	411
41% to 49%	\$204	318
49% to 59%	\$238	368
Over 59%	\$312	343

Editor's Comment: The overlapping categories were in the original (probably not important due to continuous variables)

The second important factor is type of business. SPI defines four different types of industrial product businesses as shown in Table 240. Raw and semifinished material businesses tend to have much higher sales per employee than the other three business types.

Table 240, Average Sales per Employee (1988-91) vs. Type of Business

<u>Type of Business</u>	<u>Average Sales/ Employee (\$1,000)</u>	<u>Number of Businesses</u>
Capital Goods	\$166	431
Raw, Semifinished Materials	\$318	377
Components for Finished Products	\$175	618
Supplies, Consumables	\$182	377

A third factor is the type of product sold by the business. When the type of product is more or less standard, sales per employee tend to be higher than when it is custom tailored as shown in Table 241.

Table 241, Average Sales per Employee (1988-91) vs. Type of Product

<u>Type of Product</u>	<u>Average Sales/ Employee (\$1,000)</u>	<u>Number of Businesses</u>
More or Less Standard	\$219	1,288
Custom Tailored	\$170	515

A strong association also exists with respect to the average size of sales transactions. When businesses sell in large sales transaction sizes (e.g., over \$100M per transaction), their sales per employee tend to be higher. This is shown in Table 242.

Table 242, Average Sales per Employee (1988-91) vs. Sales Transaction Size

<u>Sales Transaction Size</u>	<u>Average Sales/ Employee (\$1,000)</u>	<u>Number of Businesses</u>
Up to \$1,000	\$146	229
\$1,000 to \$10,000	\$174	625
\$10,000 to \$100,000	\$228	619
Greater than \$100,000	\$259	330

Editor's Comment: The overlapping categories were in the original (probably not important due

to continuous variables)

These four tables permit a business to roughly judge how their sales per employee compare with industrial businesses in the SPI database depending on each of four factors. Next month's article will extend this analysis and discuss other factors associated with sales per employee.

Summary

Across industrial businesses in the SPI database, sales per employee increased 7.7% per year on average. These businesses would be expected to have an average of \$204M per full-time employee in the 1988-91 time frame. Across the SPI industrial businesses sales per employee tend to be higher when:

- Purchases represent a large proportion of sales revenue;
- The business produces raw and semifinished materials;
- Products are more or less standard;
- The business sells in large sales transaction sizes.

No. 95 July, 1988

95 SALES PER EMPLOYEE - II

The last article discussed some SPI database findings with respect to sales per employee. Four business characteristics that correlate strongly with sales per employee were described. Seven more are discussed this article. The tables provide a “first cut” assessment for a business with respect to normal levels of sales per employee given the characteristics of the business.

Sales per Employee

Among the 1,803 industrial businesses in the SPI database, an enormous amount of variation exists in sales per employee. As reported last month, the average (mean) level of sales revenue per full-time employee in the 1988-91 time frame is \$204M. The median is \$144M with a range from \$32M to \$1,558M.

The last article showed that sales per employee tends to be higher when purchases represent a large proportion of sales revenue, the business produces raw or semifinished materials, products are more or less standard, and the business sells in large transaction sizes.

Businesses also tend to realize higher sales per employee when customers are concentrated as shown in Table 243 to Table 245. These tables show that sales per employee tend to be higher when the business sells to fewer direct customers, when marketing expense is a small percent of total cost of sales, and when this business represents a large percentage of the purchases its customers make.

Table 243, Average Sales per Employee (1988-91) vs. Number of Direct Customers

<u>Number of Direct Customers</u>	<u>Average Sales/ Employee (\$1,000)</u>	<u>Number of Businesses</u>
Up to 100	\$237	536
100 to 1,000	\$204	810
More than 1,000	\$167	457

Table 244, Average Sales per Employee (1988-91) vs. Marketing Expense as a Percent of Total Cost of Sales

<u>Marketing Expense/ Cost of Sales</u>	<u>Average Sales/ Employee (\$1,000)</u>	<u>Number of Businesses</u>
Up to 2%	\$332	210
2% to 4%	\$241	353
4% to 7%	\$185	359
7% to 12%	\$174	429
Over 12%	\$160	452

Editor's Comment: The overlapping categories were in the original (probably not important due to continuous variables)

Table 245, Average Sales per Employee (1988-91) vs. Percent of Customers Purchases this Business Represents

<u>Percent of Customer Purchases Business Represents</u>	<u>Average Sales/ Employee (\$1,000)</u>	<u>Number of Businesses</u>
Less than 0.25%	\$153	229
0.25% to 1%	\$183	273
1% to 5%	\$191	489
5% to 25%	\$219	527
Greater than 25%	\$261	285

Other business characteristics associated with sales per employee are shown in Table 246 to Table 249. These tables show that sales per employee tend to be higher when a business has fewer competitors, has a process patent, is younger, and serves the North American rather than the Western European or other markets.

Table 246, Average Sales per Employee (1988-91) vs. Number of Competitors

<u>Number of Competitors</u>	<u>Average Sales/ Employee (\$1,000)</u>	<u>Number of Businesses</u>
Less than 5	\$228	516
5 to 20	\$199	1,053
Greater than 20	\$173	234

Editor's Comment: The second item original read 6 to 20

Table 247, Average Sales per Employee (1988-91) vs. Whether a Process Patent Exists

<u>Existence of a Process Patent</u>	<u>Average Sales/ Employee (\$1,000)</u>	<u>Number of Businesses</u>
Yes	\$223	410
No	\$199	1,393

Table 248, Average Sales per Employee (1988-91) vs. Age of the Business

<u>Age of the Business</u>	<u>Average Sales/ Employee (\$1,000)</u>	<u>Number of Businesses</u>
Less than 15 yrs. Old	\$228	529
15 to 25 yrs. Old	\$210	453
25 to 45 yrs. Old	\$195	552
Greater than 45 yrs Old	\$169	269

Editor's Comment: The overlapping categories were in the original (probably not important due to continuous variables)

Table 249, Average Sales per Employee (1988-91) vs. Location of the Served Market

<u>Location of Served Market</u>	<u>Average Sales/ Employee (\$1,000)</u>	<u>Number of Businesses</u>
North America	\$214	1,418
Western Europe	\$175	227
Other	\$163	158

The eleven tables shown in the last and this article provide a rough first cut approximation to developing a sales per employee “norm” for an industrial business. Next month’s article will examine the sensitivity of profitability to varying levels of sales per employee.

Summary

The level of sales per employee varies greatly across the SPI industrial businesses and depends to a large extent on the characteristics of the business. The last two articles show that sales per employee tend to be higher when:

- Purchases represent a large proportion of sales revenue;
- The business produces raw or semifinished materials;

- Products are more or less standard;
- The business sells in large sales transaction sizes;
- The business has few direct customers;
- Marketing expense is a small percent of total cost; -.
- The business represents a large percent of customer purchases;
- The business has few competitors;
- A process patent exists;
- The business is young;
- The business serves North America rather than Western Europe or other parts of the world.

No. 96, August 1988

96 SALES PER EMPLOYEE - III

Among SPI industrial businesses profitability is very sensitive to sales per employee at low levels of sales per employee. Less profit sensitivity occurs at higher levels of sales per employee, particularly among businesses in the mature stage of their life cycle, those producing products which are more or less standard, and those which are second ranked in market share.

Profit Sensitivity to Sales per Employee

The last two articles examined the 1,803 industrial businesses in the SPI database and highlighted eleven factors that differentiated businesses with high vs. low sales per employee. This article examines the profit sensitivity (based on pretax return on sales) to varying levels of sales per employee.

Table 250 shows the variation between pretax return on sales and sales per employee. Sales per employee in the SPI database is extrapolated to the 1988-1991 time frame for comparability (the database includes data from 1969 through 1985).

As can be seen in Table 250, at low levels of sales per employee profitability is very sensitive to sales per employee. Above sales levels of approximately \$126,000 per employee, much less profit sensitivity is shown.

Table 250, Profitability vs. Sales per Employee (1988-91)

Sales/ Employee (\$1,000)	Average PROS	Number of Businesses
Less than \$83	6.8%	185
\$83 to \$99	9.1%	171
\$99 to \$114	9.2%	178
\$114 to \$126	11.0%	175
\$126 to \$144	10.5%	190
\$144 to \$159	10.1%	181
\$159 to \$203	12.3%	183
\$203 to \$257	10.1%	181
\$257 to \$389	12.0%	180
Greater than \$389	11.1%	179

(Source: 1,803 SPI industrial businesses broken into approximately equal 10 groups.)

Editor's Comments:

1. The overlapping categories were in the original (probably not important due to continuous variables)
2. This frequency distribution is shown as the accumulative distribution and as a test of the normal distribution to describe the data on Figure 145.

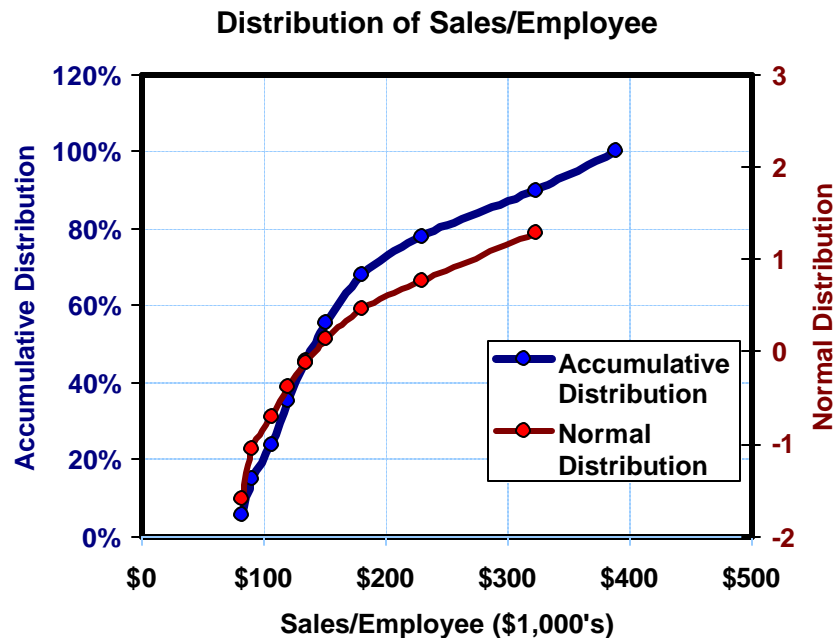


Figure 145, Distribution of Sales per Employee (1988-91)

Further examination of the distribution indicates that either a logarithmic or a log normal distribution describes the distribution, Figure 146. The log normal distribution is known to describe distribution of business grow and performance.

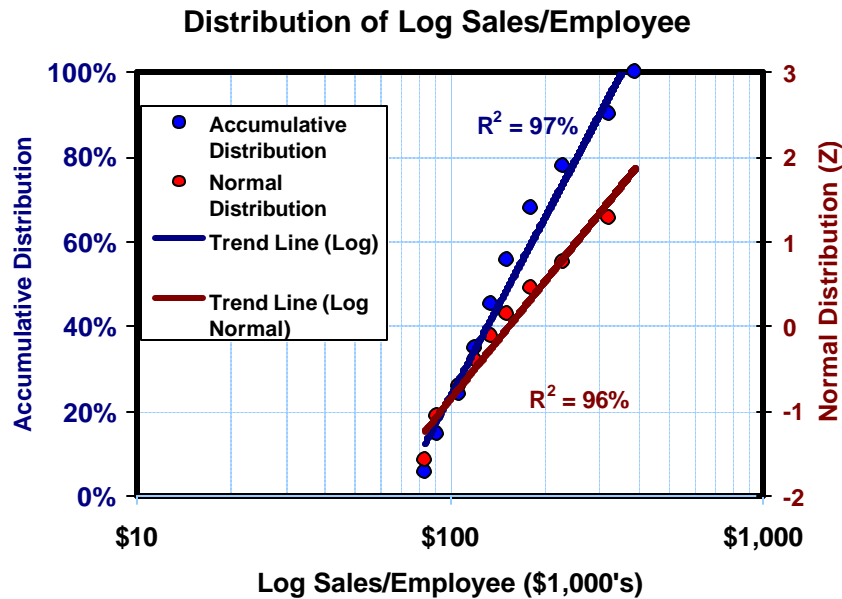


Figure 146, Log and Log Normal Distribution Plots of Sales per Employee (1988-91)

Examination of other business characteristics reveals some differences with respect to profit sensitivity at higher levels of sales per employee. As Table 251 indicates, businesses in the mature position in their life cycle show less profit sensitivity to sales per employee than those in the growth stage.

Table 251, Average PROS vs. Life Cycle Position and Sales per Employee

Life Cycle Position		Sales/Employee (1988-1991) (\$1,000)		
		Less than \$117	\$117 to \$190	More than \$190
Growth		9.1% (N=136)	11.6% (N=118)	13.1% (N=155)
	Mature	8.5% (N=415)	10.9% (N=474)	10.8% (N=398)
	Decline	10.6% (N=28)	5.1% (N=27)	8.4% (N=41)

Table 252 shows that profitability is less sensitive to sales per employee at higher levels for businesses producing products which are more or less standard rather than custom designed. Table 253 shows less sensitivity for businesses second ranked in market share

Table 252, Average PROS vs. Type of Product and Sales per Employee

Type of Product	More or Less Standard	8.9% (N=210)	11.0% (N=233)	10.9% (N=276)	11.4% (N=273)	11.5% (N=296)
	Custom Designed	6.5% (N=146)	8.3% (N=120)	8.5% (N=95)	10.7% (N=91)	11.6% (N=63)
		Less than \$99	\$99 to \$126	\$126 to \$169	\$169 to \$257	More than \$257
Sales/Employee (1988-1991) (\$1,000)						

Editor's Comment: The overlapping categories were in the original (probably not important due to continuous variables)

Table 253, Average PROS vs. Market share Rank and Sales per Employee

Market Share Rank	First	11.3% (N=149)	13.2% (N=141)	14.2% (N=152)	15.9% (N=139)	16.2% (N=125)
	Second	8.6% (N=71)	8.4% (N=98)	10.9% (N=84)	9.6% (N=93)	9.6% (N=94)
	Third or Higher	3.4% (N=136)	7.6% (N=114)	5.6% (N=135)	7.4% (N=132)	8.6% (N=140)
		Less than \$99	\$99 to \$126	\$126 to \$169	\$169 to \$257	More than \$257
Sales/Employee (1988-1991) (\$1,000)						

Editor's Comment: The overlapping categories were in the original (probably not important due to continuous variables)

Factors correlating with profitability were examined for low sales per employee businesses relative to those at higher levels. Profitability in low sales per employee businesses (below \$126,000) tend to be more influenced by factors such as high product quality, a high level of customer service, a good product image and company reputation, and selling to customers in small sales transaction amounts. Low sales per employee businesses tend to be less profit sensitive to market share, capacity utilization, whether a union exists, and the existence of a process patent relative to the higher sales per employee businesses. As a rough generalization then, it appears that low sales per employee businesses are more customer driven and high sales per employee businesses are more cost driven although there are many exceptions to this.

These findings raise questions with respect to using sales per employee as a standard

productivity measure. If it is used, its effect on producing increased earnings must be understood for each specific business situation. As was shown in article No. 66, changes in earnings are much more sensitive to increases in sales revenue than they are to decreases in the number of employees.

Summary

Profitability is very sensitive to levels of sales per employee for low sales per employee businesses (below about \$126,000/employee).

Less sensitivity is shown for high sales per employee businesses. This is particularly true for businesses:

- In the mature portion of their life cycle;
- Producing products which are more or less standard;
- Ranked second in market share.

The profitability in low sales per employee businesses seem generally to be driven more by customer-focused factors while high sales per employee businesses tend to be driven more by cost-oriented factors.

No. 97, September, 1988

97 SALES OF NEW VS. OLD PRODUCTS

Industrial businesses which sell a large proportion of new products tend to operate at lower profit margins, but grow considerably faster than the market they serve. As would be expected, they tend to be in growth markets and spend considerably more on product research and development and marketing expense.

New Product Sales

The Strategic Planning Institute (SPI) database includes information on new products as a percent of total sales. New products are those introduced within the past three years. They do not include minor product improvements or product line extensions. On average across the 1803 industrial businesses in the SPI database new products account for 8.3% of total sales. A great deal of variation exists of course; the standard deviation is 14.5%.

As shown in Table 254, new products represent a larger proportion of sales earlier in the life cycle as would be expected. Businesses in their growth stage have on average almost three times the proportion of new products as mature businesses.

Table 254, Average New Products as a Percent of Total Sales vs. Life Cycle State for Industrial Products
(Industrial Businesses N= 1803)

<u>Life Cycle Position</u>	<u>Average New Products (% of Sales)</u>	<u>Sample Size</u>
Introductory	33.5%*	11
Growth	16.3%	409
Mature	6.0%	1287
Decline	3.3%	1803

* Small Sample Size

Differences exist by type of industrial business as Table 255 shows. Capital goods businesses tend to have a larger proportion of new product sales.

Table 255, Average New Products as a Percent of Total Sales vs. Type of Business for Industrial Products
(Industrial Businesses N= 1803)

<u>Type of Business</u>	<u>Average New Products (% of Sales)</u>	<u>Sample Size</u>
Capital Goods	13.6%	431
Raw, Semifinished Materials	4.5%	377
Component Parts	8.5%	618
Supplies, Consumables	5.8%	317

Profitability and Growth

Table 256 shows how average PROS varies with new product sales. Industrial businesses tend to be most profitable when new products are about average -- 5 to 10% of total sales (8.3% the average). Profit margins are much lower when new products represent a large proportion of sales.

Table 256, Average PROS vs. New Products as a Percent of Total Sales
(Industrial Businesses N= 1803)

<u>New Products (% of Sales)</u>	<u>Average New Products (% of Sales)</u>	<u>Sample Size</u>
0%	9.9%	721
Up to 5%	11.1%	352
5% to 10%	11.7%	277
10% to 20%	10.7%	220
20% to 35%	9.1%	121
Greater than 35%	5.5%	112

Growth rates, however, are very sensitive to the proportion of new products as might be expected. Table 257 shows average sales growth and average market growth depending on the mix of new vs. old products.

Businesses tend to have a higher proportion of new product sales when markets are growing faster. (This corresponds with the previous comment on life cycle position.) More importantly,

however, sales tend to grow differentially faster than the market when businesses have a large proportion of their product sales in new products. Table 256 and Table 257 help quantify the obvious tradeoff that exists between current profitability and the growth necessary for future profitability.

Table 257, Average Physical Volume Sales and Market Growth vs. New Products as a Percent of Total Sales
(Industrial Businesses N= 1803)

<u>New Products (% of Sales)</u>	<u>Sales Growth</u>	<u>Market Growth</u>	<u>Difference</u>	<u>Sample Size</u>
0%	3.6%	1.7%	1.9%	721
Up to 5%	4.3%	3.4%	0.9%	352
5% to 10%	5.7%	3.4%	2.3%	277
10% to 20%	8.4%	3.4%	3.0%	220
20% to 35%	11.9%	7.4%	4.5%	121
Greater than 35%	22.1%	12.8%	9.3%	112

Marketing and Product R&D

As expected, businesses with a larger proportion of new product sales tend to spend more money on product R&D and marketing expense. This is quantified in Table 258.

Table 258, Average Product R&D and Marketing Expense vs. New Products as a Percent of Total Sales
(Industrial Businesses N= 1803)

<u>New Products (% of Sales)</u>	<u>Product R&D (% of Sales)</u>	<u>Marketing Expenses (% of Sales)</u>	<u>Sample Size</u>
0%	1.1%	5.9%	721
Up to 5%	1.5%	7.8%	352
5% to 10%	2.2%	8.5%	277
10% to 20%	2.5%	8.9%	220
20% to 35%	3.1%	9.5%	121
Greater than 35%	4.2%	11.8%	112

Summary

A critical decision for a business is the amount of effort to put into developing and marketing new products. Industrial businesses in the SPI database shed some light on the tradeoff that exists between current profitability and growth when making such decisions. Decisions, of course, reflect the nature of the business including life cycle position and type of business. The amount of support required in product R&D and marketing depends strongly on the proportion of new product sales.

No. 98, October 1988

98 SALES OF NEW VS. OLD PRODUCTS - II

The last article showed that industrial businesses which introduce many new products tend to grow faster but have lower profit margins compared to businesses with few new products. However, businesses with many new products show lower cost and price inflation, undoubtedly due largely to the growth absorbing more of the cost increases. This, of course, helps sustain the growth.

New Product Sales

The last article discussed the practices and success of industrial businesses in the Strategic Planning Institute (SPI) database depending on the proportion of sales represented by new products. These are products introduced within the past three years and do not include minor product improvements or product line extensions. It was shown that industrial businesses which sell a large proportion of new products tend to operate at lower profit margins, but grow faster than their served market.

In addition those businesses with a high proportion of new sales tend to show less inflation in costs and prices. Average values are shown in Table 259 where the industrial businesses in the database have been divided into those with no new products, those with a moderate amount of new products (up to 10%), and those with a large proportion of new products (greater than 10%). The negative relationship between growth and price/cost inflation was previously discussed in article No. 17.

Table 259, Characteristics of Industrial Businesses Depending on the Proportion of New Product Sales
(Industrial Businesses N= 1803)

<u>Characteristic</u>	<u>Proportion of New Products</u>		
	<u>None</u>	<u>Moderate (Up to 10%)</u>	<u>High (10% or More)</u>
New Products* (% of Sales)	0%	4.4%	27.0%
PROS	9.9%	11.4%	9.0%
Sales Growth Relative to Market Growth	1.9%	1.5%	5.0%
Annual Growth in Costs	9.9%	9.1%	7.9%
Annual Growth in Prices	8.3%	7.9%	6.7%

* Products introduced in the past three years, excluding minor product improvements and product line extensions

Effect of Image

The association between product image/company reputation and profitability was discussed in article No. 74. This association is somewhat higher among businesses introducing a high proportion of new products as shown in Table 260. This table shows the difference that exists in profit margins between those reporting a product image/company reputation better than competitors vs. those reporting to be the same or worse than competitors. As the table shows, profit margins tend to be low in the same/worse case when introducing a high proportion of new products.

Table 260, PROS Depending on Product Image & Company Reputation and the Proportional of New Product Sales
(Industrial Businesses N= 1803)

<u>Product Image/Company Reputation</u>	<u>None</u>	<u>Proportion of New Products</u>	
		<u>Moderate (Up to 10%)</u>	<u>High (10% or More)</u>
Better than Competitors	12.1%	13.6%	11.5%
Same or Worse than Competitors	<u>7.8%</u>	<u>9.0%</u>	<u>5.9%</u>
Difference	4.3%	4.6%	5.6%

Note: More than 200 businesses in each of the six cells

Summary

While industrial businesses introducing many new products tend to suffer somewhat in terms of their profit margins, they tend to grow much faster than their markets and have lower inflation in costs and prices. Such businesses tend to benefit more than others in having a product image/company reputation stronger than its competitors.

No. 99 November, 1988

99 SALES OF NEW VS. OLD PRODUCTS - III

Developing and marketing new products is a key factor in sustaining and renewing the growth of most industrial businesses. It is especially important to the differential growth of an industrial business relative to the market it serves in high-growth market situations, when entering the market late, when market share is low, when profitability is low, when price premiums are high, and when product quality is either low or high but not medium.

Differential Growth Due to New Products

This article is a continuation of the past two articles discussing the practices and success of industrial businesses in the Strategic Planning Institute (SPI) database depending on their introduction of new products. SPI defines new products as those introduced within the past three years excluding minor product improvements or product line extensions. While new products typically hurt profitability short-term, they provide business growth and often lower cost and price inflation.

This article analyzes SPI industrial businesses in terms of how the physical volume of the business is growing relative to the market it serves. The businesses are divided on the basis of whether new products introduced in the past three years are more or less than 2% of total business sales. This "break point" roughly divides the industrial businesses in half.

As can be seen in Table 261, industrial businesses typically have more trouble exceeding market growth when market growth is high. It is particularly important in high growth markets to introduce new products in order to stay abreast of the market growth and not lose market share. In low growth markets it is easier to gain share (grow faster than the market) without the assistance of new products.

Table 261, Differential Percentage Growth of New Product Introduction and Growth of Served Market
(Industrial Businesses N= 1803)

New Product Introduction (% of Sales)	<u>Growth of Served Market*</u>		
	<u>Low</u>	<u>Medium</u>	<u>High</u>
Above 2%	5.1%	3.4%	2.0%
Below 2%	3.9%	1.3%	-1.4%
Difference	1.2%	2.1%	3.4%

* Break-points are 0% and 6% real growth

As Table 262 shows, “Late Entrants” into the market are helped by new product introductions more than “Pioneers” or “Early Followers.” While “Late Entrants” typically grow faster than the markets they serve, even without new products, the differential article of new product introductions is large.

Table 262, Differential Percentage Growth of New Product Introduction and Time of Market Entry
(Industrial Businesses N= 1803)

New Product Introduction (% of Sales)	<u>Time of Market Entry</u>		
	<u>Pioneer</u>	<u>Early Follower</u>	<u>High</u>
Above 2%	2.1%	3.8%	8.5%
Below 2%	<u>0.5%</u>	<u>1.9%</u>	<u>4.1%</u>
Difference	1.6%	1.9%	4.4%

Table 261 and Table 262 together provide some support for a Boston consulting Group (BCG) strategy popularized in the early 1970's based on their share/growth matrix. This work on the portfolio theory of business management suggested that “New Entrants” into high growth markets (wildcats) be supported by strong existing businesses that could generate more funds than they needed for their growth and operations (cash cows).

Table 263 examines differentiated growth based on market share relative to competition. As this table shows, low share businesses tend to grow faster absolutely and relatively if are introducing new products. This is consistent with the previous table; “Late Entrant” businesses tend to have lower market shares than “Pioneers” or “Early Followers.”

Table 263, Differential Percentage Growth of New Product Introduction and Relative Market Share
(Industrial Businesses N= 1803)

New Product Introduction (% of Sales)	<u>Market Share Relative to Competition*</u>		
	<u>Low</u>	<u>Medium</u>	<u>High</u>
Above 2%	6.3%	2.8%	1.1%
Below 2%	<u>2.8%</u>	<u>1.6%</u>	<u>0.4%</u>
Difference	3.5%	1.2%	0.7%

* Break-points are 27% and 62% of the combined share of the three leading competitors

In line with the findings on market share, low profit businesses tend to grow differentially more than higher profit businesses when new products are introduced. This is shown in Table 264. This suggests the importance of considering more than profitability when making decisions regarding appropriate amounts of product R&D and marketing expense.

Table 264, Differential Percentage Growth of New Product Introduction and Profitability
(Industrial Businesses N= 1803)

<u>PROS*</u>			
New Product Introduction (% of Sales)	<u>Low</u>	<u>Medium</u>	<u>High</u>
Above 2%	3.5%	4.0%	2.6%
Below 2%	<u>0.2%</u>	<u>2.3%</u>	<u>2.3%</u>
Difference	3.3%	1.7%	0.3%

* Break-points are 6% and 15%

Another important differentiating business characteristic is price relative to competition. Businesses which sell their products at larger price premiums relative to competition tend to benefit more in terms of differential growth by introducing new products. This results in larger premiums which provide some rationale for continued funding of new product research, development, and marketing.

Table 265, Differential Percentage Growth of New Product Introduction and Relative Price
(Industrial Businesses N= 1803)

<u>Price Relative to Competition*</u>			
New Product Introduction (% of Sales)	<u>Equal, Lower</u>	<u>Small Premium</u>	<u>Large Premium*</u>
Above 2%	3.1%	2.4%	4.3%
Below 2%	<u>2.3%</u>	<u>1.8%</u>	<u>0.5%</u>
Difference	0.8%	0.6%	3.8%

* Greater than 5%

Table 266 shows similar differences based on relative product quality. As the table shows, businesses whose product quality is low (often commodity products) or high benefit more in terms of growth than those with medium levels of relative product quality. High product quality

is strongly associated with large price premiums and follows from Table 265. Perhaps the differential growth shown for low quality products is due in part to the differentiation that new product introductions provide in product/markets which otherwise are undifferentiated.

Table 266, Differential Percentage Growth of New Product Introduction and Relative Product Quality
(Industrial Businesses N= 1803)

New Product Introduction (% of Sales)	<u>Product Quality Relative to Competition*</u>		
	<u>Low</u>	<u>Medium</u>	<u>High</u>
Above 2%	3.5%	2.3%	4.3%
Below 2%	<u>1.4%</u>	<u>1.5%</u>	<u>2.0%</u>
Difference	2.1%	0.8%	2.3%

* Break-points are 8% and 34%

Summary

Developing and marketing new products are especially important to business growth relative to the growth of the market served when:

- Market growth is high;
- Entering a market late;
- Market share is low;
- Profitability is low;
- Products command a large price premium;
- Product quality is either low or high but not medium.

Results indicate the need to consider more than profitability when making decisions regarding the budgeting and allocation of resources for the development and marketing of new products.

No. 101, January 1989

101 CASH RETURN ON INVESTMENT

Many companies are currently using cash return on investment (CROI) as a key measure of profitability. This article examines the level of CROI for Strategic Planning Institute (SPI) database businesses and the characteristics which differentiate high from low CROI businesses.

CROI Values - All Businesses

In the past few years many companies had begun to place more emphasis on CROI as a key measure of profit performance. Commercially CROI is defined as the ratio of after-tax operating income (ATOI) plus depreciation, changes in deferred taxes and other non-cash charges (cash inflow) to average gross investment.

The SPI database does not have all the information needed to precisely define CROI, but a close approximation can be calculated. For this analysis CROI has been defined as 55% of pretax earnings (assumes a 45% tax rate), plus depreciation divided by inventory plus accounts receivable plus plant and equipment evaluated at original cost.

The average (mean) CROI value for all 2,744 SPI businesses by this definition is 10.6%. The median value is 9.6%. About half the businesses have CROI values between 5% and 15%. Average CROI values by type of business and life cycle position are shown in Table 267 and Table 268. As the tables show, service businesses tend to have higher CROI than product businesses and businesses in their growth stage of the life cycle tend to have higher CROI than those later in their life cycle.

Table 267, Average CROI Values by Type of Business
(All SPI Businesses N=2,744)

<u>Type of Business</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Consumer Durables	9.8%	311
Consumer Nondurables	11.0%	455
Capital Goods	9.5%	431
Raw, Semifinished Materials	9.3%	377
Component Parts	11.2%	618
Supplies, Consumables	11.9%	377
Services	13.8%	81
Distributors	<u>9.5%</u>	<u>94</u>
Total	10.6%	2,744

Table 268, Average CROI by Life Cycle Position
(All SPI Businesses N=2,744)

<u>Life Cycle Position</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Introductory	7.8%	18
Growth	11.5%	556
Mature	10.4%	2,008
Decline	<u>9.8%</u>	<u>162</u>
Total	10.6%	2,744

CROI Values - Industrial Businesses

The variation of CROI values for industrial businesses is recorded in Table 3. This shows the percent of industrial businesses exceeding given levels of CROI. As the table shows, only one business in nine exceeds a CROI of 20% and only two in nine exceed a CROI of 15%.

Table 269, Percent Industrial Businesses Exceeding Given Levels of CROI
(Industrial Business N= 1803)

CROI	Percent of Businesses Exceeding
-5%	98%
0%	92%
5%	75%
10%	47%
15%	22%
20%	11%
25%	6%
30%	3%
35%	2%

This is approximately a normal distribution as shown on the Figure 147

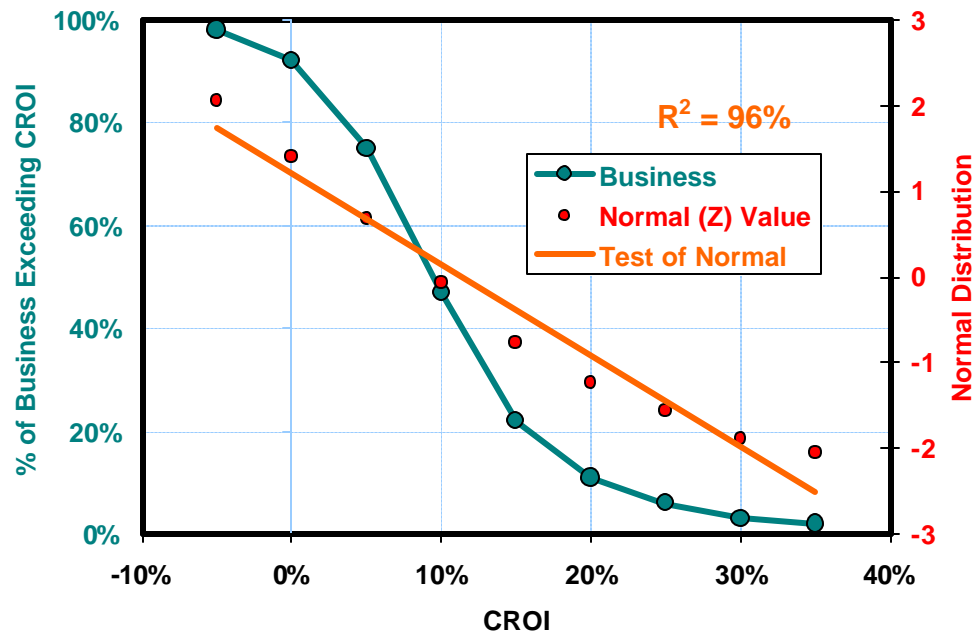


Figure 147, Percent Industrial Businesses Exceeding Given Levels of CROI against a Normal Distribution
(Industrial Business N= 1803)

Differentiating Factors

Of all the business characteristics in the SPI database, the one which correlates most strongly with CROI is sales turnover. Businesses with a high level of sales revenue per dollar of total gross investment tend to have much higher levels of CROI as would be expected. High investment intensive businesses have a difficult time realizing high levels of CROI. This is shown in Table 270.

Table 270, CROI vs. Sales Turnover
(Industrial Business N= 1803)

Sales/Inventory	Mean CROI	Sample Size
Less than 86%	5.6%	303
86% to 101%	7.2%	301
101% to 124%	9.5%	281
124% to 146%	10.4%	315
146% to 178%	12.3%	302
More than 178%	18.2%	301

Two other very important correlates of CROI are market share and product quality relative to competition. Relative market share is your market share as a percent of the total share of your three leading competitors. Relative product quality is the percent of your products perceived by your customers to be superior to competition minus the percent perceived to be inferior to competition after dividing sales revenue into superior, about equal, and inferior categories.

The relationship between CROI and relative market share and relative product quality is shown in Table 271. Higher levels of each are, of course, associated with higher values of CROI. Note that the high/high combination, achieved by only one business in six, still only yields a 15% CROI on average. Note also that CROI is somewhat more sensitive to relative market share for low- and high-quality businesses than for medium quality businesses.

Table 271, CROI vs. Relative Market Share and Relative Product Quality
(Industrial Business N= 1803)

Relative Market Share	High (> 62%)	11.8% (N=105)	12.8% (N=202)	15.3% (N=293)
	Medium (27% to 62%)	9.0% (N=202)	9.5% (N=228)	11.7% (N=182)
	Low (< 27%)	6.1% (N=292)	8.9% (N=179)	9.7% (N=120)
		Low (<8%)	Medium (8% - 34%)	High (> 34%)
		Relative Product Quality		

Two other important CROI correlates are relative direct cost and capacity utilization. Relative direct cost is the manufacturing and distribution costs of the business relative to its leading competitors.

Table 272 shows the relationship between CROI, relative direct cost, and capacity utilization. Note that CROI is most sensitive to capacity utilization for those businesses, which have a direct cost disadvantage (high relative direct cost).

Table 272, CROI vs. Relative Direct Cost and Capacity Utilization
(Industrial Business N= 1803)

Relative Direct Cost	High (> 104%)	6.7% (N=254)	7.0% (N=173)	10.7% (N=173)
	Medium (99.9% to 104%)	10.3% (N=245)	9.9% (N=266)	11.2% (N=248)
	Low (< 99.9%)	13.8% (N=117)	13.3% (N=130)	14.7% (N=197)
		Low (<71%)	Medium (71% - 84%)	High (> 84%)
Capacity Utilization				

CROI also varies depending on whether or not the business has a patent position. A patent is considered to exist if the business benefits to a significant degree from patents, trade secrets, or other proprietary methods of production or operation. As Table 273 shows, CROI values tend to be about three percentage points higher if either a product or patent position exists and about four percentage points higher if both exist.

Table 273, CROI vs. Existence of Patent Position
(Industrial Business N= 1803)

Product Patent	Yes	12.8% (N=168)	13.5% (N=218)
	No	9.4% (N=1225)	12.4% (N=192)
		No	Yes
Process Patent			

Summary

This article examines the experiences of SPI database businesses with respect to values of cash return on investment (CROI). In addition to providing values for “benchmarking” purposes, the article also examines seven factors, which correlate strongly with CROI. Next article will extend these findings.

No. 102, February, 1989

102 CASH RETURN ON INVESTMENT - II

The last article began a series examining levels of Cash Return on Investment (CROI) for Strategic Planning Institute (SPI) database businesses. The calculation used for CROI understated its value because: (a) too high a tax rate was assumed and (b) current liabilities were not deducted from average gross investment. This Article corrects the values shown last month and adds four more correlating business characteristics.

Corrections to Last Article Values

CROI is defined as the ratio of cash inflow to average operating investment. For this analysis, cash inflow is calculated as After-tax Operating Income (ATOI) plus depreciation. ATOI has been calculated using a 37% tax rate, a more reasonable average corporate rate than the 45% rate assumed in the last article.

In calculating average operating investment, current liabilities are typically deducted. For this analysis, average operating investment is calculated as inventory plus accounts receivable plus plant and equipment valued at original cost minus current liabilities.

Based on this revised calculation of CROI, the average (mean) value for all 2,744 SPI businesses is 14.6%. The median value is 12.1%. About half the businesses have CROI values between 6% and 19%. The following four tables and three figures are corrections to those shown last month based on the above definition of CROI.

Table 274, Average CROI Values by Type of Business
(All SPI Businesses N=2744)

<u>Type of Business</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Consumer Durables	13.7%	311
Consumer Nondurables	16.2%	455
Capital Goods	13.5%	431
Raw, Semifinished Materials	12.1%	377
Component Parts	14.8%	618
Supplies, Consumables	16.1%	377
Services	18.9%	81
Distributors	<u>15.3%</u>	<u>94</u>
Total	13.6%	2,744

Table 275, Average CROI by Life Cycle Position
(All SPI Businesses N=2744)

<u>Life Cycle Position</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Introductory	10.6%	18
Growth	16.7%	556
Mature	14.2%	2,008
Decline	<u>14.2%</u>	<u>162</u>
Total	13.6%	2,744

Table 276, Percent Industrial Businesses Exceeding Given Levels of CROI
(Industrial Business N= 1803)

CROI	Percent of Businesses Exceeding
-5%	96%
0%	92%
5%	79%
10%	60%
15%	39%
20%	24%
25%	16%
30%	11%
35%	7%

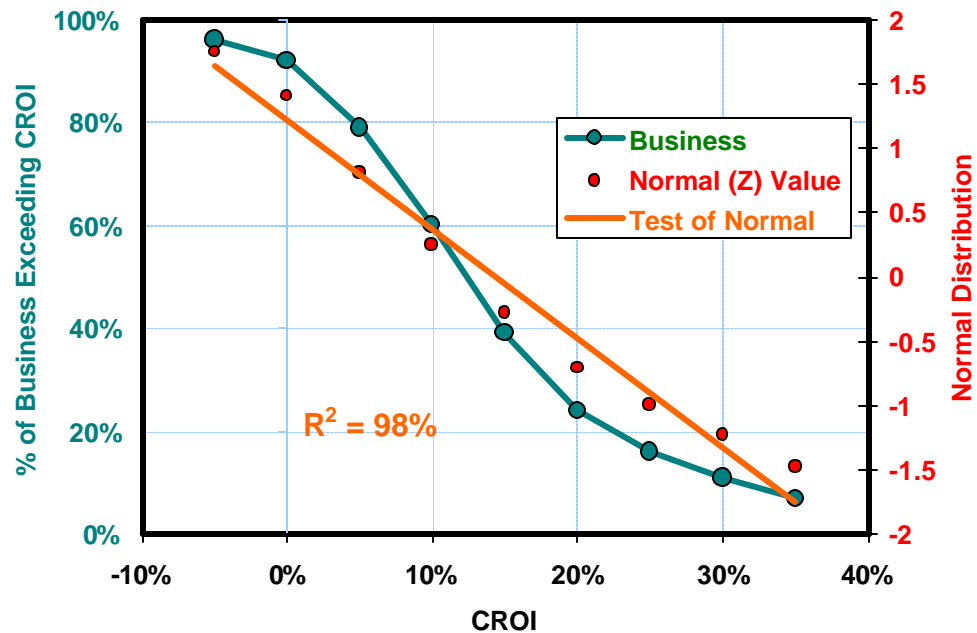


Figure 148, Percent Industrial Businesses Exceeding Given Levels of CROI against a Normal Distribution
(Industrial Business N= 1803)

Table 277, CROI vs. Sales Turnover
(Industrial Business N= 1803)

Sales/Inventory	Mean CROI	Sample Size
Less than 86%	6.3%	303
86% to 101%	8.8%	301
101% to 124%	11.5%	281
124% to 146%	13.6%	315
146% to 178%	16.0%	302
More than 178%	23.8%	301

Table 278, CROI vs. Relative Market Share and Relative Product Quality
(Industrial Business N= 1803)

Relative Market Share	High (> 62%)	14.5% (N=105)	16.2% (N=202)	20.0% (N=293)
	Medium (27% to 62%)	11.4% (N=202)	11.9% (N=228)	14.7% (N=182)
	Low (< 27%)	7.4% (N=292)	11.2% (N=179)	12.5% (N=120)
		Low (<8%)	Medium (8% - 34%)	High (> 34%)
Relative Product Quality				

Table 279, CROI vs. Relative Direct Cost and Capacity Utilization
(Industrial Business N= 1803)

Relative Direct Cost	High (> 104%)	8.5% (N=254)	9.0% (N=173)	13.7% (N=173)
	Medium (99.9% to 104%)	13.0% (N=245)	12.7% (N=266)	14.0% (N=248)
	Low (< 99.9%)	17.2% (N=117)	17.1% (N=130)	18.5% (N=197)
		Low (<71%)	Medium (71% - 84%)	High (> 84%)
Capacity Utilization				

Table 280, CROI vs. Existence of Patent Position
(Industrial Business N= 1803)

Product Patent	Yes	16.5% (N=168)	16.7% (N=218)
	No	12.0% (N=1225)	15.0% (N=192)
		No	Yes
		Process Patent	

Other Correlating Business Characteristics

As shown in Table 281 below, industrial businesses which are heavily unionized have values of CROI five percentage points below those not unionized on average. (Article No. 55 had previously discussed employee unionization and business characteristics related to unionization.)

Table 281, CROI vs. Percent of Employees Unionized
(Industrial Business N= 1803)

<u>Employees Unionized</u>	<u>Mean CROI</u>	<u>Sample Size</u>
None	16.3%	467
1% to 50%	14.3%	331
50% to 75%	11.9%	550
75% to 100%	11.3%	455

CROI is also strongly related to the level of customer service the business provides relative to leading competitors. This relationship is shown in Table 282. A very strong relationship also exists with relative product image and company reputation as shown in Table 283. (Service, image, and reputation were previously discussed in articles Nos. 74 through 77.)

Table 282, CROI vs. Relative Customer Service
(Industrial Business N= 1803)

<u>Customer Service Relative to Competition</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Worse	8.7%	173
Same	12.2%	723
Better	14.2%	632
Much Better	17.1%	275

Table 283, CROI vs. Relative Product Image & Company Reputation
(Industrial Business N= 1803)

<u>Image/Reputation Relative to Competition</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Worse	7.6%	177
Same	11.8%	683
Better	14.1%	671
Much Better	19.3%	272

Industrial businesses also tend to have higher levels of CROI if they sell in small transaction amounts. As Table 284 indicates, margins typically tend to get “squeezed” by customers buying in large transaction amounts where the transaction is considered to be the amount negotiated in total and not necessarily the amount shipped in any one shipment.

Table 284, CROI vs. Average Sales Transaction Amount
(Industrial Business N= 1803)

<u>Sales Transaction Amount</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Less than \$1,000	16.6%	229
\$1,000 to \$10,000	13.5%	625
\$10,000 to \$100,000	12.7%	619
Greater than \$100,000	11.9%	330

Summary

This article corrected values of Cash Return on Investment (CROI) from last month’s article and showed the relationship which exists between CROI and four other business characteristics. The next article will continue this investigation of CROI.

No. 103, March 1989

103 CROI VS. ELEMENTS OF INVESTMENT

This article examines the relationship between CROI and various elements of investment. As was pointed out in article No. 79, different types of investment have different degrees of association with return on investment. Manufacturing-oriented investment -- plant and equipment and raw material and work-in-process inventory -- have a strong negative association with CROI. Marketing-oriented investment -- finished product inventory and accounts receivable -- have a weaker association with CROI.

Definition of CROI

CROI is defined as the ratio of cash inflow to average operating investment. Cash inflow is calculated from the SPI database as after-tax operating income assuming a 37% tax rate plus depreciation. Average operating investment is calculated as inventory plus accounts receivable plus plant and equipment valued at original cost minus current liabilities.

Plant and Equipment Investment

As some previous articles have shown, capital intensive businesses tend to have significantly lower levels of return on investment than low capital investment intensive businesses. The relationship between CROI and capital intensity is shown in Table 285 for the industrial businesses in the SPI database. The table shows the industrial businesses divided into six approximately equal size segments on the basis of original cost of plant and equipment as a percent of total cost of sales.

Total cost of sales was used as the denominator rather than sales revenue to avoid the distortion which occurs because sales revenue includes earnings. Because all measures of profitability including CROI are so strongly dependent on earnings, it is best to avoid including earnings as part of any business characteristic which is associated with profitability, in order to get a truer indication of the effect. As can be seen in Table 285, a reasonably linear relationship exists with the least capital intensive segment of industrial businesses averaging about twice the level of CROI as the most capital intensive segment.

Table 285, CROI vs. Original Cost of Plant and Equipment as a Percent of Total Cost
(Industrial Business N= 1803)

<u>Original Cost, Plant & Equip./ Total Cost</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Less than 24%	19.4%	303
24% to 34%	11.8%	304
34% to 44%	13.8%	287
44% to 57%	12.6%	303
37 to 83%	11.9%	300
Greater than 83%	9.7%	306

Inventories

A strong negative association also exists between CROI and raw material and work-in-process inventory. Table 286 shows this relationship with the industrial businesses again being divided into six approximately equal segments with it and WIP (work-in-progress) inventory again being expressed as a percent of total cost of sales.

As Table 286 indicates, very low levels of raw material (RM) and work-in-process (WIP) inventory are associated with significantly higher levels of CROI than are high levels. However, very little profit sensitivity is seen across the middle two-thirds of the industrial businesses based on level of RM and WIP inventory.

Table 286, CROI vs. Original Cost of Plant and Equipment as a Percent of Total Cost
(Industrial Business N= 1803)

<u>RM & WIP Inventory/Total Costs</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Less than 5.3%	17.7%	307
5.3% to 8.5%	14.5%	296
8.5% to 11.5%	14.0%	299
11.5% to 16.0%	14.4%	304
16.0% to 22.6%	14.1%	299
Greater than 22.6%	10.3%	298

The relationship with finished product inventory is much weaker and somewhat different. The lowest level of finished product inventory as a percent of total cost of sales on average has CROI values 2 -1/2 percentage points lower than the second lowest level. This reinforces findings from article No. 79, which showed that driving marketing oriented investments to very low levels can

be detrimental to a business.

Table 287, CROI vs. Finished Product Inventory as a Percent of Total Cost
(Industrial Business N= 1803)

<u>Finished Product Inventory/ Total Costs</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Less than 1.5%	14.4%	209
1.5% to 4.0%	16.9%	291
4.0% to 6.6%	14.2%	304
6.6% to 9.5%	13.9%	300
9.5% to 14.6%	13.6%	299
Greater than 14.6%	12.1%	300

As is shown in Table 288, the relationship between CROI and accounts receivable is positive contrary to expectations. Businesses with moderately high levels of accounts receivable tend to have higher levels of CROI!

