

Strategic Management of Farm Supply and Grain Elevator Businesses*

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The increasingly competitive situation facing managers of farm supply and grain elevator businesses has made management of their business's strategy increasingly important to successful performance. Strategy of these businesses is examined here using linear regression. Businesses that earn higher returns on assets are found: to be more diversified in product lines, to do a better job of controlling general expenses, to have fewer assets, to be in areas of lower crop production, and to be proprietary rather than cooperative organizations.

Managers of farm supply and grain elevator businesses are searching for ways to improve the performance of their businesses. Much of the impetus for this search is increased competition in the industry. The market is maturing while the competitors are becoming increasingly sophisticated. The information available to help them determine how they can be better competitors is limited. Many studies of these businesses are old and were performed under a different set of market conditions.^{1,2} Recent studies have a strong financial bias, providing comparative summaries of accounting data,^{3,4} but not pointing out which differences are important. Nor do they consider the different competitive situation facing each business.

This article takes a strategic management approach to identifying factors that managers of farm supply and grain elevator businesses might consider as they look for ways of making their businesses perform better in this more competitive environment. This is done in three steps. First, the concept of strategy is examined, then an empirical analysis is described, and finally conclusions are drawn from the study.

*Thanks go to Thomas F. Funk for assistance with the cluster analysis.

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I. THEORETICAL FOUNDATIONS

Strategic management takes a managerial perspective of the major determinants of business performance. It has two important characteristics: it is a relatively new managerial concept and it incorporates additions from industrial organization, marketing, and administrative behavior, making it a complex concept as well. Consequently, the definition of strategy is still evolving. For our purposes, Porter's definition of competitive strategy is an appropriate definition;⁵ that is, strategy is the set of choices the manager makes about how his business competes in a particular environment.

McGee and Thomas⁶ have stressed the need to adequately specify the dimensions of strategy and suggest that much of the previous work has been weak in this regard. Hambrick,⁷ however, feels that there is no ideal way to operationalize it at present, while Porter⁵ has suggested 18 attributes that can be used to define strategy. From our review of the literature on strategy, four broad dimensions are apparent: focus, differentiation, cost leadership, and size. Focus designates the market that the business concentrates its attention on, possibly defined by type of customer, product, or geographic locale. Differentiation means how the product/service bundle is uniquely attractive to customers. Cost leadership is producing goods and services more cheaply than competitors. Finally, size is simply how big the business is.

How these four strategic dimensions interact to produce an effective strategy is not clearcut. Observation of successful businesses has suggested that businesses can pursue different strategies and be equally successful. The implication is that examining strategy by considering all businesses at once is misleading as it does not recognize that businesses doing very different things may have the same degree of success. Consequently, the emerging view in strategic management is that one should first determine alternative strategies that are possible and then examine each separately. Cluster analysis has been used by Galbraith and Schendel⁸ and Hambrick^{9,10} to determine alternative strategies pursued in industry. Cluster analysis reveals strategies, interdependent packages of strategic variables, and assigns each of the businesses to a group. Regression analysis can then be used to determine the importance of particular variables within a given strategy.

The context within which the strategy is applied should also be considered when examining the strategy since strong and complex links exist between it, organization, and environment.¹¹ Organizational variables influence the definition and implementation of strategy while environmental variables reflect the conditions under which the business is competing both with customers and with other businesses. These variables are not part of the strategies themselves, but they help explain the performance achieved through them.

The consequence of having an effective strategy is superior performance. Performance has been measured in many ways and there is no clearcut answer as to the best measures to use.^{12,13}

II. AN EMPIRICAL ANALYSIS

The character of strategy pursued by farm supply and grain elevator businesses will now be explored.

The Database

The ability to do so is influenced heavily by the data available as it determines one's ability to draw out the significant aspects of strategy. The data used are taken from a study conducted by Purdue University under a Cooperative Agreement with the U.S. Department of Agriculture. The database was collected for two purposes: first, to compare the performance of cooperative with proprietary businesses, and second, to determine current procurement, handling, and selling practices in farm supply and grain elevator businesses. The questions asked meant that the data could also be used to examine strategy.