The main reason for this anomaly is that accounts receivable is positively correlated with the major elements of competitive advantage which are the key drivers of profitability. Weak businesses tend to have lower levels of accounts receivables. For example, the one-third of the businesses with lowest accounts receivable (below 13.1% of total costs) have an average relative market share of only 56% compared to the upper two-thirds with an average relative market share of 71%. Low accounts receivable businesses also tend to have lower product quality and higher relative direct costs.

When these types of effects are accounted for, accounts receivable shows a slightly negative relationship with CROI as would be expected.

Table 288, CROI vs. Accounts Receivable as a Percent of Total Cost
(Industrial Business N= 1803)

<u>Accounts Receivable/ Total Costs</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Less than 10.4%	10.7%	300
10.4% to 13.1%	12.4%	303
13.1% to 15.2%	14.7%	293
15.2% to 18.0%	16.0%	303
18.0 % to 22.9%	16.3%	303
Greater than 22.9%	15.2%	301

Since current liabilities are deducted from average operating investment, it would be expected that a positive relationship between CROI and current liabilities as a percent of total cost of sales would exist. This is indeed the case as is shown in Table 289.

Table 289, CROI vs. Accounts Receivable as a Percent of Total Cost
(Industrial Business N= 1803)

<u>Current Liabilities/ Total Costs</u>	<u>Mean CROI</u>	<u>Sample Size</u>
Less than 5.9%	12.4%	296
5.9% to 8.0%	12.1%	298
8.0% to 10.1%	13.5%	298
10.1% to 13.0%	16.3%	299
13.0% to 19.1%	14.6%	314
Greater than 19.7%	16.2%	298

Summary

This article shows the relationship between CROI and the factors which make up its denominator, average operating investment. Key points are:

- Capital intensive businesses typically return significantly lower levels of CROI.
- Marketing—oriented investment does not have as strong a negative association with CROI as manufacturing oriented investment.

The next article will examine capital intensive businesses and discuss the key factors associated with CROI.

No. 104, April 1989

104 MANAGING CAPITAL-INTENSIVE INDUSTRIAL BUSINESSES

This article shows the relationship between CROI and its key correlating factors for capital-intensive industrial businesses. Key points are:

- It is difficult for such businesses to earn above average levels of CROI.
- Direct costs higher than competitors and low levels of capacity utilization are particularly devastating to such businesses.
- Having a process patent and low levels of employee unionization and raw material and work-in-process inventory is helpful.
- Having a strong market position with few competitors and a product image and company reputation better than competitors is important.
- Having strong (not modest) product quality relative to competition and/or a product patent is helpful.

Capital-Intensive industrial Businesses

Table 285 in the last article showed that the most capital-intensive one-sixth of the industrial businesses in the SPI database -- those with their original cost of plant and equipment exceeding 83% of total costs -- only have an average CROI of 9.7%. On average their original cost of plant and equipment is 121% of total costs.

It was difficult for this set of capital-intensive businesses to earn above average levels of CROI. Only 20% of these businesses (63 of 306) achieved values of CROI exceeding 15%. Achieving satisfactory levels of CROI for capital-intensive businesses requires skillful management and an understanding of the business characteristics which distinguish good performers from bad performers.

In examining the factors associated with CROI among these businesses, factors relating to operating costs and efficiencies showed the highest correlations. However, a strong market and product position for these businesses is also very important.

Operating Costs and Efficiency Factors

Five operating costs and efficiency factors show strong correlation with CROI. These are shown in Table 290.

Table 290, CROI vs. Operating Cost and Efficiency Factors
(Industrial Businesses with Original Cost of Plant & Equip. > 83% of Cost of Sales N=306)

	<u>Mean CROI</u>	<u>Sample Size</u>
<u>Relative Direct Cost</u>		
Lower than Competitors	12.6%	86
Equal to Competitors	11.9%	82
Higher than Competitors	6.6%	138
<u>Capacity Utilization</u>		
Less than 75.9%	7.6%	102
75.9% to 87.4%	9.3%	101
Greater than 87.4%	12.3%	103
<u>Percent Employees Unionized</u>		
Up to 40.5%	12.2%	103
40.5% to 87.4%	9.2%	99
Greater than 87.4%	7.7%	104
<u>Process Patent</u>		
Yes	11.6%	111
No	8.7%	195
<u>RM & WIP Inventory/ Total Cost</u>		
Less than 6.4%	11.9%	101
6.4% to 12.1%	9.8%	102
Greater than 12.1%	7.6%	103

As Table 290 shows, keeping relative direct costs (manufacturing and distribution costs) equal to or lower than competitors is particularly important. It is very difficult for capital-intensive industrial businesses to earn a reasonable level of CROI with direct costs higher than competitors.

It is also difficult for such businesses to achieve acceptable levels of CROI with low levels of capacity utilization. Levels above 85% are particularly helpful. These kinds of businesses also tend to do better when few of their employees are unionized, when a process patent exists, and when raw material and work—in-process inventories are low relative to total costs. There is, of course, some intercorrelation among these factors.

Market and Product Position Factors

While the correlations are not quite as strong, it is also important for capital—intensive industrial

businesses to have strong market and product positions. Five of these factors are shown in Table 291.

Table 291, CROI vs. Market and Product Position Factors
(Industrial Businesses with Original Cost of Plant & Equip. > 83% of Cost of Sales N=306)

	<u>Mean CROI</u>	<u>Sample Size</u>
Relative Market Share		
Less than 26%	7.6%	100
26% TO 62%	9.2%	103
Greater than 62%	12.4%	103
Relative Product Quality		
Less than 1%	9.1%	108
1% to 23%	8.6%	97
Greater than 23%	11.3%	101
Product Patent		
Yes	12.0%	67
No	9.1%	239
Relative Product Image, Company Reputation		
Worse than Competitors	6.3%	30
Same as Competitors	8.9%	130
Better than Competitors	11.1%	107
Much Better than Competitors	12.0%	39
Number of Competitors		
Less than 6	11.3%	128
6 to 10	8.8%	88
Greater than 10	8.4%	90

As with most businesses, a strong market share position relative to leading competitors is important. Relative market share is defined as your share as a percent of the total share of your three leading competitors. Achieving product quality superior to competition is important only if large differences exist. As Table 291 shows, modest product quality superiority is no better than equality.

It also helps to have a product patent and to have a product image and company reputation better than competitors. Image and reputation interact with product quality. Businesses in this sample which had a better image/reputation than competitors and product quality superiority above 50%

had an average CROI of 15.1%.

As Table 291 also shows, it is better to be in an industry where there are no more than five competitors.

No. 105, May 1989

105 WHEN MARKET PIONEERING IS LESS IMPORTANT

Normally businesses which are among the first to enter their markets tend to be more profitable. Often, however, businesses which serve few end users are more profitable if they enter later. Such businesses tend to have low levels of selling expense. Raw and semifinished material businesses often serve few end users and have low levels of selling expense.

Such businesses more often benefit from process patents when they enter late. The implication seems to be that businesses serving many end users benefit from establishing market positions early while businesses serving few end users benefit more from having up-to-date processes.

Profitability. Entry Position and Customer Concentration

Studies of the Strategic Planning Institute (SPI) database have shown profit and market share advantages of being a market pioneer. Previous articles Nos. 70, 92, and 93 discuss some of these findings. Table 292 shows how cash return on investment varies with entry position for consumer and industrial businesses in the database.

Table 292, CROI vs. Entry Position
(Consumer and Industrial Businesses N=2569)

Entry Position	Mean CROI	Sample Size
Pioneer	16.1%	1333
Early Follower	13.0%	837
Late Entrant	12.3%	399

As Table 292 shows, businesses which are pioneers (among the first to enter their market) tend to have values of CROI three to four percentage points higher than early followers and late entrants. This relationship varies considerably depending on customer concentration measured as the number of end users served by the business (end users are those who consume the product or incorporate it into other products). This relationship is shown in Table 293.

Table 293, Average CROI vs. Entry Position and Customer Concentration
(Consumer and Industrial Businesses N=2569)

Entry Position	Pioneer	14.3% (N=172)	15.1% (N=584)	16.6% (N=307)	18.9% (N=270)
	Early Follower	13.3% (N=143)	12.3% (N=369)	13.0% (N=171)	14.1% (N=154)
	Late Entrant	17.0% (N=65)	11.9% (N=166)	11.6% (N=94)	10.1% (N=74)
		Less than 100	100 to 10,000	10,000 to 1,000,000	Greater than 1,000,000
Number of End Users					

As Table 293 shows, pioneers tend to become more profitable as the number of end users increases. On the other hand, late entrants tend to be more profitable with fewer end users. In businesses with no more than 100 end users, late entrants on average are more profitable than pioneers.

Variation by Type of Business

As shown in Table 294, certain types of businesses tend to serve fewer end users. In particular, raw and semifinished material businesses frequently serve a small number of end users. Table 294 also shows the strong relationship between number of end users and average selling expense as a percent of total cost.

Table 294, Customer Concentration and Marketing Intensity vs. Type of Business
(Consumer and Industrial Businesses N=2569)

<u>Type of Business</u>	<u>Percent with Less than 100 End Users</u>	<u>Average Selling Expense/Total Costs</u>	<u>Sample Size</u>
Customer Durables	3%	10.6%	311
Customer Nondurables	1%	17.2%	455
Capital Goods	13%	12.1%	431
Raw, Semifinished Materials	36%	3.8%	377
Components	24%	7.3%	618
Supplies, Consumables	7%	11.0%	377

Table 295 shows how profitability as measured by CROI varies with entry position and type of business. Note that raw and semifinished material businesses which are late entrants tend to have values of CROI about seven percentage points higher than pioneers and early followers. This relationship stands out as totally different from that shown by the other five types of businesses. Note also the big advantage that consumer nondurable pioneer businesses have over late entrants. Consumer nondurable businesses tend to have a very large number of end users with a large percentage of their costs allocated to selling expense as Table 294 indicated.

Table 295, Average CROI vs. Entry Position and Type of Business
(Consumer and Industrial Businesses N=2569)

Entry Position	Pioneer	14.9% (N=131)	19.6% (N=252)	14.4% (N=241)	10.7% (N=154)	16.4% (N=339)	18.1% (N=216)
	Early Follower	12.5% (N=115)	13.4% (N=125)	12.4% (N=142)	11.1% (N=165)	14.6% (N=179)	13.8% (N=111)
	Late Entrant	13.6% (N=65)	9.8% (N=78)	12.1% (N=48)	18.4% (N=58)	10.1% (N=100)	12.4% (N=50)
		Consumer Durable	Consumer Nondurable	Capital Goods	Raw, Semifinished Matls.	Components	Supplies, Consum.
Type of Business							

When examining factors which provide advantage to later entrants that serve few end users, process patent position differences stand out. As Table 5 shows, late entrants with few end users more frequently have a process patent position than those with many end users. This seems to imply that more fragmented businesses (those selling to many end users) benefit more from establishing market positions early while more concentrated businesses (those selling to few end users) benefit from having up-to-date processes.

Table 296, Percent of Business with Process Patents vs. Entry Position and Customer Concentration
(Consumer and Industrial Businesses N=2569)

Entry Position	Pioneer	27% (N=172)	23% (N=1165)
	Early Follower	18%% (N=143)	16% (N=694)
	Late Entrant	31% (N=65)	13% (N=334)
		Less than 100	Greater than 100
Number of End Users			

No. 106, June, 1989

106 DECREASING IMPORTANCE OF EARLY MARKET ENTRY

The Strategic Planning Institute (SPI) database now includes business experiences for almost two decades and it is interesting to examine changes that have occurred over this time span. One such change is that the advantage of being first in the market seems to be less important now than it was in the early 1970's when it was first observed.

On average, it appears that late entrants into markets have been increasingly successful in improving their levels of manufacturing efficiency, product and process patent positions, and product image and company reputation. These efforts have largely eliminated the profit disadvantage observed in earlier years for late entrants. This suggests that a business should not place undue emphasis on early entry but be more concerned that its plans and operations are soundly in place prior to market entry.

Decline of Early Market Entry Advantages

The database which we analyze to prepare these articles consists of detailed information on over 2,700 businesses. Each business has provided data on at least four years of their operations. As the program has now been ongoing since 1972, it is possible to examine changes that have occurred over nearly two decades of business experience.

The chief correlates of profitability have changed very little over that period of time. One interesting change that has occurred, however, is that the advantage of market pioneering seems to have declined. This is shown in Table 297 which shows average cash return on investment depending on entry position and time of the business experience in the database.

In the early 1970's pioneer businesses had a significant profit advantage over late entrants. This advantage essentially disappeared by the 1980's. (See Table 297.)

Table 297, Average CROI vs. Entry Position & Time of the Business
(Consumer and Industrial Business N= 2569)

Entry Position	Pioneer	5.6% (N=436)	16.9% (N=398)	15.9% (N=499)
	Early Follower	12.8% (N=264)	13.4% (N=254)	12.7% (N=319)
	Late Entrant	8.7% (N=99)	11.6% (N=144)	15.4% (N=156)
		Early 1970's	Late 1970's	Early 1980's
Time of Business Experience				

In examining differences in these businesses, it was somewhat surprising that only minor differences occurred in the chief elements of competitive advantage such as market share, product quality, and costs relative to competition. However, key differences were seen in some other manufacturing, product and marketing advantages.

Manufacturing Advantages

One of the most important differences seen was the decline in capital intensity. This seemed to occur regardless of entry position, but was more pronounced among late entrants. (See Table 298.)

Table 298, Capital Intensity vs. Entry Position & Time of the Business
(Consumer and Industrial Business N= 2569)

Entry Position	Pioneer	56%*	47%	46%
	Early Follower	54%	45%	50%
	Late Entrant	60%	44%	45%
		Early 1970's	Late 1970's	Early 1980's
Time of Business Experience				

* Average original cost of plant and equipment as a percent of total cost of sales

Similarly, late entrants have reduced their levels of raw material and work—in-process inventory

(Table 299). The average percent of employee unionization has declined among late entrants making such businesses more competitive (Table 300). They also have become stronger in their process patent protection relative to pioneers and early followers (Table 301).

Table 299, Raw Material and Work-in-Process Inventory vs. Entry Position & Time of the Business
(Consumer and Industrial Business N= 2569)

Entry Position	Pioneer	13.3%*	13.1%	12.3%
	Early Follower	14.2%	12.8%	13.2%
	Late Entrant	14.8%	12.6%	12.1%
		Early 1970's	Late 1970's	Early 1980's
Time of Business Experience				

* Average raw material and work-in-process inventory as a percent of total cost of sales

Table 300, Percent Employee Unionized vs. Entry Position & Time of the Business
(Consumer and Industrial Business N= 2569)

Entry Position	Pioneer	48%*	44%	45%
	Early Follower	44%	45%	50%
	Late Entrant	48%	40%	37%
		Early 1970's	Late 1970's	Early 1980's
Time of Business Experience				

Table 301, Percent with Process Patents vs. Entry Position & Time of the Business
(Consumer and Industrial Business N= 2569)

Entry Position	Pioneer	29%	23%	20%
	Early Follower	24%	16%	11%
	Late Entrant	17%	15%	16%
		Early 1970's	Late 1970's	Early 1980's
Time of Business Experience				

Product and Marketing Advantage

Dramatic shifts in product patent position have occurred (Table 302). In the early 1970's pioneers tended to have a strong advantage in product patent protection. Today many late entrants seem able to establish product patent protection while pioneers somehow have either lost their edge or are more frequently relying on other forms of competitive advantage.

Table 302, Percent with Product Patents vs. Entry Position & Time of the Business
(Consumer and Industrial Business N= 2569)

Entry Position	Pioneer	Early 1970's	Late 1970's	Early 1980's
	Early Follower	32%	22%	20%
	Late Entrant	19%	10%	14%
		9%	13%	15%
Time of Business Experience				

Late entrants have improved their product image and company reputation relative to leading competitors (Table 303). They also tend to be slightly more marketing intensive in the 1980's while pioneers and early followers are slightly less marketing intensive (Table 304).

Table 303, Product Image and Company Reputation vs. Entry Position & Time of the Business
(Consumer and Industrial Business N= 2569)

Entry Position	Pioneer	Early 1970's	Late 1970's	Early 1980's
	Early Follower	56%*	63%	58%
	Late Entrant	47%	46%	41%
		32%	56%	46%
Time of Business Experience				

* Percent of business with product image and company reputation better than leading competitors

Table 304, Marketing Intensity vs. Entry Position & Time of the Business
(Consumer and Industrial Business N= 2569)

Entry Position	Pioneer	11.5%*	10.6%	10.8%
	Early Follower	10.1%	8.9%	8.7%
	Late Entrant	9.7%	9.7%	10.3%
		Early 1970's	Late 1970's	Early 1980's
Time of Business Experience				

* Average selling expense as a percent of total cost

Apparently, late entrant businesses have in general learned how to better manage their operations so that the former advantage of early market entry is no longer as important as it once was.

No. 107 July, 1989

107 MANAGING RAW AND SEMI-FINISHED MATERIAL BUSINESSES

An analysis of 377 Raw & Semi-finished (R&SF) material businesses in the Strategic Planning Institute (SPI) database indicates that three factors drive the profitability (as measured by CROI) of this type of business:

- Low costs relative to competition.
- Strong product quality, services and image.
- Low investment in plant, equipment and inventories.

On the other hand, market share position, number of competitors and capacity utilization are factors which show less profit sensitivity for R&SF material businesses. Also, contrary to most other types of businesses, R&SF materials tend to be more profitable when they enter markets late and add less processing cost to their purchased raw materials.

Raw and Semi-finished Material Businesses

The SPI database contains 377 Raw & Semi-finished (R& SF) material businesses³⁵. Compared to other businesses in the database they tend to:

- Have below average levels of CROI;
- Serve few direct customers and end-users;
- Sell to their customers in large sales transaction sizes;
- Have low levels of selling expense.

Table 305 shows the fifteen factors, which correlate most strongly with CROI for these businesses. Three types of factors appear to be most important. One is the cost position of the business relative to its competition. Three of the top five factors -relative direct cost, process patent, and percent of employees unionized - directly or indirectly are related to cost.

Another important factor is product quality, service and image. These three factors - all highly inter-correlated - are among the top eight. A third important profit correlate is having low levels of investment in plant, equipment and inventory - items 3, 6 and 9 in Table 1.

Items 10 and 11 in Table 1 are atypical. The positive correlation of these two factors with CROI

³⁵ Raw and semi-finished material businesses are those which provide materials and which are further processed prior to ultimate use. Unlike “component products” they are combined with other materials such that they tend to lose some or all of their original identity. SPI divides their industrial businesses into capital goods, raw and semi-finished materials, component parts, and supplies and consumables.

imply that: (1) it is better to have purchased raw materials and energy be a large fraction of total costs (implying low processing costs) and, (2) entering markets late is better than entering markets early. For most businesses in the SPI database the reverse is true.

It is also unusual that relative market share, the fifteenth item on the list, has such weak correlation with CROI. For most businesses this is among the top three profit correlates. This implies that market share position is not as important with R&SF material businesses as with other types of businesses.

Table 305, Average Value and Correlation with CROI
(Raw and Semi-Finished Material Businesses N=377)

<u>Factor</u>	<u>Average Value</u>	<u>\Correlation w/ CROI</u>
1 Relative Direct Cost	102.1%	-0.26
2 Rel. Product Image, Company Reputation	Same/Better	0.23
3 Original Cost, Plant & Equipment/Total Costs	80%	-0.23
4 Process Patent	25% Yes	0.22
5 Percent Employees Unionized	57%	-0.21
6 Finished Goods Inventory/Total Costs	7.0%	-0.20
7 Relative Product Quality	15%	0.19
8 Relative Customer Service	Same/ Better	0.17
9 Raw Material & Work-in-Process Inventory/Total Costs	10.8%	-0.17
10 Raw Material and Energy Purchases/Total Costs	59%	0.14
11 Entry Position (1= Pioneer, 2 = Early Follower, 3= Late)	1.7	0.14
12 Number of Direct Customers	50-100	0.12
13 Sales per Employee	\$318,000	0.1
14 Product Patent	15% Yes	0.1
15 Relative Market Share	58%	0.1

The importance of focusing on a low-cost position, a strong product image and low capital investment is reinforced in Table 306. The 55 R&SF material businesses able to achieve: (1) manufacturing and distribution costs the same or lower than competition, (2) a better product image than competition and, (3) capital intensity below 80% (measured by the original cost of plant and equipment as a percent of total cost of sales) average 25% CROI. As Table 306 shows,

businesses with the other combinations on average have mediocre to poor levels of CROI.

Table 306, Average CROI, Relative Cost, Relative Image, and Capital Intensity
(Raw and Semi-Finished Material Businesses N=377)

<u>Relative Direct Cost</u>	<u>Relative Product Image/ Company Reputation</u>	<u>Original Cost for P&E/Total Costs</u>	<u>Average CROI</u>	<u>Sample Size</u>
Same, Lower	Better	Below 80%	25%	55
Same, Lower	Same, Worse	Below 80%	14%	46
Same, Lower	Better	Above 80%	13%	46
Higher	Better	Below 80%	11%	48
Same, Lower	Same, Worse	Above 80%	11%	46
Higher	Same, Worse	Below 80%	8%	66
Higher	Better	Above 80%	6%	32
Higher	Same, Worse	Above 80%	5%	42

Table 307 shows 7 factors having little correlation with CROI for R&SF material businesses. Unlike most other types of businesses, capacity utilization shows very little correlation with CROI. Also little relationship exists between profitability and the number of competitors in the industry.

Table 307, Some Factors having little Correlation with CROI
(Raw and Semi-Finished Material Businesses N=377)

<u>Factor</u>	<u>Comment</u>
Capacity Utilization	Some profit sensitivity at high levels of capacity utilization but little at low levels
Number of Competitors	Not important by itself; however, it can affect market share
Selling Expense	Being above or below average is a little better than being near average
Sales Transaction Amount	High amounts (>\$100,000) slightly better than low amounts
New Product/Total Sales	
Accounts Receivable/Total Sales	
Market Growth Rate	

The key message seems to be that R&SF material businesses need to pay particular attention to

their cost and investment position and deliver high quality products supported by good customer service and a strong image. Of lesser importance is the need to establish a strong market share position, being overly concerned about the number of competitors, and adding a great amount of processing cost to raw materials. It also appears that R&SF material businesses are more disciplined than other types of businesses with respect to pricing to maintain margins as capacity utilization fluctuates.

No. 108, August, 1989

108 SELLING EXPENSE OVER-INVEST OR UNDER-INVEST?

Tom Peters in his recent book, Thriving on Chaos, recommends that businesses “over-invest in front line sales, service, distribution, and sales support people and systems” and that they “seriously consider doubling or tripling their sales force over the next three to five years.” Re “sadly observes that cost containment, not revenue enhancement, drives most firms’

A study of the 2746 businesses in the SPI database shows that:

- Sales revenue growth is strongly related, not only to cash flow and earnings growth, but to profit margin increases as well;
- Selling expense growth is strongly related to sales revenue growth;
- Few businesses are able to realize high growth in sales revenue without significant increases in selling expense.

While there is no merit in escalating selling expenses (or any other type of expense) per se, these findings suggest the value of evaluating programs on a profit contribution rather than cost basis.

Thriving on Chaos

In his new book, Thriving on Chaos, Tom Peters stresses total customer responsiveness as one of five keys to business success. He encourages businesses to become “customer obsessed organizations,” “become a service fanatic,” “to over-invest in sales, service, and distribution,” and “to seriously consider doubling or tripling their sales forces.” He discusses the need to make sales and service forces into heroes and to develop “customer responsive manufacturing”

Peters goes on to say that “the American business person’s Holy Grail is cost containment; yet the surest way to cut unit costs is to spread them over greater revenue.”

SPI Database Finding

Growth and profitability are two key objectives of almost all businesses. Many business strategies and decisions focus on tradeoffs between growth and profitability. In many cases short-term profitability can be increased through cost reduction measures, although such tactics often can be expected to hurt longer term growth in sales and earnings.

Tom Peters claims that the firm is better to focus on revenue enhancement than on cost containment. The SPI database provides some support for this contention and the value of increasing sales and market share has been the subject of several previous articles.

It is easy to accept that longer term growth in earnings and cash flow are generally closely tied to growth in sales revenue. However, it is less obvious how profit margins are likely to change as a function of sales revenue growth since high revenue growth generally requires additional costs.

Across 2,746 SPI businesses a strong positive relationship exists between change in profit margin and change in sales revenue. Table 308 shows these results for the SPI businesses divided into seven approximately equal categories on the basis of sales revenue growth. Businesses showing negative or zero change in sales revenue on average show a 2.1 percentage point loss in profit margin as measured by pretax return on sales (PROS). At the other end, businesses increasing sales revenue by more than 28% per year show a PROS increase of over three percentage points. Thus, sales revenue increases tend to have a short-term positive impact on profitability as well as a longer term impact.

Table 308, Change in Profit Margin vs. Change in Sales Revenue
(All SPI Businesses N=2746)

<u>Annual Change in Sales Revenue</u>	<u>Average Annual Change in PROS</u>	<u>Sample Size</u>
Negative or Zero	-2.1%	398
0% to 6%	-0.5%	425
6% to 10%	-0.4%	369
10% to 14%	0%	367
14% to 19%	0.7%	417
19% to 28%	1.0%	387
Above 28%	3.1%	385

Previous Articles (Nos. 80 and 81) have discussed the strong relationship that exists between change in sales revenue and change in selling expense. Results for the entire SPI database are in Table 309 which again divides the businesses into seven approximately equal segments based on annual change in selling expense. The table shows the very strong correlation existing between change in selling expense and change in sales revenue.

Table 309, Change in Sales Revenue vs. Change in Selling Expense
(All SPI Businesses N=2746)

<u>Annual Change in Selling Expense</u>	<u>Average Annual Sales Revenue</u>	<u>Sample Size</u>
-2% or less	2.2%	371
-2% to 5%	7.2%	455
5% to 9%	10.0%	364
9% to 13%	12.8%	403
13% to 17%	15.2%	329
17% to 27%	18.5%	444
Above 27%	31.2%	380

It would be highly desirable, of course, if sales could be dramatically increased without large increases in selling expense budgets. While some businesses are able to do this, the odds are against them.

Table 310 indicates the likelihood of sales revenue growth exceeding given levels of selling expense growth. This table can be helpful as a “reality check.” The table shows the percent of SPI businesses exceeding given differences between sales revenue growth and selling expense growth.

Suppose, for example, that a business predicts a 12% growth in sales revenue and plans a 3% increase in selling expense. The difference is nine percentage points. The table indicates that about 23% of the SPI businesses exceeded that growth difference, indicating that the business has about one chance in four of achieving this goal, all other things being equal.

Table 310, Probability of Sales Revenue Growth Exceeding Given Levels of Selling Expense Growth
(All SPI Businesses N=2746)

<u>Amount by Which Sales Revenue Growth Exceeds Selling Expense Growth</u>	<u>Percent of SPI Businesses Exceeding this Growth Difference</u>
24%	4.5%
21%	6.3%
18%	8.6%
15%	11.3%
12%	15.5%
9%	23.3%
6%	30.6%
3%	42.4%
0%	54.7%
-3%	66.6%
-6%	76.2%
-9%	83.6%
-12%	88.7%

Editor's Comment: Figure 149 shows that this data follows an expected Normal Distribution.

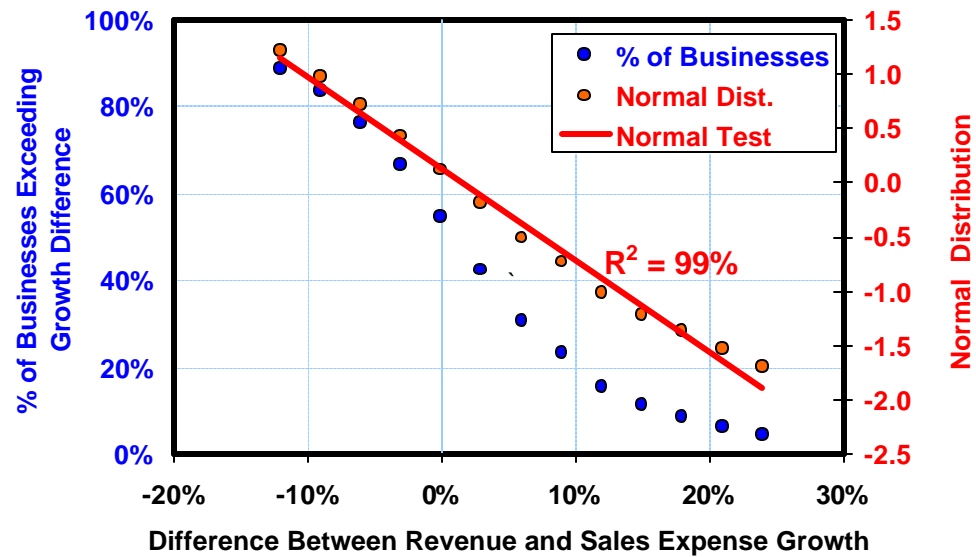


Figure 149, Probability of Sales Revenue Growth Exceeding Given Levels of Selling Expense Distribution
(All SPI Businesses N=2746)

In planning their future growth, businesses need to be cognizant of the probability of combinations of events happening. The SPI database provides a good way to assess such odds.

No. 109, September 1989

109 CHANGE IN EARNINGS

Among Strategic Planning Institute (SPI) database businesses, year-to-year change in earnings is strongly associated with served-market growth, base-period profitability, relative quality and cost, and change in relative quality and cost. Earnings increases tend to be strongest when:

- Sales in the served market are increasing;
- The business has a low pretax return on sales;
- Relative product quality is high and/or increasing;
- Relative direct costs are low and/or decreasing.

These findings underscore the need to participate in growing markets and to develop competitive advantage as measured by product quality and cost position. Also, improvements to a weak business often have higher earnings “leverage” than improvements to a strong business, perhaps because weak businesses have more room for improvement.

Change in Earnings

Financial and competitive information on businesses in the main SPI database cover a four-year period of time. Changes can be analyzed by contrasting the second two years with the first two years. This analysis examines change in earnings for 2615 businesses in the SPI database.

Change in earnings is defined as pretax earnings in the second two-year period minus pretax earnings in the first two-year period expressed as a percent of the sales revenue of the business in the first two-year period. The mean value across all businesses is 0.86 percentage points. Fifty-eight percent of the businesses reported increasing earnings; 42% reported decreasing earnings. The distribution is shown in Table 311.

Table 311, Distribution of Annual Change in Earnings
(All Businesses N=2615)

<u>Annual Change in Earnings</u>	<u>Percent of Businesses</u>
Less than -6%	5.0%
-6% to -4%	4.7%
-4% to -2%	11.1%
-2% to 0%	21.1%
0% to 2%	25.0%
2% to 4%	14.3%
4% to 6%	8.7%
6% to 8%	4.8%
More than 8%	5.3%

Editor's Comment: This data indicates a Normal (Gaussian) Distribution as would be expected, Figure 150.

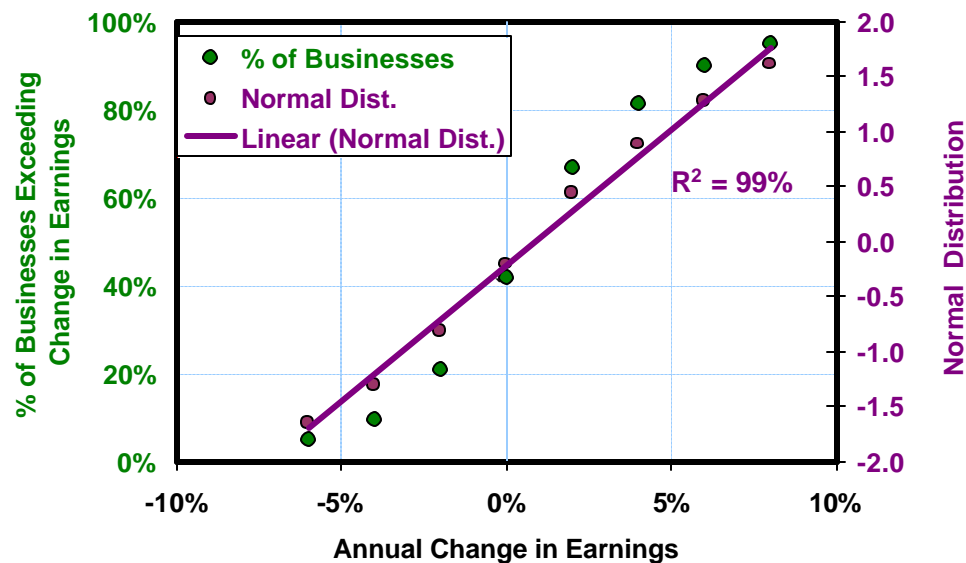


Figure 150, Distribution of Annual Change in Earnings
(All Businesses N=2615)

Market Growth and Initial Profitability

As shown strongly market inherent time the in Table 312, average annual change in earnings is associated with the sales revenue growth of the served market. Served market growth, of course, reflects both the growth in the market and the economic conditions at the business submitted its data to the database.

Table 312, Average Annual change in Earnings vs. Sales Revenue Growth of the Served Market
(All Businesses N=2615)

<u>Sales Revenue Growth of the Served Market</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
Less than 1.4%	-1.41%	435
1.4% to 6.2%	0.13%	438
6.2% to 9.7%	0.58%	444
9.7% to 13.9%	0.69%	428
13.9% to 20.1%	1.50%	432
More than 20.1%	3.63%	438

A strong “regression toward the mean” tendency cited in previous articles is apparent in Table 313 which shows the annual average change in earnings vs. base period (first two years) pretax return on sales (PROS). As can be seen in Table 313, businesses having a negative base period PROS tend to increase earnings the most; businesses with a high PROS tend to show a decrease in earnings.

Table 313, Average Annual Change in Earnings vs. Base Period PROS
(All Businesses N=2615)

<u>Base Period PROS</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
0% to 4.8%	3.45%	436
4.8% to 8.2%	1.03%	437
8.2% to 12.2%	0.60%	435
9.7% to 13.9%	0.18%	436
12.2% to 17.8%	0%	428
More than 17.8%	-0.112%	443

Competitive Advantage

Perhaps the two most important measures of competitive advantage in the SPI database are relative product quality and relative direct cost. Both have been the subject of many previous articles.

Relative product quality is defined as the percent of your dollar sales which customers perceive to be superior to competition minus the percent perceived to be inferior to competition after dividing sales into superior, about the same, and inferior categories. Relative direct costs are your raw material, manufacturing, depreciation, and distribution costs relative to your leading competitors.

Table 314 shows the average annual change in earnings vs. base period relative product quality and change in relative product quality. As indicated, it is advantageous for a business to have high quality and to improve product quality, but low-quality businesses show the most leverage with respect to change in product quality.

Table 314 also suggests “diminishing return” with respect to quality improvement. Note that for high relative quality businesses there is essentially no difference between holding quality the same or increasing quality as far as change in earnings is concerned.

Table 314, Average Annual Change in Earnings vs. Base Period Relative Product Quality and Change in Relative Quality
(All Businesses N=2615)

Change in Relative Product Quality	Increase	1.60% (N=334)	1.33% (N=348)	1.42% (N=238)
	Same	0.41% (N=400)	0.84% (N=306)	1.40% (N=308)
	Decrease	-0.29% (N=132)	-0.18% (N=227)	0.42% (N=322)
		Low (<6%)	Medium	High (> 33%)
		(6% to 33%)		
Base Period Relative Product Quality				

Table 315 shows average annual change in earnings opposite base-period relative direct cost and a change in relative cost. The figure shows the advantage of driving costs lower than leading competitors. Mirroring the findings on relative product quality, high cost businesses show the most leverage with respect to change in relative cost.

In short, “conventional wisdom” notwithstanding, improving the quality or cost position of a weak business can provide above average potential for earnings improvement. This, of course, assumes that the company plans to stay in the business and has the know-how to improve it.

Table 315, Average Annual Change in Earnings vs. Base Period Relative Direct Costs and Change in Relative Costs

(All Businesses N=2615)

Change in Relative Direct Cost	Increase	1.28% (N=199)	-0.32% (N=61)	-1.03% (N=266)
	Same	1.53% (N=275)	0.96% (N=732)	0.47% (N=544)
	Decrease	2.03% (N=124)	0.92% (N=32)	1.62% (N=382)
		Lower	Same	Higher
Base Period Direct Cost Relative to Leading Competitors				

No. 110, October 1989

110 THE CONTRIBUTION OF PRODUCT R&D TO EARNINGS GRQWTH

Studies of the Strategic Planning Institute (SPI) database show a fairly strong relationship between product R&D and growth in earnings. Product R&D effects (a) whether a product patent exists and (b) the proportion of sales represented by new products which, in turn, are positively associated with earnings growth. The positive association between product R&D and growth in earnings holds when served markets have moderate or high growth, but not when market growth is low.

Change in Earnings

As discussed in the last article, change in earnings has been defined as pretax earnings in the second two-year period minus pretax earnings in the first two-year period expressed as a percentage of sales revenue of the business in the first two-year period. Figures are annualized. By expressing earnings change as a percentage point change based on sales in the first time period, we eliminate problems caused by businesses with small or negative earnings in the first two years.

The average SPI business earns an 8.45% pretax return on sales (PROS) with earnings growth of 0.26% in the average year. Sales also increase by a similar amount so PROS will typically show small changes.

Studies of the SPI database relating product R&D to profitability indicate little association between R&D expenditures and current levels of profitability. This is to be expected due to the lag time that exists between R&D developments and profitability from commercialization.

Product R&D does show a fairly strong association with growth in earnings, however. One way to express this relationship is shown in Figure 151.

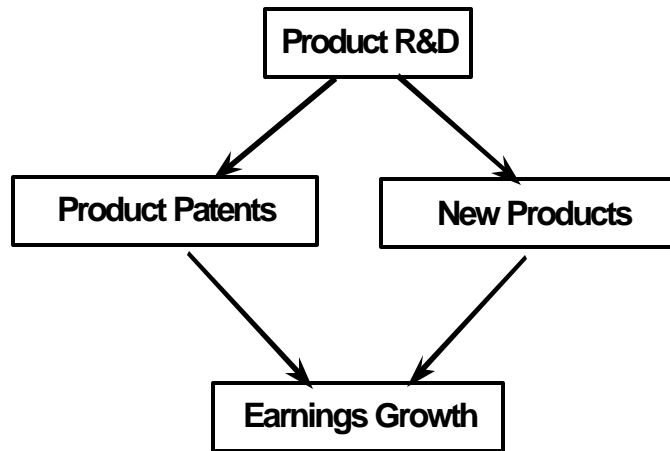


Figure 151, Relating Product R&D to Earnings Growth

Product Patent Position

Table 316 shows how product patent position varies with expenditures on product R&D. The top quartile in spending on product R&D (as a percent of total cost of sales in the initial two years) shows three times the likelihood of having a product patent position than businesses spending in the lower half.

Table 316, Product Patent Position vs. Expenditures on Product R&D
(All Businesses N=2615)

<u>Product R&D as a Percent of Total Cost of Sales, First Two Years</u>	<u>Percent Having Product Patents</u>	<u>Sample Size</u>
None	10%	611
Up to 0.7%	11%	681
0.7% to 2.2%	20%	665
More than 2.2%	32%	658

The relationship between the existence of a product patent and average annual change in earnings is shown in Table 317. The difference is about half a percentage point of earnings. For the average business this represents about a 6% difference in earnings (0.5/8.45).

Table 317, Average Annual Change in Earnings vs. Product Patent Position
(All Businesses N=2615)

Existence of Product Patent	Average Annual Change in Earnings	Sample Size
No	0.77%	2135
Yes	1.25%	480

Proportion of New Products

A strong relationship also exists between new products as a percent of sales and expenditures on product R&D. SPI defines new products as the percentage of total sales accounted for by products introduced in the preceding three years. As Table 318 shows, businesses in the upper quartile of product R&D have about four times the percent of new products in their sales mix than those not spending on product R&D.

Table 318, New Products as a Percent of Sales vs. Expenditures on Product R&D
(All Businesses N=2615)

Product R&D as a Percent of Total Cost of Sales, First Two Years	New Products as a Percent of Sales Second Two Years Patents	Sample Size
None	3.3%	611
Up to 0.7%	5.4%	681
0.7% to 2.2%	8.5%	665
More than 2.2%	14.0%	658

Table 319 shows a strong relationship between annual change in earnings and new products as a percent of sales. Businesses with more than 13% of their sales mix in new products have a one percentage point advantage in earnings growth relative to businesses with no new products. For the average business, this is almost a 12% difference on a percentage basis.

Table 319, Average Annual Change in Earnings vs. New Products as a Percent of Sales
(All Businesses N=2610)

<u>New Products as a Percent of Sales, First Two Years</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
None	0.53%	1308
Up to 5%	0.69%	378
5% to 13%	1.27%	489
More than 13%	1.53%	435

Direct Relationship of Product R&D to Earnings Growth

Table 320 shows the direct relationship between average annual change in earnings and expenditures on product R&D. This table indicates that spending nothing on product R&D may be preferable to spending a little. However, it clearly shows that at higher levels of product R&D spending is associated with stronger earnings growth.

Table 320, New Products as a Percent of Sales vs. Expenditures on Product R&D
(All Businesses N=2615)

<u>Product R&D as a Percent of Total Cost of Sales, First Two Years</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
None	0.78%	611
Up to 0.7%	0.46%	681
0.7% to 2.2%	0.97%	665
More than 2.2%	1.12%	658

In these types of analyses it is difficult to determine individual impacts when several important factors are intercorrelated. The last article showed a very strong relationship between change in earnings and growth in the sales revenues of the served market. Product R&D is also fairly strongly correlated with market growth and it is difficult to determine cause and effect.

Table 321 shows the average annual change in earnings by product R&D for three different levels of market growth. This table indicates that product R&D tends to “pay off” when markets are growing at both medium and high rates but not at low rates.

Table 321, Average Annual Change in Earnings vs. Expenditures on Product R&D and Sales Revenue Growth of the Served Market

(All Businesses N=2615)

Revenue Growth of the Served Market	High	14%	2.3% (N=188)	2.4% (N=210)	2.7% (N=226)	2.9% (N=238)
	Medium		0.3% (N=245)	0.7% (N=218)	0.5% (N=221)	0.9% (N=223)
	Low	6%	0.1% (N=178)	-1.4% (N=253)	-0.4% (N=218)	-0.5% (N=197)
			None	Up to 0.7%	0.7% to 2.2%	Over 2.2%
Product R&D/Total Cost of Sales, Base Period						

No. 111, November 1989

111 THE CONTRIBUTION OF PROCESS R&D TO EARNINGS GROWTH

This month's analysis of the Strategic Planning Institute (SPI) database examines the relationship between process R&D spending and growth in earnings. Results indicate that industrial product businesses often benefit when they spend more than 0.93% of their total cost of sales on process R&D.

Process R&D effects (a) whether a process patent exists and (b) the extent to which manufacturing costs are held in check relative to sales revenue growth. These are both positively associated with earnings growth. The relationship between process R&D and growth in earnings is much stronger for industrial businesses than for consumer businesses.

Relating Process R&D to Profitability

Studies of the SPI database show little association between R&D expenditures and current levels of profitability as might be expected. However, both product R&D and process R&D appear to pay off in tens of earnings growth. Product R&D was covered in the last article; this month focuses on process R&D.

Figure 152 outlines an association between process R&D and earnings growth. Process R&D should relate to whether a process patent exists and the ability of a business to contain its manufacturing costs. These should both affect earnings growth.

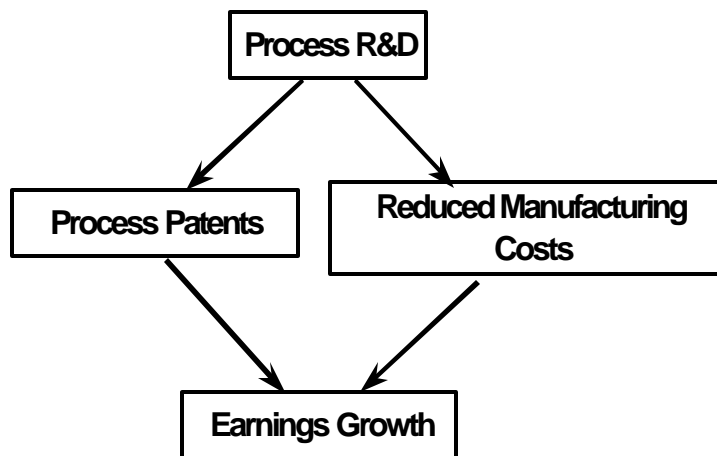


Figure 152, Relating Process R&D to Earnings Growth

As discussed last month, change in earnings is defined as pretax earnings in the second two-year period minus pretax earnings in the first two-year period expressed as a percentage of sales revenue in the first two-year period. Figures are annualized. By expressing earnings change as a percentage point change in this way, problems caused by businesses with small or negative earnings in the first two years are eliminated.

Process Patent Position

Table 322 shows how process patent position varies with expenditures on process R&D. As can be seen, a business spending over 0.9% of its cost of sales on process R&D is about twice as likely to have a process patent as one spending less.

Table 322, Process Patent Position vs. Expenditures on Process R&D
(All Businesses N=2613)

Process R&D as a Percent of Total <u>Cost of Sales, First Two</u> <u>Years</u>	<u>Percent Having</u> <u>Process Patents</u>	<u>Sample</u> <u>Size</u>
None	13%	1155
Up to 0.4%	17%	492
0.4% to 0.9%	21%	441
More than 0.9%	35%	525

The relationship between the existence of a process patent and average annual change in earnings is shown in Table 323. While a growth rate difference of about one-third a percentage point appears small, it represents about a 4% improvement in earnings each year for the average business³⁶. Compounded over time, this represents significant earnings leverage.

Table 323, Average Annual Change in Earnings vs. Process Patent Position
(All Businesses N=2613)

<u>Existence of Process</u> <u>Patent</u>	<u>Average Annual Change in</u> <u>Earnings</u>	<u>Sample</u> <u>Size</u>
No	0.79%	2109
Yes	1.13%	504

Reduced Manufacturing Costs

Manufacturing cost containment was examined by comparing growth in manufacturing and distribution costs (less cost of purchases) relative to sales revenue growth. (In the SPI database

³⁶ $1.13\% - 0.79\% = 0.34\%$ from Table 323. The average business earns an 8.45% PROS. $0.34\%/8.45\% = 4\%$

distribution costs cannot be separated from manufacturing costs.) As shown in Table 324, those businesses spending more heavily on process R&D showed almost a two percentage point difference on average between sales revenue growth and growth in manufacturing and distribution costs. This was much higher than those businesses spending lesser amounts on process R&D.

Table 324, Sales Revenue Growth Minus Mfg. & Distr. Cost Growth vs. Expenditures Process R&D

(All Businesses N=2613)

<u>Process R&D as a Percent of Total Cost of Sales, First Two Years</u>	<u>Sales Revenue Growth Minus Mfg. & Distr. Cost Growth</u>	<u>Sample Size</u>
None	0.2%	1155
Up to 0.4%	0.5%	492
0.4% to 0.9%	0.6%	441
More than 0.9%	1.9%	525

As would be expected, a very strong relationship exists between change in earnings and manufacturing and distribution cost containment. For those businesses where sales revenue increased more than five percentage points more than manufacturing and distribution costs, the average annual change in earnings is 3.6 percentage points. This relationship is shown Table 325.

Table 325, Average Annual Change in Earnings vs. Sales Revenue Growth Minus Mfg. & Distr. Cost Growth

(All Businesses N=2615)

<u>Sales Revenue Growth Minus Mfg. & Distr. Cost Growth</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
Less than -4%	-1.4%	667
-4% to 1%	0.1%	694
1% to 5%	1.2%	587
More than 5%	3.6%	667

Direct Relationship between Process R&D and Earnings Growth

Table 326 shows the direct relationship between average annual change in earnings and expenditures on process R&D. Little sensitivity is seen except at the higher level of process R&D. Those businesses spending at least 0.9% of total cost of sales on process R&D show an average annual change in earnings more than twice that of those spending less.

Table 326, Average Annual Change in Earnings vs. Expenditures on Process R&D
(All Businesses N=2613)

<u>Process R&D as a Percent of Total Cost of Sales, First Two Years</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
None	0.60%	1155
Up to 0.4%	0.82%	492
0.4% to 0.9%	0.67%	441
More than 0.9%	1.61%	525

As shown in Table 327, industrial businesses tend to benefit much more from high levels of process R&D spending than do consumer businesses.

Table 327, Average Annual Change in Earnings vs. Expenditures on Process R&D and Type of Business

Type of Business		0.5%	0.9%	-0.2%	0.7%
		(N=321)	(N=191)	(N=117)	(N=109)
Consumer					
Industrial					
	None	Up to 0.4%	0.4% to 0.9%	Over 0.9%	
Process R&D/Total Cost of Sales, Base Period					

No. 112, December 1989

112 OTHER FACTORS CONTRIBUTING TO EARNINGS GROWTH

In addition to factors discussed in the past three articles, several other factors appear to contribute to growth in earnings. Earnings growth tends to be higher when:

- There are ten or fewer competitors;
- The business is not heavily unionized;
- The business is different than competitors with respect to:
 - Backward integration;
 - Breadth of product line;
- Purchases are a small part of total cost;
- Selling expense is a large part of total cost

Change in Earnings

The past three articles examined over 2600 businesses in the Strategic Planning Institute (SPI) database and discussed factors associated with change in earnings. This article discusses six more factors, which show a significant association with earnings change.

Each business in the SPI database has four years of information. Change in earnings is defined as pretax earnings in the second two-year period minus pretax earnings in the first two-year period expressed as a percentage of sales revenue in the first two-year period. Figures are annualized. By expressing earnings change as a percentage point change in this way, problems caused by businesses with small and negative earnings in the first two years are eliminated.

Environmental Factors

The environment in which a business operates is obviously important in determining its profitability. A key factor is the number of businesses with which it must compete in its served market. Table 328 shows how the average annual change in earnings varies with the number of competitors. As can be seen, businesses with ten or fewer competitors tend to have increases in earnings greater than those with more competitors.

Table 328, Average Annual Change in Earnings vs. Number of Competitors
(All Businesses N=2615)

<u>Number of Competitors</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
Five or Fewer	0.92%	703
6 to 10	1.00%	927
11 to 20	0.73%	600
More than 20	1.59%	385

A second important factor is the degree of unionization. As Table 329 shows, businesses with more than two-thirds its work force unionized show one-third the level of earnings increase on average relative to businesses with less unionization. Unionization has previously been shown to affect level of profitability as well as change in profitability (article No. 55).

Table 329, Average Annual Change in Earnings vs. Degree of Unionization
(All Businesses N=2615)

<u>Percent of Employees Unionized</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
Up to 20%	1.11%	896
20% to 68%	1.10%	850
More than 68%	0.35%	869

Differentiating Factors

As is shown in Table 330, businesses tend to increase earnings more when they are either less or more backward integrated than competitors. Backward integration seems to be a factor where differentiation is important.

Table 330, Average Annual Change in Earnings vs. Relative Backward Integration
(All Businesses N=2615)

<u>Relative Backward Integration</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
Less than Competitors	1.14%	597
Same as Competitors	0.73%	1633
Greater than Competitors	0.95%	385

Another factor where differentiation often pays off is in the breadth of, product line relative to competitors. As Table 331 shows, businesses whose product line is either broader or less broad than competitors tend to show earnings increases greater than those having the same breadth of product line as competitors.

Table 331, Average Annual Change in Earnings vs. Relative Breadth of Product Line
(All Businesses N=2615)

<u>Relative Breadth of Product Line</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
Less than Competitors	1.09%	727
Same as Competitors	0.65%	883
Greater than Competitors	0.90%	905

Cost Mix

As Table 332 indicates, businesses whose purchase cost of raw materials and energy account for a lower percentage of total cost tend to show much higher earnings increases on average. These are businesses, which add a good deal of “value” to these purchase costs prior to their sale.

Table 332, Average Annual Change in Earnings vs. Cost of Purchases as Percent of Total Costs
(All Businesses N=2615)

<u>Purchase Costs/Total Costs in the First Two Years</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
Up to 41%	1.34%	853
41% to 57%	0.66%	885
More than 57%	0.56%	877

On the other hand, businesses whose selling expense is high as a percent of total cost tend to show higher increases in earnings on average. It must be kept in mind, however, that high selling expense is strongly related to growing markets. It was shown in article No. 109 that a strong relationship exists between change in earnings and growth of the served market. In such situations it is difficult to sort out cause and effect.

Table 333, Average Annual Change in Earnings vs. Relative Breadth of Product Line
(All Businesses N=2615)

<u>Selling Expenses/Total Costs in the First Two Years</u>	<u>Average Annual Change in Earnings</u>	<u>Sample Size</u>
Up to 5.3%	0.48%	872
5.3% to 11.6%	0.94%	867
More than 11.6%	1.14%	876

No. 113, January 1990

113 DEGREE OF PRODUCT CUSTOMIZATION

The experience of businesses in the Strategic Planning Institute (SPI) database indicates that, while it is usually profitable to have a broad line of standardized products, excessive product line “proliferation” where products are custom designed for each customer or end use application may be counterproductive.

A broad line of standardized products tends to pay off when:

- Many competitors exist in the marketplace;
- Market share is low;
- Capital intensity is medium or low;
- Product quality and manufacturing and distribution costs relative to competitors are high.

A more focused product line may be preferable when the business:

- Competes primarily on low cost rather than high quality;
- Is highly capital intensive;
- Has a strong share position with few competitors.

Discussion

Recent marketing emphasis has stressed the need to understand and serve our customers. Taken to an extreme, this can lead to a proliferation of products for each customer/end use which could conceivably be detrimental to our long-term success.

This study of the SPI database shows that in many cases profitability is best served by having a broader product line than competitors, but not custom designing products for each customer/end use. However, in many instances having a broad line of products can be counterproductive, depending on the particular market environment, competitive position, and primary means of competition.

Table 334 and Table 335 show how profitability (measured by average cash return on investment) varies by degree of product customization and other factors. The analysis is based on 2613 businesses in the SPI database. Degree of product customization is broken into the following four categories:

- Standardized products with a lower breadth of product line relative to competitors;
- Standardized products with the same relative product breadth;
- Standardized products with a higher level of product line breadth relative to competitors;
- Products custom designed for individual customers/end uses.

As can be seen in Table 334 and Table 335, average CROI tends to be highest for those businesses producing and marketing standardized products with a higher degree of product line breadth relative to competitors. The only types of businesses, which tend to do better with custom designed products are service and distributor businesses. While based only on a sample of 20 businesses, the average CROI for these businesses is 26.7%. Consumer and industrial businesses tend to be more profitable with standard products and a high breadth of product line.

Table 334, Average Cash Return on Investment (CROI) vs. Degree of Product Customization and Other Factors (Part 1)
(All Businesses N=2613)

	More or Less Standard Products Relative Product Line Breadth			Custom Designed Products
	<u>Lower</u>	<u>Same</u>	<u>Higher</u>	
All Businesses	13.1% N=577	14.1% N=766	16.9% N=715	13.5% N=555
<u>Type of Business</u>				
Consumer	13.6% N=211	15.0% N=258	17.3% N=223	12.4% N=46
Industrial	12.7% N=349	13.6% N=447	16.7% N=430	13.1% N=489
Service, Distributor	15.8% N=17	13.0% N=61	17.3% N=62	26.7% N=20
<u>Number of Competitors</u>				
5 and Fewer	13.0% N=168	17.4% N=229	18.9% N=186	14.9% N=120
6 to 10	14.4% N=192	12.6% N=290	17.0% N=256	14.5% N=188
11 or More	0.1% N=217	12.6% N=247	15.4% N=273	12.1% N=247
<u>Market Share Rank</u>				
First	22.3% N=81	19.3% N=252	19.8% N=433	17.6% N=223
Second	16.4% N=146	13.4% N=231	13.1% N=142	12.2% N=124
Third or Lower	10.7% N=350	8.4% N=283	12.1% N=140	8.9% N=208

Table 335, Average Cash Return on Investment (CROI) vs. Degree of Product Customization and Other Factors (Part 2)
(All Businesses N=2613)

	More or Less Standard Products			Custom Designed Products
	Relative Product Line Breadth			
	<u>Lower</u>	<u>Same</u>	<u>Higher</u>	
<u>Orig. Cost (P/E)/Total Costs</u>				
Low (<= 30%)	16.9% N=213	17.2% N=248	21.4% N=248	17.2% N=152
Medium (20% to 53%)	12.7% N=183	13.7% N=250	17.4% N=227	13.2% N=228
A65High (> 53%)	9.1% N=181	11.5% N=268	11.9% N=240	10.7% N=175
<u>Relative Product Quality</u>				
Low	10.5% N=266	11.4% N=293	11.8% N=151	9.8% N=164
Average	13.0% N=156	14.3% N=278	15.2% N=232	13.2% N=199
High	17.8% N=155	17.7% N=195	20.4% N=332	17.0% N=192
<u>Relative Mfg & Distr.Costs</u>				
Low	20.9% N=119	18.8% N=166	20.2% N=202	17.0% N=142
Average	14.5% N=207	13.7% N=382	16.9% N=293	13.4% N=234
High	8.3% N=251	11.1% N=218	14.0% N=220	10.9% N=179

Standardized products and higher relative breadth tend to be most profitable independent of the number of competitors. However, there is less sensitivity when facing few (up to five) competitors. With few competitors, having the same product line breadth as competitors is nearly

as good.

Findings with respect to market share position are very interesting. As can be seen in Table 334, businesses ranked first or second in market share tend to be most profitable when manufacturing and marketing standardized products with lower relative product line breadth. Those ranked third or lower tend to do best with the standardized product/higher relative breadth combination.

First ranked market share businesses tend to proliferate their product line much more than those with a lesser share position. More than five times as many first-ranked share businesses have higher relative product line breadth than have lower breadth. This situation is reversed for low-share businesses. The broad product line probably helps the high-share businesses achieve and maintain their strong share position even though it may be somewhat detrimental to profitability.

High capital-intensive businesses tend to be equally profitable selling standardized products, which are the same or higher than competitors with respect to product line breadth. Low and medium capital-intensive businesses clearly tend to do best with standardized products and a higher breadth of product line.

Whether a business chooses to compete primarily on the basis of high product quality relative to competition or on low manufacturing and distribution costs relative to competition has important implications with respect to degree of product customization. Businesses with a high level of product quality tend to do best with standardized products and a higher breadth of product line as might be expected. However, those businesses whose primary source of competitive advantage is in a strong relative cost position tend to do better when their product line breadth is lower than competitors (although higher is nearly as good and not statistically different).

In summary, a business should carefully target its market segments and serve those markets with products and services which, both meet the needs of the customers and produce adequate profitability and growth to the business. Marketing people need to be aware of the impact on manufacturing and R&D when product line additions and modifications are contemplated.

No. 114, February 1990

114 INVESTMENT INTENSITY'S TRIPLE WHAMMY

The average highly investment-intensive business in the Strategic Planning Institute (SPI) database suffers in three critical ways:

- It has a much lower level of profitability as measured by return on investment than low investment-intensive businesses;
- It must have a vastly superior edge in competitive position to obtain reasonable levels of profitability;
- High investment requirements combined with lower levels of profitability often induce businesses to relinquish competitive position.

High investment intensive businesses require exceptionally strong competitive position in high-growth markets to provide sufficient cost inflow to offset the large investment requirements.

Profit Implications

SPI publications and previous Articles have emphasized the strong negative relationship between return on investment and investment intensity (investment divided by sales revenue). For example, article No. 101 showed the relationship between cash return on investment (CROI) and sales turnover (sales revenue divided by investment) for industrial businesses. Article No. 103 discussed the relationship between CROI and elements of investment and No. 104 discussed the problems of managing capital-intensive businesses. This article extends previous findings with respect to investment intensity.

Table 336 shows the strong relationship between CROI and investment intensity. All SPI businesses were split into five approximately equal segments on the basis of investment intensity. The average CROI of the highest quintile is less than one-third the average CROI of the lowest quintile.

Table 336, CROI vs. Investment Intensity
(All Businesses N=2615)

Investment Intensity	<u>Investment */Sales Revenue</u>		<u>Average CROI**</u>	<u>Sample Size</u>
	<u>Range</u>	<u>Average</u>		
Very Low	Up to 40.4%	29.2%	25.5%	512
Low	40.4% to 53.3%	47.0%	16.6%	524
Average	53.3% to 68.4%	60.6%	13.0%	524
High	68.4% to 88.4%	77.3%	10.4%	531
Very High	Above 88.4%	119.4%	7.2%	522

*** Investment = Original Cost of Plant and Equipment + Inventories + Accounts Receivable - Current Liabilities**

**** CROI = After Tax Operating Income (ATOI), Assuming a 37% Tax Rate + Depreciation as a Percent of Investment**

Other factors which are associated with high CROI tend to be poorer on average for the highly investment-intensive businesses. As Table 337 indicates, profit margins (as measured by pretax return on sales) tend to be lower, market share tends to be lower, relative product quality tends to be lower, and relative costs tend to be higher for this highest quintile. One advantage shown in this table is that depreciation for this high quintile tends to be higher as would be expected. This, of course, benefits cash flow.

Table 337, CROI vs. Investment Intensity
(All Businesses N=2615)

Investment Intensity	Pretax Return on Sales	Depreciation/ Sales Revenue	Market Share	Relative Product Quality	Relative Direct Cost
Very Low	9.44%	1.16%	26.1%	27.9%	101.4%
Low	9.67%	1.66%	24.6%	27.0%	102.1%
Average	9.23%	2.06%	23.8%	24.3%	101.9%
High	8.15%	2.52%	23.0%	24.9%	102.7%
Very High	6.74%	4.06%	22.7%	18.9%	103.4%

Growth Implications

Loss of market share is also typically a problem for highly investment-intensive businesses, especially those which have a strong share position. As can be seen in Table 338, very high investment-intensive businesses with medium or high market share tend to lose share relative to their less investment-intensive counterparts. While differences shown are small, subtle share erosion over time can have serious long-term consequences.

Table 338, Change in Market Share vs. Investment Intensity and Market Share Position
(All Businesses N=2615)

Investment Intensity	Very Low to High	0.21% (N=682)	0.39% (N=707)	0.18% (N=704)
	Very High	0.24% (N=192)	0.11% (N=163)	-0.25% (N=167)
		Up to 13%	13% to 28%	Over 28%
Market Share				

A strong competitive position is required to help offset the high investment requirements of investment-intensive businesses. Using market share as a measure of competitive position, a simple statistical regression equation was developed from the SPI database relating cash inflow divided by sales revenue to market share, investment intensity, and served market growth on a dollar basis. The regression model determined is as follows:

$$\text{Cash Inflow/Sales Revenue} = 3.294 + .1192 \cdot \text{Market Share} + .0168 \cdot \text{Investment Intensity} + .04834 \cdot \text{Served Market Growth (dollar basis)}$$

Because many other factors influence profitability, the above equation explains only 13% of the variance in CF/Sales. However, all three factors are highly significant and the parameter estimates are “robust.”

Cash inflow based on the above equation was then related to cash outflow assuming that the sales revenue growth of the business equals the served market growth (i.e., that market share does not change on a dollar basis) and that investment intensity remains constant over time. With these assumptions, the market share required to exactly balance cash inflow and outflow can be directly related to investment intensity and market growth.

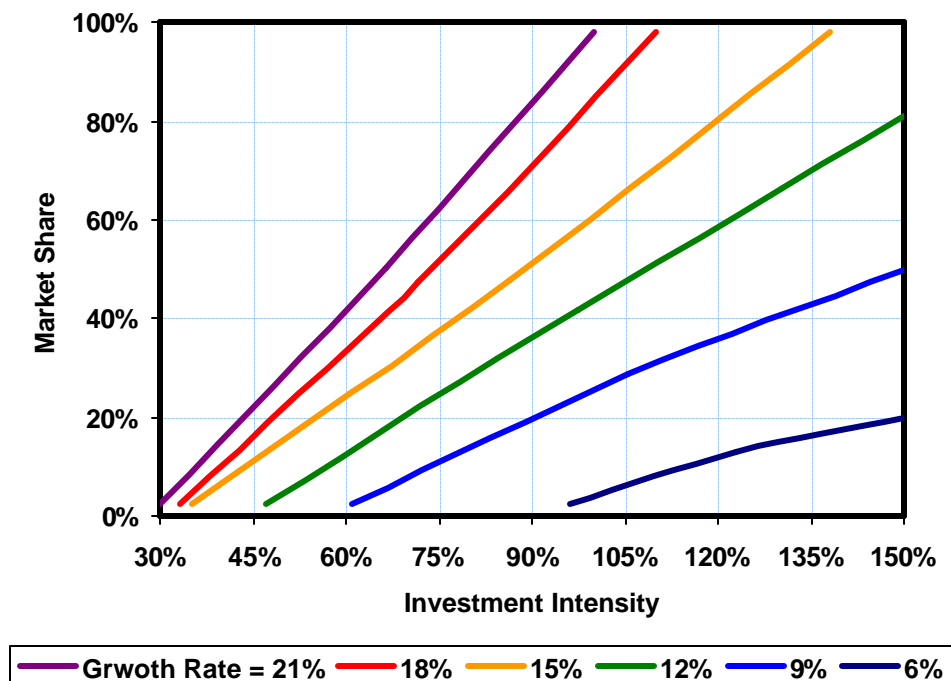


Figure 153, Market Share Required to Balance Cash Inflows and Outflows at Various Levels of Investment Intensity and Market Growth Rates for the Average SPI Business Growth Rate - Annual Percent Market and Sales Revenue Growth Rate on a Dollar Basis

Figure 153 shows this relationship and illustrates how difficult it is for highly investment-intensive businesses to offset investment requirements in high-growth markets. For example, the average SPI business with required total investment 120% of sales can offset investment requirements with a market share of only 10% in a market growing at 6%. In a market growing 15% per year, the average SPI business requires an 80% market share. The additional profit margin realized by the high market-share business is needed to provide enough earnings to offset the additional investment required to grow with the market.

Of particular significance is the fact that the “slope” of the relationships shown in Figure 153 gets steeper as growth rate increases, indicating that more and more market share is required to offset the cash-depressing impact of investment intensity as growth rates increase. This indicates the challenge our company faces in trying to achieve both growth and profitability with a portfolio of businesses consisting primarily of highly investment-intensive businesses.

No. 115, March 1990

115 GROW VS. HOLD VS. HARVEST STRATEGIES

The model used in last month's analysis of the implications of investment intensity was used to assess market share strategy. The analysis suggests that in growing markets:

- Low investment businesses should try to increase (grow) market share regardless of market position and market growth rate.
- High investment businesses should try to increase market share if they are in a strong competitive position, but should deliberately decrease (harvest) market share if they are in a weak competitive position.
- Trying to simply maintain (hold) market share is often a poorer strategy.
- Proper choice of a market share strategy is particularly important in high growth markets.

The market share objectives of any business depend, of course, on its particular market and competitive situation. For example, a market share growth strategy would be unattractive if competitive price cutting results. However, share strategies should certainly consider market share position, market growth rate, and investment requirements.

Grow vs. Hold vs. Harvest?

The last article discussed the problems associated with high investment requirements. It was shown that high investment intensive businesses require an exceptionally strong competitive position, particularly in high growth markets, to provide sufficient cost inflow to offset the large investment requirements. The analysis was based on a simple regression model as follows:

Cash Inflow/Sales Revenue = 3.294 + 0.1192 · Market Share + 0.0168 · Investment Intensity + 0.04834 · Served Market Growth (dollar basis)

This model is simplistic since only three of many important variables are considered; it does not explain much of the variance in CF/Sales. Therefore, results from the model provide only insights into average business situations and are not applicable to specific businesses without considering the many other important factors. Nonetheless, interesting insights can be gleaned from analyzing simple models such as this.

The analysis in the last article assumed that market share does not change over time; i.e., that sales revenue growth equals served market growth. This month's article extends that analysis by considering market share changes.

Discounted cash flow calculations are made based on a 12% cost of capital. Other assumptions used in the calculation procedure are summarized in the Appendix at the end of the article.

As a "base case," investment was set at 80% of sales revenue; the initial market share, 30%; and beginning market growth, 10%. Market growth is assumed to deteriorate 5% per year in the

calculations to recognize the normal maturing of markets.

Figure 1 shows the relationship between discounted cash flow and annual change in market share for the base case as well as showing the sensitivity to beginning market share. Annual market share change was constrained between -1% and 1% assuming that more drastic market share change could lead to competitive retaliation and market turbulence.

Figure 154 shows, first of all, that the strategy that maximizes discounted cash flow for the base case is a grow strategy. Also, higher levels of beginning market share provide more incentive to grow. As has been pointed out in previous articles, this is counter to most business practice which shows a regression toward the mean tendency with large share firms losing share and low share firms gaining share. The large differences in level of discounted cash flow are due to the fact that total market sales were set at \$100 Million and, therefore, sales revenue is directly proportional to market share. (For this analysis we are more interested in the shape of the curve than its level.)

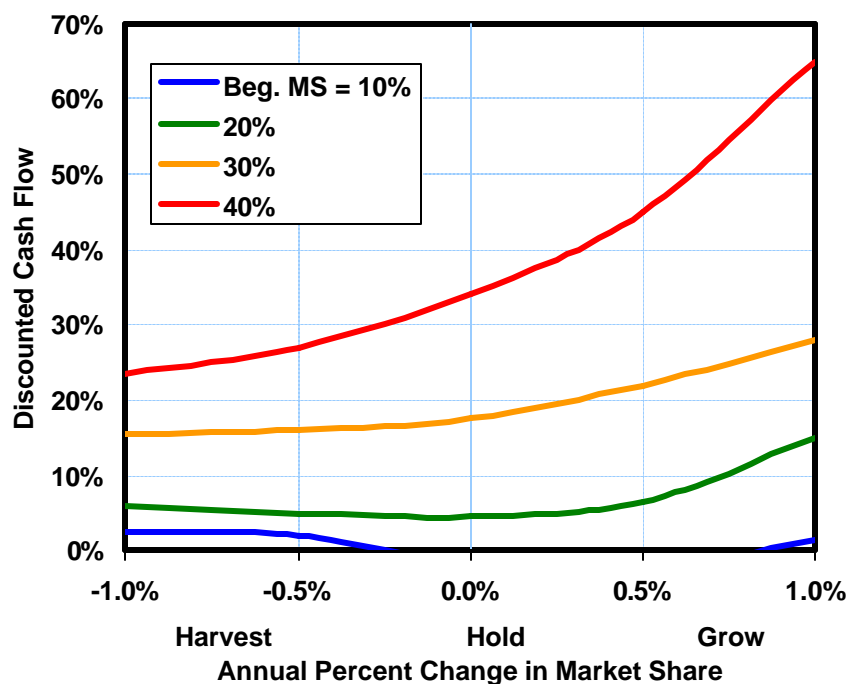


Figure 154, Discounted Cash Flow vs. Change in Market Share for Beginning Market Share as Shown, Total Investment/Sales = 80%, Beginning Market Growth Rate = 10%

Figure 155 shows the sensitivity of market share strategy to investment intensity and reinforces findings from the last article. At low levels of investment intensity grow strategies dominate and at high levels of investment intensity harvest strategies dominate.

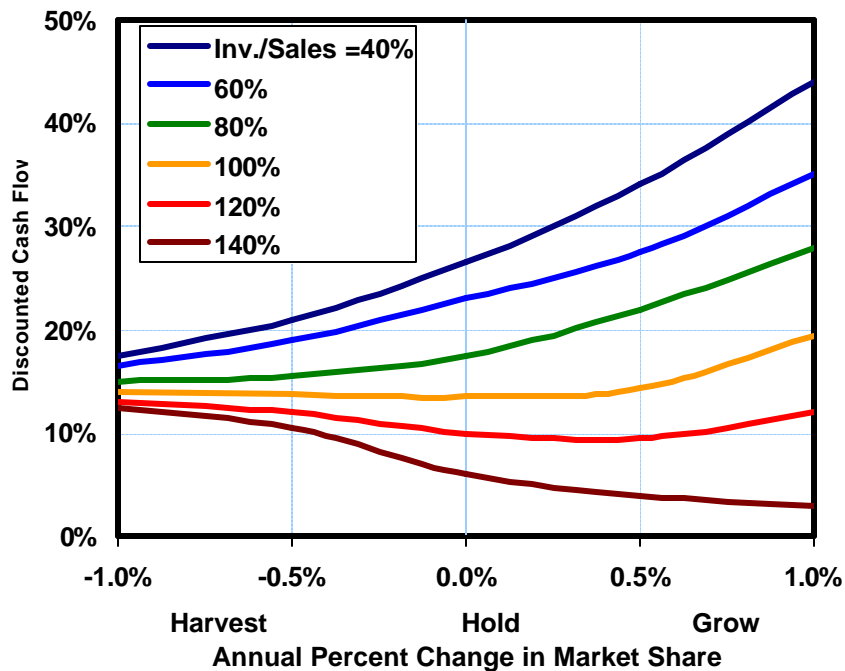


Figure 155, Discounted Cash Flow vs. Change in Market Share for Beginning Market Share = 30%, Total Investment/Sales as Shown, Beginning Market Growth Rate = 10%

Figure 156 shows the sensitivity to the beginning market growth rate. Results are least sensitive to beginning market growth rate; all five levels shown indicate that a grow strategy is best, but note that higher growth rates increase the benefits of a grow strategy since the curve becomes steeper.

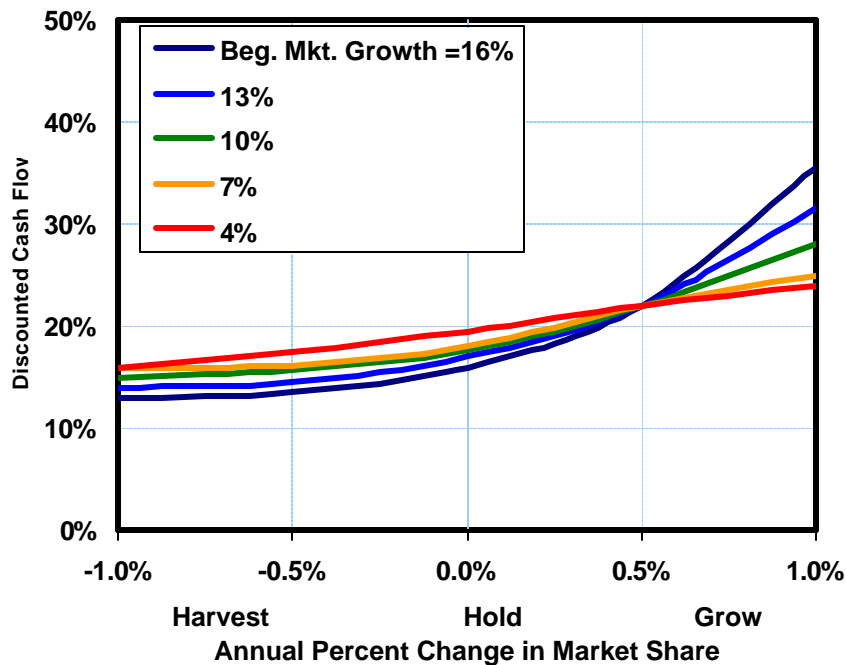


Figure 156, Discounted Cash Flow vs. Change in Market Share for Beginning Market Share = 30%, Total Investment/Sales as Shown, Beginning Market Growth Rate = 10%

Note that in the three previous figures the relationship between discounted cash flow and change in market share tends to form the shape of a “dish.” This indicates that either “harvest” or “grow” strategies will dominate “hold” strategies and that it is important to make decisions with respect to market share strategy for every business. A hold strategy can be justified, however, if evidence exists that changing market share can upset competitive equilibrium and lead to retaliation and market turbulence. For example, this might happen with commodity products in low growth markets where market shares often tend to be about equal to capacity shares.

Again, remember that these results are for an “average” business; the model is too simplistic to apply the findings directly to individual businesses.

Appendix: Calculation Procedure Assumptions

- A 12% cost of capital is used to discount future cash flows.
- Market growth rate declines 5% each year (e.g., if first year growth is 12%, the second is 11.4%).
- Market share cannot exceed 80%.
- Increments of investment are added each year to maintain the specified investment/sales ratio.

- However, investment cannot be “sold” if sales decline.
- Cash inflow depends only on market share, investment intensity, and market growth as follows:
- **Cash Inflow/Sales Revenue = $3.294 + 0.1192 \cdot \text{Market Share} + 0.0168 \cdot \text{Investment Intensity} + 0.04834 \cdot \text{Served Market Growth (dollar basis)}$ ***
- Sales revenue of the total market is set at \$100 Million in the base year.

No. 116, April 1990

116 PRODUCT QUALITY, COST POSITION, AND MARKET SHARE STRATEGY

A conclusion from the last article is that most businesses should either try to increase or decrease market share rather than simply maintain the same market share position. This article develops a set of “indifference curves” which suggest -- for different combinations of beginning market share and investment intensity -- whether a business should try to increase or decrease its share position.

The beginning market share position needed to justify a market share growth strategy is lower when:

- Investment intensity is low;
- Market growth is low;
- Product quality relative to competitors is high;
- Manufacturing and distribution costs relative to competitors are low.

Graphs are shown which quantify these relationships.

An important implication of these results is that it is very difficult to justify new entry into investment intensive businesses. Such new entry will normally require a competitive position and market environment that will result in strong early market share position in order to achieve a reasonable cash return on investment.

Market Growth Rate

The last two articles have looked at the profitability and market share strategy implications of combinations of beginning market share, investment intensity, and market growth for the average business based on the following simple regression equation calibrated from the Strategic Planning Institute (SPI) database:

Cash Inflow/Sales Revenue = 3.294 + 0.1192 · Market Share + 0.0168 · Investment Intensity + 0.04834 · Served Market Growth (dollar basis)

The calculation procedure assumptions used to determine discounted cash flow for different annual percentage point change in market share are shown in the appendix of the last article.

Indifference curves can be developed by finding the beginning market share for different levels of investment intensity where the discounted cash flow is the same when losing 1% market share per year vs. gaining 1% market share per year. Because of the shape of the curve shown in the last article was concave upward), discounted cash flow will be greater than when following a “hold” strategy.

Figure 157 shows this relationship for three different levels of market growth rate. As an

example, the bottom curve shows that a business whose market is growing 4% per year on a dollar basis and which requires \$1.20 of new investment for each new dollar of sales should try to gain share if its current share is above 26%, but should otherwise try to decrease share. (The greater the differential from this indifference point, the greater the incentive to grow or harvest.) This assumes that the business is average with respect to other factors, which influence profitability and that market share changes do not incur strong competitive reaction.

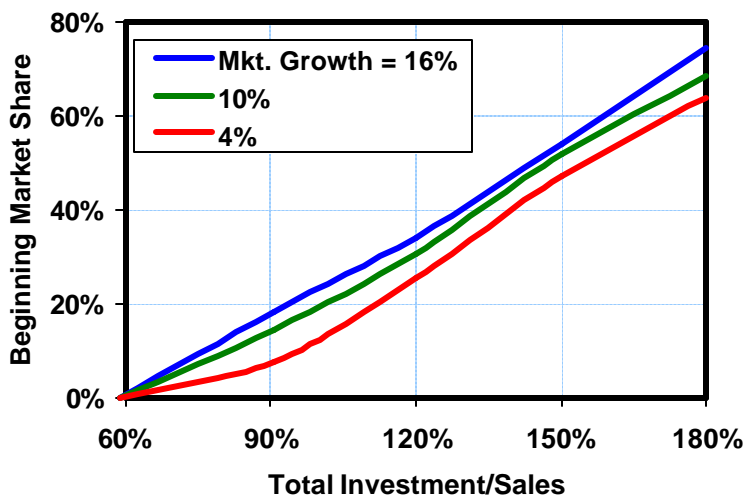


Figure 157, Relationship between Beginning Market Share and Total Investment/Sales showing Indifference Between Growth and Harvesting for Average SPI Business at Specified Annual Market Growth Rates

Relative Product Quality

As was pointed out last month, the equation upon which these analyses are based includes only three factors and explains only 13% of the variance in CF/Sales. As has been discussed in several previous articles, relative product quality and relative costs are important profit correlates. A regression equation was developed which includes these two factors as well as the previous three. This new model increases explained variance to 18%.

From this new equation the effect of relative product quality was determined and is plotted in Figure 158. The figure is similar to the one shown previously except that it uses the extended model and assumes that market growth rate is 10% and manufacturing and distribution costs are equal to that of leading competitors.

As an example, the figure shows that the average business with investment intensity of 120 requires more than 42% beginning market share to justify growing if it is a true commodity product with no product quality advantage relative to leading competitors. However, it requires only a 28% beginning market share if 60% more of its customers perceive to be superior to competition than perceive it to be inferior. (Relative product quality is defined by subtracting the

percent inferior from the percent superior after dividing all sales into percent superior, percent about the same, and percent inferior based on perceptions of customers.)

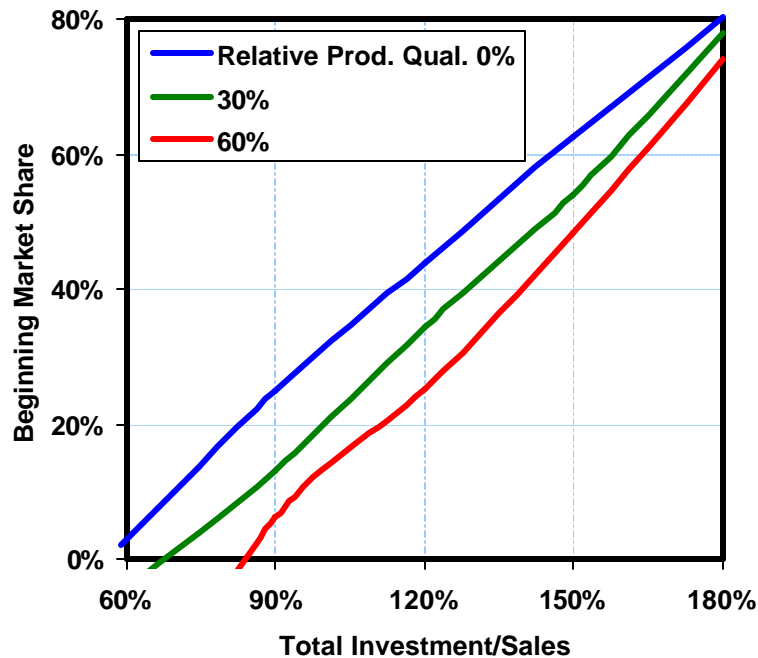


Figure 158, Relationship between Beginning Market Share and Total Investment/Sales showing Indifference Between Growth and Harvesting for Average SPI Business at Specified Levels of Relative Product Quality, 10% Market Growth and Mfg. & Distr. Costs Equal to Leading Competitors

Relative Cost Position

Figure 159 shows a similar analysis based on differences in manufacturing and distribution costs relative to leading competitors. This analysis assumes a 10% dollar basis growth rate and a 30% relative product quality. As the figure shows, businesses in a better cost position relative to competition require a much lower beginning market share to justify growth strategy than those with poorer relative costs.

Figure 158 and Figure 159 indicate how difficult it is to justify new entry into an investment intensive business. Such new entry must normally be based on a competitive position and market environment which promises strong market share position early --well beyond the 1% share change assumed in these analyses -- in order achieve reasonable cash return on investment.

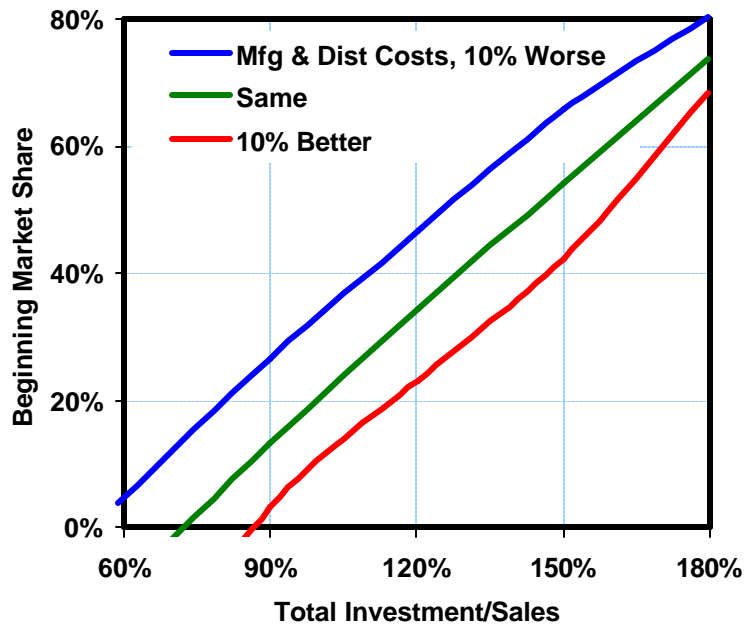


Figure 159, Relationship between Beginning Market Share and Total Investment/Sales showing Indifference Between Growth and Harvesting for Average SPI Business at Specified Levels of Mfg. & Distr. Costs, 10% Growth Rate, and 30% Relative Product Quality

Once again, caution must be taken in using these graphs since any business situation will include many other factors. However, the SPI database can be very helpful by tailoring this kind of analysis for a particular business, which is pondering the question of appropriate market share strategy.

No. 117, May 1990

117 WHEN CAN BOTH MARKET SHARE AND MARGIN INCREASE SIMULTANEOUSLY?

Many business managers assume that price-cutting is required to increase market share. Analysis of businesses in the Strategic Planning Institute (SPI) database reveals that share gain often occurs in concert with price enhancement. Businesses are most likely to gain both share and margin when:

- The market served is growing slowly or declining;
- Initial profit margins are low;
- Current cost inflation is relatively low.

This suggests that low margin businesses in mature and declining market segments should be taking advantage of the lower cost inflation, which has existed for the past few years to improve their market share and margin positions.

Change in Market Share and Margin

The last two articles have stressed the need to consider business position, investment intensity, and market growth in determining what type of market share strategy to pursue. Equally important are the likely actions of competitors in reaction to market conditions. While it is often assumed that price-cutting is required to gain share, the SPI database shows that share gain actually occurs more often with price enhancement than with price erosion.

This is shown in Table 339, which relates the average annual percentage point change in earnings to change in market share and change in price relative to cost. Each of the two independent variables were broken into three approximately equal segments. (The “breakpoints” for change in market share were -0.15% and 0.66%; the breakpoints for change in price relative to cost were -2.42% and 0.53%.)

Figure 1 shows, first of all, that change in earnings is highly sensitive to both change in market share and change in margin. Numbers shown are percentage point movements from the base level of sales. The 306 businesses showing both share gain and price enhancement average 3.4% in change in earnings based on initial sales. For the average business this represents about a 40% increase in earnings.

Equally important, there are more businesses in this “cell” than in the combination share gain/price erosion cell. Note also that there are slightly more businesses showing share loss/price erosion than share loss/price enhancement. Thus the correlation between change in market share and change in price relative to cost is slightly positive.

Table 339, Average Annual Change in Earnings vs. Change in Market Share and Change in Price Relative to Costs
(All Businesses N=2610)

Change in Market Share	Share Gain	1.0% (N=260)	1.8% (N=300)	3.4% (N=306)
	Share Maintenance	0.0% (N=285)	0.5% (N=305)	1.5% (N=260)
	Share Loss	-1.0% (N=310)	-0.1% (N=293)	0.6% (N=291)
		Price Erosion	Price Maintenance	Price Enhancement

Change in Price Relative to Costs

An investigation of the conditions under which share gain is more likely to be associated with price enhancement shows that the market environment in which the business operates makes a big difference. Of particular importance is market growth. Table 340 shows the average annual percent growth in physical volume for the market share/margin change combinations. High growth businesses are much more likely to show the share loss/price erosion combination than the share gain/price enhancement combination. Thus it appears easier to get market share and margin increases in lower growth markets.

Table 340, Real Growth vs. Change in Market Share and Change in Price Relative to Costs
(All Businesses N=2610)

Change in Market Share	Share Gain	4.2%	2.3%	0.0%
	Share Maintenance	5.3%	2.3%	0.0%
	Share Loss	7.4%	5.6%	3.7%
		Price Erosion	Price Maintenance	Price Enhancement
Change in Price Relative to Costs				

A second important factor is the initial level of margin. Table 341 shows the average annual beginning percent pretax return on sales depending on share and margin change. Note that the share gain/price enhancement combination is more likely to be associated with lower beginning levels of margin.

Table 341, Initial Pretax Profit Margin vs. Change in Market Share and Change in Price Relative to Costs
(All Businesses N=2610)

Change in Market Share	Share Gain	9.4%	9.3%	6.9%
	Share Maintenance	8.7%	6.3%	8.2%
	Share Loss	10.8%	8.0%	8.6%
		Price Erosion	Price Maintenance	Price Enhancement
Change in Price Relative to Costs				

A third factor is the current level of cost inflation. Table 342 shows how average annual percent change in total costs vary with change in market share and change in margin. Note that it is

slightly easier to enhance prices relative to costs when cost inflation is lower.

Table 342, Cost Inflation vs. Change in Market Share and Change in Price Relative to Costs
(All Businesses N=2610)

Change in Market Share	Share Gain	10.8%	8.0%	7.4%
	Share Maintenance	10.1%	8.0%	8.2%
	Share Loss	10.7%	8.1%	8.4%
		Price Erosion	Price Maintenance	Price Enhancement
Change in Price Relative to Costs				

It thus appears easier to gain share and to enhance prices when market growth is low and margins are low. The lower cost inflation of the past 5 years has given businesses with low growth and margin the opportunity to become more profitable and more competitive.

Results also imply that high margin businesses in growth markets need to work particularly hard to maintain their share and margin positions.

No. 118, June 1990

118 THE REWARDS FOR AGGRESSIVE PRICE INCREASES

The last article pointed out that share gain often occurs in concert with price enhancement. Many businesses sense opportunities for price increases and find competitors following more often than not (see article No. 82). Because of this, there is a strong association between increased earnings and the increase of selling price relative to unit cost.

Earnings increases tend to be especially correlated with higher relative price increases for:

- Businesses with low marketing intensity;
- Businesses with high capital intensity;
- Ingredient material suppliers;
- Businesses later in their life cycle;
- Businesses serving few direct customers;
- Businesses selling in large sales transaction amounts.

Relating Earnings and Share Change to Price Aggressiveness

Table 343 shows the strong correlation that exists between change in earnings and price aggressiveness as measured by the difference between change in selling price and change in unit cost. The earnings changes shown are percentage point movements from a base level of sales. As mentioned last month, a 3.4 percentage point increase -- that exhibited by the top 10% -- represents about a 40% increase in earnings for the average business.

Note also in the table that the percent of businesses losing market share actually declines as a business becomes more price aggressive up to the most aggressive 10%. While there will be many exceptions, at least on average only very price aggressive businesses have a tradeoff to make between short-term earnings and more vulnerability to loss of market share.

Table 343, Change in Earnings and Percent of Businesses Losing Market Share vs. Price Aggressiveness

Change in Selling Price Minus Change in Unit <u>Cost</u>	Average Annual Percentage Change in <u>Earnings</u>	Percent of Businesses Losing Market Share
Below -6.19%	-1.0%	37%
-6.19% to -4.32%	0.1%	35%
-4.32% to -2.89%	0.6%	37%
-2.89% to -1.85%	0.6%	33%
-1.85% to -0.80%	0.3%	36%
-0.80% to -0.14%	0.9%	31%
-0.14% to 0.12%	1.0%	30%
0.12% to 1.86%	1.0%	32%
1.86% to 4.04%	1.4%	31%
Above 4.04%	3.4%	40%

Earnings Leverage Depending on Business Situation

The amount of leverage that price aggressiveness has on change in earnings varies depending on the characteristics of the business. Two key factors are the marketing intensity and the capital intensity of the business.

Table 344 shows how change in earnings varies depending on marketing intensity (measured by selling expense as a percent of sales) and price aggressiveness.³⁷ Note that there is more difference in change in earnings moving from price erosion to price enhancement for low marketing intensive businesses than there is moving from price erosion to price enhancement for high marketing intensive businesses. This suggests that low marketing intensive businesses typically have more to gain (relatively) by becoming more price aggressive, i.e., increasing price more relative to cost inflation.

³⁷ The price aggressiveness scale was developed by simply partitioning the database into three approximately equal segments based on selling price change minus change in unit cost.

Table 344, Average Annual Change in Earnings vs. Marketing Intensity and Change in Price Relative to Costs
(All Businesses N=2610)

Selling Expense as a Percent of Sales	High	0.8% (N=254)	1.1% (N=266)	1.9% (N=311)
	Medium	0.2% (N=306)	0.8% (N=330)	1.8% (N=299)
	Low	-1.1% (N=296)	0.4% (N=276)	2.0% (N=275)
		Price Erosion	Price Maintenance	Price Enhancement

Change in Price Relative to Costs

Table 346 shows a similar chart with respect to capital intensity. Here there seems to be somewhat more leverage at high levels of capital intensity judging by the difference for price enhancement relative to that for price erosion.

Table 345, Average Annual Change in Earnings vs. Capital Intensity and Change in Price Relative to Costs
(All Businesses N=2610)

Original Cost of Plant & Equipment as a Percent of Sales	High	0.0% (N=355)	1.4% (N=236)	2.6% (N=291)
	Medium	0.0% (N=279)	0.6% (N=318)	1.4% (N=294)
	Low	-0.3% (N=222)	0.4% (N=318)	1.6% (N=300)
		Price Erosion	Price Maintenance	Price Enhancement

Change in Price Relative to Costs

The combination of these two effects is illustrated in Table 346, which shows average change in earnings by type of business and price aggressiveness. The biggest difference between price enhancement and price erosion occurs among ingredient material producers. These tend to have low marketing intensity and high investment intensity.

Capital goods businesses are also relatively sensitive to price aggressiveness, but consumer products, consumables, and service and distributor businesses are much less sensitive. These latter three categories tend to have high marketing intensity and low investment intensity.

Table 346, Average Annual Change in Earnings vs. Type of Business and Change in Price Relative to Costs
(All Businesses N=2610)

Type of Business	Consumer Products	0.1% (N=203)	0.5% (N=248)	0.9% (N=287)
	Capital Goods	1.0% (N=111)	0.6% (N=147)	3.2% (N=152)
	Ingredients	-0.6% (N=364)	0.8% (N=299)	2.5% (N=287)
	Consumables	0.3% (N=136)	1.0% (N=113)	1.5% (N=106)
	Service, Distr.	-0.2% (N=42)	0.4% (N=65)	0.7% (N=53)
		Price Erosion	Price Maintenance	Price Enhancement
Change in Price Relative to Costs				

There also seems to be increased sensitivity as a business moves from growth to maturity to decline. Earnings increases tend to be higher for introductory and growth businesses, but the difference between price enhancement and price erosion is less than it is in the mature and decline stages. This suggests that a business should become more price aggressive over the product life cycle. These conflicts with the notion that potential loss of share makes it

unprofitable to raise price, as a business becomes more “commodity-like.”

Table 347, Average Annual Change in Earnings vs. Life Cycle Stage and Change in Price Relative to Costs
(All Businesses N=2610)

Life Cycle Stage	Introduction & Growth	1.3% (N=200)	1.8% (N=169)	2.8% (N=168)
	Maturity	-0.4% (N=607)	0.4% (N=656)	1.7% (N=663)
	Decline	-1.5% (N=49)	1.1% (N=47)	1.5% (N=54)
		Price Erosion	Price Maintenance	Price Enhancement
Change in Price Relative to Costs				

While the figures are not shown, earnings are more sensitive to price aggressiveness for businesses serving few direct customers and those selling in large transaction amounts. This corresponds with previous findings since these types of businesses are more likely to be more capital intensive and less marketing intensive.

No. 119, July 1990

119 MARKETING VS. INTENSIVE BUSINESSES

Businesses in the Strategic Planning Institute (SPI) database tend to be either marketing intensive or capital intensive but not both. Cash return on investment (CROI) tends to be significantly higher for businesses which have a high ratio of selling expense (marketing intensity) divided by the original cost of plant and equipment (capital intensity). Thus, to the extent possible, it is generally better to be marketing intensive rather than capital intensive.

Across the data base consumer products, capital goods, and service and distributor businesses tend to be more marketing intensive. However, industrial material businesses, of which Du Pont has many, tend to be capital intensive. Interestingly, industrial material businesses, which are more marketing and less capital-intensive show relatively higher levels of CROI.