To obtain a sample representative of the industry, businesses in the states of Indiana, Illinois, Iowa, and Kansas were surveyed. These states contained around 60% of the grain elevators in the United States and also were representative of the region producing corn, soybeans, and wheat. Within each state, four or five clusters were set based on county boundaries such that each cluster was 40 to 50 miles in diameter, the clusters lay along the long axis of the state, and the counties in the clusters were of similar size. A sample was then selected from each cluster. To be included in the sample, the firm had to have fewer than 10 outlets, and if it handled grain, had to be a grain merchant rather than a grain processor, and had to purchase at least half its grain from farmers, thus excluding terminal or subterminal operations.

The sampling objective was a response of 10–12 companies in each cluster. Initially 16–18 businesses were selected randomly and sampled. Additional firms were randomly selected until the desired number of responses was achieved. Each business received a mailed questionnaire and then was personally interviewed. The information was collected in 1979–1980 and represented operations during the 1978 crop year. The fiscal year for 85% of the firms ending during May through December 1979.

Bad weather during the winter restricted application of this approach in Iowa and Kansas so that the final database contained data on 170 firms with 54 in Indiana, 52 in Illinois, 36 in Iowa, and 26 in Kansas. The sample contained 99 single outlet and 71 multiple outlet businesses. Ninety-eight were cooperatives, 62 were corporations, and 10 were proprietorships. Average sales of cooperative businesses for those with product specified were grain sales \$7.8 million, feed sales \$0.9 million, fertilizer and chemical sales \$1.4 million, petroleum sales \$1.5 million, and seed sales \$0.7 million. Average sales of other forms of business (proprietary businesses) for those with product specified were grain sales \$4.2 million, feed sales \$0.5 million, fertilizer and

chemical sales \$0.3 million, petroleum sales \$0.2 million, and seed sales \$0.2 million. Since the percentage gross margin on grain is less than 25% of that on other product lines, grain does not dominant these businesses as sales figures suggest. The cooperative businesses, though, were significantly larger in all lines of business. Further information on the sampling procedure, the questionnaire and the sample is provided by Babb and Keen.¹⁴

B. The Variables

Selection of the variables used in this study was a three stage process. The first stage was based on a review of the strategic literature to identify relevant variables, drawing in particular on Porter⁵ and Hambrick.^{9,10} The second stage involved review of the literature on economic analysis and the management of these businesses in order to identify specific industry characteristics important to performance. The third stage involved using these lists to identify data on these variables. The variables finally used in the analysis were separated into three components: strategy, context, and performance.

1. Strategy

The attributes of strategy were examined based on the four dimensions outlined above: focus, differentiation, cost leadership, and size.

Focus was examined using the diversity of the product line, which could include chemicals, feed, fertilizer, grain, other farm supplies, and services. The manager of the individual business chooses which products to handle. Some specialized in a single product with other lines either absent or playing a minor role, while others carried a broad range of lines, all of which are important.

In general, the literature suggests that successful businesses will be diversified, handling a broad range of products. On the marketing side, it has been argued that offering a complete product line or center for one-stop-shopping helps attract customers. While specific products may be more profitable than others, the large selection of products offered is seen as increasing total sales revenue and firm performance. On the operations side, diversification has been pointed out as a way of lowering costs as a broad line allows facilities and labor to be used more intensively and with greater flexibility throughout the year, thus spreading fixed costs. For average retail fertilizer plants, Akridge and Hertel¹⁵ found economics of scope—that a company could produce a group of fertilizers more cheaply than it could produce the same number of fertilizers individually in the short run. They argued that these economies were responsible for larger plants which overcame the lack of economies of scale for single product lines.

Measurement of the diversification of product line relied on the Herfindahl index to consider both the breath and degree of specialization. The index is

$$H = \sum S_i^2$$

where H is the index of diversification, n is the number of product lines, and S_i represents the contribution of the i th product to the total margin of the firm. For a firm specializing in one profitable line, H equals one, while for a firm relying on a range of products with equal importance, the index equals $1/n$. This measure was calculated so that companies with losses in any lines were omitted from the sample. The gross margin on service revenue was assumed to be 25% because no gross margin figures were available. No systematic pattern was observed in the gross margins of the businesses by line. In particular, the gross margin for the grain program did not dominate the contribution to total gross margin across all businesses.