In addition, more profit leverage tends to exist for businesses, which are more marketing intensive when they have high market share and fewer competitors. Many of our businesses have these characteristics. This suggests that we should seek to increase our portfolio toward marketing intensive and less toward capital intensive businesses.

Relating CROI to Marketing and Capital-Intensity

Previous articles have pointed out how difficult it is to achieve acceptable levels of CROI with capital intensive businesses (see, e.g., article No. 104). Also, the strong correlation that exists between selling expense growth and growth in sales and profitability have been pointed out (see article No. 80 and No. 108).

Table 348 shows the strong negative relationship between CROI and capital intensity. At all three levels of selling expense as a percent of cost of sales, CROI is much higher when the original cost of plant and equipment as a percent of cost of sales is low. The “break point” shown divides each of the dimensions in approximately equal segments.

As Table 348 also shows, it is generally better when selling expense is a larger fraction of the “cost mix.” This is especially true for businesses with medium levels of capital intensity.

Table 348 also shows that marketing intensive businesses tend not to be capital intensive and vice versa. Note that many more businesses exist in the upper left and lower right cells than exist at the other two corners.

Table 348, CROI vs. Marketing Intensity and Capital Intensity

Selling Expense/ Cost of Sales	High	19.0% (N=381)	16.7% (N=320)	11.9% (N=170)
	Medium	17.6% (N=283)	13.8% (N=320)	11.9% (N=262)
	Low	18.0% (N=197)	11.8% (N=248)	10.0% (N=432)
		30%	53%	
		Low	Medium	High
Original Cost of Plant and Equipment				

The net effect of these profit relationships is shown in Table 349, which lists six levels of the ratio of selling expense to the original cost of plant and equipment expressed as a percent. As Table 349 shows, CROI is strongly related to this ratio which is driven more by capital intensity than by marketing intensity.

Table 349, CROI vs. Marketing Intensity Divided by Capital Intensity

<u>Selling Expense Divided by Original Cost of Plant and Equipment</u>	<u>Average Cash Return on Investment</u>	<u>Sample Size</u>
Below 5.3%	10.2%	435
5.2% to 11.1%	12.8%	436
11.1% to 20.3%	13.3%	432
20.3% to 34.3%	15.2%	440
34.3% to 62.2%	15.8%	437
Over 62.2%	19.9%	433

Table 350 divides the data base into four types of businesses. While all four types show some sensitivity between CROI and marketing vs. capital intensity, the difference is more pronounced for industrial material businesses than consumer product or capital goods businesses.

However, industrial material businesses tend to be much more capital intensive. For these types of businesses more than three times as many appear in the capital-intensive cell than in the marketing intensive cell. For the other three classes of business there are more in the marketing

intensive cell relatively.

Table 350, Average CROI vs. Type of Business and Selling Expense/Original Cost of Plant & Equipment

Type of Business	Consumer Products	11.4% (N=110)	12.7% (N=250)	17.9% (N=378)
	Capital Goods	9.7% (N=40)	12.7% (N=164)	14.9% (N=206)
	Industrial Materials	11.8% (N=660)	15.3% (N=434)	19.6% (N=211)
	Services, Distributors	9.7% (N=61)	21.7% (N=24)	20.8% (N=75)
		11.1%		34.3%
		Low (Capital Intensive)	Medium	High (Marketing Intensive)

Selling Expense/Original Cost of Plant and Equipment

Table 351 shows the relationship between market share rank and marketing vs. capital intensity. As this figure shows, an enormous difference in the sensitivity of CROI exists depending on market share rank. Very little sensitivity is shown for low market position businesses. However, more than 11 percentage points of CROI advantage exist on average for first ranked businesses depending on whether they are marketing intensive or capital intensive. Thus, it appears that larger share businesses have much more to gain by becoming more marketing and less capital intensive. Looking at it another way, marketing intensive businesses have more to gain by having strong market share positions.

Table 351, Average CROI vs. Market Share Rank and Selling Expense/ Original Cost of Plant and Equipment

Market Share Rank	First	12.1% (N=298)	17.9% (N=361)	25.7% (N=330)
	Second	11.6% (N=230)	13.1% (N=204)	16.8% (N=209)
	Third or Lower	9.0% (N=343)	10.7% (N=307)	10.6% (N=331)
		11.1%		34.3%
		Low (Capital Intensive)	Medium	High (Marketing Intensive)

Selling Expense/Original Cost of Plant and Equipment

A similar though not as strong a finding exists when looking at the number of competitors vs. the degree of marketing vs. capital intensity. This is shown in Table 352. As the number of competitors decreases, CROI tends to become more sensitive to the degree of marketing intensity. For businesses with five or fewer competitors, marketing intensive businesses on average have more than 8.5% percentage points of CROI advantage over capital intensive businesses.

Table 352, Average CROI vs. Type of Business and Selling Expense/Original Cost of Plant and Equipment

Number of Competitors	Up to 6	12.1% (N=274)	17.0% (N=202)	20.8% (N=227)
	6 to 10	11.6% (N=305)	14.8% (N=314)	17.4% (N=307)
	11 to 20	11.6% (N=189)	13.1% (N=201)	17.2% (N=210)
	More than 20	9.3% (N=103)	11.1% (N=155)	14.7% (N=126)
		<div> <div>11.1%</div> <div>34.3%</div> </div>		
		<div> <div>Low (Capital Intensive)</div> <div>Medium</div> <div>High (Marketing Intensive)</div> </div>		
		Selling Expense/Original Cost of Plant and Equipment		

Editor's Note: Top Category originally read "Up to 5" then "6 to 10" this was changed for close the gap.

No. 120, August 1990

120 MANAGING HIGH-SHARE, MARKETING-INTENSIVE BUSINESSES

As discussed in the last article, high-share marketing-intensive businesses tend to earn high levels of cash return on investment. Table 351 in that article showed that 330 SPI businesses ranked first in market share and with selling expense exceeding 34.3% of the original cost of plant and equipment had an average CROI of 25.7%, almost twice the average of the other database businesses.

In examining these businesses further, it was found that two-thirds of them exceeded a 15% CROI. Half these businesses are consumer product, service, or distributor businesses; the other half are industrial businesses. However, over half of these are capital goods businesses and only 1% of them are producers of raw and semifinished materials.

High values of CROI tend to be associated with the normal profit correlates. Having a dominant market share position relative to competition is particularly important. Other key factors are high relative product quality, low relative direct cost, high capacity utilization, and low investment. In addition, these businesses tend to have higher levels of CROI when they have few competitors, when selling expense is a larger part of the cost mix, and when they have a narrow product line.

Relating CROI to Business Characteristics

Table 353 shows the average value of CROI for high-share marketing intensive businesses opposite key correlating business characteristics. These are the 330 Strategic Planning Institute (SPI) businesses shown in the upper right-hand cell of Table 351 in last month's article. These businesses have a mean level of CROI of 25.7%, a median level of 21.2%, and a standard deviation of 21.2%. Eighty-four percent of them have a CROI exceeding 10%, while two-thirds exceed 15%.

Perhaps most noteworthy in Table 353 is the fact that even doing poorly on the key correlating characteristics still results on average in an above average level of CROI. This is in marked contrast to capital intensive businesses. Article No. 104 showed how difficult it is for capital intensive businesses to earn above average levels of CROI.

The importance of a dominant relative market share position is shown in Table 353. While all of these businesses were first ranked in their market, one-third of them (111) had a market share position exceeding 144% of the total of the shares of their three largest competitors. These have an average CROI of 33.1%. The association between CROI and relative product quality, relative direct cost, capacity utilization, and both permanent and working capital investment is also shown. These relationships are typical of similar relationships for other types of businesses although the leverage of high capacity utilization and low working capital is somewhat stronger for these businesses.

High-share marketing intensive businesses tend to do best when they have five or fewer competitors; 113 such businesses average 29.3% CROI. This is perhaps because there are fewer

competitors to chip away at the various market niches that high share businesses tend to occupy; high share businesses are often most vulnerable to niche strategies on the part of smaller competitors.

Table 353 indicates that CROI for these kinds of businesses tends to be somewhat higher when selling expense is a larger percent of the total cost mix. This ties back to the strong relationship between CROI and market share; high levels of selling expense are typically needed to hold existing business and attract new business.

Surprisingly, the businesses that do the best are those which have a breadth of product line less than that of leading competitors. A focused product line allows a business to better concentrate its resources in situations where market and competitive conditions allow it to achieve a dominant share with fewer product types than competitors. Note by the way that the vast majority of these high-share marketing intensive businesses have a broader product line than competition. Many high profit businesses tend to want to add products and sometimes get caught in the trap of adding products that are only marginally profitable.

Table 353, Average CROI for High Share, Marketing Intensive Businesses vs. Various Characteristics
(N=330)

	Low	Medium	High
Relative Market Share (79%, 144%)*	21.0% (N=111)	23.0% (N=108)	33.1% (N=111)
Relative Product Quality (25%, 49%)	24.2% (N=103)	23.0% (N=117)	30.1% (N=110)
Relative Direct Costs (99%, 102%)	29.1% (N=98)	27.1% (N=125)	21.1% (N=107)
Capacity Utilization (68.7%, 81.2%)	21.6% (N=109)	25.7% (N=111)	29.8% (N=110)
Original Coat, Plant & Equip./ Cost of Sales (17.8%, 30.1%)	27.2% (N=110)	28.2% (N=111)	21.7% (N=109)
Working Capital/Cost of Sales (35.7%, 48%)	32.7% (N=109)	24.8% (N=110)	19.8% (N=111)
Number of Competitors (5.5, 10.5)	29.3% (N=113)	24.5% (N=121)	23.1% (N= 96)
Selling Expense/Cost of Sales (12.5%, 19.2%)	24.4% (N=112)	25.1% (N=108)	27.7% (N=110)
Relative Breadth of Product Line (Less, Same, Broader)	32.9% (N=41)	23.6% (N=91)	25.2% (N=198)

* Indicates "break-points" values which separates low from medium and medium from high

In sum, it appears typical to earn high levels of CROI with high share, marketing intensive businesses. Achieving even higher levels of CROI is usually accomplished by:

- Developing and holding a very high share position compared to your leading competitors;
- Focusing on both high quality products and low costs relative to competition;
- Operating at high levels of capacity utilization;
- Containing investment, especially working capital;
- Being aggressive in keeping competitors out of your markets and spending adequately on marketing;
- Keeping the product line narrow and focused.

No. 121, September 1990

121 CORPORATE SUCCESS

Before reading ahead, rank order the following *six* companies on the basis of total shareholder return during the past ten years: DuPont, Exxon, Ford, IBM, Kodak, Westinghouse.

John B. Clark in his recent book, 'Marketing Today: Success, Failures, cites nine factors he finds are major contributors to company success and failure. They can be grouped into the following four categories:

- Marketplace understanding and adaptation;
- Providing appropriate offerings;
- Having a strong competitive strategy and position;
- Being an efficient, focused operation.

An examination of the return to shareholders in 30 major U.S. companies during the past ten years lends credence to Clark's findings.

While sales growth tends to be correlated with shareholder return, it does not guarantee it. Nor does lack of sales growth guarantee poor shareholder return.

Corporate Success

Nine key reasons for company failure are summarized in Table 354. Having insufficient market information or not properly using the market information that exists seems to be a problem common to several items on the list. Understanding the business, competitive, and market situation and properly acting upon it is obviously critical for all businesses.

Table 354, Reasons for Company Failure

- Failure to adjust to changing times.
- Improper handling of the market.
- Failure to introduce new products.
- Failure to terminate products, lines of products, or whole divisions.
- Lack of a favorable image.
- Lack of a marketing orientation.
- Over-diversification.
- Lack of a competitive strategy.
- Improper implementation of the business functions.

Reference: Marketing Today: Success, Failures, and Turn-arounds by John B. Clark, Prentice Hall, 1987.

Table 355 rank orders 30 major U. S. companies on the basis of maximum shareholder return during the past ten years. Shareholder return is calculated on the basis of the present value of equal amounts invested in each company at average prices in 1979. It includes change in stock value per share and dividends paid with dividends assumed to be reinvested at 8% compounded annually.

Table 355 Rank Order of 30 Major U. S. Companies on Maximizing Shareholder Return during Past Ten Years (1970's)

1. Philip Morris	16. United Technologies
2. Merck	17. Alcoa
3. Exxon	18. International Paper
4. Westinghouse	19. Dow
5. Coca-Cola	20. Goodyear
6. McDonald's	21. Union Carbide
7. Boeing	22. Kodak
8. GE	23. USX
9. Ford	24. GM
10. P&G	25. IBM
11. Monsanto	26. Digital Equipment
12. Chevron	27. Allied Signal
13. Texaco	28. Xerox
14. 3M	29. Bethlehem Steel
15. Du Pont	30. Navistar

Note: Shareholder return includes (1) change in stock value per share adjusted for splits and (2) dividends paid with dividends assumed to be reinvested at 8% compounded annually.

Editor's Comment: It would be interesting to see what the list would look like today. Many of these companies clearly would no longer in on this list.

Table 355 may be somewhat surprising. I suspect many people would have expected Exxon and Ford to be much lower on the list and Kodak, IBM, and Digital Equipment to be much higher.

It is also useful to look at the best and worst companies in Table 355 opposite the factors in Table 354 and try to understand the reasons for their success and failure. Philip Morris is clearly a company that has done an excellent job of diversification into the food industry with the large cash flow it receives from tobacco. Philip Morris, Merck, Coca-Cola, McDonald's, and Boeing appear to be well-focused companies which are marketing oriented and use a competitive

strategy to drive success in their key core business areas. Allied Signal is perhaps a company which has lost focus and over-diversified.

Navistar (formerly International Harvester) and the steel and auto companies have been accused of failing to adjust to changing times. The difference between Ford and General Motors is interesting, of course. Ford has done a better job of more quickly understanding what the market wanted, driving product quality, and developing a competitive strategy.

Lack of a favorable image is an interesting dimension. Union Carbide, of course, was hurt considerably by the unfortunate accident in Bhopal. Merck is a company, which has an exceedingly fine image. However, Philip Morris has a highly variable image. While it is admired by many for its strong financial performance, it has a poor image among the general public (based on research by Opinion Research Corp.).

Xerox is a corporation that, in the 1970's, lost competitive advantage and market share. They are in the process of turning their company around, but shareholders have not yet been rewarded. They have gained market share, recently won the Malcolm Baldrige National Quality Award, and perhaps are positioned for more success in the 1990's.

Sales growth is one key driver of shareholder return, but does not guarantee it. Figure 160. shows the relationship between sales growth and shareholder return during the past ten years for the 30 companies.

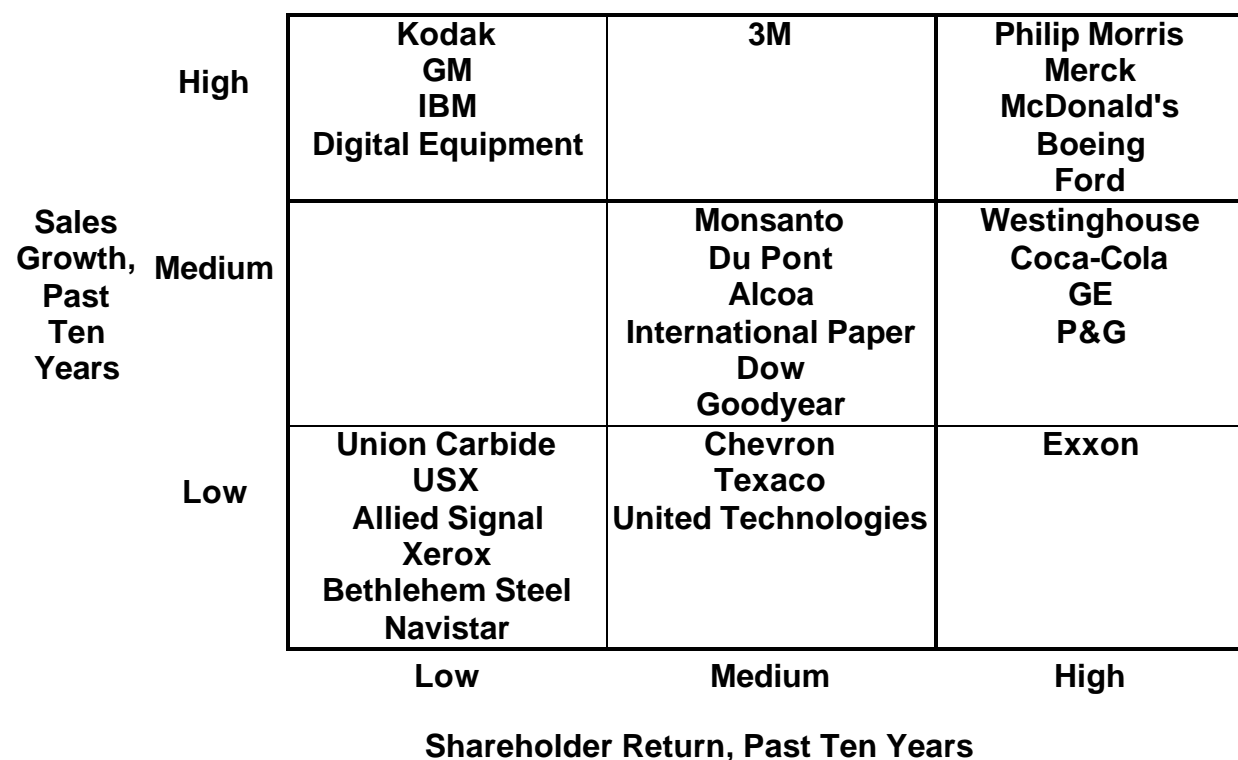


Figure 160, Sales Growth vs. Shareholder Return, Past Ten Years for 30 Companies
Seventeen of the companies are on the low-low to high-high diagonal of the matrix indicating

fairly strong, positive correlation. The oil companies, however, achieved medium to high shareholder return with relatively low sales growth. This is likely due to expectations of higher oil prices in 1989 than existed in 1979.

Kodak, GM, IBM, and Digital Equipment had high sales growth but low shareholder return. All suffered from significantly increased competition. The first three had high market share in key markets. Previous articles have pointed out that it is typical for large-share businesses to gradually lose share over time. Margins tend to suffer as well.

In sum, shareholder return is highly variable and depends on many factors, only one of which is sales growth. Clark's list of nine success/failure criteria is a useful test for our businesses and corporation.

No. 122, October 1990

122 DETERMINING THE APPROPRIATE QUALITY/PRICE POSITION

An important business decision is determining the appropriate quality/price position for its products. Most businesses in the Strategic Planning Institute (SPI) database price in concert with quality; a strong correlation exists between product quality relative to competition and price relative to competition. (As shown in previous articles, e.g., #47, 102, a strong relationship exists between profitability and relative product quality.) However, there are many instances where high quality products are priced relatively low and low quality products are priced relatively high.

Five quality/price positions were examined. It was found on average that:

- A **Premium** (high quality, high price) position was more profitable than an **Average** (medium quality, medium price) position;
- An **Average** position was more profitable than an **Economy** (low quality, low price) position;
- A **Penetration** (high quality, low price) position was second to a **Premium** position in terms of profitability;
- A **Skimming** (low quality, high price) position was less profitable than all but an **Economy** position.

The **Skimming** position was also poorest with respect to improvement in earnings and share and requires a large amount of selling expense. The findings reinforced the importance of product quality and the fact that it is difficult to achieve high levels of profitability by pricing higher than product quality dictates.

Quality /Price Position

This article examines the consequences of combinations of relative quality and relative price. Combinations examined are shown conceptually in Figure 161.

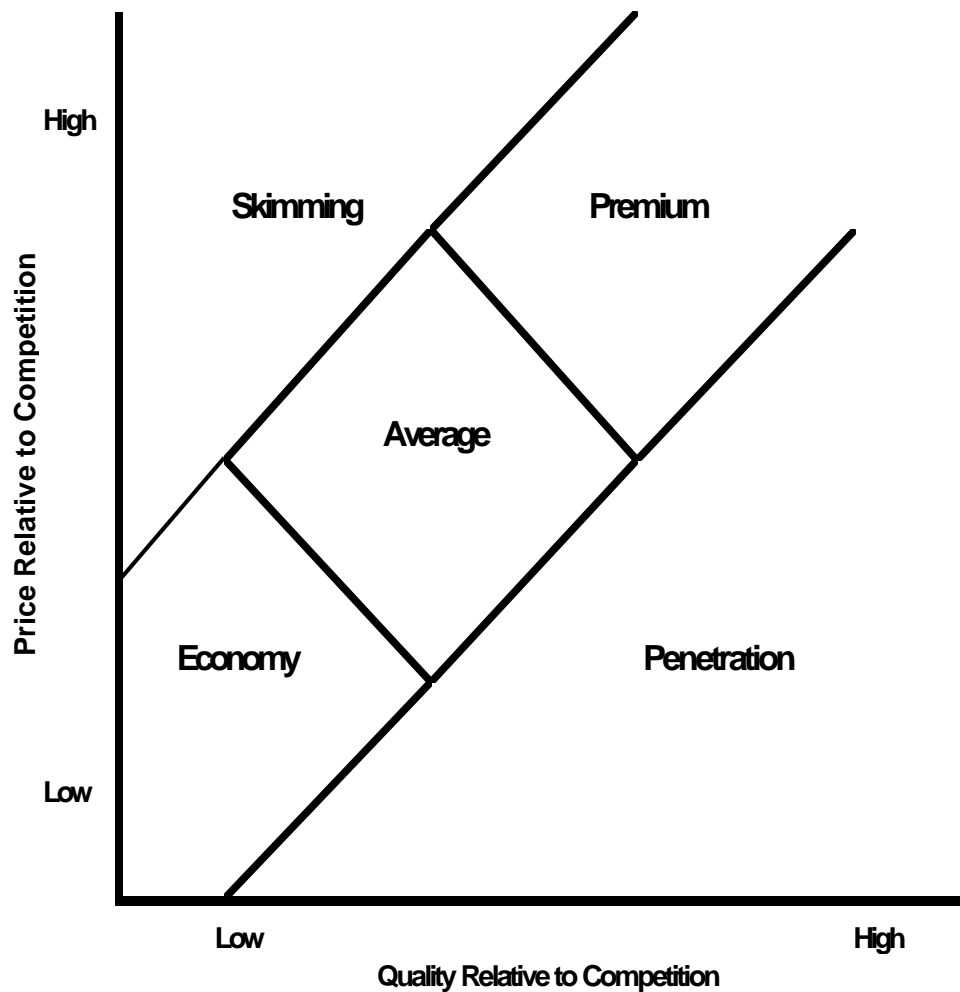


Figure 161, Five Quality/Price Positions

The **Premium**, **Average** and **Economy** positions represent three quality/price strategies where consistency exists between price and quality. The **Penetration** strategy is an attempt to improve market share position by pricing lower than product quality would presumably allow. The **Skimming** strategy is the reverse; pricing high relative to that indicated by quality might be expected to produce short-term profits while giving up share position in the longer term.

All businesses in the SPI database were examined to determine the average effectiveness of each of the five quality/price alternative strategies. Average profitability based on cash return on investment is summarized in Figure 162.

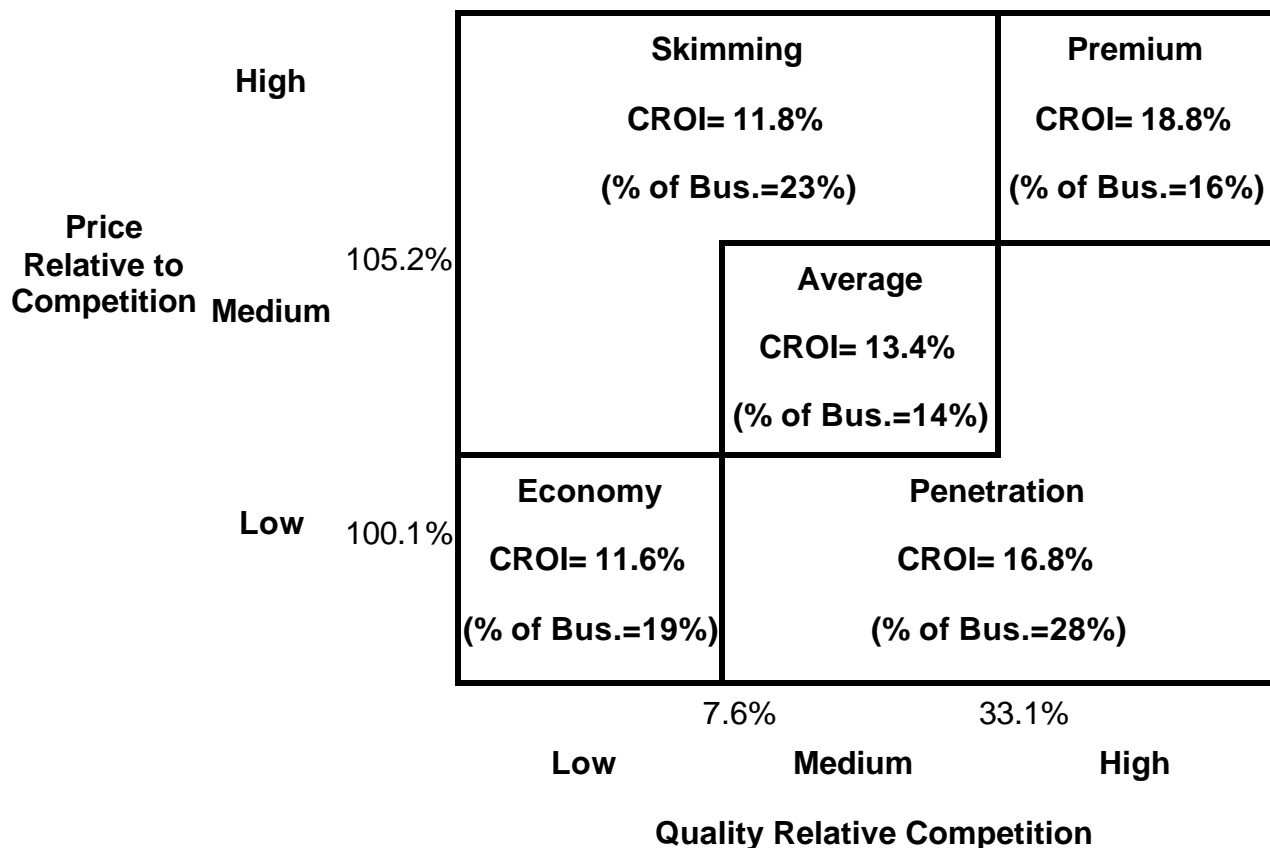


Figure 162, Average CROI for Quality/Price Alternatives

The analysis was done by splitting the database into equal thirds on each of the two dimensions, relative price and relative quality. The values which produce these splits are shown at the bottom of the figure.

Because of the correlation between relative price and relative quality, there tend to be fewer businesses in the cells in the upper left and lower right of the figure. Because of this, the three cells in the upper left were combined to be the **Skimming** strategy and the three in the lower right were combined to be the **Penetration** strategy.

As can be seen in the figure, the 16% of the businesses following the **Premium** strategy tend to be the most profitable with an average CROI of 18.8%. The **Penetration** strategy is second in profitability, two percentage points behind. At the other extreme the **Skimming** and **Economy** strategies produce the lowest level of profitability.

As shown in Table 1, the **Penetration** and **Premium** strategies also tend to be better on several other factors. Change in earnings and change in market share are both higher for these two strategies. In addition, businesses following **Penetration** or **Premium** strategies tend to have higher levels of market share and higher perceived customer service and company image and product reputation.

Average strategies require the lowest levels of selling expense and advertising and promotion expense. They produce mediocre results on average. *Skimming* strategies are poorest in terms of increasing earnings and market share and require reasonably high levels of selling expense and advertising and promotion.

Table 356, Other Averages for Quality/Price Alternatives

	<u>Penetration</u>	<u>Premium</u>	<u>Average</u>	<u>Economy</u>	<u>Skimming</u>
Change in Earnings*	1.2%	1.2%	0.8%	0.7%	0.4%
Change in Market Share	0.4%	0.3%	0.3%	0.1%	0.0%
Average Market Share	27%	31%	23%	18%	22%
Selling Exp./Revenue	8.6%	11.0%	7.7%	8.3%	9.9%
Adv. & Prom./Selling Exp.	17%	21%	14%	20%	20%
Relative Customer Service	3.6%	3.8%	3.5%	3.1%	3.3%
Relative Image**	3.7	4.2	3.5	2.9	3.4

* Percentage points per year per \$ of Sales Revenue

** Five Point Sale. Three is Average

It should be noted that relative to consumer businesses, industrial business have more *Average* positions and few *Skimming* positions

The quality/price position is an important element of the marketing strategy for a product or line of products. Often, quality and price must be carefully scrutinized on a market-by-market basis and managed that way. Understanding differential values of your offering opposite both in-kind and not-in-kind competition on a market-by-market basis is a prerequisite for determining appropriate quality/price positions.

No. 123, November 1990

123 MARKET SHARE POSITION AND QUALITY/PRICE STRATEGY

The last article showed how profitability varies on average with five different quality/price positions or strategies. This article extends this analysis by looking at how success of these strategies varies depending on the market share position of a business.

It was found on average that:

- High share businesses are usually profitable regardless of their choice of quality/price strategy, but tend to be most successful with a ***Premium*** (high quality, high price) strategy;
- Second and lower ranked share businesses tend to be most successful with a ***Penetration*** (high quality, low price) strategy;
- An ***Economy*** (low quality, low price) strategy works well for second-ranked share businesses but not for the others;
- A ***Skimming*** (low quality, high price) strategy is more frequently employed by low-share businesses (perhaps due to pressures to get margins up regardless of market perceptions of value), but usually produces poor results.

Strong businesses are generally much better able to successfully capture higher prices than weak businesses. Weak businesses are generally more profitable when they price commensurate with or perhaps a little lower than market quality perceptions indicate.

Alternative Quality/Price Strategies

The last article described five different quality/price positions or strategies. The average profit consequences were summarized in Figure 161 in that article.

As was discussed that article, ***Premium*** and ***Penetration*** strategies tend to result in the highest level of CROI while ***Skimming*** and ***Economy*** strategies do more poorly on average.

Table 357 summarizes the percent of Strategic Planning Institute (SPI) businesses following each of these five strategies depending on their market share rank. Note that first ranked businesses tend to much more frequently follow ***Premium*** and ***Penetration*** strategies than lower share ranked businesses. Third and lower ranked businesses tend much more frequently to follow ***Economy*** and, to some extent, ***Skimming*** strategies.

While this may be partially by choice, it is likely that many low share businesses feel constrained by the actual and perceived quality of their offerings. As has been pointed out in many previous articles, correlations exist between all elements of competitive advantage (market share, product quality, cost position, image, etc.) and between those elements and profitability. Table 358 shows how average cash return on investment varies with market share rank.

Table 357, Percent Following Alternative Strategies

<u>Market Share Rank:</u>	<u>First</u>	<u>Second</u>	<u>Third or Lower</u>
Quality/Price Strategies:			
Penetration	32%	27%	24%
Premium	24%	14%	11%
Average	15%	15%	12%
Economy	8%	21%	28%
Skimming	21%	23%	25%
Total	100%	100%	100%

Editor's Comment: This analysis assumes that a business in a characteristics position is following the appropriate strategy or alternatively, we can identify the characteristics as a strategy.

Table 358, CROI by Market Share Rank

<u>Market Share Rank:</u>	<u>First</u>	<u>Second</u>	<u>Third or Lower</u>
Average CROI	19.4%	13.8%	10.1%
Number of Businesses	990	644	981

Profit Consequences

More important are the profit consequences of each of the alternative five strategies depending on market share rank. This information is summarized in Table 359.

Table 359, Average CROI Following Alternative Strategies

<u>Market Share Rank:</u>	<u>First</u>	<u>Second</u>	<u>Third or Lower</u>
Quality/Price Strategies:			
Penetration	19%	17%	14%
Premium	24%	14%	12%
Average	17%	12%	11%
Economy	16%	15%	9%
Skimming	18%	10%	8%

As can be seen, first ranked businesses tend to be successful regardless of strategy, but tend to be most successful following a *Premium* strategy. This indicates that first-ranked businesses tend to focus strongly on product quality and capture that quality in price premium. As was seen in Table 357, about one-quarter of them follow this strategy. About one in three follow a *Penetration* strategy and this is on average a high CROI strategy as well.

Second ranked and lower share businesses tend to do best with a *Penetration* strategy. This implies that they should seek to constantly improve their quality, but realize the result of this improvement more in volume than in price premium. As Table 357 indicates, about one-quarter of them follow this strategy. For second ranked businesses an *Economy* strategy also seems to work reasonably well. It does not seem to work well for the first ranked or lower share businesses.

Third and lower ranked businesses tend to realize low average levels of profitability regardless of strategy. Note that their best level of CROI from Table 359 is almost three percentage points lower than the worst for No. 1 ranked businesses!

Over half of the third and lower ranked businesses pursue either an *Economy* or *Skimming* strategy. Note the difference in average profitability for the *Skimming* strategy across the three market share positions. First ranked businesses are much better with a *Skimming* strategy than lower ranked businesses. Lower ranked businesses perhaps fall into the trap of trying to price higher than the perceived quality of their offerings allows because of profit margin pressures.

A business needs to be constantly aware of its market position and choose marketing strategy appropriate to that position. Market share rank is one of the important elements that needs to be considered.

No. 124, December 1990

124 INVENTORY/SALES RATIOS

The average Strategic Planning Institute (SPI) business has about 10 weeks' sales invested in raw material, work-in-process and finished product inventories. Prudent cash management requires constant attention to maintaining appropriate levels of inventory. This article summarizes some inventory/sales ratios from segments of the SPI database in order to help provide some "benchmark" data for comparative purposes.

Inventory levels were found to vary by type of business, type of product, percent of sales shipped direct to the end user, and market share position. Inventory levels were less sensitive to position in the life cycle. Finished product inventory is affected by whether a LIFO, FIFO, or other accounting method is used to value inventory. Other correlating factors will be discussed in the next article,

Distribution of Inventory/ Sales Ratios

Across all SPI businesses, raw material and work-in-process inventory averages 11.3% of sales; finished product inventory averages 8.1% of sales, Distribution statistics are shown in Table 360.

Table 360, Distribution of Inventory/Sales
(All Businesses, N=2613)

	Raw Material		
	<u>W-I-P</u>	<u>Finished Product</u>	<u>Total</u>
Mean	11.3%	8.1%	19.4%
Std. Deviation	8.7%	7.4%	11.3%
90% Above	1.8%	0.2%	
75% Above	5.0%	2.8%	
50% Above	9.4%	6.3%	
25% Above	15.3%	11.2%	
10% Above	23.5%	17.8%	

Finished product inventories vary depending on the accounting method used. Fifty-two percent of the SPI businesses use FIFO; their finished product inventory on average is 9.0% of sales. Twenty-five percent use LIFO and average 7.1%. Twenty-three percent use some other method and average 7.2%.

Table 361 shows how inventory/sales ratios vary depending on type of business. Consumer businesses tend to have slightly higher levels of finished product inventory than industrial businesses. Capital goods businesses tend to have very high levels of raw material and work-in-process inventory. Raw and semifinished material tend to have the lowest level of finished product inventory and below-average levels of raw material and work-in-process inventory as well.

Table 361, Average Inventory/Sales vs. Type of Business

<u>Type of Business</u>	<u>Raw Material W-I-P</u>	<u>Finished Product</u>	<u>Total</u>	<u>Sample Size</u>
Consumer Durables	12.2%	9.6%	21.8%	308
Consumer NonDurables	8.9%	9.2%	18.1%	430
Capital Goods	18.2%	8.3%	26.5%	410
Raw, Semi-finished Materials	9.9%	6.1%	16.0%	356
Components	12.2%	7.2%	19.4%	594
Supplies and Consumables	9.8%	9.1%	18.9%	355
Services and Distribution	1.6%	7.5%	9.1%	160

A contrast exists between businesses producing more or less standardized products and those producing custom-tailored products. Finished product inventory tends to be much lower for businesses producing custom-tailored products; however, raw material and work-in-process inventory tends to be somewhat higher; See Table 362.

Table 362, Average Inventory/Sales vs. Type of Product

<u>Type of Product</u>	<u>Raw Material W-I-P</u>	<u>Finished Product</u>	<u>Total</u>	<u>Sample Size</u>
More or Less Standardized	10.7%	9.0%	19.7%	2058
Custom Tailored	13.5%	4.9%	18.4%	555

Finished product inventory is very sensitive to the percent of sales shipped direct to the end user. Much lower levels of finished product inventory are common for businesses who ship primarily direct to end users. Those shipping through distributors and other intermediaries usually required higher levels of finished product inventory. These data are shown in Table 363.

Table 363, Average Inventory/Sales vs. Percent of Sales Shipped Direct to End-Users

<u>Percent Directly Shipped to End-Users</u>	<u>Raw Material W-I-P</u>	<u>Finished Product</u>	<u>Total</u>	<u>Sample Size</u>
Up to 5%	10.5%	10.1%	20.6%	799
5% to 70%	12.6%	9.2%	21.8%	557
70% to 95%	11.6%	7.3%	18.9%	357
Above 95%	11.1%	6.0%	17.1%	900

High-share businesses tend to realize some economy of scale with respect to required inventory levels. As shown in Table 364, businesses ranked first in terms of market share tend to have slightly lower levels of inventory as a percent of sales.

Table 364, Average Inventory/Sales vs. Market Share Rank

<u>Market Share Rank</u>	<u>Raw Material W-I-P</u>	<u>Finished Product</u>	<u>Total</u>	<u>Sample Size</u>
First	10.6%	7.5%	18.1%	989
Second	11.6%	7.9%	19.5%	643
Third or Lower	11.8%	8.9%	20.7%	981

Little sensitivity was seen in examining inventory levels vs. life-cycle position. As shown in Table 365, total inventory positions do not seem to change much over the life cycle. However, the percent of inventory in finished product relative to raw material and work-in-process tends to increase as the business moves from early to later stage in the life cycle.

Table 365, Average Inventory/Sales vs. Life Cycle Stage

<u>Life Cycle Stage</u>	<u>Raw Material W-I-P</u>	<u>Finished Product</u>	<u>Total</u>	<u>Sample Size</u>
Introductory and Growth	12.5%	7.9%	20.1%	537
Maturity	11.1%	8.1%	19.2%	1926
Decline	10.6%	8.6%	19.2%	150

No. 125, January 1991

125 INVENTORY/SALES RATIOS -II

This article extends the findings from the last article and discusses additional business characteristics that correlate strongly with inventory levels. It is important to try to understand what types of business conditions lead to lower (or higher) levels of inventory in order to develop “benchmarks” to help us manage our working capital.

Factors which tend to be associated with raw material and work-in-process inventory include:

- Producing in small batches (continuous processes are associated with much lower levels);
- Labor-intensive businesses (low sales per employee);
- Infrequent purchases by immediate customers; high order backlog levels;
- High levels of accounts receivable;
- High levels of product R&D;
- Purchases are a small percent of sales.

Factors which tend to lead to higher finished product inventory include:

- Many end users and direct customers;
- High levels of selling expense;
- Low order backlog levels;
- High accounts receivable.

The above factors are in addition to those reported in the last article.

Raw Material and Work-in-Process Inventories

The last article showed that raw material and work-in-process inventories tended to be higher with capital goods businesses, those producing custom-tailored products, lower share businesses, and businesses earlier in their life cycle.

Table 366 shows several other correlating factors. The average (mean) level of raw material and work-in-process inventories for consumer and industrial businesses is 12.0% of annual sales.

Table 366, Average Level of Raw Materials and Work-in-Process Inventory vs. Different Business Characteristics
(Consumer and Industrial Businesses N=2453)

<u>Business Characteristics</u>	<u>RM & WIP Inventory/Sales</u>	<u>Sample Size</u>
Overall Average	12.0%	2453
<u>Production Process:</u>		
Small Batches	15.3%	314
Assembly Line	10.8%	620
Continuous Process	6.9%	235
<u>Sales /Employee (1988\$):</u>		
Less than \$96,000	15.0%	472
\$96,000 to \$126,000	13.8%	495
\$126,000 to \$170,000	11.6%	516
\$170,000 to \$255,000	10.8%	474
Greater than \$255,000	8.7%	496
<u>Customer Purchase Frequency:</u>		
Once a Month or more Frequent	9.9%	1045
Once a Month to Every 6 months	12.3%	915
Once every 6 months or less frequent	15.6%	493
<u>Normal Order Backlog/Sales:</u>		
None	10.5%	1322
Up to 10%	11.3%	410
10% to 20%	12.5%	298
Greater than 20%	16.8%	423
<u>Account Receivables/ Sales:</u>		
Less than 9.5%	8.6%	487
9.5% to 12.1%	11.8%	484
12.1% to 14.7%	12.0%	494
14.7% to 19.3%	12.4%	480
Greater than 19.3%	14.9%	498

As might be expected, one key factor is the production process. Typically, small batch production requires more RM and WIP inventory than assembly line production and much more than continuous processes. Related to this is the labor intensity of the business. Those businesses with low levels of sales per employee tend to require higher levels of RM and WIP inventory.

Customer purchasing characteristics also play a role. RM and WIP inventory tend to be higher when customers purchase less frequently and when order backlogs are high. This may be to some extent an indicator of a more complicated or time consuming production process such as the production of capital goods. While not shown in Table 366, RM and WIP inventory also tend to be higher when purchases are a small percent of sales, i.e., a good deal of “value” is added.

There also tends to be a strong, positive correlation between RM and WIP inventory and accounts receivables. In addition, these inventories also tend to be higher when product R&D is high as a percentage of sales (not shown)

Finished Products Inventory

The last article showed that finished product inventory tended to be higher with consumer products, those producing more or less standardized products, those shipping through intermediaries rather than direct to the end user, and those with low market share positions. Table 367 shows four other factors that strongly correlate with finished product inventory.

Table 367, Average Level of Finished Product Inventory vs. Different Business Characteristics
(Consumer and Industrial Businesses N=2453)

<u>Business Characteristics</u>	<u>Finished Product Inventory/Sales</u>	<u>Sample Size</u>
Overall Average	8.2%	2453
<u>Number of End Users:</u>		
Less than 100	5.4%	359
100 to 999	6.8%	549
1,000 to 10,000	8.3%	522
Greater than 10,000	9.8%	1023
<u>Selling Expense/Sales:</u>		
Less than 3%	5.6%	464
3% to 6%	7.2%	517
6% to 9%	8.3%	460
9% to 14%	9.3%	523
Greater than 14%	10.3%	4893
<u>Normal Order Backlog/Sales</u>		
None	9.0%	1322
Up to 10%	8.0%	410
10% to 20%	7.9%	298
Greater than 20%	6.0%	423
<u>Account Receivables/ Sales</u>		
Less than 9.5%	7.5%	487
9.5% to 12.1%	7.4%	484
12.1% to 14.7%	7.0%	494
14.7% to 19.3%	8.6%	480
Greater than 19.3%	10.3%	498

The overall average finished product inventory for consumer and industrial businesses is 8.2% of annual sales. As would be expected, finished product inventory tends to be higher when there are many end users and direct customers. In part because of the correlation between selling expense and number of end users, there is also a strong correlation between finished product inventory and selling expense as a percent of sales.

In contrast to RM and WIP inventory, finished product inventory tends to be higher when there is no order backlog. Such products are typically more or less standard rather than custom tailored and sold through channels requiring inventory rather than being shipped direct. Finished product inventory also tends to be higher when accounts receivables are higher as is the case with RM and WIP inventory.

No. 126, February 1991

126 CROI VS. INVENTORY LEVELS

The last two articles discussed business characteristics that correlate strongly with inventory levels. This article is focused on the association between CROI (cash return on investment) and inventory levels and how that varies depending on other business characteristics.

As has been discussed in previous articles (e.g., #103), CROI has a strong negative correlation with inventory as a percent of sales. While lower levels of inventory tend to be associated with higher levels of CROI for almost all business situations, the negative profit sensitivity of CROI to inventory tends to be especially strong for:

- Raw and semifinished material businesses;
- Consumer product businesses;
- Businesses with low capital intensity;
- Businesses with high marketing intensity;
- Businesses with low labor intensity;
- Businesses with few competitors.

CROI vs. Total Inventory

Table 368 shows how CROI varies with total inventory as a percent of sales across the Strategic Planning Institute (SPI) database. The database was divided into six approximately equal segments on the basis of the inventory/sales ratio; the average CROI for the lowest group is more than 23 times that of the highest group.

Table 368, CROI vs. Total Inventory as a Percent of Sales

<u>Total Inventory as a Percent of Sales</u>	<u>Average CROI</u>	<u>Sample Size</u>
Less than 9.0%	21%	433%
9.0% to 13.2%	18%	439%
13.2% to 17.7%	16%	437%
17.7% to 22.5%	13%	433%
22.5% to 30.1%	12%	435%
More than 30.1%	8%	436%

As was shown in Table 286 and Table 287 of article #103, the type of inventory makes some

difference. Table 286 of that article implied that raw material and work-in-process inventory should be reduced to the lowest practical level. Table 287 showed that the same is not true for finished product inventory.

Variations in CROI

Profit sensitivity to inventory levels varies with a number of important business characteristics. Table 369 shows the variation with type of business. In this and subsequent figures low levels of inventory are levels up to 13.2% of sales; medium levels between 13.2% and 22.5%; and high levels above 22.5%. CROI is used as the measure of profitability.

Table 369 shows that consumer product profitability tends to be particularly sensitive to inventory levels. The average CROI for the 235 businesses that have low levels of total inventory is 22%, while the average of those having high levels is 8%.

Probably the most interesting type of business is raw and semifinished materials because Du Pont has so many of these businesses. As can be seen in the chart, it is difficult to earn above average levels of CROI unless total inventory levels are kept reasonably low, all other things being equal.

Table 369, Average CROI vs. Type of Business and Selling Expense/Original Cost of Plant and Equipment
(All Businesses, N=2612)

Type of Business	Consumer Products	22% (N=235)	15% (N=263)	8% (N=240)
	Capital Goods	19% (N=51)	17% (N=124)	10% (N=235)
Type of Business	Raw & Semi-Finished Materials	17% (N=174)	9% (N=110)	5% (N=72)
	Components, Consumables	19% (N=302)	15% (N=338)	11% (N=308)
	Service, Distribution	19% (N=110)	12% (N=34)	11% (N=16)
		Low	Medium	High
Total Inventory/Sales				

Table 370 shows the relationship between CROI and both capital intensity and inventory. As can be seen in Table 370, these two major elements of investment are very strongly related (negatively) to CROI as previous articles have pointed out. Driving to low levels of inventory for

highly capital intensive businesses does not add much to profitability on average, in large part due to inventory being a much smaller proportion of investment for such businesses. The sensitivity is much greater for the low capital intensive businesses.

Table 370, Average CROI vs. Capital Intensity and Total Inventory as a Percent of Sales
(All Businesses, N=2613)

Original Cost of Plant and Equipment/ Sales	Over 47.8%	12% (N=327)	9% (N=256)	7% (N=288)
	27.4% to 47.8%	18% (N=251)	14% (N=291)	10% (N=323)
	Up to 27.4%	28% (N=294)	18% (N=323)	12% (N=260)
		Low	Medium	High
Total Inventory/Sales				

The opposite is true with respect to marketing intensity. As Table 371 shows, businesses that spend a large percent of their sales on selling expense tend to show greater sensitivity of CROI to inventory levels. This, of course, matches the finding that consumer product businesses show high profit sensitivity to inventory.

Table 371, Average CROI vs. Marketing Intensity and Total Inventory as a Percent of Sales
(All Businesses, N=2613)

Selling Expense/ Sales	Over 10.2%	24% (N=240)	16% (N=281)	9% (N=354)
	4.9% to 10.2%	19% (N=219)	16% (N=315)	11% (N=322)
	Up to 4.9%	17% (N=413)	11% (N=274)	9% (N=195)
		Low	Medium	High
Total Inventory/Sales				

Table 372 shows the variation with labor intensity. Businesses with high sales per employee (less labor intensive) show more CROI sensitivity to inventory than those which are more labor intensive.

Table 372, Average CROI vs. Labor Intensity and Total Inventory as a Percent of Sales
(All Businesses, N=2613)

Sales per Employee (1988 \$)	Over \$191,000	22% (N=400)	14% (N=270)	9% (N=204)
	\$117,000 to \$191,000	17% (N=255)	15% (N=308)	11% (N=311)
	Up to \$117,000	16% (N=217)	14% (N=292)	9% (N=356)
		Low	Medium	High
Total Inventory/Sales				

Another factor which shows variation in CROI sensitivity is number of competitors. More sensitivity is shown when there are few competitors. This is shown in Table 373.