Differentiation emphasizes ability in marketing products and services as a business seeks to exploit complexity. This makes it a multivariate concept for which no single measure is possible. The data available for this study allowed only the consideration of product and service pricing and services offered.

Differentiation through price is an important dimension in these businesses. Low prices for farm supplies and high prices for the farmers' grain can attract farmers when the business deals in a limited product line or when the products and services are not highly differentiated. If the firm has to use lower prices or product margins to attract farmers, size becomes important since large sales volume is needed to generate sufficient returns. On the other hand, pricing may be less important to the full product line firm which attracts the customer by supplying all his needs at one place. These businesses may be charging higher prices so that they earn higher margins because buyers are not as price sensitive and therefore less likely to shop for alternative sources of supply.

Boynton and Babb¹⁶ found that farmers considered prices the most important consideration when determining where to market grain and buy fertilizer. Farmers saw no difference between cooperatives and proprietary firms on this count but they favored cooperatives because of dependability and convenience. When studying the businesses Babb and Bohl¹⁷ and Johnson and Schrader,¹⁸ however, found that cooperatives paid higher prices for grain. Babb and Bohl¹⁷ also reported that managers of business of all types of ownership tended to underprice competition with prices being closer to "the competition" when margins were low. Apparently, managers felt their pricing flexibility was less under low margins or they acted more conservatively. They also found a number of nonprice marketing decisions were important.

Differentiation through product pricing was examined using a price index that reflected the competitive character of a business's market prices relative to other businesses in the local area (cluster). This was measured using an index developed by taking the difference between the business's price and the mean price for the local area, divided by the mean price to obtain a relative measure of the price distortion, and averaged over the business's product lines. Initially the farmer prices for atrazine, anhydrous ammonia, diesel fuel, and 40% hog supplement and the price bid by the business for the farmers' corn, soybeans, hard wheat, and soft wheat were considered. Constancy in grain price bids across businesses led us to exclude them.

Differentiation through services is another place the business can differentiate itself, either in the uniqueness of the services offered or in what it charged for them. Managers were asked to describe services they had that

were different from their competitors. Almost all managers saw their businesses as offering the same services so differentiation through services offered could not be evaluated. The pricing of four services was available and this was examined using a price index that reflected the competitive character of business's service charges relative to those of local competitors. This index was constructed in the same way as the price index.

Cost leadership stresses efficient scale facilities, the pursuit of cost reduction in operations, and the minimization of overhead expenses. It was measured in this study in two ways: cost of goods sold and operating efficiency. Cost of goods sold is associated with particular product lines handled by the business. By keeping these cost low relative to competition, a business can expand its gross margin beyond that of its competitors. Low cost of goods sold also gives the firm flexibility in pricing. In a competitive market where selling prices and product margins may be under pressure, low prices may be necessary to meet or beat competitive prices while still earning a return on capital. High cost of goods sold permits less flexibility in pricing. Thus, the cost of goods sold may affect the overall performance of firms. The cost of goods sold was examined using the purchase price of common inputs bought by the industry: liquid atrazine, anhydrous ammonia, and diesel fuel. An index was constructed in the same way as the previous price indexes to measure the business's relative cost of goods sold.

Operating efficiency reflects the degree to which the general expenses of the business are kept down relative to the volume of business. Total operating expenses comprised of salaries, utilities, trucking, maintenance and repair, communication, selling expense, professional service, demurrage, bad debt, other expenses, depreciation, insurance, rent and least, interest expense and state and local taxes, fines, and fees. Holding down operating expenses should have a positive affect on firm performance.

Control of operating expenses was measured using the sum of total operating costs divided by total gross margin. Two facts were important in choosing this measure of operating efficiency. First, for most businesses in this industry, labor was the largest component of unallocated expenses followed by depreciation and interest. Baumel and Sharp¹⁹ found a significant negative relationship between labor coast and net profit per dollar of sales. Since unallocated expenses were highly correlated with labor, depreciation, and interest expenses, a decision was made to use total cost rather than any single component. Second, a simple analysis of the data showed that firms with a greater proportion that fixed assets written off were more profitable, but that depreciation and interest expenses were only weakly and positively correlated with return on assets, ROA, pointing out that a low ROA was not as likely a function solely of recent investment in new facilities.

Size has been hypothesized by some to affect performance of the firm through both costs and marketing. From a cost perspective, some argue that larger size and plant numbers in the businesses provide both real and pecuniary economies of scale. Others argue that some or all of the potential gains from economies of scale are offset by costs incurred due to increased complexity and the need for increased management expertise. Still others, such as Von Oppen and Hill,²⁰ see a balance, pointing out that the dis-

economies in assembly and capacity utilization of grain elevators through expanding the size of a business are offset by economies in the construction of space and transportation. The latter are important because of the small increase in value during the marketing of whole grain and the large weight and volume involved in transportation. From a marketing perspective, size can have a psychological impact since a large firm can project the image that it is prospering from the volume of business conducted and subtly imply that it is the price leader in the area. Therefore, size may affect performance of a firm operating in this industry in a positive manner.

The most common measure used for size is value of assets although sales are sometimes used. Sales were not used in this study because of the different sales values and value added among the products handled by these firms. The actual measure used in this study was $1/\log$ net fixed assets. By taking the log, one removes most of the skewness in the original distribution. In this form, we would expect the coefficient to carry a negative sign if economies of scale exist.

Several other aspects asset measures were also examined. First, use of two components, size and size squared, was also considered because some argue that profitability is a function of size with small and large businesses being more profitable than medium size businesses. Small businesses can pursue niche markets while large businesses can pursue large markets and the medium sized firms are "stuck in the middle." While estimated coefficients carried the correct signs to support this relationship, the explanatory power of the equation was reduced and neither coefficient was significant. Second, the net value of fixed assets was compared with the gross margins generated by the different lines of business to see if capital needs were significantly different by line of business. All correlations were low with negative coefficients for grain, feed, fuel, and services and positive ones for the other lines of business.

2. Context

Strategy must also be examined within its organizational and environmental context in which it is applied, because the same strategy applied in different contexts may provide different results.

Organizational Context could be considered from two dimensions with the data available for this study: ownership and structure. Ownership of the businesses was classified into proprietary (proprietorships and corporations) and cooperative ownership. Type of ownership may be important since each type of ownership seems to provide its own philosophy as to goals and how the business achieves them. In principle, the goal of cooperatives is to supply all of the customers' needs and distribute any surplus to its members. Profit has been a major goal, but competition from proprietary firms has forced cooperatives to become more sensitive to price and operating efficiency. Therefore, it is important to recognize that cooperatives and proprietary firms may have different standards for measuring firm performance.

While Thompson and Dziura²¹ recognized the role of different forms of ownership, they did not find that it had any impact on margins. Baker and

Babb²² found, using a simulation model, that managers of cooperative-owned grain elevators appeared less interested in maximizing profits than those of proprietary firms. They also found that those who ranked return on investment, ROI, as an important consideration achieved higher ROIs both in the experiment and in the real world. They speculated that while managers of proprietary firms have invested in the business to make a return, cooperative managers probably have other goals in mind such as providing members with higher incomes, lower input costs, or better services. They also found that cooperative managers were more interested in dominating one market, though how they planned to accomplish this was not clear as they were not significantly different when it came to the goals of assuring farmers a market or dependable supplies, providing higher quality product, and providing farmers with the best prices. Two dummy variables were used to control for alternative forms of organizational ownership.

The second dimension of organizational context was the structure of business as reflected in single and multiple outlets. Businesses that are part of a multiple outlet company may operate differently because the corporate planning and financial control systems needed to coordinate and control the businesses from head office tend to tighten control. Thompson and Dziura²¹ found no relationship between margin and number of outlets, but that decentralized decision making had a significant positive effect on margins. They thought the difference might be due to local decision making allowing a better match with local market conditions or to multioutlet businesses being interested in making profit on volume while smaller firms go for higher margins on limited volume. Babb and Bohl¹⁷ found that firms with single outlet corporate affiliations excelled in nearly all measures of performance. A dummy variable was introduced to control for organizational structure.