Table 373, Average CROI vs. Number of Competitors and Total Inventory as a Percent of Sales
(All Businesses, N=2613)

Number of Competitors	Up to 6	22% (N=245)	16% (N=233)	10% (N=225)
	6 to 10	20% (N=290)	15% (N=301)	10% (N=335)
	11 to 20	19% (N=200)	14% (N=209)	9% (N=191)
	More than 20	14% (N=137)	12% (N=127)	9% (N=120)
		Low	Medium	High
Total Inventory/Sales				

The previous charts show how profitability varies with inventory levels for a variety of business situations, They help to highlight the importance of prudent inventory management.

No. 127, March 1991

127 PRICE DIFFERENTIATION

Article #63 reported findings from a special Strategic Planning Institute (SPI) study on differentiation. The important implication was that a business can earn an above average level of profitability -- not only by being better than competition -- but merely by being different. This article extends that finding with respect to price differentiation and shows that:

- Higher levels of CROI are typically achieved by businesses priced above or below competition than those priced equal to competition;
- First ranked market share businesses tend to achieve superior levels of CROI when priced either below competition or well above competition;
- Second ranked market share businesses tend to achieve above average levels of CROI when priced below competition;
- Third and lower ranked market share businesses tend to achieve lower levels of CROI no matter how they price;
- Among businesses with prices below competition, No. 1 ranked market share businesses tend to have significantly higher levels of perceived quality than those ranked lower.

Relating CROI to Relative Price

Table 374 shows how CROI and market share vary with relative price. Correlations are positive with the exception that somewhat higher levels of CROI exist for businesses priced below competition. Relative price is defined as your price relative to leading competitors with leading competitors indexed at 100.

Table 374, Average CROI and Market Share vs. Relative Price

Relative Price	CROI	Average Level of:	
		Market Share	Sample Size
Up to 98%	16%	19%	273
98% to 102%	13%	22%	927
102% to 106%	14%	26%	678
106% to 110%	15%	25%	282
Above 110%	17%	28%	455

This table suggests that price differentiation is associated with higher profitability since the lowest level of CROI is at a relative price near 100. Further examination reveals that this is due primarily to businesses first ranked in market share. Table 339 relates CROI to relative price and market share rank.

For first ranked businesses higher levels of CROI occur at the low and high ends of relative price. For the smaller market share businesses there is a slight negative correlation between CROI and relative price.

Note the number of businesses in each cell, however. There are proportionally many more low share businesses in the low relative price column than elsewhere. This reinforces the positive correlation between market share and relative price seen in Table 374

Table 375, Average CROI vs. Relative Price and Market Share Rank
(All Businesses N=2615)

Market Share Rank	First	26% (N=65)	17% (N=708)	25% (N=217)
	Second	17% (N=68)	14% (N=488)	12% (N=88)
	Third or Less	11% (N=140)	10% (N=691)	9% (N=150)
		Up to 98%	98% to 110%	Above 110%
Relative Price				

It might be assumed that pricing lower than competition should result in higher market share. The explanation, of course, is that market share, relative price, and profitability all seem to be driven by other elements of competitive advantage --relative product quality, relative image, cost relative to competitors, and marketing and new product development activity. This has been discussed in previous articles.

Figure 2 shows the relationship between relative product quality, relative price, and market share rank. For low relative price businesses, average relative product quality is considerably higher for first-ranked share businesses than for smaller share businesses. However, at all levels of market share rank a very strong relationship exists between relative product quality and relative price.

Table 376, Average Relative Product Quality vs. Relative Price and Market Share Rank
(All Businesses N=2615)

Market Share Rank	First	25%	31%	51%
	Second	7%	19%	38%
	Third or Less	6%	15%	32%
		Up to 98%	98% to 110%	Above 110%
Relative Price				

While it is difficult to sort out cause and effect, it seems that the advantages achieved by high product quality, good customer service, strong image, and a strong marketing and R&D effort result in the ability to develop a strong market share position and higher levels of profitability. Appropriate pricing strategy is less clear from this analysis, but price differentiation, at least for first ranked businesses, seems to make the most sense. Price differentiation is often hard to achieve without product differentiation, especially for industrial businesses.

No. 128, April 1991

128 LARGE SHARE BUSINESSES NOT PRICE DIFFERENTIATED

The last article discussed price differentiation and showed that first ranked market share businesses tend to achieve superior levels of CROI when priced either below competition or well above competition. As shown in Table 377 of this article, these businesses averaged 26% and 25% CROI, respectively.

However, most of the first ranked market share businesses (over 70% of them) have relative prices between 98% and 110% on a scale where 100% is the average price of leading competitors. These businesses average only 17% CROI. An examination of these 708 SPI database businesses found that they tend to have higher levels of CROI when:

- Relative product quality is high;
- Selling expense is high;
- They have high relative market share and few competitors;
- They have high levels of capacity utilization and low relative manufacturing and distribution costs;
- Their employees are not unionized;
- They sell in small sales transaction amounts;
- Their permanent investment is low as a percent of total cost of sales.

CROI for these businesses is less sensitive to other factors including levels of working capital.

Associations with CROI

Previous articles have shown the strong correlation that exists between profitability and market share and the strong profit advantage first ranked market share businesses tend to have over those ranked second and lower. A surprising finding from the last article was that -- while this is true of those businesses with either low or very high relative prices -- it is not true for the majority of these businesses with more average relative prices. Over 70% of the first market share ranked businesses in the database have relative prices between 98 and 110 and these businesses average only 17% CROI. Relative price is defined as your price relative to leading competitors with leading competitors indexed at 100.

An examination of these businesses was undertaken to determine what business characteristics are associated with high vs. low levels of CROI. Average CROI levels for the main correlating factors are shown in Table 377 through Table 381.

Table 377 shows a strong association with relative product quality and selling expense as a percent of cost of sales. These high share, moderate price (relative to competition) businesses seem to perform best when they have high relative product quality (typical of all kinds of businesses) and when selling expense is a relatively high percent of total cost of sales. While there is often a positive correlation between selling expense and profitability, it is particularly strong for these kinds of businesses. This perhaps suggests that many first ranked market share

businesses should be more aggressive marketers than their smaller share competitors.

Table 378 shows that these kinds of businesses do best when they have high relative market shares and few competitors. There is, of course, a relationship between these two factors, since there's a greater chance of a database business being a smaller share competitor if there are many competitors.

Table 379 shows the relationship with relative manufacturing and distribution costs and capacity utilization. While it is best to have low relative costs and high levels of capacity utilization, the relationship is not as strong as seen for many other kinds of businesses. In particular, cost advantage does not seem to help when capacity utilization is low. Also, capacity utilization does not seem to help when relative costs are high. This suggests that these kinds of businesses need to be efficient on both dimensions.

Table 380 shows the relationship with percent of employees unionized and sales transaction amount. The association between CROI. and percent of employees unionized is particularly strong. Small sales transaction amounts seem to help when the percent of employees unionized is low or medium.

Table 381 shows how CROI is associated with permanent investment and working capital, both expressed as a percent of total cost of sales. As is the case for most businesses, a strong negative association exists between CROI and permanent investment. However, the association with working capital is not nearly as strong.

Table 377, CROI vs. Relative Product Quality and Selling Expense/Total Cost of Sales
(First Ranked Business with Average Prices, 98% to 110% N=708)

Relative Product Quality	High	39%	17% (N=80)	20% (N=64)	23% (N=91)
	Medium		14% (N=76)	17% (N=76)	20% (N=85)
	Low	17%	12% (N=94)	13% (N=74)	17% (N=68)
			5%	10%	
			Low	Medium	High
Selling Expense/Cost of Sales					

Table 378, CROI vs. Number of Competitors and Relative Market Share
(First Ranked Business with Average Prices, 98% to 110% N=708)

Number of Competitors	Over 10	13% (N=107)	16% (N=77)	15% (N=37)
	6 to 10	15% (N=91)	18% (N=95)	22% (N=76)
	2 to 5	18% (N=40)	18% (N=62)	20% (N=123)
		73%		116%
		Low	Medium	High
Relative Market Share				

Table 379, CROI vs. Relative Manufacturing & Distribution Costs and Capacity Utilization
(First Ranked Business with Average Prices, 98% to 110% N=708)

Relative Manufacturing & Distribution Costs	High	15% (N=86)	14% (N=76)	15% (N=67)
	Medium	17% (N=83)	16% (N=80)	19% (N=77)
	Low	16% (N=67)	20% (N=75)	21% (N=97)
		73%		84%
		Low	Medium	High
Capacity Utilization				

Table 380, CROI vs. Percent of Employees Unionized and Sales Transaction Amount
(First Ranked Business with Average Prices, 90% to 110% N=708)

Percent of Employees Unionized	High	69%	15% (N=26)	14% (N=94)	14% (N=127)
	Medium	27%	20% (N=48)	19% (N=73)	15% (N=101)
	Low		25% (N=50)	21% (N=82)	19% (N=106)
			\$1,000	\$10,000	
			Low	Medium	High
			Sales Transaction Amount		

Table 381, CROI vs. Original Cost of Plant and Equipment and Working Capital/Total Cost of Sales
(First Ranked Business with Average Prices, 90% to 110% N=708)

Original Cost of Plant & Equip./ Cost of Sales	High	54%	12% (N=86)	13% (N=77)	13% (N=72)
	Medium	32%	20% (N=68)	16% (N=79)	16% (N=87)
	Low		22% (N=85)	21% (N=75)	22% (N=79)
			33%	45%	
			Low	Medium	High
			Working Capital/Cost of Sales		

The previous tables show relationships between CROI and the factors that correlate most strongly with it for large share businesses not price differentiated. Note that the CROI averages in almost all of the “cells” are considerably lower than the 26% and 25% figures shown in the last article for the top market share ranked businesses with low or very high relative prices.

This suggests how important it is to try to price differentiate. Whether the large share business is price differentiated depends both on its actions and those of its competitors. Unique offerings which are more likely to permit price differentiation seem to help large share businesses more than their smaller share competitors.

No. 129, May 1991

129 PRICE DIFFERENTIATED LARGE SHARE BUSINESSES

The last two articles have discussed price differentiation and the fact that first ranked market share businesses typically achieve high levels of CROI when priced either below competition or well above competition. The last article examined in more detail the first ranked market share businesses which have not achieved price differentiation and which usually have lower profitability.

These previous results suggest that one route to business success is:

- Drive toward a high market share position in your served markets (well known) and
- Develop or maintain price differentiation (not as well known).

Perhaps too many market leaders choose a cautious, middle-of-the-road strategy and allow their source(s) of competitive advantage to be neutralized by more aggressive competitors. Achieving and maintaining a high share, differentiated market position requires continuous reinvestment in the business.

This article discusses key differences between large share businesses whose prices relative to competition are low, medium, and high. The factors, which have the most profit leverage for the price differentiated (low and high) segments, are discussed. Businesses which have managed to position themselves favorably on these characteristics frequently have CROI's in excess of 30%!

Differences between Low, Medium and High Relative Price Large Share Businesses

Table 382 summarizes key characteristics of low, medium, and high relative price large share businesses. These analyses are based on the first market share ranked businesses in the Strategic Planning Institute (SPI) database. Relative price is defined as your price relative to leading competitors with leading competitors indexed at 100%. As was stated last month, most large share businesses tend to have relative prices between 98% and 110%. Their average level of CROI is 17%, well below that achieved by large share businesses able to differentiate their pricing. These businesses tend to have lower levels of relative market share, spend less on selling expense and R&D expense, add the less values to purchases, have slightly higher levels of permanent investment, and tend to be in lower growth markets. The fact that these businesses are more mature is also shown in the percent of employees unionized, More mature businesses tend to have a higher level of unionization.

Table 382, Key Characteristics of Low, Medium and High Relative Price Large Share Businesses

<u>Business Characteristics</u>	Price Relative to Competition		
	<u>Low</u>	<u>Medium</u>	<u>High</u>
Number of Businesses	65	708	217
Relative Price	Up to 98%	98% to 110%	Above 110%
CROI	26%	17%	25%
Relative Market Share	122%	114%	151%
Relative Product Quality	25%	31%	51%
Relative Mfg. & Distr. Costs	97%	100%	105%
Selling Expense/Cost of Sales	13.7%	8.6%	14.1%
R&D Expense/Cost of Sales	2.8%	2.2%	3.0%
Purchases/Cost of Sales	45%	50%	43%
Orig. Cost, (P&E)/Cost of Sales	43%	49%	42%
Physical Vol. Market Growth	6.4%	3.2%	4.6%
% Employees Unionized	39%	45%	37%
Annual Change in Market Share	0.5%	0.1%	0.1%
% Industrial Businesses	57%	71%	61%

A larger percentage of the medium relative price large share businesses tend to be industrial rather than consumer, service, or distributor businesses. As Figure 1 shows, however, medium relative price high share businesses tend to have lower CROI's whether they are consumer businesses or industrial businesses.

Table 383, CROI vs. Relative Price and Type of Business
(Large Share Businesses N=989)

Type of Business	Consumer	28% (N=25)	19% (N=169)	27% (N=73)
	Industrial	24% (N=37)	16% (N=504)	22% (N=132)
	Service, Distributor	** (N=3)	20% (N=34)	** (N=12)
		98%	110%	
		Low	Medium	High
Relative Price				

** Too few observations for meaningful value.

Low Relative Price Large Share Businesses

Sixty-five of the data base businesses ranked first in market share have relative prices below 98%. Their average CROI is 26%. They tend to have strong share positions but below average levels of relative product quality. On average, their manufacturing and distribution cost advantage is only 3% better than their competitors.

They tend to invest heavily in both selling expense and R&D expense. Their amount of value added is only about average and their permanent investment is only slightly below average. They tend to be in higher growth markets, however, and tend to be increasing market share -- unusual for such high share businesses.

These businesses are exceptionally profitable if they are able to attain low relative manufacturing and distribution costs. As is shown in Table 384, half the businesses have relative manufacturing and distribution costs below 100; half are at 100 or above. The low half have an average CROI of 33%; the high half have an average CROI of 18%.

The second strongest profit leverage factor for low relative price large share businesses is permanent investment. The low half (below the median value of 33.3%) have an average CROI of 30% vs. the high half average of 21%. These businesses also tend to do better when they have

few employees unionized, spend at high levels on selling expense, and have high relative market share.

Table 384, Average CROI vs. Other Business Characteristics
(For Low Relative Price Large Share Businesses)

Business Characteristics	Median Value	Average CROI for:	
		Low Half	High Half
1. Relative Mfg. & Distr. Costs	100%	33%	18%
2. Orig. Cost P&E/Cost of Sales	33.3%	30%	21%
3. % Employees Unionized	35%	29%	22%
4. Selling Expense/Cost of Sales	11.9%	22%	29%
5. Relative Market Share	82.6%	23%	28%

(Based on 65 SPI database businesses ranked first in market share with relative prices more than 2% below competition.)

High Relative Price Large Share. Businesses

Of the first ranked market share businesses in the data base, 217 have relative prices above 110%. The average CROI of these businesses is 25%. They are characterized by extremely high levels of market share and relative product quality and very high spending on selling expense and R&D expense.

Table 385 shows the seven factors for which CROI is most sensitive. High levels of relative market share and low levels of investment -- both working capital and permanent investment -- are the most sensitive factors, Working capital was not a sensitive factor for the low relative price large share businesses, perhaps because it may be needed for the growth of these businesses shown in the higher levels of market growth and increase in market share.

Other important profit leverage factors for high relative price large share businesses are low manufacturing and distribution costs, having few competitors, having high levels of capacity utilization, and having few employees unionized.

Table 385, Average CROI vs. Other Business Characteristics
(For High Relative Price Large Share Businesses)

Business Characteristics	Median Value	Average CROI for:	
		Low Half	High Half
1. Relative Market Share	119.2%	18%	31%
2. Working Capital/Cost of Sales	41.9%	31%	19%
3. Orig. Cost P&E/Cost of Sales	37.8%	30%	19%
4. Relative. Mfg. &Distr. Costs	101.3%	28%	21%
5. Number of Competitors	8	27%	22%
6. Capacity Utilization	77%	22%	27%
7. % Employees Unionized	38%	27%	23%

(Based on 217 SPI database businesses ranked first in market share with relative prices more than 10% above.)

This analysis reinforces once again the desirability for market leaders to be price differentiated and highlights the key strategic factors, which make such businesses even more profitable. CROI values of 30% or more shown for some combinations of characteristics is extremely unusual for SPI database businesses.

No.130, June, 1991

130 AVOID AVERAGE SPENDING PRACTICE?

The last three articles showed that large market share businesses typically achieve much higher levels of cash return on investment when priced either below competition or well above competition. Two earlier articles (Nos. 41 and 90) showed that the businesses tend to be more successful when their selling expense budgets were either well below or well above the norm.

This article examines overall spending practices and finds that a strategy of allowing costs to increase normally results in lower earnings growth than strategies associated with either more aggressively increasing or decreasing costs. Which of these two strategies to follow seems to depend on whether the market will respond to improvements created by the spending by accepting above average price increases.

A strategy of above average cost increases has the higher potential reward but also the higher risk. Aggressive cost containment is often a safer strategy.

Normal Spending Practice

As was discussed in article No. 17, cost inflation tends to vary inversely with the rate of market growth. This relationship is shown in Figure 163. The "regression" equation which relates average cost increase to physical volume market growth is the following:

$$\text{Cost Growth} = 8.9 - 0.107 \cdot \text{Market Growth} + 0.0022 \cdot \text{Market Growth}^2$$

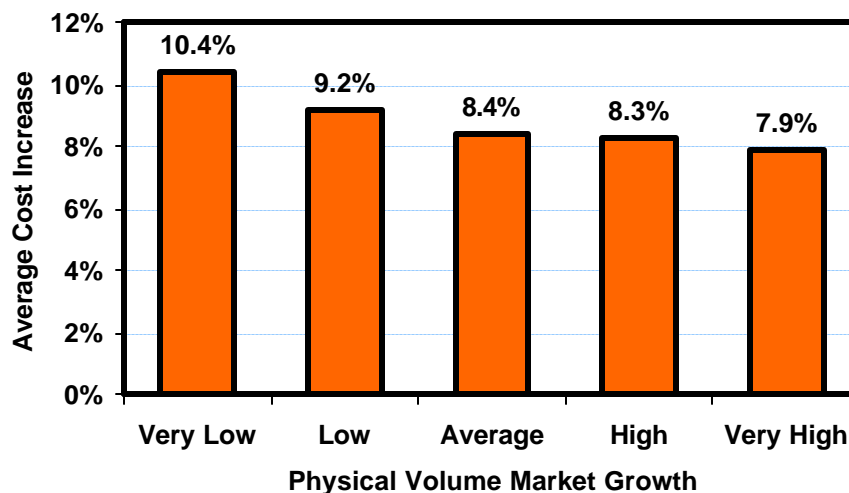


Figure 163, Average Cost Increase vs. Physical Volume Market Growth

Average Earnings Growth vs. Spending Strategy

Using the above regression equation, the average cost increase of the Strategic Planning Institute (SPI) businesses was adjusted for market growth and divided into equal 20% groupings based on

this adjusted cost increase. Average annual earnings growth is defined as pretax earnings in the second two-year period for the business minus pretax earnings in the first two year period expressed as a percentage of sales revenue in the first two year period. Figures are annualized. Expressing earnings change as a percentage point change in this way helps eliminate problems caused by businesses with small or negative earnings in the first two years.

The relationship between average annual earnings growth and average cost increases adjusted for market growth is shown in Figure 164. Note the “U-shaped” relationship implying that aggressive cost containment or cost increase strategies are preferable to strategies where costs are allowed to increase at some average rate. This is perhaps one more way in which a business can differentiate itself from competition. In this respect it is similar to previous findings with respect to selling expense and price differentiation for large share businesses.

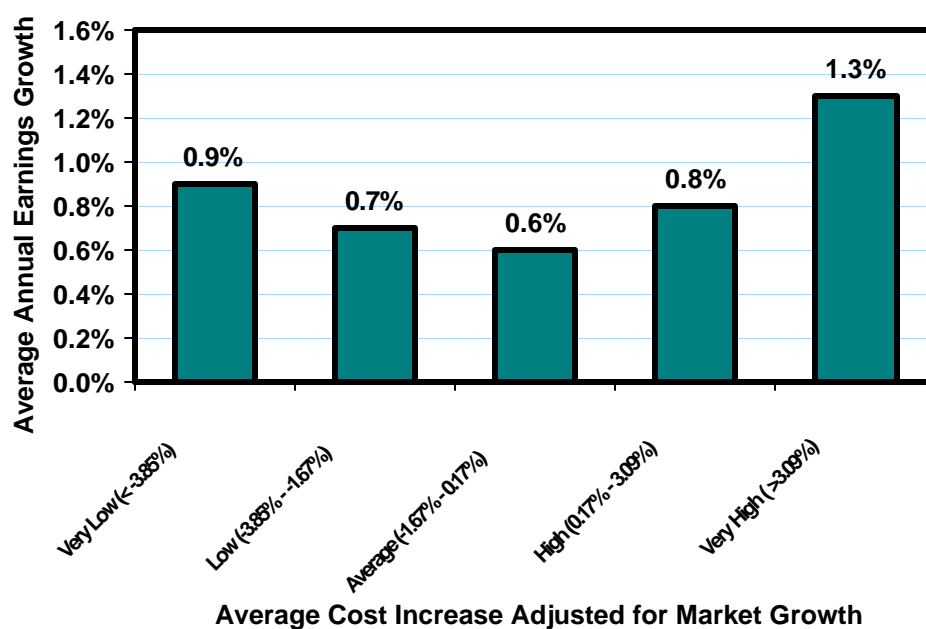


Figure 164, Average Annual Earnings vs. Average Cost Increase Adjusted for Market Growth

Pricing Effects

The relationship between an average selling price increase and average cost increase adjusted for market growth is shown in Figure 165. This very strong relationship indicates that high cost increases must be associated with high price increases to realize the above average earnings increase for high cost increases shown in Figure 164. Unless such increases in price are acceptable to the market based on improvements to product or service quality, a strategy of aggressively increasing costs will not pay back, at least short-term.

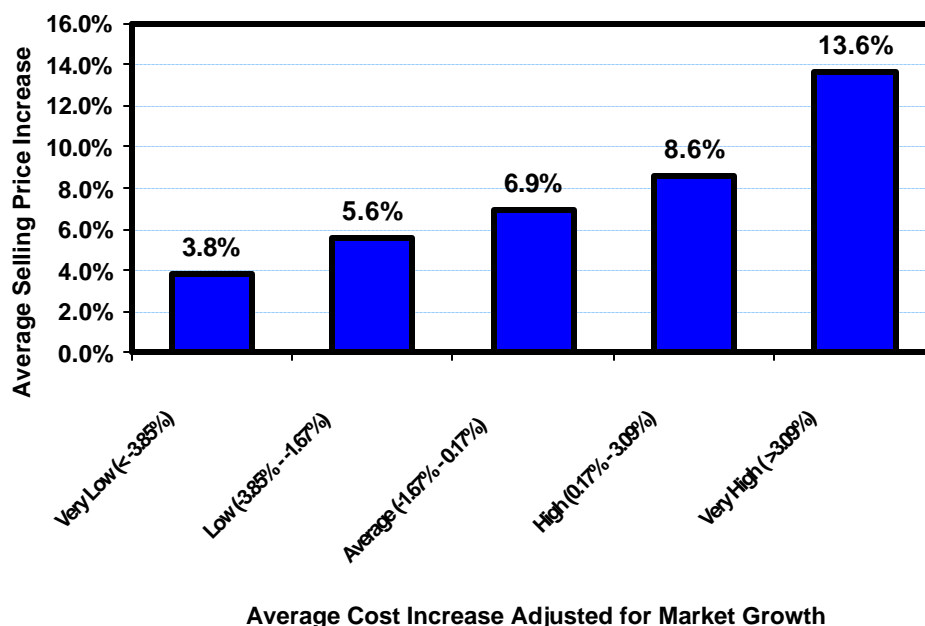


Figure 165, Average Selling Price Increase vs. Average Cost Increase Adjusted for Market Growth

Cost containment strategies are typically not as risky as high cost increase strategies as illustrated in Table 386. Here average annual earnings growth is related to both selling price increase and average cost increase adjusted for market growth. For low levels of average cost increase (aggressive cost containment), earnings growth is not sensitive to whether the marketplace accepts the selling price increase. However, annual earnings growth is highly sensitive to the strategy of above average cost increases shown in the right-hand column of Table 386.

Note, however, the strong correlation existing between selling price increase and adjusted cost increase. Most of the businesses fall on the diagonal from lower left to upper right. Five hundred forty-seven businesses lie in the high-high cell and these businesses realize an average annual earnings growth of 1.8% per year -- an extraordinarily high rate of growth in earnings. In the lower right-hand cell 107 businesses had declining earnings because they could not match their aggressive cost increases with increased prices in the market.

Table 386, Average Annual Earnings Growth vs. Selling Price Increase and Average Cost Increase Adjusted for Market Growth
(N=2615)

Selling Price Increase	High	9.07%	1.1% (N=97)	1.1% (N=225)	1.8% (N=547)
	Medium		0.8% (N=260)	0.5% (N=400)	0.2% (N=220)
	Low	5.15%	0.9% (N=506)	0.3% (N=253)	-1.3% (N=107)
			-2.35%		0.98%
			Low	Medium	High
Average Cost Increase Adjusted for Market Growth					

No.131, July1991

131 OPERATING COST STRATEGIES

The last article suggested that it is often best to either aggressively increase operating costs to improve the value of the offering or drive for a low-cost position, rather than pursuing a middle-of-the-road cost strategy. This article confirms and extends these findings in a variety of business situations.

While a cost-cutting strategy is desirable in many cases, aggressively increasing operating costs often proves advantageous for businesses with:

- Low to medium relative costs of manufacturing and distribution;
- Medium quality products;
- Inferior customer service;
- Moderate levels of new product introductions;
- Medium levels of selling expense;
- Many direct customers.

As stated in the last article, a business must be able to extract above average price increases to justify a cost increase strategy. This, of course, depends on whether the market will respond to improvements created by this spending by accepting above average price increases.

Cost and Quality Position

Keeping costs in line with competition is almost always a key requirement for business success. Businesses with a high relative cost position tend to increase earnings more when they follow a cost reduction strategy. Only when costs are medium or low is it advisable to consider aggressive spending in most instances. This is shown in Table 387 which plots average annual earnings growth vs. relative manufacturing and distribution costs and average cost increase adjusted for market growth. Average annual earnings growth and average cost increase adjusted for market growth are defined as they were in the last article. Low relative manufacturing and distribution cost businesses are those with costs below leading competitors. High cost businesses are those with costs at least 3.5 percentage points higher than leading competitors.

Table 387, Average Annual Earnings Growth vs. Relative Manufacturing and Distribution Costs and Average Cost Increase Adjusted for Market Growth
(N=2613)

Relative Manufacturing and Distribution Costs	High	0.9% (N=280)	0.4% (N=293)	0.3% (N=299)
	Medium	0.8% (N=392)	0.4% (N=376)	1.1% (N=375)
	Low	1.2% (N=189)	1.4% (N=209)	2.0% (N=200)
		Low	Medium	High

Average Cost Increase Adjusted for Market Growth

Businesses whose relative product quality is low (at best equal to competition) tend to improve earnings most following a cost containment strategy. Medium-quality businesses do best in increasing costs, which presumably results in improving the quality or perceived quality of their offering. At high levels of relative product quality results are about equal between the two strategies. See Table 388. Table 388Table 389 shows the relationship with relative customer service. Businesses with customer service inferior to competitors tend to do better with high cost increases, presumably using some of this cost increase to improve service. Average and superior relative customer service businesses are not sensitive to cost strategy.

Table 388, Average Annual Earnings Growth vs. Relative Product Quality and Average Cost Increase Adjusted for Market Growth
(N=2613)

Relative Product Quality	High	1.1% (N=293)	0.8% (N=301)	1.1% (N=274)
	Medium	0.5% (N=291)	0.5% (N=309)	1.3% (N=281)
	Equal or Low	1.1% (N=277)	0.5% (N=268)	0.7% (N=319)
		Low	Medium	High

Average Cost Increase Adjusted for Market Growth

Table 389, Average Annual Earnings Growth vs. Relative Customer Service and Average Cost Increase Adjusted for Market Growth
(N=2613)

Relative Customer Service	Superior	1.0% (N=381)	0.6% (N=388)	0.9% (N=404)
	Average	0.8% (N=398)	0.6% (N=414)	0.9% (N=374)
	Inferior	0.8% (N=82)	0.9% (N=76)	1.9% (N=96)
		Low	Medium	High

Average Cost Increase Adjusted for Market Growth

Marketing Strategy and Position

Which cost strategy to follow seems also to depend on marketing strategy and position. As Table 390 shows, a strategy of introducing a moderate number of new products is best when accompanied by a cost increase strategy. At high levels (when products introduced in the past

three years represent more than 9% of total sales) results are indifferent between a cost increase and cost decrease strategy.

Table 390, Average Annual Earnings Growth vs. New Product Introductions and Average Cost Increase Adjusted for Market Growth
(N=2615)

New Product Introductions	High	1.8% (N=246)	1.1% (N=217)	1.8% (N=172)
	Moderate	0.8% (N=209)	0.5% (N=230)	1.3% (N=229)
	None	0.4% (N=408)	0.5% (N=431)	0.6% (N=473)
		Low	Medium	High

Average Cost Increase Adjusted for Market Growth

Results are similar when looking at selling expense as a percent of sales. At medium levels (between 5 and 10% of sales) an aggressive cost increase strategy typically works best.

Table 391, Average Annual Earnings Growth vs. Selling Expense and Average Cost Increase Adjusted for Market Growth
(N=2613)

Selling Expense	High	1.4% (N=347)	1.0% (N=311)	1.6% (N=218)
	Medium	0.6% (N=275)	0.6% (N=324)	1.4% (N=291)
	Low	0.4% (N=239)	0.3% (N=243)	0.4% (N=365)
		Low	Medium	High

Average Cost Increase Adjusted for Market Growth

The number of direct customers also seems to make a difference. When serving fewer than 100 direct customers, a cost decrease strategy typically works best. When serving more than 1,000 direct customers, a cost increase strategy often works best. See Table 392.

Table 392, Average Annual Earnings Growth vs. Number of Direct Customers and Average Cost Increase Adjusted for Market Growth
(N=2615)

Number of Direct Customers	>1,000	0.8% (N=326)	0.5% (N=316)	1.1% (N=291)
	100 to 1,000	0.7% (N=344)	0.6% (N=367)	0.9% (N=352)
	< 100	1.5% (N=193)	1.0% (N=195)	1.2% (N=231)
		Low	Medium	High

Average Cost Increase Adjusted for Market Growth

Experts often advise businesses not to be "stuck in the middle. Findings here with respect to cost position, product quality, new product introductions, and selling expense perhaps suggest that moderate levels are not usually appropriate and that business should drive these key activities towards superiority with an intelligent cost increase strategy aimed at improving competitive position.

No.132, August1991

132 THE IMPORTANCE OF IMPROVING PRODUCT QUALITY

This article focuses on the strong association between product quality improvement and gain in market share and earnings. Its key conclusions are that:

- Product quality improvements typically lead to higher earnings.
- A small improvement is usually only marginally better than no improvement at all.
- Large improvements in quality tend to have very large earnings leverage.
- Businesses more often realize the value of large improvements in market share than in margin.
- If a business making a large improvement in quality is forced by market conditions to realize the value in either market share or margin, they are typically somewhat better off targeting market share.

Product Quality Improvements

The association between relative product quality and profitability has been cited in several previous Impact articles. Product quality is one of the strongest correlates of profitability of any of the factors captured in the Strategic Planning Institute (SPI) database. Relative product quality is the percent of your products perceived by your customers to be superior to competition minus the percent perceived to be inferior to competition after dividing sales revenue into superior, about equal and inferior categories. The focus of this article is on change in relative product quality and the extent to which quality improvements are realized in market share versus margin.

Table 393 shows the frequency of change in relative product quality. Change in quality was divided arbitrarily into five categories from large loss to large gain. The percentage point range is shown as well as the number of businesses and percent of businesses in each of the five categories. Over 60% of SPI businesses show some change from one two year period to the next two-year period.

Table 393, Frequency of Change in Relative Product Quality

<u>Quality Change</u>	<u>Range</u>	<u>No. of Business</u>	<u>Percent of Businesses</u>
Large Loss	Less than -4.0%	280	11.4%
Loss	-4.0% to - 0.1%	358	14.6%
No Change	-0.1% to 0.1%	947	38.6%
Gain	-0.1 to 4.0%	446	18.2%
Large Gain	Greater than 4.0%	422	17.2%

The average change in market share and earnings is shown in Table 394 opposite change in relative product quality. Change in earnings is defined as pretax earnings in the second two-year

period for a business minus pretax earnings in the first two-year period expressed as a percent of sales revenue in the first two year period. Values are annualized. Change in earnings is probably best thought of as the dollar improvement in earnings per one hundred dollars of sales in the base year.

The average SPI business with no change in quality shows an average annual change in earnings of 0.8%. Those with a moderate gain in quality show a slightly higher level of earnings increase. However, on average those businesses showing a large gain in quality show an average annual change two and a half times the average business and this gain is sustained for at least two years. In addition, improvements in product quality and market share improve competitive advantage which helps future earnings.

Table 394, Average Annual Change in Market Share and Earnings vs. Change in Relative Product Quality

<u>Quality Change</u>	<u>Average Change in Market Share</u>	<u>Average Change in Earnings</u>
Large Loss	-0.5%	0.0%
Loss	-0.2%	0.1%
No Change	0.2%	0.8%
Gain	0.5%	1.0%
Large Gain	0.7%	2.1%

Depending on both market conditions and the business strategy, improvements in relative product quality can be capitalized on to improve market share, margin, or both. Table 395 shows the percent of businesses realizing different market share and margin changes versus change in relative product quality. Note that for businesses realizing a large gain in quality, more than twice as many businesses show share up and margin down versus those showing share clown and margin up (down and up refer to changes relative to the average change). Many 'large gain' businesses of course show improvements in both share and margin.

Table 395, Percent Businesses Realizing Different Market Share and Margin Changes vs. Change in Relative Product Quality

<u>Quality Change</u>	<u>Share Down* Margin Down</u>	<u>Share Down, Margin Up</u>	<u>Share Up, Margin Down</u>	<u>Share Up, Margin Up</u>
Large Loss	34%	25%	20%	21%
Loss	30%	29%	23%	18%
No Change	26%	26%	21%	26%
Gain	21%	23%	27%	30%
Large Gain	23%	13%	31%	34%

* Note: Down and up refers to changes relative to the average change.

Table 396 shows average annual change in earnings for these share and margin changes opposite change in quality. As would be expected, when market conditions permit a business to improve both share and margin, earnings increase is the greatest. When a large quality gain has occurred and conditions and strategies dictate a trade off between market share and margin, Table 4 shows that on average a “share up, margin down” strategy is better than a “share down, margin up” strategy. These findings support conclusions from article No. 22 that a volume aggressive strategy tended to be better when perceived value improvements occur.

In sum, while quality improvements do not guarantee improved earnings and share, they certainly improve the odds.

Table 396, Average Change in Earnings for Businesses Realizing Different Market Share and Margin Changes vs. Change in Relative Product Quality

<u>Quality Change</u>	<u>Share Down* Margin Down</u>	<u>Share Down, Margin Up</u>	<u>Share Up, Margin Down</u>	<u>Share Up, Margin Up</u>
Large Loss	-0.7%	0.1%	0.6%	0.6%
Loss	-1.3%	0.3%	0.1%	2.2%
No Change	-0.6%	0.4%	0.9%	2.7%
Gain	-0.8%	0.9%	1.0%	2.4%
Large Gain	0.2%	1.6%	2.1%	3.6%

*Note: Down and up refers to changes relative to the average change.

No. 133, September 1991

133 BEING A MAJOR SUPPLIER

Businesses seek to be major suppliers to their customers for good reasons. There is a downside, however. When customers purchase large quantities of a business's products and the purchase represents a large proportion of their total purchases, they have a strong incentive to negotiate contracts at lower prices. Analysis of the Strategic Planning Institute (SPI) database bears this out. Sellers in this situation (referred to as major suppliers) realize about 2.5 percentage points lower cash return on investment (CROI) than other sellers on average. However, this disadvantage does not usually occur for businesses that:

- Have a low relative cost position;
- Have high fixed capital intensity;
- Are in the decline stage of their life cycle.

Profitability of major supplier businesses is somewhat more sensitive to their cost position than is the case for other businesses.

Customer Purchase Quantity Size

The SPI database includes two business characteristics, which help assess the size and importance to customers of the products sold to them. The first is the typical amount purchased per transaction (contract) for the business's products and services. The second is the percent of total materials purchased by the customer, which are accounted for by purchases of the types of products and services sold by the business.

Average values of CROI are shown in Table 397 opposite these two dimensions. The upper right-hand cell of this matrix represents large and important customer purchases -- those with sales transaction sizes more than \$10,000 which represent more than 5% of the customer's total purchases. This cell averages about 2.5% less CROI than the average of the other three cells.

Table 397, Average CROI vs. Sales Transaction Size and % of Customer Purchases
(N=2453)

Sales Transaction Size	Above \$10,000	14.2% (N=511)	12.4% (N=588)
	Up to \$10,000	16.0% (N=922)	13.8% (N=432)
		Up to 5%	Above 5%
Percent of Customer Purchases			

In certain situations, however, being a major supplier does not seem detrimental to CROI. Table 398 shows the same matrix for businesses in the database, which have a cost position lower than the average of its three leading competitors. Here the upper right-hand cell is about at the average of the other three. A business with a strong cost position is able to realize high returns in all four supply situations.

Table 398, Average CROI vs. Sales Transaction Size and % of Customer Purchases
(With Low Relative Cost Position, N=597)

Sales Transaction Size	Above \$10,000	18.1% (N=133)	19.1% (N=161)
	Up to \$10,000	20.6% (N=193)	18.1% (N=110)
		Up to 5%	Above 5%

Percent of Customer Purchases

Businesses with high fixed capital intensity seem to have a slight advantage when there are a major supplier (Table 399). As previous articles have shown, high fixed capital intensity tends to lead to low levels of CROI, but this effort is somewhat mitigated by becoming a major supplier. (High fixed capital intensity is defined as original cost of plant and equipment exceeding 80% of annual sales revenue.)

Table 399, Average CROI vs. Sales Transaction Size and % of Customer Purchases
(with High Fixed Capital Intensity, N=274)

Sales Transaction Size	Above \$10,000	6.0% (N=51)	7.9% (N=97)
	Up to \$10,000	7.4% (N=78)	7.3% (N=48)
		Up to 5%	Above 5%

Percent of Customer Purchases

The CROI disadvantage of being a major supplier tends to erode as a business moves through its

product life cycle. By the time it reaches the decline stage, CROI is about the same for major suppliers as it is for other businesses (Table 400).

Table 400, Average CROI vs. Sales Transaction Size and % of Customer Purchases
(in the Declining Stage of the Life Cycle, N=139)

Sales Transaction Size	Above \$10,000	10.1% (N=19)	11.8% (N=48)
	Up to \$10,000	12.3% (N=51)	12.8% (N=21)
		Up to 5%	Above 5%

Percent of Customer Purchases

In order to evaluate the profit “levers,” a statistical regression analysis was made using pretax return on sales (PROS) as the measure of profitability. Table 401 contrasts the profit levers for these major supplier businesses with all industrial and consumer businesses. In general, it appears that businesses selling large customer purchase quantities need to be more cost focused and perhaps relatively less product and marketing focused. Factors such as cost position, unionization, and the existence of a process patent have moved up the list relatively. Factors such as product and service quality and image and the existence of a product patent are relatively less important. Also, in this situation a business’s profit margins tend to be relatively lower when they produce custom-designed products rather than standardized products and when they invest heavily in new products.

Table 401, Rank Order of Key Correlates of PROS

<u>All Industrial and Consumer Businesses</u>	<u>Businesses Selling Large Purchases</u>
1. Market Share (+)	1. Market Share (+)
2. Quality, Image (+)	2. Cost Position (-)
3. Capacity Utilization (+)	3. Unionization (-)
4. Cost Position (-)	4. Capacity Utilization (+)
5. Unionization (-)	5. New Products (-)
6. New Products (-)	6. Quality Image (+)
7. Working Capital Required (+)	7. Fixed Capital Required (+)
8. Fixed Capital Required (+)	8. Working Capital Required (+)
9. Sales Transaction Size (-)	9. Custom Designed Product? (-)
10. Product Patent? (+)	10. Process Patent? (+)
11. Marketing R&D Expense (+)	11. Market Growth Rate (+)
12. Product Line Breadth (-)	
13. Process Patent? (+)	
14. Competitive Share Difference (+)	
15. Market Growth Rate (+)	
16. Custom Designed Product (-)	

(Rank order based on beta weights in the Step-Down OLS Regression.)

No 134, October 1991

134 ADAPTING TO MARKET SHARE AND LIFE CYCLE POSITION

In the early 1970, the Boston Consulting Group popularized the idea of managing a portfolio of businesses on the basis of their market share and life cycle position. Others extended their work. Analysis of the Strategic Planning Institute (SPI) data base reinforces these earlier findings by showing that the business characteristics which correlate most strongly with profitability vary substantially depending on market share position and life cycle position.

Correlates of Pretax Return on Sales

Two key dimensions which characterize a business are its market share position and its life cycle position. Many previous articles have examined the association between profitability and various business characteristics. Figure us a summary of the correlation between pretax return on sales (PROS) and a variety of business characteristics with the data base segmented on market share rank and life cycle position. The characteristics in each of these six "cells" are rank ordered with the more strongly correlated factors listed first.

Table 402 shows that the factors most strongly correlated with profitability vary depending on market share rank and life cycle position. For example, in four of the six cells market share shows the strongest correlation with PROS. This suggests that businesses in the growth stage of their life cycle and/or are first in market share rank should pay particular attention to increasing or maintaining market share.

Table 402, Correlates of PROS
(Rank Ordered)

Market Share Rank	1	Market Share Pct. Customer Purchases (-) Quality/Image Customer Concentration Process Patent Working Capital Purchase Costs (-) Capacity Utilization Sales per Employee Product Patent	Market Share Direct Costs (-) Selling, R&D Exp. Unionization (-) Quality/Image Number of Competitors (-) Purchase Costs (-)
	2	Market Share New Products (-) Sales Transaction Size (-) Process Patent No. of Direct Customers Customer Concentration Market Share Large Comp (-) Direct Costs (-) Breadth Product Line (-)	Capacity Utilization Unionization (-) Product Patent Direct Costs (-) Quality/Image
	3 or Lower	Market Share Early Market Entry Quality/Image Capacity Utilization Direct Costs (-) Product Patent New Products (-) Unionization (-) No. of Direct Customers	Direct Costs (-) Capacity Utilization Quality/Image Market Share New Products (-) Product Patent
		Growth	Maturity
Life Cycle Position			

Note: (-) means negatively correlated with PROS. Others are positively correlated. Investment and cost items are as a percent of total cost of sales.

Smaller share mature businesses have relatively less to gain through market share improvement. In mature markets it usually behooves smaller competitors to focus more attention on operating efficiencies than on share gain. In these situations, high levels of capacity utilization and low levels of direct costs and unionization tend to be more important. However, the quality and image of products and services are also important and it helps to have a product patent.

In large share mature businesses high levels of spending on marketing and R&D are strongly

associated with higher profitability. This reinforces the idea that large share mature businesses do best competing on the basis of product and service quality and image rather than on price (they have most to lose when prices are cut). Because of their size they also need to pay attention to costs as shown by the importance of a low direct cost position and a low level of unionization. It is best when they have few competitors and purchases represent a smaller percentage of total cost of sales (they add more 'value' to their raw materials).

Large share businesses in the growth phase of their life cycle also benefit by low purchase costs. Note that purchase costs do not appear as a significant factor for smaller share businesses. Contrary to other kinds of businesses, large share growth businesses tend to do best when they do not sell products which represent a large amount of their customers purchases, when they have higher levels of working capital, and when they have higher levels of sales per employee. First and second ranked growth businesses tend to do better when their customers are concentrated, i.e., a small percentage account for most of their sales, and when they have a process patent.

While a key to long term growth, developing and marketing new products often hurts profitability short term, particularly in smaller share businesses. The amount of new products (defined as percent of sales accounted for by products introduced in the past three years) is the second strongest profit correlate for second ranked growth businesses. Selling in large sales transaction sizes also hurts these businesses.

Small share growth businesses tend to be driven by the same factors that drive other businesses with two exceptions. These businesses tend to be more profitable when they have entered the market early and when they serve many direct customers, i.e., they are established and broad based.

Table 402 might serve as a useful checklist for your business. If your business characteristics and strategies are inconsistent with the items that are strong profit correlates, you may want to consider alternatives.

No. 135, November 1991

135 ADAPTING TO MARKET SHARE AND LIFE CYCLE POSITION -II

The last article showed that the business characteristics, which correlate most strongly with profitability vary substantially depending on market share position and life cycle position. This article extends those findings by similarly examining sales revenue growth.

Sales revenue growth was previously analyzed in articles Nos. 80 and 81. Those articles showed that the factors correlating most strongly with sales revenue growth were served market growth, selling expense growth, and capacity growth. These three factors are the strongest correlates in all six combinations of market share rank and life cycle position. Served market growth correlates most strongly with sales revenue growth for larger share businesses; selling expense growth correlates most strongly for smaller share businesses.

During the growth phase of the life cycle sales revenue growth is strongly associated with new product development. Improving the quality and image of existing products seems to be more important during the mature phase.

Correlates of Sales Revenue Growth

In addition to achieving high profit margins discussed last month, business success is also dependent on its ability to grow sales and earnings. Factors affecting sales revenue growth will normally be different than those affecting profit margin. Some factors, such as product quality, image, and relative cost position, are important to both margin and growth. Other factors, such as new product development, often help growth at the expense of current levels of profitability.

It is necessary for a business to allocate resources appropriately to the factors contributing to margin and growth, making tradeoffs consistent with the long-term business objectives. Table 403, used in conjunction with Table 402 in the last article, provides a quick checklist of factors a business might want to emphasize depending on its market share rank and life cycle position.

Table 403, Correlates of Sales Revenue Growth
(Rank Ordered)

Market Share Rank	1	Served Market Growth Capacity Growth Selling Expense Growth initial % New Products Initial Rel. Sales Force Exp. (-) Initial Market Share (-) Customer Service improvement Increasing % New Products	Served Market Growth Selling Expense Growth Capacity Growth Quality/Image Improvement Initial Market Share (-)
	2	Served Market Growth Selling Expense Growth Capacity Growth Initial % New Products Initial capacity Utilization (-) Competitive Exit Quality/Image Improvement initial Market Share (-) Initial Direct Cost Position (-) Direct Cost Improvement	Served Market Growth Selling Expense Growth Capacity Growth Quality/Image Improvement Initial % New Products customer Service Improvement Initial Direct Cost Position (-) Initial Market Share (-)
	3 or Lower	Selling Expense Growth Capacity Growth Served Market Growth Initial % New Products Initial Market Share (-) Quality/Image improvement Direct Cost Improvement Increasing % New Products Initial Direct Cost Position (-) Competitive Exit	Selling Expense Growth Capacity Growth Served Market Growth Direct Cost improvement Quality/Image Improvement Customer Service Improvement Initial Market Share (-) Initial % New Products
		Growth	Maturity
Life Cycle Position			

Note: (-) means negatively correlated with Sales Revenue Growth. Others are positively correlated.

Table 403 shows that the top three factors for each of the six cells are served market growth, capacity growth, and selling expense growth, although not always in that order. These factors were discussed previously in article No. 80. These associations are not necessarily causal and perhaps best thought about as conditions conducive to growth, i.e., it is difficult for sales revenue to grow without simultaneous growth in these correlating factors. Note that served market

growth is most important for businesses ranked first or second in their served markets, but selling expense growth and capacity growth are more important for smaller share businesses. This makes sense since the growth of large-share businesses is closely aligned with the growth of their served markets, being a larger part of them. Small-share businesses grow by aggressive expansion within their served markets.