Environmental Context of competitive strategy could be described by two dimensions in this study: density of local crop production and location of the business. The effect of density of local crop production, while potentially important, is uncertain. On the one hand, an area with less crop production can either support fewer or smaller businesses or both. Fewer competitors may reduce competitive pressures, and make these businesses more profitable. On the other hand, an elevator operating in an area with dense crop production will have lower collection and distribution costs. Thus businesses operating in regions of dense production may outperform elevators located where crops are less dense. The density of crop production was measured using the proportion of acres of land devoted to crop production in the county in which the business was located. This was compared to the total land area in the county in which the firm resides, and expressed as a percentage, to determine the density of crop products.

The second dimension of environmental context was the location which influences the range of products and services which might be provided. The survey covered four states with considerable difference among them. In Kansas, wheat was predominant while corn and soybeans were predominant in Indiana, Illinois, and Iowa. This is important because different crops have different marketing needs. Hill²³ has pointed out that corn, for example, tends to be stored on farms and used in livestock production. Market conditions will also

vary by location, with supply and demand conditions in each being different. Similarly, weather and agronomic factors differ from one location to another. This can affect the production by location, which in turn can affect the performance of firms in a particular region. Location was controlled for through the use of dummy variables.

3. Performance

A fundamental view of business is that justification for it is its ability to earn a profit. Coupled with the fact that the database contained both cooperative and proprietary businesses, some measure of return on funds invested in the business seemed the best way to assess performance since it is a common concern. An argument against using this or other financial measures is that they represent short-run results while strategy involves long run decisions. This point is correct, but short run measures are still appropriate because strategy is revealed in the current actions of the firm in the competitive situation. Furthermore, revealed strategy is more relevant since implementation can cause intended strategy to differ considerably from it.

Various measures of return on investment are possible. Performance was measured in this study using return on assets, ROA. It is a reliable measure of performance in mature industries where the asset base tends to be reasonably stable against sales. Two other measures of return on investment, return on owner's equity, ROE, and return on invested capital, ROIC, were rejected because they are influenced by how funds are provided. This happens because capital structure imposes bias due to financial leverage through high debt/equity ratios. ROA was calculated by taking gross margin and dividing by total value of assets.

III. EMPIRICAL RESULTS

Empirical determination of the characteristics of successful competitive strategies required two steps. The first step involved clustering firms in order to determine principal strategies. An attempt was made using standard cluster analysis procedures to group firms based on diversity, price difference, service charge difference, purchased input costs, other expenses, and size. The means for these variables appear in Table I. The results yielded no statistically sig-

Table I. Values of Variables Used in the Analysis.

Variable	Mean	Std. Dev.
Diversity	0.441	0.249
Price Difference	0.000	0.062
Service Charge Diff.	-0.133	0.234
Purchased Input Cost	0.003	0.074
Other Expenses	2.217	5.241
Size	0.075	0.007
Density	0.017	0.036

Table II. Correlation Coefficients among Independent Variables.

Variable	1	2	3	4	5	6	7	8
1. Diversity	1.00							
2. Price difference	-0.03	1.00						
3. Service Charge Diff.	-0.15	0.02	1.00					
4. Purchased Input Cost	-0.09	0.04	0.05	1.00				
5. Other Expenses	0.41	0.01	-0.10	-0.04	1.00			
6. Size	0.31	-0.04	-0.14	-0.07	0.14	1.00		
7. Density	0.03	0.10	-0.07	-0.02	-0.06	-0.03	1.00	
8. Business in Illinois	0.11	0.06	-0.03	-0.05	-0.13	0.02	0.49	1.00
9. Business in Iowa	-0.02	-0.02	-0.07	0.06	-0.02	-0.13	-0.18	-0.40
10. Business in Kansas	-0.26	-0.05	0.11	0.07	-0.05	-0.12	-0.15	-0.24
11. Business has a Single Outlet	0.15	0.13	0.08	-0.05	0.06	0.57	0.24	0.26
12. Corporation	0.45	-0.06	-0.03	-0.07	0.20	0.61	-0.15	-0.17
13. Cooperative	-0.45	0.05	-0.02	0.07	-0.18	-0.68	0.13	0.14

Variable	9	10	11	12	13
9. Business in Iowa	1.00				
10. Business in Kansas	-0.20	1.00			
11. Business has a Single Outlet	-0.01	-0.18	1.00		
12. Corporation	0.06	-0.12	0.25	1.00	
13. Cooperative	-0.01	0.14	-0.29	-0.92	1.00

nificant clusters, suggesting that all businesses pursued the same competitive strategy. A possible explanation is that the specification of businesses considered limited the sample to ones with only the single strategy, excluding businesses such as terminal and subterminals which are volume oriented and so likely to have distinctly different strategies.

The second step involved determining the importance of individual dimensions in the competitive strategy on performance. Multiple correlation among the independent variables was not a problem (Table II.) The empirical results of using linear regression to do this appear in Table III. The first model includes all aspects of competitive strategy thought to be related to performance. The second model includes only those variables for which the *t* value in the first model was greater than one. Both models are statistically significant at the 1% level and, for cross-sectional data, provide an acceptable explanation of performance with adjusted squares of over 40%. More companies entered the latter model because fewer of the necessary variables were missing. Important factors affected in the performance now examined in detail are diversity, differentiation, cost leadership, and size.

The mean value for diversity at 0.44 indicates that most businesses rely on two lines of business to generate their profits. The negative coefficient indicates that those businesses relying on more product lines have higher ROA. This indicates that more profitable companies rely on more product lines to make a significant contribution to gross margin. Hence one-stop-shopping or more diversified businesses appears to make sense strategically.

Differentiation through charging higher prices and service charges over competitors is insignificant though results suggest it is associated with higher

Table III. Estimated Values for Factors Related to Performance.

	Dependent Variable Estimated Coefficients					
	Model 1			Model 2		
	B	Beta	t Value	B	Beta	t Value
Diversity	-0.21 ^a	-0.35	4.26	-0.23 ^a	-0.37	4.84
Price Difference	0.11	0.41	0.70			
Service Charge Diff.	0.02	0.04	0.56			
Purchased Input Cost	-0.24	-0.10	1.61	-0.15	-0.08	1.26
Other Expenses	-0.01 ^a	-0.32	4.39	-0.01 ^a	-0.30	4.50
Size	6.72 ^a	0.31	2.87	6.27 ^a	0.28	3.39
Density	-0.38	-0.10	1.31	-0.38	-0.09	1.33
Business in Kansas	-0.13 ^a	-0.27	3.77	-0.13 ^a	-0.32	4.48
Business in Illinois	-0.04	-0.12	1.36	-0.04 ^b	-0.14	1.70
Business in Iowa	-0.04 ^b	-0.13	1.66	-0.06 ^c	-0.18	2.45
Business has a						
Single Outlet	-0.08	-0.03	0.29			
Corporation	-0.03	-0.11	0.66			
Cooperative	-0.11 ^c	-0.36	2.02	-0.09 ^a	-0.29	3.16
Constant	0.01	0.06		-0.08	0.17	
Adjusted R ²	0.42			0.44		
F Value	8.91 ^a			14.76 ^a		
Number	145			152		

^aIndicates significance at the 1% level.

^bIndicates significance at the 10% level.

^cIndicates significance at the 5% level.

profitability. Both actions increase the return, but it is interesting that this may also increase margins; perhaps the loss in volume due to higher prices is less than the gain in revenue due to the higher prices. Another point is that these results seem to contradict Babb and Bohl's experimental results that managers price closer to "the competition" when margins were low because margins vary considerably and yet the pricing aspect is not significant.¹⁷ Possible explanations are that price information used here is limited to standard items which are hard to differentiate since farmers view them as commodities and can shop on price; and that these businesses are so similar that they have trouble differentiating themselves in this respect when they have to compete with terminal and subterminal operations which tend to pay significantly higher prices for grain.