The next most important factor for all three share positions in growth markets is the initial level of new products. New products are defined as the percent of sales revenue accounted for by products introduced in the previous three years. Having new products in the market and in the pipeline during the growth phase of the product life cycle is extremely important to stimulate further growth.

While this factor is also important for businesses in the mature phase of the life cycle (although it is not a statistically significant factor for first ranked mature businesses), the ability to improve the quality and image of existing products tends to be more important. This suggests that the focus of product development should normally shift from designing, developing, and marketing totally new products to continually improving the quality and performance of existing products as a business moves through its life cycle.

A factor which appears in all six combinations of market share rank and life cycle position is initial market share, negatively correlated. This re-emphasizes a point made in several previous articles about the difficulty to grow from a high-share position; growth is easier when market share is low.

Having an initial low direct cost (manufacturing and distribution costs) position and/or improving direct costs seems to be more important for businesses ranked second or lower in market share. While cost position does not correlate strongly with sales revenue growth for high-share businesses, the last article showed that, for top-share mature businesses, a low direct-cost position was the second highest correlating factor with pretax return on sales. Examining both these charts leads to the conclusion that only first ranked share businesses in growth markets need not be overly concerned with their cost position.

An unusual factor for first ranked growth businesses is the negative correlation between sales revenue growth and initial relative sales force expenditures. The fastest growing businesses in this cell tend to spend less on their sales force than their competitors. Many of these are likely early entries into the marketplace. They probably entered fast-growing markets with high-value offerings, penetrated quickly with a relatively small sales force, and grew by increasing capacity and selling expense relatively aggressively.

While competitive exits tend to help all businesses, correlation with sales revenue growth was significant only for second and lower market-share ranked businesses in the growth phase of their life cycle position. Competitive exit seems to be less important (1) when markets have matured and are, therefore, relatively stable and (2) for businesses which have a large-share position and are less affected by the exit of a competitor, likely to be small.

Customer service improvement correlates with sales revenue growth significantly for large-share businesses during the growth phase of the life cycle and smaller share businesses (second and

lower) during the mature phase of the life cycle. Customer service tends to be more important for all customers earlier in the life cycle and, therefore, a large broad-based supplier needs strong customer service to continue to grow. Later in the life cycle larger customers may not value customer service as much, but smaller share suppliers may grow by providing improving customer service in the smaller niches that they often tend to serve.

Again, Table 403, used in conjunction with the last article's Table 402, can serve as a useful checklist for your business to test whether your strategies are consistent with the factors that correlate with profit margin and sales revenue growth given your market share rank and life cycle position.

No.136, December 1991

136 USING PROFITABILITY NORMS

The major factors, which show high correlation with pretax return on sales (PROS) were summarized in article No. 134 for combinations of market share rank and life cycle position. From a characterization of a business on these and other factors we can develop a profit "norm" - the level of PROS typical for a business with these given characteristics. This norm can be used to:

- Test actual business profitability vs. an 'expected' value;
- Help assess the balance between business strengths and weaknesses;
- Forecast likely changes in profitability:
- Without changes in the business characteristics;
- With changes in the business characteristics.

Calculating Profitability Norms

Profitability norms can be calculated from the Strategic Planning Institute (SPI) database in two ways. One alternative is to select a sample of businesses similar to the business being analyzed on key characteristics and find the average PROS of these businesses. A second way is to develop through multiple regression an equation relating PROS (or some other measure of profitability) to the key correlating factors.

Such an equation has been developed and can be used to calculate the profit norm given a characterization of the business on the key correlating factors. Such an analysis can help assess the balance between business strengths and weaknesses and test actual business performance vs. an "expected" value.

Deviations from Norm

There can be a number of reasons why the actual profitability of a business can differ significantly from the norm. Table 404 summarizes some key reasons for below average profitability.

Table 404, Reasons for Below Average Profitability

- Poor general business conditions.
- Overly aggressive competition.
- Low profit customers
- Position in segments poorer than position overall.
- Misjudging customer values and pricing too low.
- Setting prices to the low value segment.
- High allocated costs.

If a business is analyzed during a recession, poor general business conditions can cause below-average profitability. A business may be in a competitive situation where it faces one or more overly aggressive competitors. A factor not captured in the SPI database is the profitability of customers -- the profitability of a supplier can depend heavily on the profitability of its customers.

Occasionally, a business can be in a situation where it looks strong overall, but could be weak if analyzed on a segment-by-segment basis. Other reasons for below-average profitability are misjudging customer value and pricing lower than necessary or setting prices across the board based on a low-value segment. High allocated cost is often given as a reason for below-average profitability.

Forecasting Likely Changes In Profitability

There is a very strong tendency among businesses in the SPI database for their profitability to trend toward the norm. (If this were not true, the norm would have no value.) Figure 1 shows the average annual change in PROS on a percentage point basis vs. the PROS norm and the initial level of PROS.

Table 405, Average Annual Change in PROS vs. PROS Norm and Initial Level
(N=2448)

Initial Level of PROS		PROS Norm		
		Low	Medium	High
Initial Level of PROS	High	-2.5% (N=112)	-1.5% (N=236)	-0.5% (N=471)
	Medium	-0.9% (N=248)	-0.3% (N=333)	1.0% (N=231)
	Low	1.8% (N=448)	1.7% (N=261)	2.9% (N=108)

In the lower right-hand corner of Table 405 are the 108 businesses with high PROS norms (top one-third) and low initial levels of PROS (low one-third). On average, these businesses show almost a three percentage point increase in PROS. At the other extreme in the upper left-hand corner, serious profit erosion occurs.

Table 406 summarizes the average annual change In PROS vs. the difference between the PROS norm and the initial level. The SPI database businesses were divided into six approximately equal segments for this analysis. Again, the strong relationship between change in profitability

and the difference between the norm and the initial value is seen.

Table 406, Average Annual Change in PROS vs. Difference Between PROS Norm & Initial Level

<u>Pros Norm Minus Initial Level</u>	<u>Average Annual Change in PROS</u>	<u>No. of Businesses</u>
Less than -7.6%	-1.9%	404
-7.6% to -3.1%	-0.8%	402
-3.1% to -0.1%	-0.5%	412
-0.1% to 3.2%	0.2%	412
3.2% to 7.9%	1.1%	412
More than 7.9%	3.5%	406

Regression analysis indicates that the average business in an average year moves about 20% of the way from its initial PROS value toward the norm if nothing else changes. Thus, a business at 10% PROS with a norm of 15% would be expected to be at 11% a year later.

In addition to the difference between the PROS norm and its initial level, several other factors are strongly associated with change in PROS. Table 407 lists these factors rank ordered.

Table 407, Factors Most Strongly Associated with Change in PROS
(Rank Ordered)

- Difference between PROS norm and initial level (+).
- Market growth (+).
- Change in product quality (+).
- Change in relative costs (-).
- Change in capacity (+).
- Initial level of capacity utilization (-).
- Initial level of percent new products (+).

The second strongest factor is market growth, which again emphasizes the importance of being in growing markets. Next most important are improvements in product quality and costs relative to competition.

Capacity additions, perhaps surprisingly, also correlate strongly with improvement in PROS. This factor was discussed last month as a key driver to changes in market share. Businesses also tend to show more improvement in PROS when they start at a lower level of capacity utilization and when they have been developing a large number of new products. There is, of course, some intercorrelation among these factors and it is difficult to sort out cause and effect.

It behooves a business to understand its potential profitability in order to assess its strengths and weaknesses, forecast profit performance, and prescribe strategies for improvement. The SPI database and the regression models we've developed from the database can be helpful in doing this.

No. 137, January 1992

137 USING PROFITABILITY NORMS -II

The last article discussed the value of calculating a profit “norm” for your business to test current levels of pretax return on sales (PROS) and help predict future levels. This profit norm is also related to changes in price premium, market share, and capacity utilization. A business with a high profit norm (indicating that business strengths exceed weaknesses) is more likely to improve its price premium, share, and capacity utilization as well as its margin.

Change In Price Premium

In addition to improving profit margins as shown last month, a business with a high profit norm also tends to improve its price premium when it begins with a medium or low premium. Price premiums are often slow to change but, as shown in Table 408, weaker competitors are often not able to improve their profit margins (at least through price) to the same extent as strong competitors. Thus, a high profit norm helps improve margins, not only absolutely, but relatively and thereby helps to hold the strong competitive position.

Change Market Share

A stronger relationship is found when examining change in market share, the initial level of market share, and the profit norm. As indicated in Table 409, businesses with a high profit norm tend to do much better in terms of improving or holding market share, regardless of the initial level of market share.

Table 408, Average Annual Change in Price Premium vs. PROS Norm and Beginning Level of Relative Price
(N=2448)

Beginning Price Relative to Competitors	High	-0.2% (N=268)	-0.2% (N=299)	-0.2% (N=355)
	Medium	0.2% (N=169)	0.2% (N=191)	0.4% (N=164)
	Low	0.4% (N=382)	0.5% (N=311)	0.6% (N=309)
		Low	Medium	High
PROS Norm				

Table 409, Average Annual Change in Market Share vs. PROS Norm and Initial Level of Market Share
(N=2453)

Initial Level of Market Share		PROS Norm		
		High	Medium	Low
Initial Level of Market Share	High	-0.7% (N=54)	-0.4% (N=229)	-0.1% (N=535)
	Medium	0.1% (N=263)	0.4% (N=350)	0.9% (N=213)
	Low	0.3% (N=504)	0.5% (N=224)	0.6% (N=81)
		Low	Medium	High

At high levels of market share, shares tend to erode as discussed in previous articles. Erosion is much less severe when the profit norm is high. Note in Table 409 that most businesses tend to be on the diagonal from lower left to upper right because of the strong correlation between market share and profitability (as well as other elements of competitive advantage).

There are some slight differences with respect to the effect of the profit norm on change in market share depending on growth of served market. As Table 410 indicates, the profit norm has no effect on market share change for high growth markets, but the effect increases somewhat as the served market becomes more mature. While not a strong tendency, this helps support the idea first expressed about 20 years ago by the Boston Consulting Group of trying to improve the relative strength of a business before growth goes out of the market.

Table 410, Average Annual Change in Market Share vs. PROS Norm and Growth of Served Market
(N=2443)

Growth of Served Market	High	0.0% (N=239)	0.0% (N=254)	0.0% (N=325)
	Medium	0.1% (N=256)	0.2% (N=274)	0.3% (N=279)
	Low	0.4% (N=326)	0.4% (N=275)	0.6% (N=215)
		Low	Medium	High
		PROS Norm		

Change in Capacity Utilization

The effect of the improvement of market share due to having a high profit norm also spills over to capacity utilization. As Table 411 indicates, capacity utilization is improved more when the profit norm is higher for all three levels of beginning capacity utilization shown. This, then, is another advantage of a strong business.

Table 411, Average Annual Change in Capacity Utilization vs. PROS Norm and Beginning Level of Capacity Utilization
(N=2448)

Beginning Capacity Utilization	High	-3.4% (N=210)	-2.8% (N=273)	-1.9% (N=362)
	Medium	-1.6% (N=250)	-0.0% (N=273)	0.9% (N=278)
	Low	2.6% (N=359)	3.0% (N=255)	3.4% (N=188)
		Low	Medium	High
		PROS Norm		

These relationships can help a business predict how key profit influencing factors are likely to change depending on the relative strength of the business indicated by the profit norm. In each case consideration must be given to the initial level of these factors as well as the profit norm because it is more difficult to improve from an already good position on any individual element.

No. 138, February 1992

138 NORMS FOR ACCOUNTS RECEIVABLE

In times of economic recession many businesses experience an increase in accounts receivable. There also seems to be several inherent business characteristics which influence the norm (expected level) for accounts receivable regardless of the economic climate. This Impact article focuses on some of these factors and the relationship between accounts receivable and pretax return on sales (PROS). Key conclusions are that accounts receivable as a % of total costs are:

- Normally higher for European businesses than North American businesses.
- Normally higher for capital goods businesses than other industrial businesses.
- Normally lower for manufacturers of consumer non-durables than other industrial businesses.
- Consistently higher among businesses with a high PROS.

By characterizing a business on these and other factors we can develop a norm for accounts receivable as a % of total cost ... the level typical for a business with these given characteristics. Business performance can also be quickly evaluated against several other norms by conducting a Business Situation Evaluation.

Location of Market and Type of Business

For similar size businesses, European businesses (markets predominantly located in Europe) consistently have a higher level of accounts receivable than North American businesses. This is shown in Table 412 which plots average accounts receivable as a percent of total cost versus location of market and type of business.

The regional difference may be due in part to the more fragmented customer base (larger number of accounts representing 50% of total sales) typical of most European markets.

Table 412, Accounts Receivable/Total Cost vs. Location of Market and Type of Business
(N=2262)

Type of Business	Capital Goods	20% (N=352)	26% (N=18)
	Consumer Durables	17% (N=269)	22% (N=22)
	Intermediate Products or Supplies	14% (N=995)	22% (N=198)
	Consumer Non-Durables	12% (N=286)	16% (N=122)
		North America	Europe

PROS Norm

This observation remains true regardless of the type of business. Although, the type of business also seems to strongly influence the level of accounts receivable. For instance, capital goods businesses tend to have higher levels ... while levels for manufacturers of consumer non-durables tend to be lower than for other business types. This is perhaps related to frequency of purchase, length of time to fill orders, and/or time to be sure received goods are satisfactory.

Accounts Receivable and Profit Norms

It might seem logical that for similar businesses the one with a lower level of accounts receivable would usually be more profitable. Actually the opposite seems to be true. Business in the SPI database with lower accounts receivable as a percent of total cost tend to have lower PROS (see Figure 166). This is not to suggest that increasing accounts receivable should be an integral part of any business plan striving to improve margins. However, constraining accounts receivable as a prerequisite to implementing a profit improvement strategy may be counter productive.

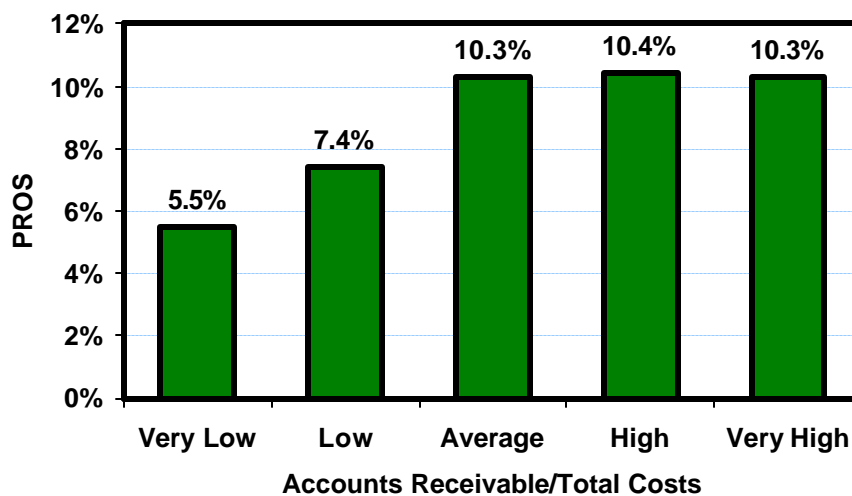


Figure 166, Relationship of Pretax Return on Sales (PROS) and Accounts Receivable

Correlates with Accounts Receivable

In addition to location of market, type of business and PROS several other factors are highly correlated with accounts receivable as a percent of total cost. For example, Figure 167 shows the relationship of current liabilities and accounts receivable. It would seem many businesses tend to compensate for higher levels in accounts receivable by extending the holding period on accounts payable as much as possible. Perhaps this is a better way to manage net working capital in a business attempting to improve return on investment. The factors most highly correlated with accounts receivable are listed in Table 1.

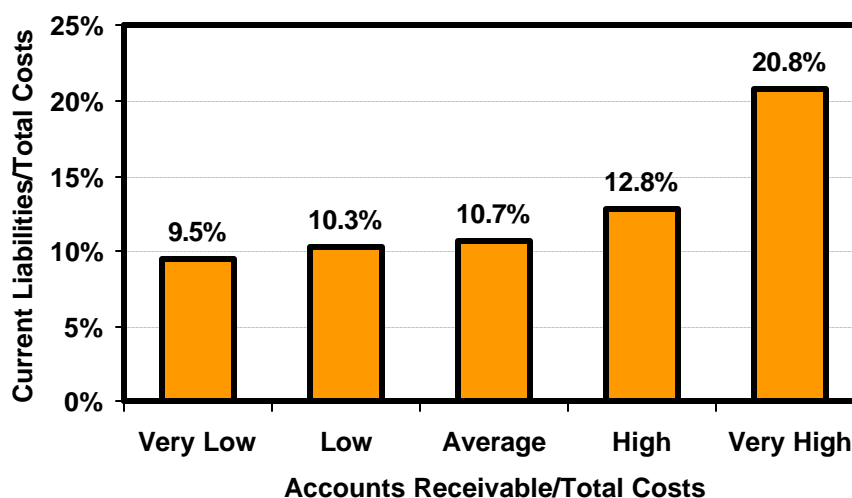


Figure 167, Relationship of Current Liabilities and Accounts Receivable

Actual business performance on accounts receivable can be tested versus a norm (expected value) for a typical business with the same characteristics. This is done using a regression

equation that links accounts receivable as a percent of total cost to business characteristics in Table 413.

Table 413, Factors most strongly correlated with the level of Accounts Receivable as a % of Total Costs

(Rank Ordered)

- **Current Liabilities as a Percent of Total Costs (+)**
- **Pretax Return on Sales - Norm (+)**
- **Location of Market (North America or Europe)**
- **Type of Business (Consumer Durables or Capital Goods, etc.)**
- **Percent of Immediate Customer Purchases Accounted for by Purchases of this Type of Product/Service (+)**
- **Raw Material and Semi-Finished Inventory as a % of total Costs (+)**
- **Number of Immediate Customers (+)**
- **Capacity Utilization (-)**
- **Percent of Immediate Customers Accounting for 50% of Total Sales (+)**
- **Marketing and R&D Expense as a % of Total Costs (+)**
- **Finished Goods Inventory as a % of Total Costs (+)**
- **Physical Growth of Served Market (+)**
- **Purchases of Raw Materials, Energy and Services as a % of Total Costs (-)**

No. 139, March 1992

139 THE EFFECT OF COMPETITIVE ENTRY ON MARKET SHARE

One of the most difficult problems a business can face is dealing with a new competitive entry. As would be expected, when a major competitor enters its markets, a business is likely to suffer a loss of market share. Strategic Planning Institute consumer and industrial businesses were examined to quantify this impact and determine whether certain business characteristics either contributed to or helped prevent loss of market share.

Forty-six percent (46%) of SPI businesses reporting a recent major competitive entry showed a subsequent loss of market share. Only thirty-four percent (34%) of those not reporting an entry lost share subsequently.

By far the single biggest factor associated with market share loss was the original level of market share. As reported in previous articles, high share businesses tend to lose share and low share businesses tend to gain share regardless of whether a competitive entry occurs.

High share businesses were less likely to lose share after a competitive entry when it: had patent protection, had high product and service quality, had many competitors, produced custom-designed rather than standardized products and/or was not in the decline stage of its product life cycle.

Recent Entry of a Major Competitor

SPI considers that a recent major competitive entry occurred if a competitor entered the market in the past five years and has at least a 5% share of the market. Of the 2453 consumer and industrial businesses analyzed, 652 (27%) of them reported a major competitive entry. Of these 652 businesses, 46% reported losing share. Among the 1801 businesses without an entry, 34% reported losing share. (Each business reports four years of data. Share is considered lost if the average share for the second two-year period is less than the first two-year period.)

Table 414, Percent of Business that Lost of Market Share vs. Initial Market Share and Recent Entry of Competitor
(All Businesses N=2453)

Recent Major Competitive Entry	Yes	35% (N=351)	59% (N=301)	46% (N=652)
	No	31% (N=1156)	41% (N=654)	34% (N=1801)
		Up to 25%	More than 25%	Total
Initial Market Share				

Initial market share is the average of the first two years.

Effect of Initial Level of Market Share

Most competitive factors in the SPI database show a strong “regression toward the mean” tendency. As shown in Table 339, high share businesses are more prone to lose share regardless of whether or not a competitive entry occurred. Note also that the chances of losing market share are not much different for low share businesses regardless of whether a competitor entered.

High share businesses seem to have more to lose when a competitor enters. This is consistent with the “broken stick rule” discussed in article #25. Table 415 shows the estimate of market share according to this “rule” for combinations of number of competitors and market share rank.

Table 415, "Broken Stick Rule" Market Share Estimates

<u>Number of Competitors</u>	<u>Market Share Rank</u>					
	1	2	3	4	5	6
1.	100%					
2.	75%	25%				
3.	61%	28%	11%			
4.	52%	27%	15%	6%		
5.	46%	26%	16%	9%	4%	
6.	41%	24%	16%	10%	6%	3%
7.	37%	23%	16%	11%	7%	4%
8.	34%	22%	15%	11%	8%	5%
9.	31%	20%	15%	11%	8%	6%
10.	29%	19%	14%	11%	9%	7%
11.	28%	18%	14%	11%	9%	7%
12.	26%	18%	13%	11%	9%	7%

It is obvious that the expectation from the “broken stick rule” is that the high share business will suffer the most when a new competitor enters. (Of course smaller share competitors lose too if they lose their rank position.)

Table 416, Percent of High Market Share Businesses Losing Market Share When a Recent Competitive Entry Has Occurred vs. Characteristics of the Business
(N= 301)

<u>Business Characteristics</u>	<u>Losing Market Share</u>	<u>Sample Size</u>
Existence of a Product Patent		
Yes	53%	225
No	61%	76
Existence of a Process Patent		
Yes	50%	227
No	62%	74
Product Quality Relative to Competition		
High (superior-inferior >25%)	54%	191
Low	66%	110
Quality of Customer Service:		
Superior to Competitors	55%	179
Same or Inferior	64%	122
Number of Competitors:		
More than 10	51%	51
Ten or Less	60%	250
Type of Product:		
Custom Designed	53%	47
More or Less Standard	60%	254
Life Cycle Position:		
Introductory, growth	57%	93
Mature	58%	192
Decline	75%	16

Analysis of High Share Businesses

The 301 businesses with a recent major competitive entry and a market share greater than 25% were examined to see what other factors were associated with share loss. As shown in

Table 416, share loss tended to be less for these businesses when:

- A product or process patent exists;
- Product and service quality is high;
- There are many competitors;
- The products are custom-designed rather than standardized;
- The product is not in the decline stage of its life cycle.

(While there were only 16 of these businesses in the decline stage, 12 showed a share loss.)

It was somewhat surprising that other factors such as product image/company reputation and relative cost position showed no association. Also the differences shown in Table 416 are not very large, indicating that the best that can be expected is slight improvement in the “odds” when these conditions exist.

No. 140, April 1992

140 IMPACT OF PRODUCT INNOVATION ON PRETAX MARGIN

In article #136 it was noted that businesses with high levels of product innovation can generally expect to see increasing pretax return on sales (PROS) in future years. Considering potentially high costs and uncertain lead times in product development, it often is difficult to assess the risk of pursuing strategies centered around product innovation. Even when successful from a technical point of view, competitive actions and changing customer needs can minimize the rewards of such a strategy. This article will investigate changes in PROS over time for businesses active in product innovation.

Half the businesses in the SPI database are considered non-innovators -- less than 1% of total revenue came from products introduced in the last three years. On average their PROS did not change over the next four years. For businesses active in product innovation, an average 2 percentage point improvement in PROS was observed. Ten characteristics of businesses active in product innovation have been identified that seem to differentiate the better performers in PROS improvement from the rest.

Product Innovation and PROS

As a measure of product innovation, the SPI database tracks the percent of sales revenue that is generated by products introduced in the last three years. For approximately half of the SPI businesses (N = 1205) this value is less than 1% of total revenue. The other SPI businesses (N = 1122) were far more active in product innovation, averaging 13% of revenue from products less than three years old. When these businesses were compared on the basis of change in PROS over the following four years, it was found that innovative businesses improved their margin an average of 2 %. There was no change in the average PROS for the businesses that were not active in product innovation.

There are performance differences on other business characteristics that tend to further enhance the improvement in PROS for businesses active in product innovation. The differences in performance on these characteristics, see Table 417, Improved PROS Through Product Innovation, may be useful in assessing the merits of increasing product innovation in your business.

Product Age and Life Cycle.

Additional improvements in PROS were found for products introduced after 1955. Older products' PROS performance did not respond as well to a successful product innovation strategy. This was particularly true for products in the "decline" stage of their product life cycle, where average PROS declined significantly when sales from products introduced in the previous three years exceeded 1% of total revenue. However, product innovation was still important for businesses with positive market growth (physical volume) of less than 2.3% per year. Here PROS declined for non-innovating businesses but increased for businesses active in product innovation.

Market Structure and Competitive Position

Higher initial levels of product innovation tend to improve PROS more in markets served by few suppliers and especially for the market's second and third ranked supplier. This was also true for businesses which were at a cost disadvantage versus major competitors.

Table 417, Improved PROS Through Product Innovation

<u>Age of Product</u>	Prior to 1955 ✓	1955 or Later ✓
<u>Product Life Cycle</u>	Growth to Maturity ✓	Decline
<u>Market Share of Four Largest Suppliers</u>	Less than 77%	77% or Greater ✓
<u>Share/Share of 3 Largest Competitors</u>	Less than 40% ✓	40% or More
<u>Mfg. & Distribution Cost vs. Leading Competitors</u>	Cost Disadvantage ✓	Cost Advantage
<u>Customer Service vs. Leading Competitors</u>	Worse ✓	Better
<u>Importance of Immediate Customer</u>	< 5% of Purchases	> 5% of Purchases ✓
<u>Purchases/Total Cost</u>	Less than 50% ✓	50% or More
<u>Total Investment/Total Cost</u>	Less than 45%	45% or More ✓
<u>Product Patents</u>	Yes ✓	No

Cost Position and Customer Perceptions

In general, businesses with relatively poor customer service tend to benefit more in terms of gains in PROS after achieving success with a product innovation strategy. This is also true if the customers' total purchase of the type of product you supply to the customer represent more than 5% of their total purchases.

Internal Business Characteristics

High value added business, high investment intensity (low sales turnover), and businesses having product patents all demonstrated additional improvements in PROS when they were active in product innovation.

Businesses that have been active in product innovation and then experience increasing PROS have several characteristics in common. These characteristics may be viewed as a sort of checklist in evaluating the suitability of adopting or sustaining a product innovation strategy in your business.

No. 141, May 1992

141 A NORM FOR RELATIVE PRODUCT QUALITY

Pretax margin, market share and several other major factors correlate highly with a supplier's product quality relative to its leading competitors'. Using these factors, a "product quality norm" has been developed which can be used to:

- Test actual business performance versus an "expected" value.
- Assess the current balance between product quality and other characteristics such as market share, price premium and profit margin.

Relative Product Quality

The association between relative product quality and profitability has been cited in several previous articles. This association is shown in Figure 1. Relative product quality is the percent of your products perceived by customers to be superior to leading competitors minus the percent perceived to be inferior to leading competitors after dividing product revenues into three categories -- superior, about the same, and inferior. Since customers tend to buy products they perceive to be equal to or better than those offered by others, it is not surprising that 80% of the businesses in the SPI database net out positive on relative product quality. In fact, the average for industrial businesses in the database is +24%.

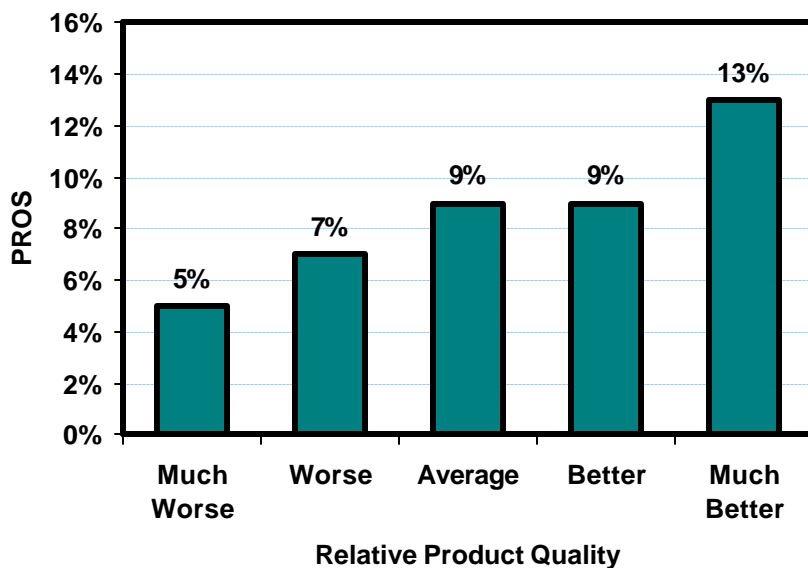


Figure 168, Supplier Profit Margin vs. Relative Product Quality

For the plots in Figure 168 through Figure 172 the database was split into five groups. The group labeled "much worse" represents businesses with negative relative product quality -- that is, a higher percent of revenue comes from products inferior to leading competitors than from products that are superior. The average rating and range for each of the groups is:

Table 418, Relative Product Quality Range

	Average	Range
Much Worse	-12.6%	-25.0% to -0.1%
Worse	4.3%	0.0% to 13.6%
Average	20.6%	13.8% to 28.2%
Better	37.2%	28.3% to 49.8%
Much Better	67.7%	50.0% to 85.0%

Relative Product Quality Norm

There are several other business characteristics that are also closely correlated with relative product quality. Figure 169 through Figure 172 show the strong positive relationship with market share, price premium and relative image/reputation. There is also a strong inverse relationship between a supplier's relative product quality and the market share of the largest competitor.

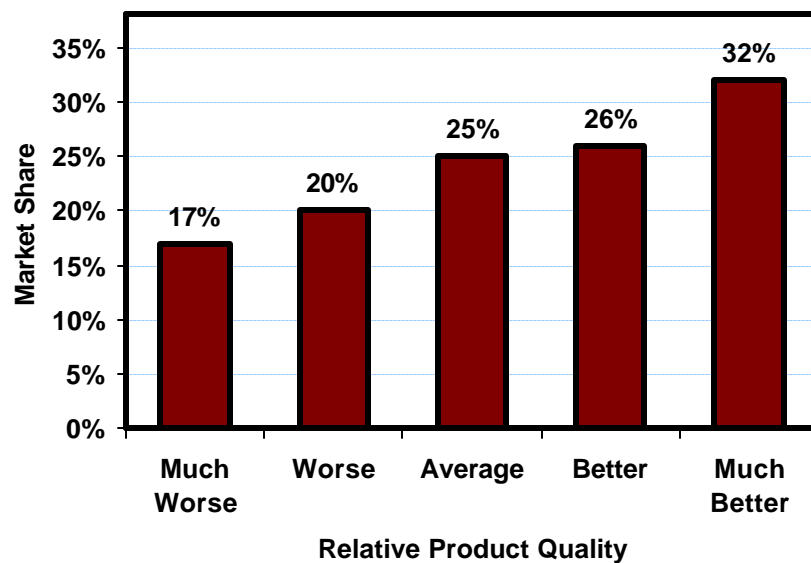


Figure 169, Market Share vs. Relative Product Quality

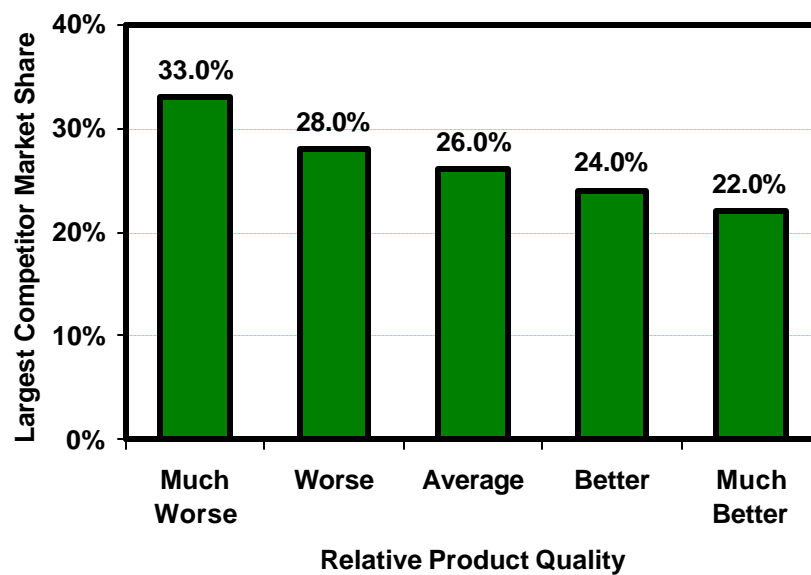


Figure 170, Largest Market Share vs. Relative Product Quality

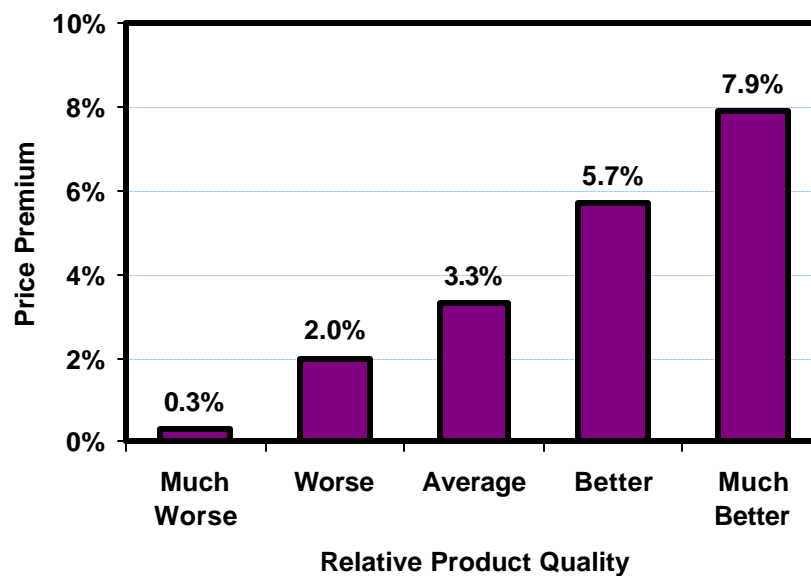


Figure 171, Price Premium vs. Relative Product Quality

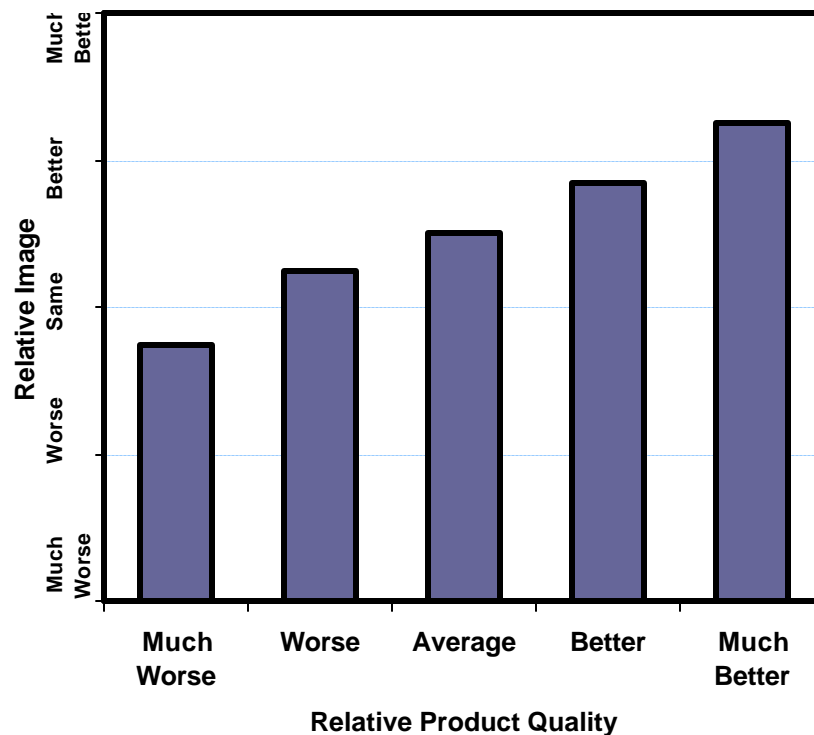


Figure 172, Relative Image vs. Relative Product Quality

Actual business performance on relative product quality can be tested versus a norm (expected value) for a typical business with the same characteristics. This is done using a regression equation that links relative product quality to the factors listed in Table 419. Since some of these factors are as likely a result of high relative product quality as the cause of it, it is possible to examine a business to see if it is in equilibrium. More importantly, if out of balance, is your business missing a potential chance to increase earning or is it likely to become vulnerable to share or price erosion? These questions and others relating to the sensitivity of market share and earnings to improvements in product quality can be evaluated in conjunction with other norms that have been discussed in recent articles.

Table 419, Factors Most Strongly Correlated with Relative Product Quality
(Rank Ordered)

- Relative Product Image and Company Reputation (+)
- Price Relative to Competition - Price Premium (+)
- Your Market Share (+)
- Market Share of Largest Competitor (-)
- Pretax Income as % of Total Cost (+)
- Having Product Patents (-I-)
- Percent of Revenue from Products Introduced in Last 3 Years (+)

- Relative Quality of Services Provided (+)
- Permanent Investment as % of Total Cost (-)
- Average Market Growth (+)
- Age of Business (+)

No. 142, June 1992

142 A NORM FOR RELATIVE DIRECT COST³⁸

In articles No. 130 & 131 on “Cost Strategies” it was indicated that -- it is often best to either aggressively increase operating costs to improve the value of the offering or drive for a low-cost position, rather than pursuing a middle-of-the-road strategy. Keeping costs in line with competition is almost always a key requirement for business success. Businesses with a high relative direct cost position (> 33% higher than leading competition) tend to increase their earnings more when they follow a cost reduction strategy. Only when costs are medium or low is it advisable to consider aggressive spending in most instances.

Obtaining accurate cost estimates for competitors can be a difficult and time consuming task. In this article a relative direct cost norm will be discussed which can be used to:

- Develop an assessment of cost position versus businesses with similar characteristics in the Strategic Planning Institute database.
- Challenge internal perceptions of our relative cost position.
- Help assess the appropriateness of pursuing a cost reduction or an aggressive spending strategy.

Price Premium and Earnings

There is a strong inter-relationship between relative direct cost and several other key business characteristics. Some of these factors are obvious and need to be considered when assessing a business's cost position. For example, some businesses in the SPI database can operate successfully at a direct cost disadvantage. In Table 420, 336 businesses achieved high margins even though their relative direct cost averaged 103 (e.g. 3% higher than competition).

³⁸ Relative direct cost is defined as the average level of a business's direct costs per unit of production relative to the average level of the three largest competitors. Included are costs of materials, production, and distribution. Excluded are marketing, R&D and administrative costs.

Table 420, Relative Direct Cost vs. Price Premium and Pretax Income as a % of Total Cost
(All Businesses N=2453)

Pretax Income/ Total Costs	High	97% (N=123)	99% (N=374)	103% (N=336)
	Medium	100% (N=113)	101% (N=410)	104% (N=288)
	Low	102% (N=153)	103% (N=389)	108% (N=267)
		Lower	Slightly Higher	Much Higher

Price Relative to Competition

While not a simple accounting relationship (only direct costs are considered and both costs and price are relative to competition), it would be anticipated that most businesses with high relative direct cost tend to achieve high pretax margins only when they are able to obtain a high price premium over in-kind competition. These successful businesses generally have a superior offering (both product and services). However, it is difficult under any circumstances to demonstrate good financial performance when relative costs are more than **5%** higher than leading competitors. For these businesses a cost reduction strategy is clearly the first priority.

Other Correlates with Relative Direct Cost

Market share structure and several other factors also correlate highly with a supplier's direct cost relative to its leading competitors'. For the plots in Figure 2, the SPI database was split into five groups. The groups labeled "much better" and "better" are businesses with a direct cost advantage. The other groups are at a direct cost disadvantage versus leading competitors. The range of relative direct cost for each group is:

Table 421, Relative Direct Costs

	Range
Much Worse	106.9% to 125.0%
Worse	102.2% to 106.8%
Average	100.2 % to 102.1%
Better	98.2% to 100.1%
Much Better	85.0% to 98.1%

As well as the market structure relationships, the strong correlation between relative direct cost and the relative quality of services mentioned earlier can be seen in Figure 173 through Figure 176. As cost position improves, successful businesses tend to put more effort into improving the total value of their offering. The product image and company reputation also tend to improve as relative direct cost improves, however the correlation is not as strong.

These observations and other information in the database seem to indicate that for most well established businesses the successful sequence to follow is:

- First drive for a direct cost advantage (or at least parity) and
- Then gain a perceived value advantage and price premium versus competition which is likely to require an increase in discretionary expenses.

Other characteristics that correlate with relative direct cost are:

- Businesses that are more backward integrated tend to have better relative direct cost position.
- Businesses that have process patents tend to have better relative direct cost position.
- Businesses operating at higher capacity utilizations tend to have better relative direct cost position.

One correlation that was not expected was that North American businesses tend to have better cost positions versus their leading competitors than is true for European businesses. This may be due to lower raw material costs and higher labor productivity in North America.

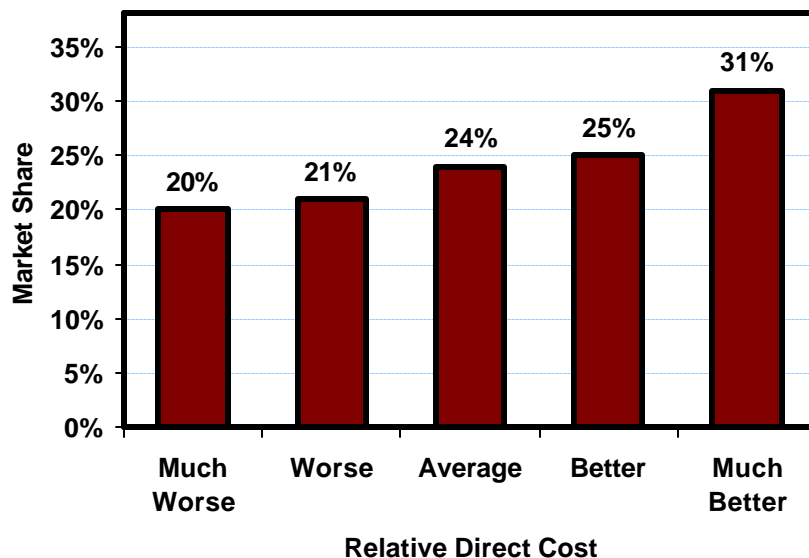


Figure 173, Market Share vs. Relative Direct Cost

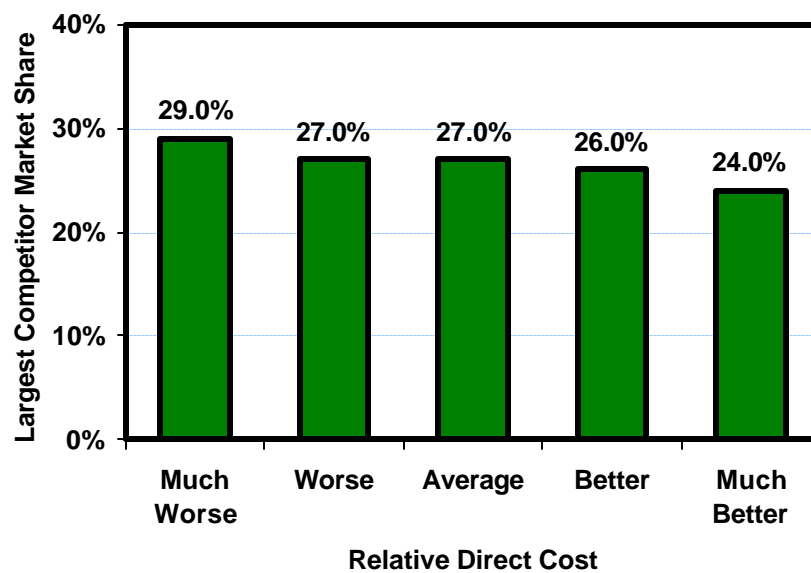


Figure 174, Largest Competitor Market Share vs. Relative Direct Cost

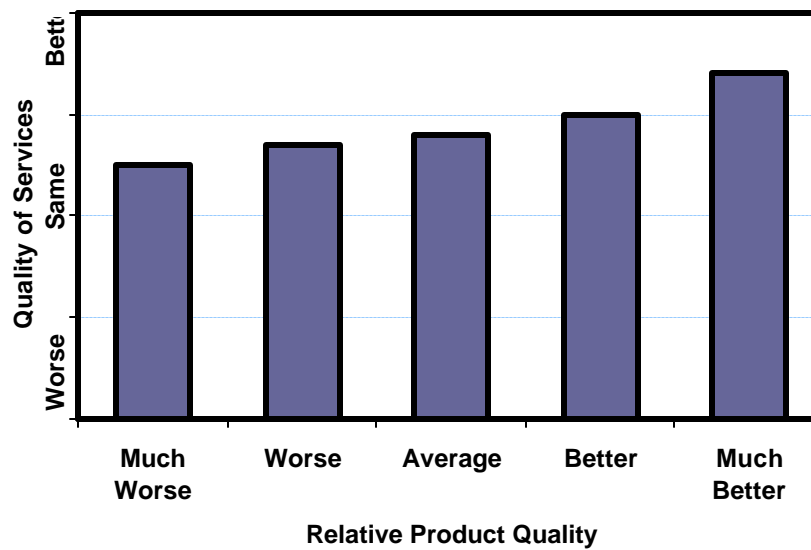


Figure 175, Relative Quality of Services vs. Relative Direct Cost

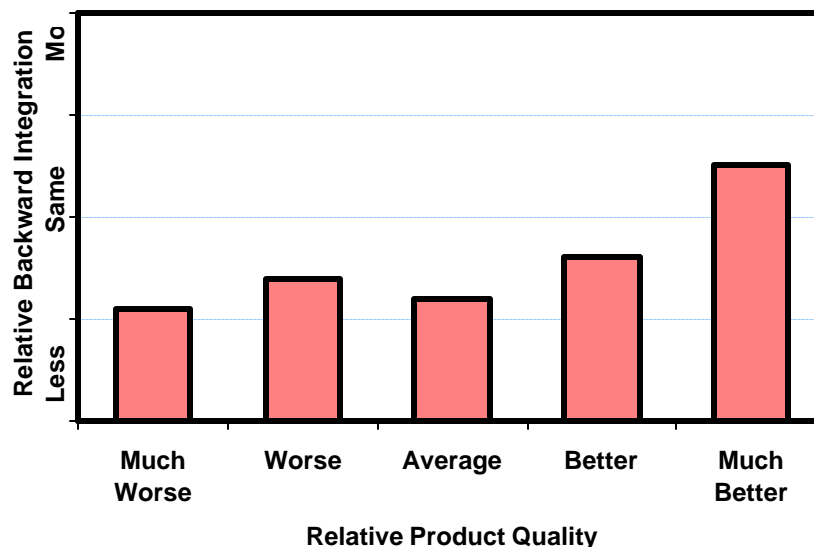


Figure 176, Relative Backward Integration vs. Relative Direct Cost

Relative Direct Cost Norm

Current estimates of cost position can be compared with a norm (expected value) for a typical business with the same characteristics. This is done using a regression equation that links relative direct cost to the factors listed in Table 422. A comparison of the computed value to current estimates can challenge or confirm internal perceptions very quickly. Having more confidence in estimates of your business's cost position will help assess the appropriateness of pursuing a cost reduction strategy or a spending strategy to improve the value of the offering.

In addition to the norm for relative direct cost, several other performance norms have been developed for factors such as pretax earnings, market share and several discretionary expenses.

Table 422, Factors Most Strongly Correlated with Relative Direct Cost
(Rank Ordered)

- Price Relative to Competition - Price Premium (-)
- Pretax Income as % of Total Cost (+)
- Market Share of Largest Competitor (-)
- Relative Quality of Services Provided (+)
- Your Market Share (+)
- Backward Integration Relative to Competition (.1)
- Location of Market (North America or Europe)
- Having Process Patents (+)
- Capacity Utilization (+)

(+) indicates positive correlation with improved relative direct cost.

No. 143, July 1992

143 HIGH MARKET SHARE GAIN BUSINESSES

One of the variables measured in the Strategic Planning Institute's PIMS database is market share gain. The top ten percent of industrial businesses with respect to market share gain increased share by 7% or more over the four year period data was gathered on each business. Almost two-thirds of these high share gain businesses also increased or maintained profit margin during that period.

Several characteristics differentiated these businesses from the rest of the businesses in the PIMS database. The most important changes these businesses made to achieve high market share gain were:

- Increased capacity during the period
- Increased marketing effort (selling expense)
- Improved product quality relative to major competitors

Among the high share gain businesses, the ones that improved their cost position relative to competition were the most successful in improving or maintaining margin. Several other less controllable conditions in the competitive/market environment also are key to increasing the chances of adopting a successful market share gain strategy.

High Share Gain Business

There are 2453 industrial businesses in the PIMS database. Performance on change in market share and profit margin over four year period data was gathered on each business, as shown in Table 423.

Table 423, % of Businesses vs. Market Share Change and vs. PROS
(All Businesses N=2453)

Change in PROS	Maintained or Increased	6.5% (N=160)	29% (N=706)	15% (N=380)
	Decreased	3.5% (N=86)	24% (N=583)	22% (N=538)
	Total	10% (N=246)	53% (N=1289)	37% (N=918)
		Increased 7% or More in 4 years	Increased Less than 7% in 4 years	Lost Share in 4 years
Change in Market Share				

The top ten percent of the businesses achieved a 7% or greater share gain over the four-year period. Perhaps surprisingly, a majority of those high share gain businesses (65%, 160 out of 246) maintained or improved pretax return on sales.

Several characteristics differentiate high share gain businesses regardless of profitability, and these might be considered necessary to increase the chances of success when embarking on a high share gain mission but not sufficient to increase the odds of also improving margin. Three important changes these businesses usually made to achieve high share gain are shown at the top of Table 424.

The relationship between increases in capacity and change in market share is to some extent dependent on market growth. It is interesting that on average businesses that increase capacity at the same rate as the market grows tend to lose market share (see Figure 177). For the majority of SPI businesses sustained market share growth was achieved only when capacity was expanded at a rate greater than industry growth.

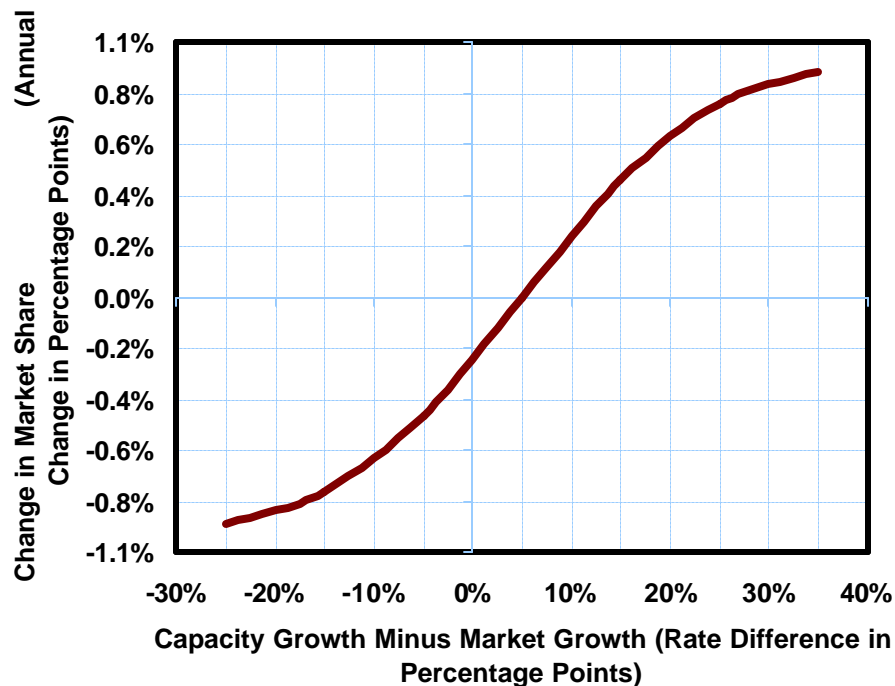


Figure 177, Market Share Change vs. Supply/Demand Change

Table 424, Characteristics of Businesses that Increased Market Share 7% or more
Numbers in ()'s are High Share Gain versus Others

- Increased capacity during the four-year period.
- Increased marketing effort (selling expense) during the period (20% vs. 9% ... last year compared to first year).
- Improved product quality relative to major competitors over the period (two point increase per year vs. competition).
- Higher product quality than major competitors (+32% vs. +24%) (product quality is measured by subtracting the percent total sales revenue coming from products judged inferior to competition from the percent judged superior].
- 2% Better cost position (manufacturing + distribution cost).
- Higher percent of revenue from product introduced in the last 3 years (13% vs. 7%).
- A competitor has exited the market in the last 5 years.
- The market share of the four largest suppliers is lower (71% vs. 81%).
- The relative market share is higher (.81 vs. .62) ($RMS/1000$ is your share divided by sum of three largest competitors' share].

Other characteristics were usually inherent in the business situation at the time the strategy was

launched. Not much can be done to control factors such as competitive entry or exit. Likewise, general market share structure is difficult to change radically in more established, lower growth markets. However, the evidence would indicate a business would be wise to first get its cost position and relative product quality in order before embarking on such a strategy.

Share Gain Without Pain

Focusing on the 160 businesses in the upper left cell of Table 423, there are several characteristics among the high share gain businesses that differentiate the ones that maintained or improved margins from the ones that experienced decreased margins over a four year period. The most important discriminator with respect to pretax return on sales (PROS) among these businesses was having a successful cost containment program. Other factors relating to differences in PROS are shown in Table 425. The relationship of most these factors to PROS have been discussed in detail in recent articles.

Table 425, Characteristics of Businesses that Maintained or Increased Market Share 7% or More over a 4-Year Period.

Numbers in ()'s are Maintain/Improve PROS versus Others

- **Improved relative cost position (manufacturing. + distribution cost) vs. competition (4% improvement per year vs. 0 .1% loss)**
- **Higher percent of revenue from product introduced in the last 3 years (14.3% vs. 11.3%).**
- **No competitor has entered the market in last 5 years.**
- **Higher market growth in terms of physical volume (5.5% /yr. vs. 1.5% /yr.)**
- **Higher price premium than major competitors (4% premium vs. 3% premium)**
- **Lower relative market share (0.76 vs. 0.90) (RMS/100 is your share divided by sum of three largest competitors' share).**

No. 144, August 1992

144 THE BUSINESS SITUATION EVALUATION

- Business performance norms have been developed to allow comparison of the performance of your business to the performance achieved by a typical business with the same characteristics.
- These norms represent performance in a normal year with respect to business and economic conditions and address several areas, ranging from strategic measures such as earnings and market share, to supporting factors such as discretionary expenses and elements of working capital.
- Over forty businesses have been analyzed in comparison to the SPI data base. A wide variety of results were observed. Indications are that many businesses have earnings and share performance out of balance with their underlying business strengths..

Business Performance Norms

Business performance norms have been developed that can be used to compare specific external business performance to the performance achieved by a typical business with the same characteristics. The norm values are calculated from multiple regression equations calibrated using the Strategic Planning Institute PIMS database.

The norms should be interpreted as what businesses with these characteristics actually do, but not necessarily as what they should do. For example, our studies on selling expense indicate that businesses tend to be more profitable when they spend away from the norm (either above or below) rather than spending near the norm. However, these norms can be useful in helping you understand your business, perhaps raising questions that need to be addressed.

The norm equations do not always explain the majority of the variation that occurs business to business. There are many unique factors in a business (as well as business information not captured by the database) that lead to this business-to-business variability. Also, the norm represents the average performance over the economic cycle. So actual business performance measured in a boom or recession year is likely to deviate from the norm. This variability is distributed about the norm as shown in Figure 178 and can be used as a guide to position your actual performance versus the expected range in performance for a hundred businesses with the same characteristics as your business.

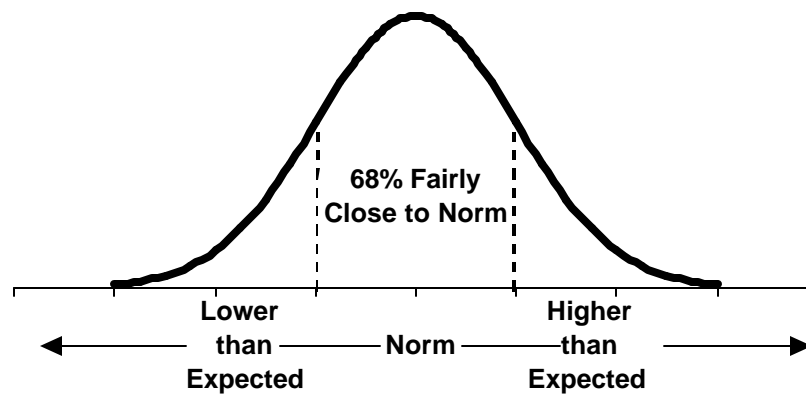


Figure 178, Typical Distribution of Businesses with the Same Characteristics

While performing at the 90th percentile (or above) on factors such as earnings and market share is laudable our studies of the SPI database show this type of performance is not typically achieved.. on a consistent basis. The difficulty has always been in internally gauging whether a business is performing above the 90th percentile or well below expected performance for a business with its characteristics. Instead absolute levels of performance on earnings are used -- good for determining current contribution to corporate profits, but not good for assessing earnings trends and how the business should be funded in the future.

The values of the Business Situation Evaluation norm hierarchy shown in Figure 179 are:

- 1) An objective measure of current performance on pretax margin and market share can be established. Therefore, the likely trend for business performance can be anticipated.
- 2) If performance is well above the norm -- and therefore likely to erode unless something is changed -- the effect of each element of competitive advantage on performance can be determined. This can be helpful in identifying the best course of action.
- 3) Norms for spending on items such as process and product R&D (the typical level used to support a business achieving the desired levels of competitive advantage) can be used to help set levels for discretionary expenses.
- 4) There are also norms for working capital items for use in monitoring levels of inventory and accounts receivable.

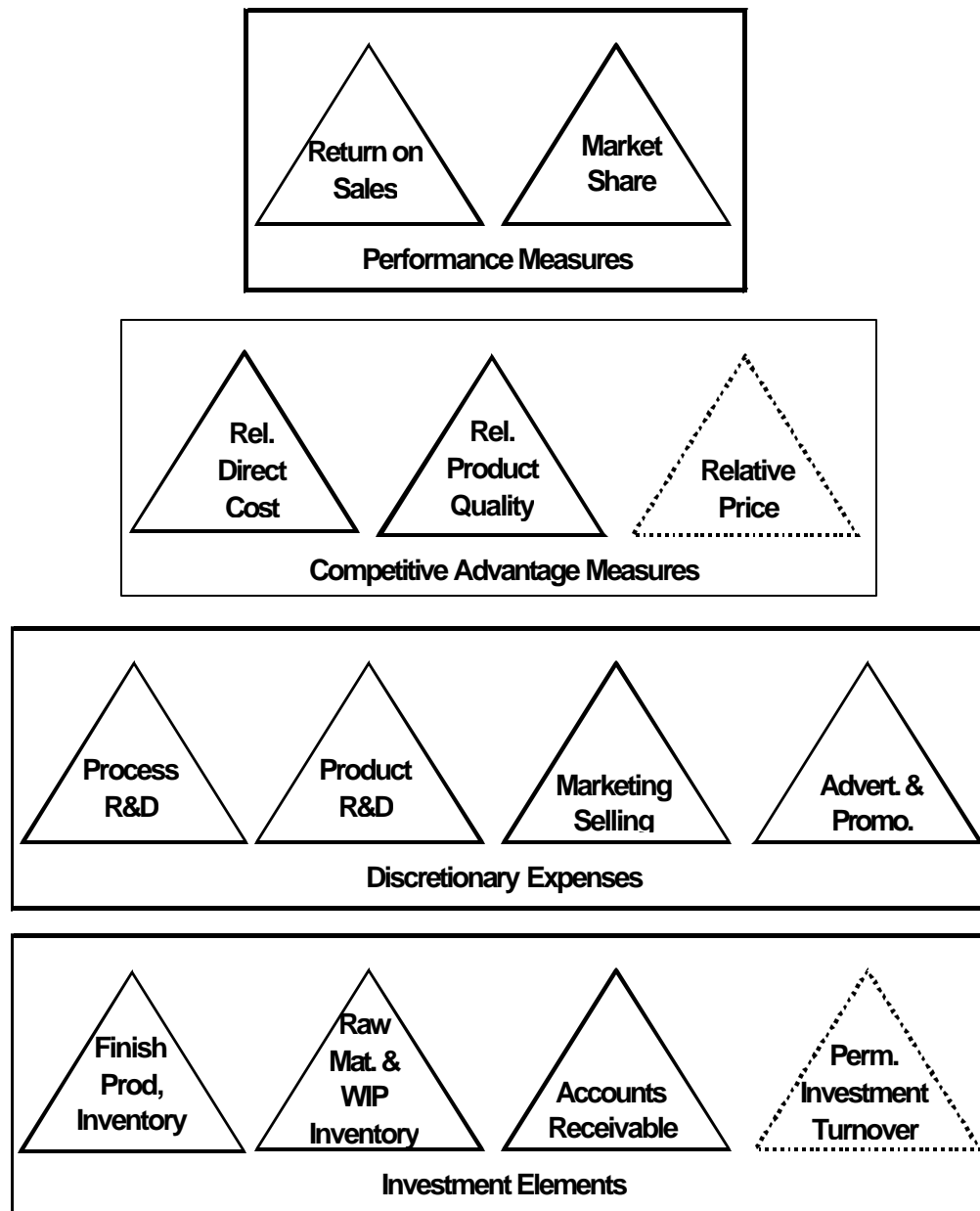


Figure 179, Business Situation Evaluation Norm Hierarchy

Results of Analyzing External Businesses

A set of over forty businesses were analyzed using the Business Situation Evaluation scheme.

Figure 180 shows the wide variation in results that was observed on PROS and market share. Indications are that many businesses have earnings and share performance out of balance with their underlying business strengths. As discussed earlier in the article, since business performance tends to regress toward the mean, several businesses need to improve competitive position in the areas of relative product quality and relative direct cost if they expect to

consistently perform above the norm.

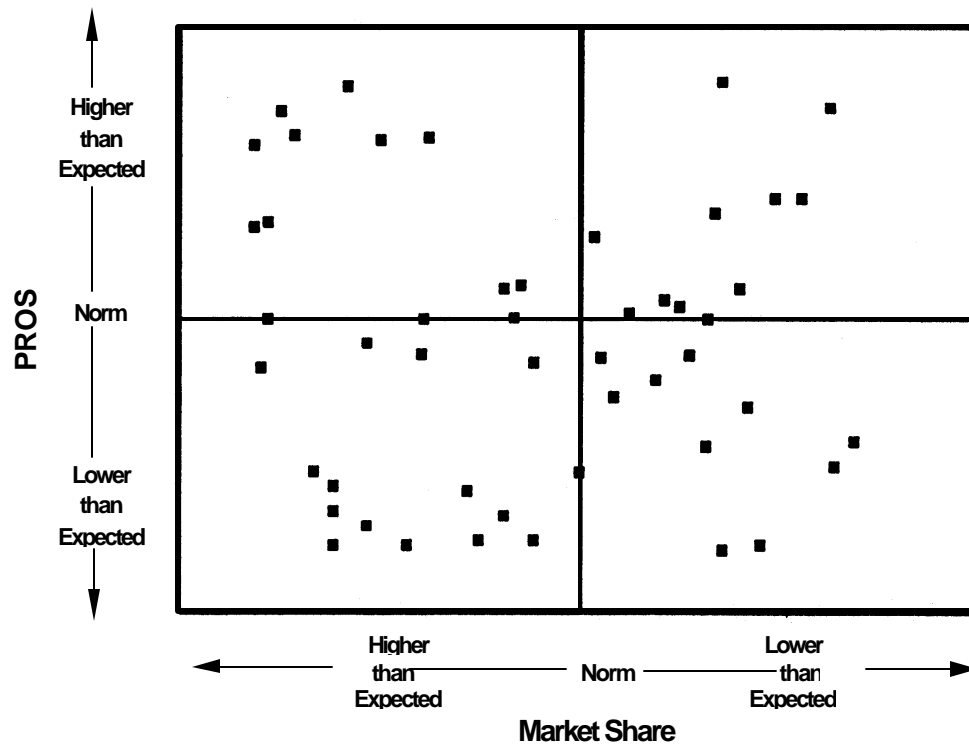


Figure 180, Actual vs. Expected Performance for Selected Businesses

No. 145, September 1992

145 BUSINESS SITUATION EVALUATION -II

The performance norms developed for the Business Situation Evaluation are summarized in article No. 144. These norms can be used to compare business performance to the performance achieved by a typical business with the same characteristics. They can also be used:

- To forecast likely changes in business performance:
 - Without changes in competitive position;
 - With changes in competitive position.
- To measure the strategic and financial progress of a business versus “Look-Alike” businesses selected from the Strategic Planning Institute’s PIMS database.

Changes in Business Performance Norms

In addition to the uses described in last month’s Article, norms can be used to identify likely trends in business performance. In article No. 136 it was shown -- “There is a very strong tendency among businesses in the SPI database for their profitability to trend toward the norm”. Regression analysis indicates that on average a business will move about 20% of the way from its initial pretax return on sales (PROS) toward the norm in one year if nothing else changes. For example, a business at 15% PROS when the norm is 10% would be expected to be at 14% a year later.

The empirical evidence from the SPI database that supports this trend toward the norm can be seen in Figure 181.

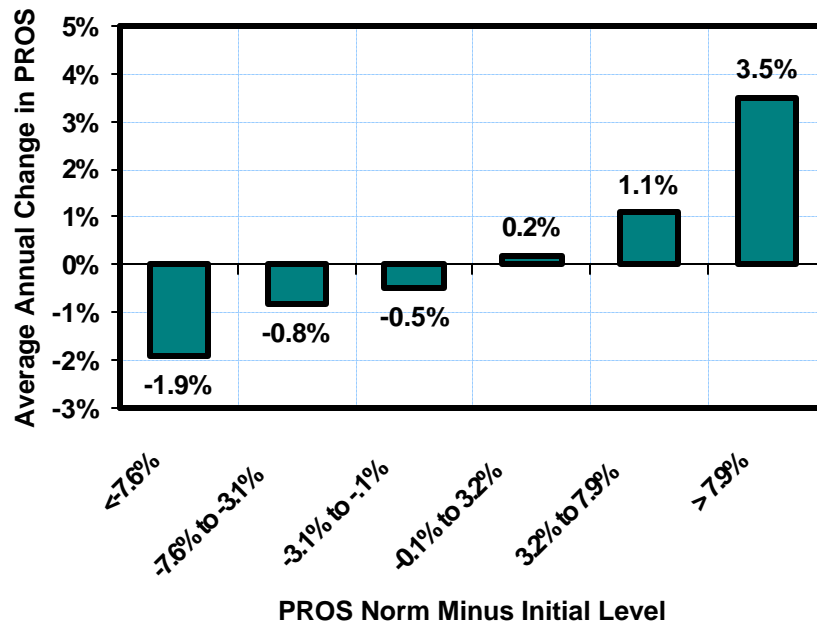


Figure 181, Average Annual Change in PROS vs. Difference Between PROS Norm and Initial Level

Note: All Values are Percentage Points

This is also true for the other performance norms developed using the Business Situation Evaluation. Clearly it is difficult to sustain performance well above the norm. Competitive forces tend to drive actual performance back towards equilibrium, i.e. the norm. The alternative to facing declining performance for a business performing far better than the norm is to improve the business's competitive position on factors which drive that norm at a rate faster than the expected movement toward the norm.

Effect of Changes in Competitive Position on Performance Norms

Previous articles have discussed the relationship of competitive position and PROS. Figure 182 illustrates a way to assess the effects changing performance on factors such as direct cost relative to leading competitors, relative product quality, relative quality of service, and relative image and reputation are likely to have on PROS.

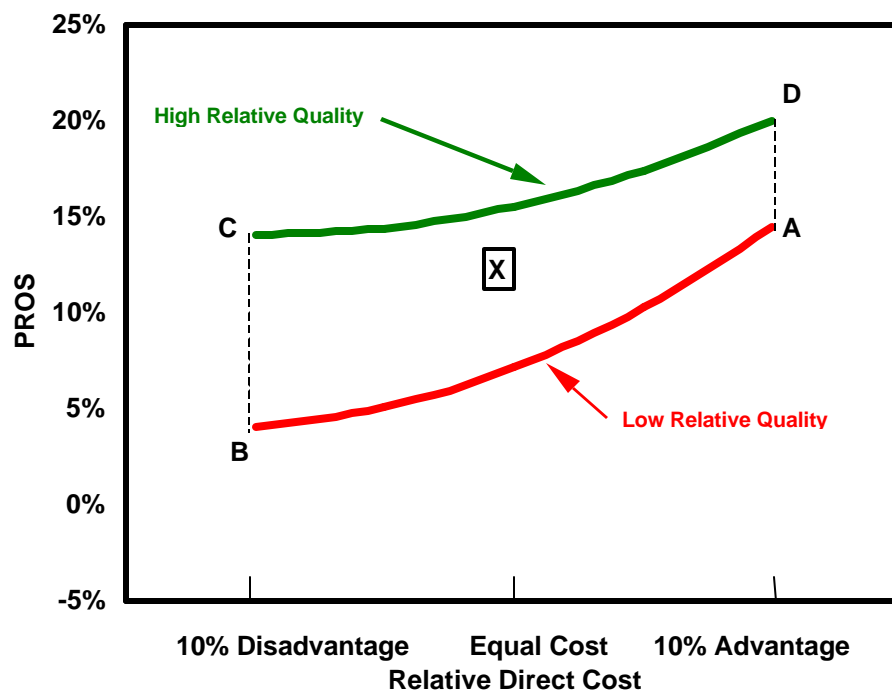


Figure 182, PROS vs. Relative Quality and Relative Cost

Suppose the PROS norm for a business with relative direct cost and quality of product, service, and image all equal to leading competitors was found to be 10% when analyzed using the Business Position Evaluation [point X in Figure 182]. If this business improved its relative cost to a 10% cost advantage and relinquished parity on relative quality, moving to [A], it could expect PROS to ultimately improve to 16%. Likewise, if cost position deteriorated to [B] PROS would decline to 3%. Improving relative quality until it was much higher than leading competitors [C] would increase the expected PROS to 13%. And improving both cost position and relative quality to [D] leads to an improved outlook for PROS of 24%.

The relative impact of cost position and relative quality on PROS varies substantially from business to business and is dependent on other characteristics of the business. Therefore, each business needs to be assessed individually to understand the potential leverage that can be achieved from both cost reduction and product improvement strategies. A similar analysis can be conducted on market share although a more dynamic analysis including factors such as future capacity expansions is likely to be more insightful.

A "Look-Alike" Basis for Performance Comparisons

As discussed earlier, if current business performance is well below the norm some improvement is to be expected. However, if competitive position is also strengthening, the business may appear to be losing ground relative to the norm. This is because changes to the norm resulting from improved competitive position are immediate while changes in actual performance may be much slower. For this reason the difference between the norm (expected performance considering the businesses characteristics) and actual performance may actually increase even

though actual performance is getting better.

Therefore, it is also useful to measure performance against a set of “look-alike” businesses as well as the performance norm. This set of “look-alike” businesses usually represents about 200 businesses selected from the 2700 businesses in the SPI’s PIMS database that are most similar in characteristics to the business being evaluated. In Figure 183 the range of performance on PROS for a typical set of “look-alike” businesses is exhibited. Note that most of the businesses are concentrated near the center of the performance range but a few deviate widely from the mean. As performance improves, progress can be measured over time against the “look-alike” business in an absolute sense and versus the norm in a relative sense.

In this example the movements in actual performance and the norm are intentionally exaggerated to illustrate the effects in subsequent years. However, a business can gain valuable insights from developing a clear understanding of its performance potential and the likely value of strategies to improve competitive position. The SPI database and the Business Situation Evaluation regression models developed from it can be helpful in doing this.

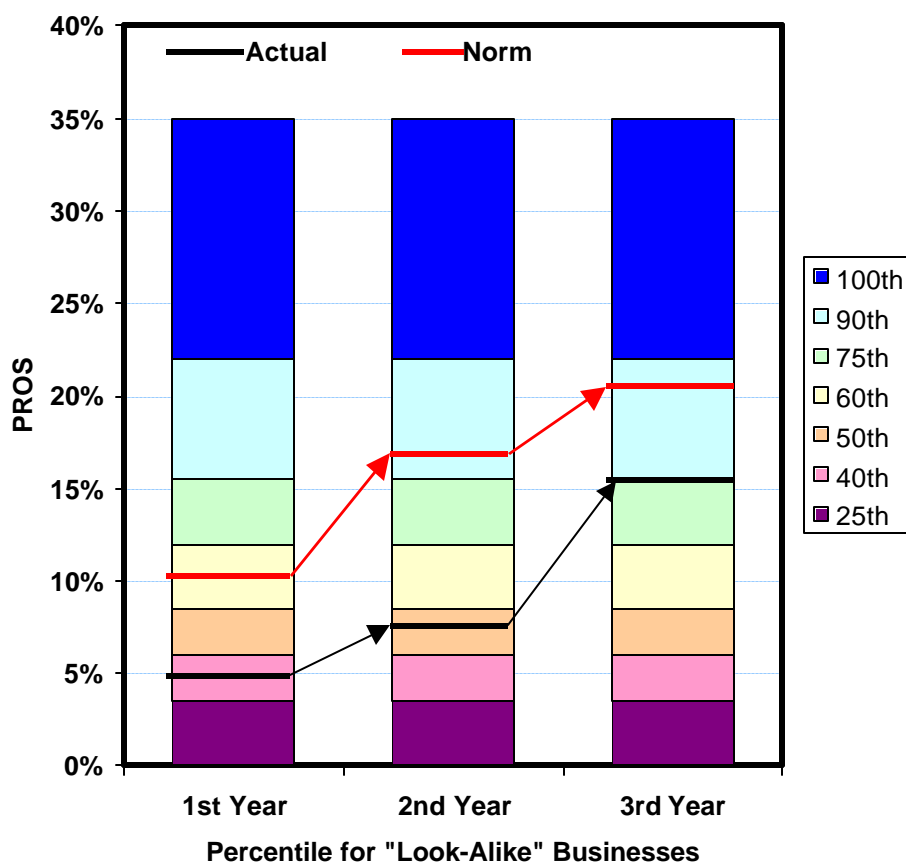


Figure 183, Business Profitability vs. SPI Look-a-Like Businesses

No. 146, September 1995

146 A RENEWED PIMS DATABASE: INSIGHTS ON SHAREHOLDER VALUE ADDED

The Strategic Planning Institute has revitalized the PIMS database. With the addition of over 450 more businesses, new perspectives on the profit impact of marketing strategies are available. This article discusses a method to rate business performance on Shareholder Value Added (SVA) and an approach to establish Return on Net Asset (RONA) goals that will increase SVA in the future.

New Businesses & Insights

The Strategic Planning Institute has added 457 new businesses and removed 193 old businesses expanding the PIMS database to 3011 businesses. Figure 184 shows the number of businesses added and removed from different time periods. Most of the added businesses have performance data covering recent years. This new information helps provide answers to the questions

- Is my business performing better than similar businesses?
- If not, what are other businesses doing differently that might enhance the performance of my business?
- In recent years, has there been a change in the drivers of healthy business performance?

In this article we will look at certain aspects of these issues related to SVA and RONA. Future articles will discuss how these issues relate to revenue growth.

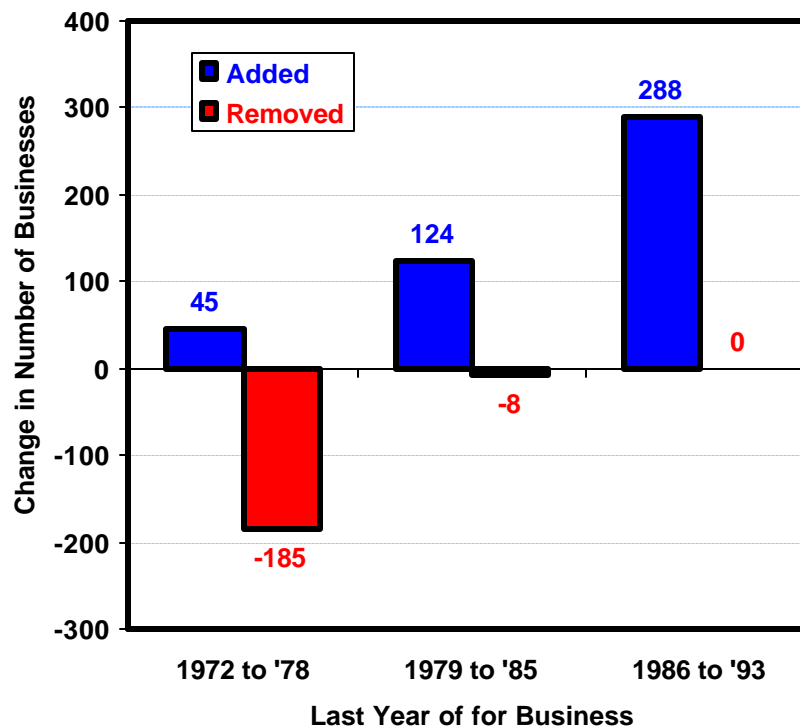


Figure 184, Age of PIMS Database change in Number of Businesses Each Period

Shareholder Value Added

SVA is an important indicator of business performance because it measures how successful a business has been at meeting investor expectations. It is linked with Return on Net Assets (RONA) in the following relationship.

$$\text{SVA (\$)} = (\text{RONA} - \text{Cost of Capital}[\%]) \cdot \text{Net Assets}[\$]$$

$$\text{where, RONA} [\%] = \text{ATOI}[\$] / \text{Net Assets}[\$]$$

If a business is generating a RONA of greater than cost of capital it is making a positive contribution to SVA. During most of the 1990's the cost of capital for many firms has been around 12%, with 14% RONA being a minimum goal for business performance.

A Norm for RONA

The norm represents the “expected” performance of the business based on the performance of businesses with similar characteristics in the PIMS database. The RONA norm is useful because we can determine whether a business’s actual RONA is higher, lower, or about the same as the expected RONA for a business with similar characteristics. It can also be used to help set realistic performance goals since a performance range is included which would indicate “best in class” performance. The RONA norm can also be used to compare the approximate SVA of a similar business with the same level of Net Assets.

Changes in the RONA Norm

Adding new businesses to the database did not change the RONA norm dramatically. Figure 185 shows a plot of the new norm versus the old norm for a large number of diverse businesses. Most of the points fall along or near the 45-degree line. The plot also shows that many of these businesses fall below a 12% cost of capital. Of course, the actual RONA for the corresponding businesses may be higher or lower than the norm.

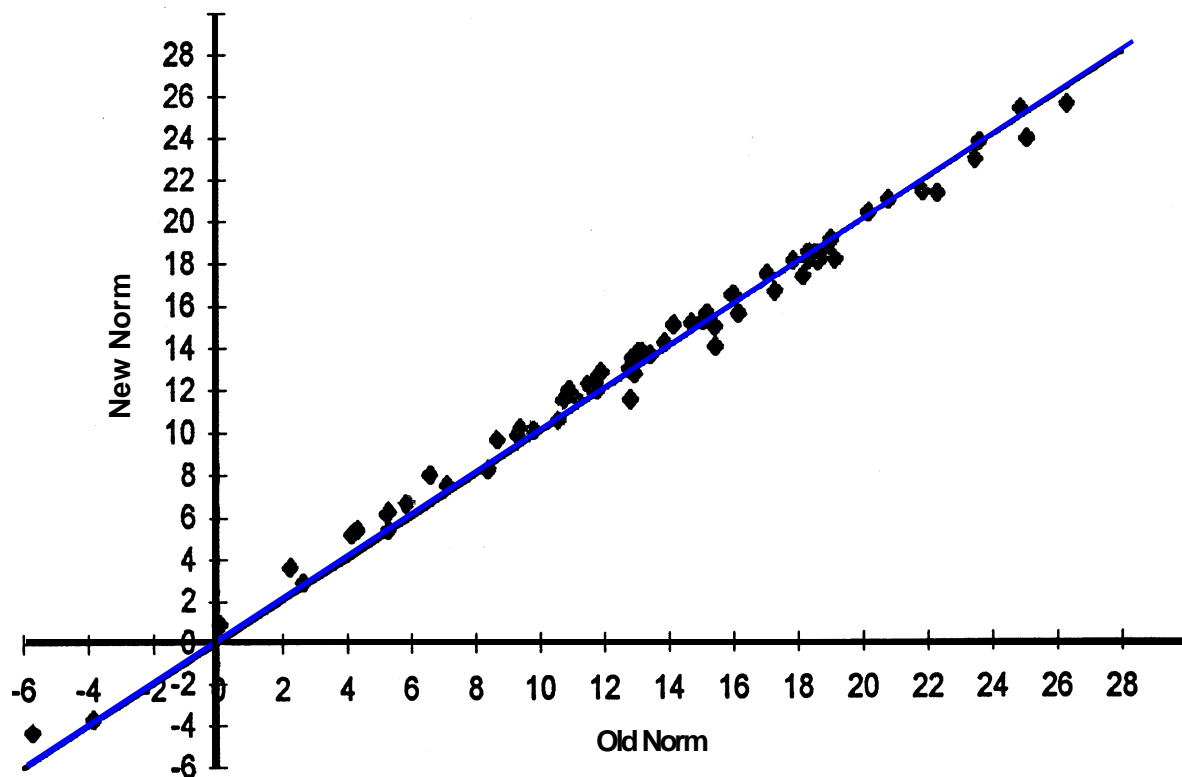


Figure 185, RONA Norms for Selected Businesses

It is helpful for a business to know which variables in the norm relation have a positive direct relationship with RONA and which have an inverse, negative, impact with RONA. Table 426 shows those variables for which an increase in the variable correlates with an increase in RONA and those for which an increase correlates with a decrease in RONA.

Table 426, Impact on RONA

<u>Increased RONA</u>	<u>Decreased RONA</u>
<ul style="list-style-type: none">• Capacity Utilization• Relative Product Quality, Image, and Customer Service	<ul style="list-style-type: none">• Raw Material and Work-in-Progress Inventory• Marketing and R&D Expense• Degree of Unionization

The relative importance to the norm of some variables has changed with the addition of new businesses to the PIMS database. In general, cost variables have a greater impact on the RONA norm using the new database and the product quality and image variables have less impact. Specifically, percentage capacity utilization and relative direct costs are now more important variables in the norm equation while relative product quality, product image, and customer service are less important. Some of the other variables in the RONA norm, such as, marketing and R&D expense, percentage unionization, and inventories have essentially the same impact on the norm with the new database as they had with the old database.

No. 147, October 1995

147 MARKETING EXPENSE, PROFITABILITY AND REVENUE GROWTH

It's been more than a decade since we first took a look at the relationship between marketing expense and profitability. With the recent addition of over 450 businesses to the Strategic Planning Institute's PIMS database, new insights on key relationships are evident. However, one thing that remains true is that it may be better to deviate from the practices of similar businesses. Many businesses are more profitable when their level of spending on marketing effort is either much higher or much lower than the norm (the typical level of spending for a business with similar characteristics). Surprisingly, revenue growth tends to follow a similar pattern. There is a simple method you can use to determine whether your business is spending near the norm or your marketing expense level is positioned away from the norm, in the higher revenue growth region.

Profitability versus Marketing Expense

In a 1984 article, we looked at the relationship between pre-tax return on sales (PROS) and relative marketing expense. For that analysis, only industrial businesses that were not operating at a loss and not in the introductory stage of their product life cycle were considered. We observed that PROS tended to be lowest when marketing expense was near the norm while PROS was highest when marketing spending was away from the norm. The PIMS database has been updated since that study. Newer businesses were added and some older businesses with incomplete data were removed. A relationship between PROS and marketing expense still exists, although it is not quite as symmetrical about the norm as it was in 1984. Figure 186 shows the trend using the 1984 database and the 1995 database. “**Well Below**” the norm means greater than 3% below the norm, “**Below**” means 1-3% below, “**Near**” means within 1% of the norm, “**Above**” means 1-3% above, and “**Well Above**” means greater than 3% above. Although the relationship is similar, there are some differences. The curve is flatter now with less variation in average PROS between the five marketing expense Levels. Also, those businesses are more profitable that are spending above rather than well above the norm. It's also clear that the average PROS tends to be lower in the new database.

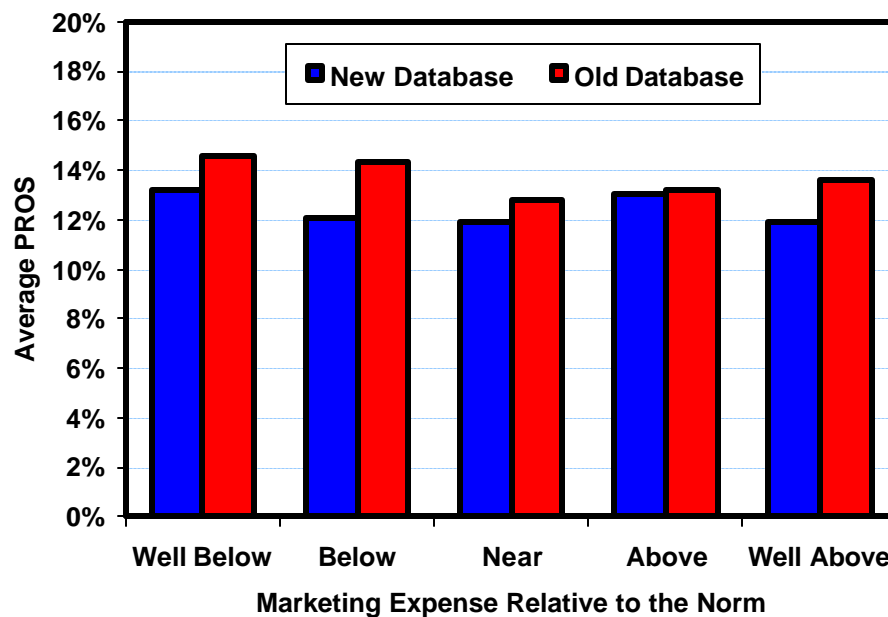


Figure 186, PROS vs. Relative Marketing Expense for Industrial Businesses

Today, we often use return on net assets (RONA) as a measure of profitability. A trend similar to that of PROS is observed when we look at RONA versus relative marketing expense. A higher average RONA is observed for businesses that are spending above the norm or well below the norm. Figure 187 shows that there is even more variation in RONA for consumer durables and consumer nondurables businesses. As one might expect, it is more important for consumer businesses to spend well above the norm on marketing.

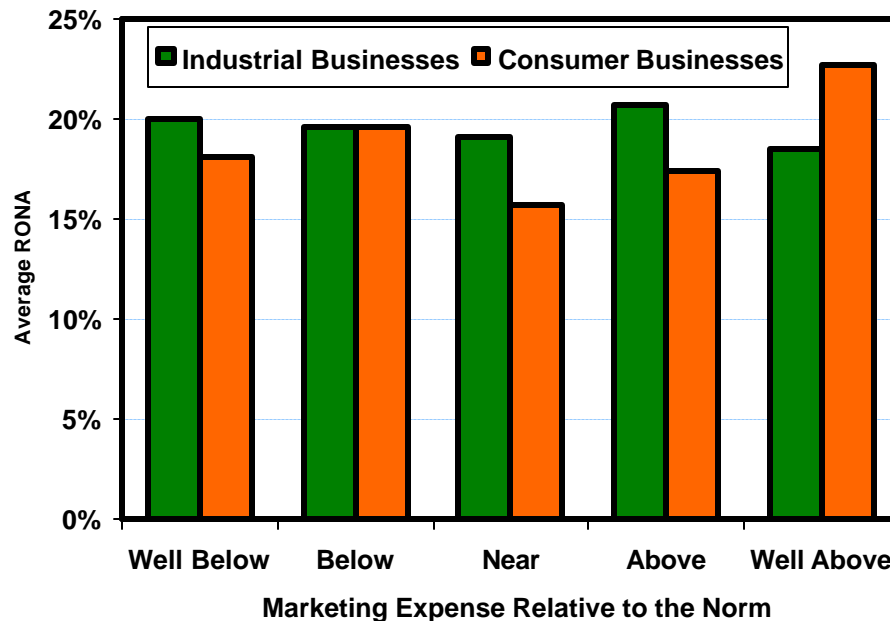


Figure 187, RONA vs. Relative Marketing Expenses for Consumer & Industrial Businesses

Figure 188 shows a somewhat unexpected relationship. As with PROS and RONA, revenue growth tends to be higher when spending away from the marketing expense norm. One might expect to see higher revenue growth when spending above the norm on marketing expense. However, achieving higher revenue growth when spending well below the norm may seem counter intuitive. One might think that businesses spending below the marketing expense norm would lose share. But, surprisingly, we have found that these businesses show relatively high share gains even though little improvement was made in their product quality. This suggests that the reason for higher revenue growth when spending below the norm is almost exclusively related to aggressive pricing strategies.

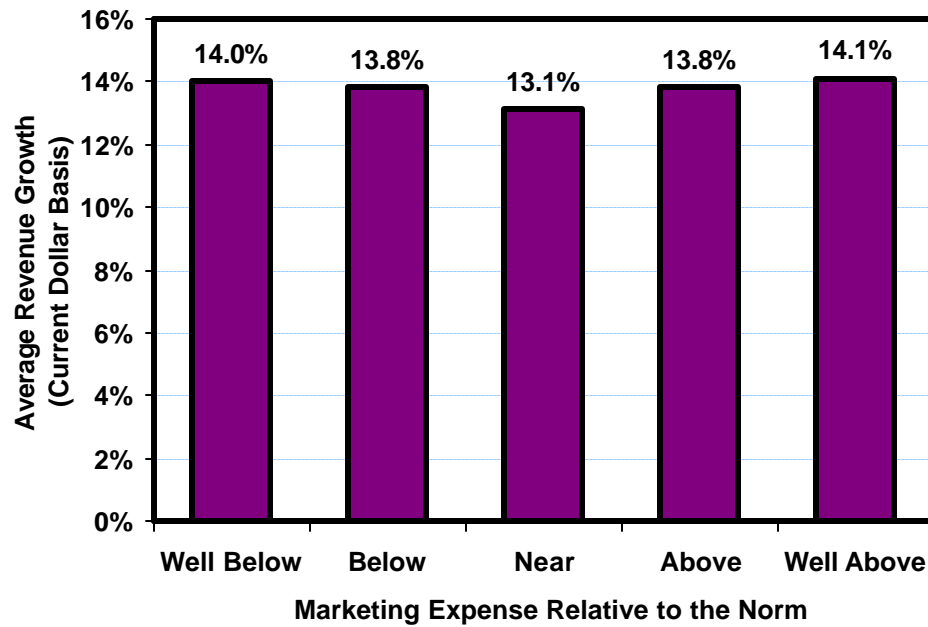


Figure 188, Revenue Growth vs. Relative Marketing Expense for Industrial Businesses

No. 148, November 1995

148 A DIAGNOSTIC TOOL FOR PRICE CHANGE

“There ain’t no brand loyalty that two cents oft can’t overcome.”

Anonymous

Although non-price factors have become relatively more important in buyer-choice behavior in recent years, price remains one of the most important factors determining a businesses market share, revenue growth and profitability. Managing prices in industrial markets requires explicit understanding of your customers’ values, your competencies and objectives, as well as those of your competitors. This article discusses a systematic approach that can be used to assess whether or not it’s time to adjust price.

Depending on their objectives, businesses use a variety of methods to set their prices somewhere between a low price at which no profit can be achieved and a high price at which there would be no demand. As shown in the gray box in Figure 189, there are three major considerations used to determine the ultimate price: cost, competitors’ prices, and customers’ values. Businesses typically select a pricing method that includes one or more of these considerations. Market prices for industrial businesses are determined mainly by costs, supply/demand conditions in the marketplace and the intensity of competition. Understanding how price varies as marketplace conditions vary is important in assuring that profitability is maximized. Knowing when to increase price and by how much prevents periods of time when “money is left on the table.” We now have a diagnostic tool for assessing the competitive pricing situation that can help guide decision making.

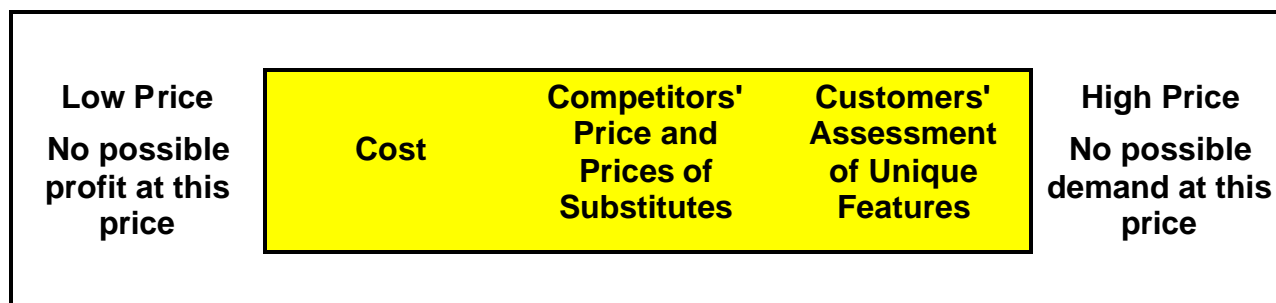


Figure 189, Price Setting
Source: Marketing Management, Philip Kotler

The Equilibrium Price Approach

One pricing method is to monitor the dynamics of the marketplace by comparing the actual price of the offering to an “equilibrium price.” If you and your leading competitors’ prices are all below their equilibrium price, it suggests it is time to raise prices and that competitors will likely follow. A price above the equilibrium price suggests that prices are likely to decrease whether you choose to lead a price reduction or not.

The equilibrium price is derived from the pretax return on sales (PROS) equation, which on a unit basis is:

$$\text{PROS} = (\text{Price} - \text{Cost}) / \text{Price}$$

Rearranged to solve for price at a given production Level the equation becomes:

$$\text{Price}_{\text{equilibrium}} = \text{Cost} / (1 - \text{PROS}_{\text{expected}})$$

By using the expected PROS for a business (the norm) in this equation, the expected price can be calculated. The PIMS database has been used to determine the PROS norm for a business by correlating PROS with several key characteristics of the business (see Table 1). Knowing a business's performance on these key characteristics and the full unit cost for the current production level, the equilibrium price for the business can be estimated. This method also needs to be used to determine an equilibrium price for each major competitor. The equilibrium price model used for a specific business and its leading competitors may need to be modified somewhat to account for special circumstances unique to the business and markets of interest such as intensity of non-generic competition and customer price pressure. This can be done by looking at how equilibrium prices tracked actual price movements over the past few years. Examining the differences between actual prices and equilibrium price for each supplier can also give insight into their objectives and future actions and reactions.

Table 427 , Key Business Characteristics

<u>Characteristics Related to PROS</u>
Direct costs vs. leading competitors
Product quality vs. leading competitors
Quality of services vs. leading competitors
Image & reputation vs. leading competitors
Breadth of product line vs. leading competitors
Product type (custom-tailored or standard)
Percent of sales from new products
Globalization of sales pattern
Industry market share structure
Age of business
Growth of served market
Sales transaction size
Importance of auxiliary services to customers
Fragmentation of customer base
Amount of sales sold direct to end-user
Number of immediate customers
Purchase frequency of immediate customers
Patent position or trade secrets
Marketing expense level
R&D expense level
Capacity utilization
Backward integration relative to leading competitors
Investment intensity

No. 149, December 1995

149 LEVERAGING IMPROVEMENTS IN EFFICIENCY

In a previous article, we discussed the link between Shareholder Value Added and Return on Net Assets (RONA). One way many businesses have found to improve RONA is to focus on improving Controllable Fixed Cost Productivity (CFCP). In this article we look at how those improvements can be leveraged by improvements in market-oriented revenue growth factors such as quality of the offering and market share to drive RONA to even higher levels.