Under cost leadership, both purchased input costs and other expenses carry the expected negative sign. The negative coefficient for input costs suggests that profitability is greater for companies that pay less than their competitors. This is in keeping with the expectation that the margin the business earns goes up as the cost of inputs goes down. Again, the statistical insignificance may be due to the fact that the businesses are buying homogeneous products for which they shop on price. The significant negative coefficient for other expenses shows that the more profitable businesses hold them down. Thus cost leadership suggests that more profitable businesses do a better job of controlling cost or keeping them in line with business activity.

Size appears to be a very important aspect of strategy but one must be careful in interpreting the measure. The large size of the coefficient is deceptive in that a casual reader would interpret the size effect as overwhelming all others. But the measure of size does not change much for considerable change in the value of assets. The average total assets of the businesses is \$0.6 million, giving 0.075 for size. Though the standard deviation of the size measure is only 0.007, one standard deviation below this means assets are worth only \$0.2 million, while one greater means they are worth \$2.4 million. The result is that the coefficient is large to compensate for the small change in the measure itself. The positive measures means that as the measure of size increases, the business is more profitable. However, the way size is measured (as a reciprocal of the value of assets) means that as value of assets increases, profitability falls. Thus businesses that have fewer assets are more profitable and this relationship is significant at the 1% level.

The context within which the strategy just described is conducted has an important bearing on the business's success. The density of crop production in the county in which the business was located was negatively associated with profitability, suggesting that the greater the crop production in the county, the lower the profitability. This implies that businesses are more aggressive competitors in areas where crop production is greater, thus decreasing profitability. Coupled with the size aspect, this result suggests that businesses tended to support the observation that businesses tend to think that they can outcompete competitors so they all chose to invest in the markets with the greatest volumes. The result is that the businesses in these market overinvest in capacity and this leads to a more competitive situation as all businesses in these large volume markets try to make a return on their own investment.

The models as estimated assume the business is located in Indiana. Businesses located in the other states are less profitable than those in Indiana as indicated by the negative coefficients on the state dummy variables. Thus environment does affect the performance of a strategy.

The organizational variables also played an important role. The model as estimated assumes that the business has multiple outlets. The negative value on the dummy for single outlet businesses suggests they were less profitable, though this is not significant. This meets our expectation that larger organizations likely have better control and cost systems. The model as estimated also assumes that the business is a partnership. The coefficients on dummy variable controlling for the cooperative form of organization is negative, indicating that cooperatives were less profitable than partnerships and corporations. These results suggest that organization has an impact on the performance of the business through its competitive strategy.

IV. CONCLUSIONS

This article has determined factors important to the performance farm supply and grain elevator businesses using a simple view of strategy. A test for alternative strategies using cluster analysis showed that all these businesses pursue

a single strategy. This result justified determining the key aspects of only one strategy for all businesses.

Using cross-sectional data for businesses in four states, linear regression showed that return on investment was greater for businesses with fewer assets, were more diversified in terms of products and services generating profits, and had keep procurement and operating expenses relatively low. Location has also had a significant effect on return on investment with businesses located in Indiana performing best, followed in order by Illinois, Iowa, and finally Kansas. A caution regarding these results is that they consider competitive strategy at a point in time. The notorious long-term profit cycles in this business mean that attributes identified as important strategically here may not be as important in other parts of the cycle. Consistency in performance can only be determined using time series data.

The major contribution of these results is that they demonstrate the utility of taking a strategic approach to explaining the performance of these businesses. More revealing insights into strategy are expected when a richer concept of strategy which includes more variables and relationships is used. Porter,²⁴ for example, has added to the concept of competitive strategy by considering the competitive advantage; that is, the decisions that the business must make as it implements its competitive strategy. Clarification of the concept requires that the proposed variables and relationships be tested empirically.

Unfortunately, our ability to perform these tasks is limited at present. The biggest constraint is lack of databases considering enough variables needed to perform the quantitative analysis. The complex view strategy provides of businesses means that the necessary databases are inherently large because the number of variables that must be considered. The Profit Impact of Marketing Strategy (PIMS) database of all types of business provides an example of what is needed with respect to these businesses and the kinds of results that can be derived using a more sophisticated strategic management database.²⁵

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