Since most businesses are concerned with increasing RONA it can be beneficial to understand how changes in other financial metrics such as Controllable Fixed Cost Productivity (CFCP), correlate with changes in RONA so that performance goals can be properly aligned with overall strategies. CFCP is the sales and transfers dollars generated by each dollar of fixed cost. This ratio will improve if sales and transfers increase at a rate greater than that of the fixed costs. Depending on the competitive factors facing a business (e.g. Is it a commodity? Is there patent protection? Is there a close substitute? Is it a new product?) businesses may attempt to improve CFCP through increasing share, differentiating to get a price premium, achieving economies of scale to be the low cost supplier, etc.

Relationship Between CFCP and RONA

One would expect that businesses improving CFCP would also be improving RONA. Figure 190 shows the positive relationship between changes in CFCP and changes in RONA for businesses in the PIMS database. The average increase in RONA is much higher for the businesses that greatly improved CFCP than those that suffered a decline in CFCP.

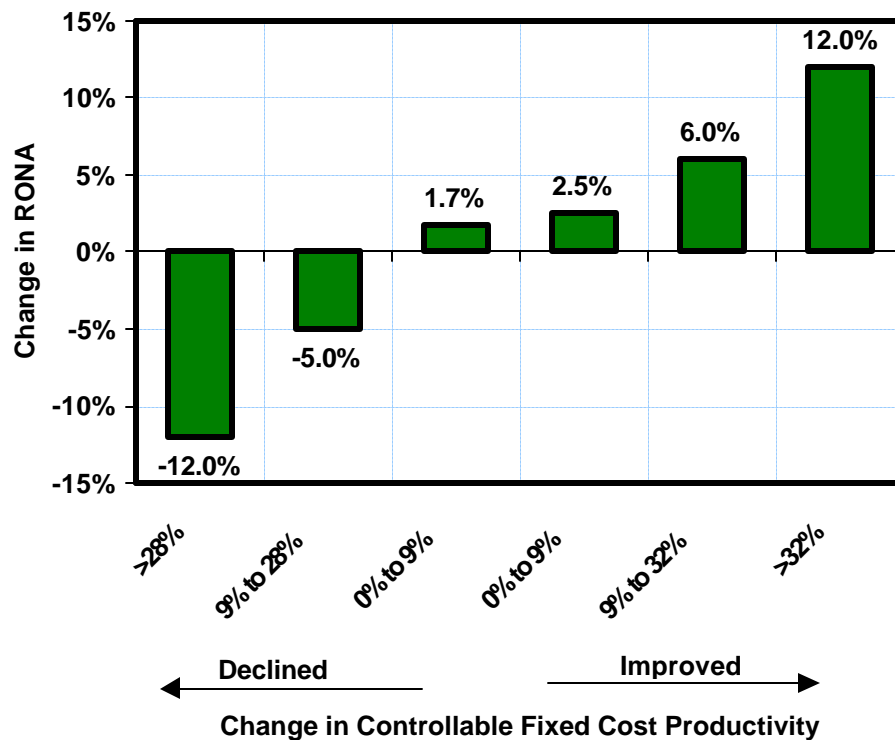


Figure 190, Change in CFCP vs. Change in RONA

When simultaneous improvements are made in CFCP and Relative Product Quality (RPQ) additional improvements in RONA are often realized. Relative Product Quality is defined in the Strategic Planning Institute's PIMS database as the quality of your products and allied services (i.e. quality of the offering) compared to those of the leading competitors. Table 428 shows how changes in efficiency (CFCP and RPQ) can work together to significantly improve the health of a business.

Table 428, Change in RONA vs. Change in Controllable Fixed Cost Productivity and Change in Relative Quality of the Offering
(All Businesses N=2628)

Change in Controllable Fixed Cost Productivity	Improved	6.9% (N=230)	9.5% (N=396)	9.4% (N=376)
	Little Change	0.3% (N=182)	0.0% (N=297)	1.1% (N=245)
	Declined	-12.3% (N=275)	-7.4% (N=349)	-5.7% (N=278)
		Decline	Little Change	Gain

Change in Relative Quality of the Offering

Another important variable impacting profitability and revenue growth is market share gain. Being driven by factors such as improved RPQ, it is not surprising that the results on RONA are very similar. Table 429 shows how gains in relative market share and CFCEP work hand in hand to improve business performance. In the PIMS database, relative market share is expressed as your market share as a percentage of the combined share of the top three competitors.

Table 429, Change in RONA vs. Change in Controllable Fixed Cost Productivity and Change in Relative Market Share
(All Businesses N=2679)

Change in Controllable Fixed Cost Productivity	Improved	6.7% (N=270)	8.0% (N=354)	10.8% (N=395)
	Little Change	-0.2% (N=242)	0.1% (N=263)	1.8% (N=237)
	Declined	-11.5% (N=346)	-7.0% (N=336)	-6.6% (N=236)
		Decline	Little Change	Gain

Change in Relative Marketing Share

Summary

Improvements in RONA and Shareholder Value Added (SVA) can be accomplished in many ways. In studying the businesses in the PIMS database, it is apparent that working on both better cost efficiency and improving factors that enhance revenue growth (e.g. Relative Product Quality and market share gain) tends to be more effective in increasing SVA than limiting efforts to only one of the alternatives.

No.150, June1997

150 PIMS LOOK-ALIKE ANALYSIS: GROWTH OF A NUMBER TWO SUPPLIER

Achieving profitable revenue growth is a common objective of many businesses. Strategies for revenue growth can vary depending on a business's other short-term and long-term performance goals, competitive factors, and market environments. In this article, we show how a technique called the PIMS Look-alike Analysis was recently used by a business to gain insight into successful growth strategies of similar businesses.

A business that held the number two share position in their market wanted to learn more about businesses achieving high revenue growth that were similar to their business but external to the firm. The Strategic Planning Institute's PIMS database was used to determine the average characteristics of businesses that were similar to this business. The following key characteristics of the business were used to distinguish 69 Look-A-Likes among the 3011 businesses in the database:

- Number two market share rank
- Raw & semi-finished goods, components and supplies & consumable products types of business
- Real market growth between 3% and 15%
- Total shares of the top four suppliers greater than 80%

Since, in this case, we were interested in revenue growth rather than some other performance measure (e.g., RONA, Profit Margin), the group was further divided into businesses that achieved high revenue growth and businesses that had little or no growth in revenue. These two groups were then compared based on their average performance on over 40 business characteristics in the following categories:

- Performance & Financial Metrics;
- Market Structure;
- Relative Competitive Position;
- Product/Market Characteristics;
- Marketing;
- Research & Development;
- Capital/Labor Efficiency.

By identifying significant differences between the two groups on specific characteristics, we were able to learn what the high growth companies were doing that was unique. At the same time we learned which factors did not seem to impact or correlate with revenue growth based on the observation that there was no difference between the two groups in performance on those factors.

Key Findings

Some notable differences were identified between the high growth and low growth businesses. As might be expected, higher growth businesses were in higher growth markets (average market growth about 9% per year) and were able to achieve market share gains (average about 6% per year) in those markets. These businesses were also more likely to have higher R&D spending levels and to benefit from process and product patents or trade secrets.

We also observed that the performance on the financial metrics was not necessarily higher for high growth businesses than low growth businesses. In fact, average performances on Pretax Return on Sales, Return on Net Assets, Controllable Fixed Cost Productivity and Permanent Investment Turnover were lower for the high growth businesses. These results might seem inconsistent with the expectations of a high growth business, but we also found that while the average performance on these metrics was lower for high growth businesses, the rate of improvement annually was much higher (See Table 430). One reason for the lower short term performance on these metrics was the impact of the additional investment and expenditures needed for those businesses to achieve sustainable revenue growth.

Table 430, Change in Profitability

	PROS	RONA
	(point change per year)	(point change per year)
High Growth	0.48%	2.22%
Low Growth	-1.13%	0.48%

Some factors considered are probably drivers of revenue growth while others are more structural in nature and therefore are difficult to manipulate to drive growth. Although this type of analysis does not establish a cause-effect relationship between variables, those factors that seem to be the most promising drivers to try to manipulate are listed in the left-hand column of Table 431. Some other factors that may only indirectly influence revenue growth or are more structural in nature are listed in the right-hand column of Table 431.

Table 431, Revenue Growth Factors*

<u>Potential Drivers of Revenue Growth</u>	<u>Factors that Indirectly Influence Revenue Growth</u>
• High Market Growth	• Having patents
• High Share Growth	• Decreasing investment intensity
• Improvement in Offering Value (Product & Services)	• Higher percentage of sales sold direct to end-user
• Small increases in Selling Price relative to competitors	• Decreasing Marketing Expense (% of sales)
• Higher R&D Expense (% of sales)	

* For a number two share rank supplier with few competitors

Strategy Implications

PIMS-based Look-alike Analysis alone can not map out the details of a successful growth strategy for a particular business; however, the analysis does suggest some things to consider. Based on this analysis, it appears that a successful growth strategy for a number two market share rank business should emphasize improving the value of their product offering; specifically, product quality, product image, and customer service relative to their leading competitors. Most businesses successful in achieving high revenue growth should anticipate increasing R&D effort to support improvements in relative perceived value of the offering. In general, it also appears that businesses that succeeded in growing revenue found the growth came from share gain rather than increased price premium. Surprisingly, the analysis does not suggest that increases in marketing expenses are necessary. In fact, marketing expense as a percentage of sales tended to decline over time for the high growth businesses, most likely reflecting a constant marketing expense level as revenue increased. Also, if high revenue growth is pursued, some financial metrics, particularly ratios to sales or assets might suffer in the short term but are necessary if revenue growth and long term value creation is to be sustained.

APPENDIX: GLOSSARY, SPI DATABASE DEFINITIONS

Advertising and Sales Promotion Expenses:	Includes all expenditures for media advertising, catalogs, exhibits, displays, premiums, coupons, samples, and temporary price reductions for promotional purposes.
Beginning Capacity Utilization	Capacity utilization at the beginning of the period for which the data exist for each business.
Capacity Aggressiveness	Actual capacity growth minus normal capacity growth. The difference between a business' actual level of capacity growth and a normal level given its characteristics. Capacity Growth Norm = $0.563 \bullet \text{Volume Growth} + 0.293 \bullet \text{Beginning Capacity Utilization} - 16.41$
Capacity Growth	The annual percent change in standard capacity
Capacity Utilization	Percent of standard capacity utilized on average during the year. Standard capacity is the maximum feasible volume given current product mix, labor practices, and technical constraints. If the business shares production facilities with other businesses, capacity utilization is for the total facility.
Cash Return On Investment (CROI)	For this analysis CROI has been defined as 63% of pretax earnings (assumes a 37% tax rate), plus depreciation divided by inventory plus accounts receivable plus plant and equipment evaluated at original cost
Competitive Advantage Index	Relative Market Share plus 2 • Relative Product Quality plus 10 • Relative Margin.
Competitive Entry	A new competitor entering the served market of the reporting business within five years prior to the reporting date and subsequently capturing at least a five percent share of its market.
Competitive Exit	An existing competitor with at least a five percent market share exiting the served market within the previous five years.
General Sales Growth Curve	A two parameter expression that describes the growth phase of new product growth
Importance of Auxiliary Services to End Users	Degree of importance of installation, repair, customer education, and other product-related services provided to end users.
Investment	Original Cost of Plant and Equipment + Inventories + Accounts Receivable - Current Liabilities
Life Cycle Position	Product life cycle position, as with other conditions, are estimated by the business.
Manufacturing &	Manufacturing & Distribution Costs exclude purchases

Distribution Costs	
Market Share	Total annual dollar sales as a percent of the total sales sold into the served market. The served market is that portion of the total market for which the business has suitable products and toward which it directs its marketing effort.
Marketing Effectiveness	A weight combinations of (33%) change in PROS, (28%) change of market share, (21%) change in price relative to competition , and (18%) change in relative product quality.
Marketing Expense	Includes all costs of salesman's compensation and expenses, sales force administration, agent or broker commissions, advertising and promotion, exhibits, displays, samples, temporary promotional price reductions, marketing administration, marketing research, and customer services. Excludes costs of physical distributions, such as freight and warehousing.
Marketing Aggressiveness	Measured by the difference between the increase in marketing expense compared to market growth.
Mill Cost Growth	Annual percent increase in purchase, manufacturing, distribution, and depreciation expenses.
Normalized Values	Normalization consists of subtracting the mean value and dividing by the standard deviation. This provides equal weighting for both factors.
Perceived Value Change	Annual change in market share (normalized) <u>plus</u> annual change in relative price (normalized).
Percent New Products	Percentage of total dollar sales accounted for by products introduced during the three preceding years. Excludes minor product improvements and product-line extensions unless they required major R&D effort, new technology, new investment, or a significant marketing introduction.
Pretax Return on Investment (PROI)	Pretax earnings as a percent of total investment
Pretax Return on Sales (PROS)	Pretax earnings as a percent of annual revenues net of bad debts, returns, and allowances.
Price Aggressiveness	Measured by the increase in price compared to cost.
Process Patent	A patent, trade secret, or other proprietary position pertaining to processes, which significantly benefits the business.
Product Patent	A patent, trade secret, or other proprietary position pertaining to products or services , which significantly benefits the business.

Product R&D Expense	Includes all expenses incurred to improve the existing products or services of the business or to develop new products or services. Includes improvements in packaging as well as product design, features, and functions. Excludes expenses for improving the efficiency of the manufacturing and distribution processes.
Purchases	Purchases are captures as a ratio to total costs
R&D Expense	Includes product, service am process R&D expense. Product or service R&D expenses include all expenses incurred to secure innovations and/or advances in the products or services. Includes improvements in packaging as well as product design/features/functions. Process R&D expenses include all expenses for process improvements for the purpose of reducing the cost of manufacturing, processing and/or physical handling of goods.
Real Market Growth	Average annual percentage change in the physical volume of products purchased by the market served by the business.
Recent Technological Change	The occurrence during the past five years of a major technological change in the products offered or the methods of production by the business or its major competitors.
Relative Direct Cost	Unit raw material, manufacturing, depreciation, and distribution costs relative to the three largest competitors.
Relative Margin	Relative Price minus Relative Direct Cost.
Relative Market Share	Market share on a dollar basis as a percent of the sum of the market shares of the three largest competitors (excluding your business).
Relative Price	Unit average selling price of products and services relative to the average selling price of the three largest competitors.
Relative product image/company reputation	Were end users' perceptions of "product image" and/or company reputation (for quality, dependability, etc.) for this business "about the same," "somewhat better" (or worse), or "much better" (or worse) than their perceptions of the image/reputation of leading competitors?
Relative Product Quality	Estimate the percentage of dollar sales accounted for by products and services that, from the perspective of the customer, are assessed as "Superior," "Equivalent," and "Inferior" to those available from the three leading competitors. Consider both intrinsic product characteristics and associated services. The sum of the three must add to 100%. Relative Product Quality is calculated as % Superior minus % Inferior. Example: 30% superior, 60% equivalent, 10% inferior; Relative Product Quality = +20%.

Relative product quality	For each year, estimate the percentage of your sales volume accounted for by products and services that <u>from the perspective of the customer</u> are assessed as "superior," "equivalent," and "inferior" to those available from leading competitors. Measure is % superior minus % inferior.
Sales	Annual revenues realized from goods shipped or services rendered net of bad debts, returns, and allowances. Includes lease revenues and progress payments applicable to a given year.
Selling Price Growth	Annual percent increase in selling prices for the products sold by the businesses in actual (not constant) dollars. The percentage should not reflect changes in the product mix.
Standard Capacity	The maximum feasible amount of production volume which the business is capable of manufacturing under normal operating policies, the current product mix, and current constraints on technology, work rules, labor practices, etc.
Strategic Choice	Annual change in market share (normalized) <u>minus</u> annual change in relative price (normalized).
Total Fixed Cost	The fixed costs of manufacture as reported to SPI
Total Investment	Permanent investment, inventories, accounts receivable, and cash. Permanent investment is valued at original cost. Cash is assumed to be 3% of cost of sales.
Turnover	Sales as a percent of total investment.
Unit Variable Cost	The variable or incremental component of mill costs
Volume Growth	The average annual percent change in the physical volume sales and transfers of the business.
Working Capital	Includes raw material, work in process and finished product inventories, accounts receivable, and cash assumed to be 3% of cost of sales

APPENDIX: QUESTIONS

The following True/False questions summarizes the major points in the first 99 articles based on the analysis of the SPI (PIMS) database. The first 68 of the questions appeared with the articles.

True or False?

- 1 Competitive advantage is the most important single determinant of the profitability of a business.
- 2 Businesses, which sell to their customers in large purchase quantities, tend to be more profitable than those selling in small lots.
- 3 Strong businesses tend to increase their competitive advantage at the expense of weak businesses.
- 4 Industrial businesses with high relative market shares typically earn an above average pretax return on investment, even when they operate with a low "relative margin" (relative price minus relative direct cost).
- 5 It is quite natural to operate with a high relative share and low relative margin (or vice versa) and many industrial businesses continually operate this way.
- 6 Pretax return on investment is usually higher for businesses which generate more sales revenue per dollar of investment.
- 7 Pretax return on sales is usually lower for businesses which generate more sales revenue per dollar of investment.
- 8 When an industrial business' capacity utilization is decreasing, price cutting usually occurs leading to lower prices than would exist if utilization were steady or increasing.
- 9 During the 1970's, most industrial businesses showed decreasing profit margins. This profit margin pressure was particularly severe among investment intensive businesses selling standard, raw and semi-finished materials.
- 10 The current level of profitability is normally a very important factor in determining whether an industrial business will expand its capacity.
- 11 Industrial businesses which expand aggressively (capacity growth above the "norm") have decreases in PROI, (pretax return on investment) two years later; those with below normal levels of capacity growth show increases in PROI two years later.
- 12 Businesses with a product or process patent³⁹ position have a lower incidence of competitive entry compared to businesses without patent protection.

³⁹ As defined by SPI, patents include trade secrets and other proprietary positions.

- 13 Competitive entry often occurs during periods when other competitors are exiting markets.
- 14 Industrial businesses tend to have a lower incidence of new competitive entry when the top three sellers account for a large share of total sales.
- 15 Industrial businesses tend to have a lower incidence of new competitive entry when total investment is high relative to sales (turnover is low).
- 16 Industrial businesses tend to have a lower incidence of new competitive entry when marketing and R&D expenditures are high relative to sales.
- 17 Industrial businesses with high market shares tend to lose share to their smaller competitors.
- 18 Increases in market share occur more often in businesses which are offering more new products and increasing the quality of existing products.
- 19 Industrial businesses which sell their products at premium prices (higher than prices of comparable competitive products) generally find that the "premiums" shrink over time.
- 20 When costs increase more than competitors' costs, prices usually increase more than competitors' prices also.
- 21 Industrial businesses show an above average amount of price reduction relative to competitive prices when operating at low levels of capacity utilization.
- 22 Among industrial businesses cost increases are by far the strongest correlate of selling price increases.
- 23 A negative correlation exists between selling price growth and physical volume growth. The relationship is stronger (more negative) in mature/ decline businesses than in growth businesses.
- 24 Selling prices tend to increase more rapidly among industrial businesses, which send a large percentage of their sales dollar on marketing and R&D.
- 25 Marketing and R&D expenses as a percent of sales correlate strongly with selling price inflation among growth businesses than among mature/decline businesses.
- 26 Among industrial businesses in the SPI database, market share increases occur more often when prices decrease relative to competition than when they increase relative to competition.
- 27 On average, volume aggressive businesses show more increase in pretax return on sales (PROS) than price aggressive.
- 28 In general, it pays to adopt a volume aggressive strategy in high growth markets but a price aggressive strategy in low growth markets if the objective is increased PROS.

- 29 Volume aggressive industrial businesses, in addition to showing more increase in PROS on average than price aggressive businesses, also tend to show more of an increase in sales revenue.
- 30 Price aggressiveness becomes a much better strategy when the objective is increased PROI (pretax return on Investment) rather than increased PROS.
- 31 As measured by change in PROI, the average low profit industrial business is better off pursuing a price aggressive strategy than a volume aggressive strategy.
- 32 A business with many competitors should be more volume aggressive than a business with few competitors.
- 33 A business is usually better off responding to the entry of a new competitor with a balanced strategy rather than a volume aggressive or price aggressive strategy.
- 34 Industrial businesses which outspend competitors on sales force expense and customer service show a greater increase in perceived value (as defined above) than those which outspend competitors on advertising.
- 35 It is normally better for industrial businesses to be consistent in their relative spending on sales promotion and advertising (i.e., don't spend relatively more on one and less on the other).
- 36 Industrial businesses which introduce more new products than competitors realize significantly larger gains in perceived value and PROI on average when they outspend competitor on advertising.
- 37 Seller concentration tends to be higher among industrial businesses selling to few immediate customers rather than many immediate customers.
- 38 Seller concentration tends to be higher in industrial businesses where auxiliary services are of great importance to end-users.
- 39 Seller concentration tends to be higher in businesses spending a small percentage of their total cost of sales on research and development.
- 40 Industrial businesses tend to have higher market share relative to competition if they were among the early entrants into the business
- 41 Industrial businesses tend to have higher market share relative to competition if they are more backward integrated than competitors.
- 42 Industrial businesses tend to have higher market share relative to competition if they spend more money on advertising and promotion as a percent of sales than competitors.
- 43 Pretax return on sales (PROS) for industrial businesses tends to be higher for higher levels of market share but in "diminishing return" fashion with PROS less sensitive to market share at

higher of share.

- 44 Higher PROS at higher market share is due more to high share businesses having higher incremental margins than to scale economies associated with spreading fixed costs over a broader sales base.
- 45 Large share businesses are usually able to generate more sales revenue per employee than small share businesses.
- 46 All other things being equal, by raising his market share by one share point, a small share competitor realizes more pretax earnings than does a large share competitor.
- 47 An industrial business typically has a higher level of PROS than that predicted by the above PROS/market share formula if it is in a situation of high seller concentration where the top three suppliers account for a large percentage of the business.
- 48 An industrial business typically has a higher level of PROS than that predicted by the above PROS/market share formula if it has few (10 or less) competitors.
- 49 An industrial business typically has a higher level of PROS than that predicted by the above PROS/market share formula if it has many (more than 10) competitors but has the largest market share among them.
- 50 Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when market share is low
- 51 Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when they are early in their life cycle.
- 52 Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when they are protected with a process patent.
- 53 Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when R&D expenses are a large percent of sales relative to other businesses.
- 54 Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when product quality is high relative to competition.
- 55 Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when mill (manufacturing and distribution) cost is low.
- 56 Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when turnover (sales/investment) is high relative to other businesses.

- 57 Among Strategic Planning Institute (SPI) industrial businesses, PROS increases as sales volume increases at all levels of sales volume growth.
- 58 Among these businesses, PROS increases as selling price increases at all levels of selling price growth.
- 59 Among SPI industrial businesses, pretax return on investment (PROI) is higher on average late in the 1970s than early in the 1970s.
- 60 A direct cost advantage is more likely to be associated with a higher level of pretax return on sales (PROS) for businesses with markets growing less than 2 percent per year.
- 61 A direct cost advantage is more likely to be associated with a higher level of pretax return on sales (PROS) for businesses making standard (off-the-shelf) products rather than custom-designed products.
- 62 A direct cost advantage is more likely to be associated with a higher level of pretax return on sales (PROS) for businesses having few competitors rather than many competitors.
- 63 High direct cost industrial businesses are more likely to achieve higher profit margins (PROS) if they were the first supplier to enter the market.
- 64 High direct cost industrial businesses are more likely to achieve higher profit margins (PROS) if they have product patent protection.
- 65 High direct cost industrial businesses are more likely to achieve higher profit margins (PROS) if they have a narrower product line than competitors.
- 66 Low cost industrial businesses serving moderate growth markets tend to achieve high levels of PROS whether they are the first ranked market share business or not.
- 67 Low cost industrial businesses typically earn higher levels of PROS if they are not unionized.
- 68 PROS is not very sensitive to relative product quality among low cost industrial businesses providing products which are more or less standard.
- 69 A very strong relationship exists between competitive advantage (share, quality, price, and cost relative competitors) and the profitability of a business.
- 70 Strong businesses tend to increase their competitive advantage at the expense of weak businesses.
- 71 Businesses which sell to their customers in large purchase quantities tend to be more profitable than those selling small lots.
- 72 Industrial businesses with high relative market shares typically earn an above average pretax return on investment, even when they operate with a low “relative margin” (relative price minus relative direct cost).
- 73 While lower capacity utilization may lead to price cutting in the short term, over a two-year

time frame prices tend to be higher when capacity utilization is lower.

- 74 The current level of profitability is normally a very important factor in determining whether an industrial business will expand its capacity.
- 75 During the 1970's most industrial businesses showed decreasing profit margins. This profit-margin pressure was particularly severe among investment-intensive businesses selling raw and semifinished materials.
- 76 When a product or process patent position exists, a lower incidence of competitive entry tends to occur.
- 77 It is unusual to have competitors exiting a business about the same time other competitors are entering.
- 78 High investment requirements, high requirements for marketing and R&D, and high seller concentration are "barriers to entry."
- 79 Increases in market share occur more often in businesses, which are offering more new products and increasing quality of existing products.
- 80 Selling prices tend to inflate more when volume is growing rapidly.
- 81 A strong negative association exists between change in market share and change in price among SPI industrial businesses.
- 82 Pretax return on sales increases more often when a business gives up price premium to gain market share than when it increases price premium and gives up market share.
- 83 A business is usually better off with a balanced price/share strategy (not overly price or volume aggressive) when new competitor enters.
- 84 There tends to be more seller concentration (fewer sellers) when there is buyer concentration (fewer buyers).
- 85 A business typically has a higher market share if it is a pioneer in its market rather than an early follower or late entrant.
- 86 High market share businesses have significantly lower fixed costs per dollar of sales revenue than low share businesses.
- 87 High market share businesses tend to have fewer employees per dollar of sales revenue than low share businesses.
- 88 Industrial businesses tend to realize more of an increase in profit margins per percentage point increase in market share if they have low shares and are early in their life cycle.
- 89 Having a strong cost advantage is particularly important (for profitability) to an industrial business having competitors.
- 90 A high cost industrial business is unlikely to be profitable if it has no quality advantage or enters as a follower and does not become the first or second largest supplier.
- 91 Marketing expense tends to be higher (as a percent of sales) among businesses with higher levels of working capital.
- 92 Industrial businesses tend to be more profitable when their marketing budgets are in line with

the budgets of business with similar characteristics.

- 93 It is often profitable to reduce marketing spending in low share, high cost, low-value-added, low turnover businesses.
- 94 Poor quality products tend to have lower prices relative to competition. However, this is at least partially offset the fact that they cost less to produce.
- 95 High quality products tend to be more profitable when process patent exists.
- 96 For most high quality businesses, it is probably best to charge high price premiums.
- 97 A low cost position is particularly important for industrial commodities.
- 98 Business profitability tends to be lower in businesses which are heavily unionized.
- 99 Successful ingredient producers which outspend competitors in advertising tend to be more profitable than those whose advertising is the same or lower than competitors.
- 100 In addition to the strong association between product quality and profitability, there is also an association between product differentiation and profitability.
- 101 A strong negative association exists between change in profitability and change in unit costs.
- 102 While change in earnings is associated with change in sales per employee, increasing sales has considerably more leverage on earnings than reducing employees.
- 103 Gains in market share are likely to come at great costs.
- 104 When entering a new industrial business or market, it usually pays to enter aggressively.
- 105 Industrial businesses, which sell partly through distributors and partly direct to end-users tend to be more profitable than those selling either all through distributors or direct to end-users.
- 106 Having a strong product image and company reputation is an important correlate of profitability.
- 107 Cutting back on customer service is probably a good idea as a business matures or as services are perceived to be of little or no importance.
- 108 While the existence of a product patent is associated with higher levels of profitability, the association is strong early in the product life cycle.
- 109 Achieving very low levels of manufacturing investment (plant, equipment, raw material inventory) is usually associated with a very high return on investment.
- 110 Achieving very low levels of marketing investment (finished product inventory, accounts receivable) is usually associated with a very high return on investment.
- 111 The key factors which influence how fast sales revenue grow relative to the market are how aggressively capacity is added and how aggressively price is cut.
- 112 It is easier to grow sales faster from a low share, low quality base.
- 113 It is more important to be a market leader in North America than in Western Europe.
- 114 When your products represent a large proportion of your customers' purchases, it is particularly important (for profitability) to have a cost advantage and operate at high

capacity utilization.

- 115 The profitability of strong businesses is usually more sensitive to improvements in product quality and cost position than that of weak businesses.
- 116 The profitability of commodity businesses tends to be very sensitive to improvements in product quality, customer service, and relative product image and company reputation.
- 117 In order to be successful, late entrants usually need a strong competitive cost position or a means to differentiate its offering.
- 118 Businesses which introduce many new products tend to grow faster than their markets, but have higher costs and high prices.

ANSWERS

- 1 **True** Competitive advantage is the most important single determinant of the profitability of a business. As discussed in article No. 1, our analysis of the SPI data base lead us to conclude that competitive advantage as measured by relative margin and relative market share is the most important profit determinant.
- 2 **False** Businesses, which sell to their customers in large purchase quantities, tend to be more profitable than those selling in small lots. Generally businesses that sell in large purchase quantities have lower returns on investment (or on sales), all other things being equal. This is most likely because customers are probably stronger and tend to negotiate more intensely when purchase transactions are large. See article No. 1
- 3 **False** Strong businesses tend to increase their competitive advantage at the expense of weak businesses. As shown in Figure 3 in article No. 1, weak businesses tend to become stronger.
- 4 **False** Industrial businesses with high relative market shares typically earn an above average pretax re turn on investment, even when they operate with a low "relative margin" (relative price minus relative direct cost). High relative share, low relative margin industrial businesses typically earn a 12% return as shown in the upper left-hand corner of Table 1, article No. 2. This is below the data base average of 14%.
- 5 **False** It is quite natural to operate with a high relative share and low relative margin (or vice versa) and many industrial businesses continually operate this way. See Table 2, article No. 2 and the related discussion in the article.
- 6 **True** Pretax return on investment is usually higher for businesses which generate more sales revenue_per dollar of investment. This is an important finding but not a surprising one. See article No. 4.
- 7 **False** Pretax return on sales is usually lower for businesses which generate more sales revenue per dollar of investment. This is a surprising finding in that one might expect higher margins in businesses requiring higher investment. See article No. 4.
- 8 **False**. When an industrial business' capacity utilization is decreasing, price cutting usually occurs leading to lower prices than would exist if utilization were steady or increasing. As shown in Figure 8, article No. 5, selling prices tend to increase more when capacity utilization is decreasing.
- 9 **True** During the 1970's, most industrial businesses showed decreasing profit margins. This profit margin pressure was particularly severe among investment intensive businesses selling standard, raw and semi-finished materials. See Table 7, article No. 6.
- 10 **False** The current level of profitability is normally a very important factor in determining whether an industrial business will expand its capacity. As noted,_capacity growth is unrelated to profitability and seems to depend entirely on the need for capacity (demand increases and anticipated supply limitations). See article No. 7.

- 11 **True**. Industrial businesses which expand aggressively (capacity growth above the "norm") have decreases in PROI, (pretax return on investment) two years later; those with below normal levels of capacity growth show increases in PROI two years later. See Figure 13, article No. 8.
- 12 **False** Businesses with a product or process patent position have a lower incidence of competitive entry compared to businesses without patent protection. See Figure 35, article No. 13.
- 13 **True** Competitive entry often occurs during periods when other competitors are exiting markets. See Figure 36, article No. 13.
- 14 **False** Industrial businesses tend to have a lower incidence of new competitive entry when the top three sellers account for a large share of total sales. See Table 15, article No. 14.
- 15 **False** Industrial businesses tend to have a lower incidence of new competitive entry when total investment is high relative to sales (turnover is low). See Table 17, article No. 14.
- 16 **False** Industrial businesses tend to have a lower incidence of new competitive entry when marketing and R&D expenditures are high relative to sales. See Table 18, article No. 14.
- 17 **True** Industrial businesses with high market shares tend to lose share to their smaller competitors. See Figure 38, article No. 15.
- 18 **True** Increases in market share occur more often in businesses, which are offering more new products and increasing the quality of existing products, see article No. 15.
- 19 **True** Industrial businesses which sell their products at premium prices (higher than prices of comparable competitive products) generally find that the "premiums" shrink over time. See Figure 42, article No. 16.
- 20 **True** When costs increase more than competitors' costs, prices usually increase more than competitors' prices also. See Figure 43, article No. 16.
- 21 **False** Industrial businesses show an above average amount of price reduction relative to competitive prices when operating at low levels of capacity utilization. See article No. 16.
- 22 **True** Among industrial businesses cost increases are by far the strongest correlate of selling price increases. See Figure 44, article No. 17.
- 23 **True** A negative correlation exists between selling price growth and physical volume growth. The relationship is stronger (more negative) in mature/ decline businesses than in growth businesses. See Figure 45, article No. 17.
- 24 **False** Selling prices tend to increase more rapidly among industrial businesses which send a large percentage of their sales dollar on marketing and R&D. See Figure 46, article No. 18.

- 25 **True** Marketing and R&D expenses as a percent of sales correlate strongly with selling price inflation among growth businesses than among mature/decline businesses. See regression equations in the last section of the article. The correlation coefficient between selling price. See article No. 18.
- 26 **False** Among industrial businesses in the SPI database, market share increases occur more often when prices decrease relative to competition than when they increase relative to competition. See Table 21, article 19.
- 27 **True** On average, volume aggressive businesses show more increase in pretax return on sales (PROS) than price aggressive. See Figure 54, article No. 20.
- 28 **False** In general, it pays to adopt a volume aggressive strategy in high growth markets but a price aggressive strategy in low growth markets if the objective is increased PROS. See Table 24, article No. 20.
- 29 **True** Volume aggressive industrial businesses, in addition to showing more increase in PROS on average than price aggressive businesses, also tend to show more of an increase in sales revenue. See Table 25, article No. 21.
- 30 **False** Price aggressiveness becomes a much better strategy when the objective is increased PROI (pretax return on Investment) rather than increased PROS. See Table 26, article No. 21.
- 31 **False** As measured by change in PROI, the average low profit industrial business is better off pursuing a price aggressive strategy than a volume aggressive strategy. See Table 29, article No. 22.
- 32 **False** A business with many competitors should be more volume aggressive than a business with few competitors. See Table 30, article No. 22.
- 33 **True** A business is usually better off responding to the entry of a new competitor with a balanced strategy rather than a volume aggressive or price aggressive strategy. See Table 31, article No. 22.
- 34 **False** Industrial businesses which outspend competitors on sales force expense and customer service show a greater increase in perceived value (as defined above) than those which outspend competitors on advertising. See Table 32, article No. 23.
- 35 **True** It is normally better for industrial businesses to be consistent in their relative spending on sales promotion and advertising (i.e., don't spend relatively more on one and less on the other). See Table 33, article No. 23.
- 36 **True** Industrial businesses which introduce more new products than competitors realize significantly larger gains in perceived value and PROI on average when they outspend competitor on advertising. See Table 34, article No. 23.

- 37 **True**. Seller concentration tends to be higher among industrial businesses selling to few immediate customers rather than many immediate customers. See Table 39, article No. 26.
- 38 **True**. Seller concentration tends to be higher in industrial businesses where auxiliary services are of great importance to end-users. See Table 40, article No. 26.
- 39 **False**. Seller concentration tends to be higher in businesses spending a small percentage of their total cost of sales on research and development. See Table 41, article No. 26.
- 40 **True**. Industrial businesses tend to have higher market share relative to competition if they were among the early entrants into the business. See Table 43, article No. 27.
- 41 **True**. Industrial businesses tend to have higher market share relative to competition if they are more backward integrated than competitors. See Table 43, article No. 27.
- 42 **True**. Industrial businesses tend to have higher market share relative to competition if they spend more money on advertising and promotion as a percent of sales than competitors. See Table 44, article No. 27.
- 43 **True**. Pretax return on sales for industrial businesses tends to be higher for higher levels of market share but in "diminishing return" fashion with PROS less sensitive to market share at higher of share, See Figure 56, article No. 28.
- 44 **True**. Higher PROS at higher market share is due more to high share businesses having higher incremental margins than to scale economies associated with spreading fixed costs over a broader sales base. See Figure 57, article No. 28.
- 45 **False**. Large share businesses are usually able to generate more sales revenue per employee than small share businesses. See Table 47, article No. 29.
- 46 **False**. All other things being equal, by raising his market share by one share point, a small share competitor realizes more pretax earnings than does a large share competitor. See Table 48 and Figure 59, article No. 29.
- 47 **False**. An industrial business typically has a higher level of PROS than that predicted by the above PROS/market share formula if it is in a situation of high seller concentration where the top three suppliers account for a large percentage of the business. See Table 49, article No. 30.
- 48 **False**. An industrial business typically has a higher level of PROS than that predicted by the above PROS/market share formula if it has few (10 or less) competitors. See Table 50, article No. 30.
- 49 **True**. An industrial business typically has a higher level of PROS than that predicted by the above PROS/market share formula if it has many (more than 10) competitors but has the largest market share among them. See Table 50, article No. 30.

- 50 **True**. Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when low levels of market share. See Table 53, article No. 31.
- 51 **True**. Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when they are early in their life cycle. See Table 53, article No. 31.
- 52 **False**. Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when they are protected with a process patent. See Table 54, article No. 31.
- 53 **True**. Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when R&D expenses are a large percent of sales relative to other businesses. See Table 55, article No. 32.
- 54 **False**. Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when product quality is high relative to competition. See Table 57, article No. 32.
- 55 **False**. Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when mill (manufacturing and distribution) cost is low. See Table 58, article No. 32.
- 56 **False**. Industrial businesses typically realize a higher percentage point increase in PROS per percentage point increase in market share (or lose more per percentage point decrease in market share) when turnover (sales/investment) is high relative to other businesses. See Table 59, article No. 32.
- 57 **True**. Among Strategic Planning Institute (SPI) industrial businesses, PROS increases as sales volume increases at all levels of sales volume growth. See Figure 60, article No. 34.
- 58 **False**. Among these businesses, PROS increases as selling price increases at all levels of selling price growth. See Figure 61, article No. 34.
- 59 **True**. Among SPI industrial businesses, pretax return on investment (PROI) is higher on average late in the 1970s than early in the 1970s. See Figure 66, article No. 35.
- 60 **False**. A direct cost advantage is more likely to be associated with a higher level of pretax return on sales (PROS) for businesses with markets growing less than 2 percent per year. See Figure 68, article No. 36.
- 61 **True**. A direct cost advantage is more likely to be associated with a higher level of pretax return on sales (PROS) for businesses making standard (off-the-shelf) products rather than

custom- designed products. See Figure 69, article No. 36.

- 62 **True**. A direct cost advantage is more likely to be associated with a higher level of pretax return on sales (PROS) for businesses having few competitors rather than many competitors. See Figure 70, article No. 36.
- 63 **True**. High direct cost industrial businesses are more likely to achieve higher profit margins (PROS) if they were the first supplier to enter the market. See Table 64, article No. 37.
- 64 **True**. High direct cost industrial businesses are more likely to achieve higher profit margins (PROS) if they have product patent protection. See Table 66, article No. 37.
- 65 **False**. High direct cost industrial businesses are more likely to achieve higher profit margins (PROS) if they have a narrower product line than competitors. See Table 67, article No. 37.
- 66 **True**. Low cost industrial businesses serving moderate growth markets tend to achieve high levels of PROS whether they are the first ranked market share business or not. See Table 69, article No. 38.
- 67 **True**. Low cost industrial businesses typically earn higher levels of PROS if they are not unionized. See Table 71, article No. 38..
- 68 **True**. PROS is not very sensitive to relative product quality among low cost industrial businesses providing products which are more or less standard. See Table 73, article No. 38.
- 69 **True**. A very strong relationship exists between competitive advantage (share, quality, price, and cost relative competitors) and the profitability of a business. These factors are almost always among the factors which correlate strongly with profitability for segments of the SPI database. See articles Nos.1, 33.
- 70 **False**. Strong businesses tend to increase their competitive advantage at the expense of weak businesses, .SPI database businesses show a strong “regression toward the mean” tendency with respect to market share, profitability, relative price, and relative costs. See articles Nos. 1, 15.
- 71 **False**. Businesses which sell to their customers in large purchase quantities tend to be more profitable than those selling small lots. A strong negative association exists between profitability and sales transaction amount. See articles Nos.1, 74 (Table 2).
- 72 **False**. Industrial businesses with high relative market shares typically earn an above average pretax return on investment, even when they operate with a low “relative margin” (relative price minus relative direct cost). See article No.2. However, most high share businesses also have high relative margins.
- 73 **True**. While lower capacity utilization may lead to price cutting in the short term, over a two-year time frame prices tend to be higher when capacity utilization is lower. SPI database experience indicates that over time prices are driven much more by costs than supply/demand changes. See articles Nos. 5, 17.

- 74 **False**. The current level of profitability is normally a very important factor in determining whether an industrial business will expand its capacity. Capacity expansion is driven by the need for capacity (demand growth, high capacity utilization) and is not related to profitability. See article No.7.
- 75 **True**. During the 1970's most industrial businesses showed decreasing profit margins. This profit-margin pressure was particularly severe among investment-intensive businesses selling raw and semifinished materials. See article Nos.6, 35.
- 76 **False**. When a product or process patent position exists, a lower incidence of competitive entry tends to occur. See article No.13. This is probably because patent protection usually occurs early in the life cycle when growth is high and entry is attractive.
- 77 **False**. It is unusual to have competitors exiting a business about the same time other competitors are entering. Competitive entry and exit often occur together suggesting more competitive turbulence than the life cycle theory might suggest. See article No. 13.
- 78 **False**. High investment requirements, high requirements for marketing and R&D, and high seller concentration are "barriers to entry." While often cited as entry barriers, these factors do not differentiate frequency of competitive entry among SPI industrial businesses. See article No.14.
- 79 **True**. Increases in market share occur more often in businesses, which are offering more new products and increasing quality of existing products. See article No.15.
- 80 **False**. Selling prices tend to inflate more when volume is growing rapidly. The reverse is true. Prices correlate very strongly with costs. Both costs and prices tend to increase faster when volume growth is low or negative. See article No.17.
- 81 **False**. A strong negative association exists between change in market share and change in price among SPI industrial businesses. The correlation is near zero indicating that structural changes (e.g., competitive conditions, changes in the offerings) where price and volume move in the same direction occur about as often as strategic changes (volume aggressiveness) where they move in opposite directions. See article Nos. 19, 44.
- 82 **True**. Pretax return on sales increases more often when a business gives up price premium to gain market share than when it increases price premium and gives up market share. While a balanced price/share strategy is usually best, volume aggressiveness is usually better than getting price premiums higher and losing market share. See article Nos.20, 21.
- 83 **True**. A business is usually better off with a balanced price/share strategy (not overly price or volume aggressive) when new competitor enters. See article No. 22.
- 84 **True**. There tends to be more seller concentration (fewer sellers) when there is buyer concentration (fewer buyers). See article No.26.
- 85 **True**. A business typically has a higher market share if it is a pioneer in its market rather than an early follower or late entrant. See article No. 27.
- 86 **False**. High market share businesses have significantly lower fixed costs per dollar of sales revenue than low share businesses. Fixed costs tend to be more variable in the longer run than might be expected. High share businesses tend to benefit more from higher price

premiums and lower cost of purchases than from “spreading fixed costs across larger volumes.” See articles Nos. 28, 67.

- 87 **False**. High market share businesses tend to have fewer employees per dollar of sales revenue than low share businesses. See article No.29.
- 88 **True**.Industrial businesses tend to realize more of an increase in profit margins per percentage point increase in market share if they have low shares and are early in their life cycle. See article No. 31.
- 89 **True**. Having a strong cost advantage is particularly important (for profitability) to an industrial business having competitors. See article No.36.
- 90 **True**.A high cost industrial business is unlikely to be profitable if it has no quality advantage or enters as a follower and does not become the first or second largest supplier. See article No.37.
- 91 **True**.Marketing expense tends to be higher (as a percent of sales) among businesses with higher levels of working capital. See article No.40.
- 92 **False**. Industrial businesses tend to be more profitable when their marketing budgets are in line with the budgets of business with similar characteristics. It is usually better not to follow the practices of similar businesses. See article Nos. 41, 90.
- 93 **False**. It is often profitable to reduce marketing spending in low share, high cost, low value-added, low turnover businesses. See article No.43.
- 94 **False**. Poor quality products tend to have lower prices relative to competition. However, this is at least partially offset the fact that they cost less to produce. Poor quality products typically cost more to produce. See article No. 48.
- 95 **True**. High quality products tend to be more profitable when process patent exists. Managing high quality products for high profitability requires attention to costs and investment. See article No. 50.
- 96 **False**. For most high quality businesses, it is probably best to charge high price premiums. For mature/decline industrial businesses selling standardized products, which have few competitors and are first ranked in market share, moderate price premiums tend to be more profitable than high price premiums. See article No. 51.
- 97 **True**.A low cost position is particularly important for industrial commodities. See article No.53.
- 98 **True**.Business profitability tends to be lower in businesses which are heavily unionized. See article No. 55.
- 99 **True**.Successful ingredient producers which outspend competitors in advertising tend to be more profitable than those whose advertising is the same or lower than competitors. See article No. 60.
- 100 **True**. In addition to the strong association between product quality and profitability, there is also an association between product differentiation and profitability. See article No. 63.
- 101 **False**. A strong negative association exists between change in profitability and change in

unit costs. Indications are that “revenue enhancement” programs generally increase earnings more than “cost reduction” programs. However, it is very important to maintain low costs relative to competitors. See article Nos. 64, 65.

- 102 **True**. While change in earnings is associated with change in sales per employee, increasing sales has considerably more leverage on earnings than reducing employees. See article No. 66.
- 103 **False**. Gains in market share are likely to come at great costs. Market share increases are more often associated with increased profits than increased costs. See article No. 68.
- 104 **True**. When entering a new industrial business or market, it usually pays to enter aggressively. See article No. 69.
- 105 **True**. Industrial businesses, which sell partly through distributors and partly direct to end-users tend to be more profitable than those selling either all through distributors or direct to end-users. See article No. 72.
- 106 **True**. Having a strong product image and company reputation is an important correlate of profitability. Profitability shows a fairly strong association with image/reputation even after other correlating elements of competitive advantage are factored out. See article Nos. 74, 75.
- 107 **False**. Cutting back on customer service is probably a good idea as a business matures or as services are perceived to be of little or no importance. See article No. 77.
- 108 **False**. While the existence of a product patent is associated with higher levels of profitability, the association is strong early in the product life cycle. The association is stronger later in the life cycle. See article No. 78.
- 109 **True**. Achieving very low levels of manufacturing investment (plant, equipment, raw material inventory) is usually associated with a very high return on investment. See article No. 79.
- 110 **False**. Achieving very low levels of marketing investment (finished product inventory, accounts receivable) is usually associated with a very high return on investment. Also see article No. 79.
- 111 **False**. The key factors which influence how fast sales revenue grow relative to the market are how aggressively capacity is added and how aggressively price is cut. While aggressive capacity expansion is a key factor, price-cutting is not. Aggressive marketing spending is the second key factor. See article Nos. 80, 81, 82.
- 112 **False**. It is easier to grow sales faster from a low share, low quality base. While it is easier to grow from a low share position, it is also easier to grow from a high quality position. See article No. 81.
- 113 **True**. It is more important to be a market leader in North America than in Western Europe. See article No. 85.
- 114 **True**. When your products represent a large proportion of your customers’ purchases, it is particularly important (for profitability) to have a cost advantage and operate at high capacity utilization. See article No. 87.

- 115 **False**. The profitability of strong businesses is usually more sensitive to improvements in product quality and cost position than that of weak businesses. The reverse is true. This raises some question about the normal practice of funding strong rather than weak businesses. See article Nos. 88, 89.
- 116 **True**. The profitability of commodity businesses tends to be very sensitive to improvements in product quality, customer service, and relative product image and company reputation. See article No. 91.
- 117 **True**. In order to be successful, late entrants usually need a strong competitive cost position or a means to differentiate its offering. See article Nos. 92, 93.
- 118 **False**. Businesses which introduce many new products tend to grow faster than their markets, but have higher costs and high prices. While they do tend to grow faster, the price/cost inflation tends to be lower for businesses not introducing many new products.

APPENDIX: INDEX

- Articles are identified by their article number.
- The identifier "X" refers to the use of the variable in the article noted.
- The identifier "C" refers to the use of the change in the variable in the article noted.
- The identifier "I" refers to the use of the initial or beginning value of the variable in the article noted.