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Market Orientation, Innovation and Entrepreneurship: An Empirical Examination of the Illinois Beef Industry

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Abstract

This paper explores the importance of a producer's market orientation on their subjective performance within agricultural commodity markets. Using a structural equation model of beef producers, our findings suggest that market oriented firms are highly innovative and achieve superior performance. These findings are consistent with previous research on the market orientation-performance relationship in heterogeneous product markets. The cost focus of a firm was also found to have a significant influence on innovation, but no direct effect on performance. This suggests that beef producers should follow a balanced approach utilizing both an external market and an internal productivity focus to achieve superior returns as opposed to solely focusing on internal productivity as many producers currently do.

Keywords: market orientation, beef production, innovation, performance

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Introduction

The concept of a market orientation (MO) and its influence on firm performance has been extensively researched within the marketing literature (Slater and Narver, 1990; Kohli and Jaworski, 1990; Day, 1994). The premise behind this research is firms who are more closely aligned with and better understand their clients and market demands will, in turn, be able to provide products, services and solutions that more closely meet consumers' expressed and latent needs and thereby achieve superior performance measures. Recent studies have shown the MO-performance relationship to be robust across a variety of industries and regional locations, such as small craft firms in Spain (Bigne and Blesa, 2003), large Japanese corporations (Deshpande, Farley and Webster, 1993), and various strategic business units (SBU) of a single forestry firm in the United States (Narver and Slater, 1990). The breadth of this body of research gives credence to the findings of Slater and Narver (1994) who state that in any business environment, highly market oriented firms are better positioned for successful outcomes.

Researchers have defined market orientation as a firm's ability to generate market intelligence and disseminate it throughout the firm and marketing channel, while using this new knowledge to create products which meet the expressed as well as latent needs of consumers (Kohli and Jaworski, 1990). The foundation of a market orientation is customer and channel knowledge. Working backwards along the channel from the consumer market interface, market oriented firms search for possible sources of value creation using market intelligence and then determine if they in fact can meet these needs based on their own core capabilities. Similar to what is seen in other industries, beef producers can acquire market intelligence through various sources and methods, including consumer focus groups, discussions with channel members, participant observations, trade publications, as well as extension personnel. Increased channel communication may provide producers with specific market knowledge, such as preferred loin size, that would allow them to make better production management decisions in terms of genetic selection and culling.

The performance implications of a market orientation have been studied extensively in the literature within numerous contexts. Agricultural markets are the exception as they have been largely overlooked. Agricultural commodity markets, however, provide a unique context in which to study market orientation as they are generally highly competitive, price taking, markets characterized by many small firms with extremely small market share. Within these commodity markets most producers would view an internal focus on improving production efficiency as more important than earning potentially higher prices through improved quality. The lack of research on the market orientation- performance link in agriculture is even more puzzling given that Moore and Hussey (1965) stressed that in the future agricultural firms' must become more market oriented in order to succeed.

The purpose of this paper is to determine the performance implications of a market orientation in the Illinois beef industry. This research fills two important voids in the literature. First, thus far the impact of market orientation in commodity businesses has been shown to be ambiguous. In two papers which have explored this issue, Narver and Slater (1990) found a positive, but non-significant MO-performance relationship in their study of a forest products firm, and Pelham (1997) found no relationship when examining small industrial manufacturing firms. Pelham did however find that a market orientation was an important determinant of performance in segmented markets. Secondly, there is a lack of empirical research examining the level and affect of a market orientation on firm performance in agriculture. While the U.S. beef industry has traditionally been largely commodity based, the increasing growth of niche marketing and production alliances is resulting in parts of the industry becoming more highly segmented and vertically aligned. Furthermore, food retailers indicate that the amount of branded beef offerings has been increasing in recent years (National Meat Case Study, 2007). In this new marketing environment, we argue that increased market knowledge, combined with appropriate firm capabilities, is gaining importance in determining a firm's competitive advantage and thus performance.

The Current U.S. Beef Industry

The U.S. beef industry has historically been characterized as a homogenous and highly fragmented commodity based business composed of numerous buyers and sellers interacting in autonomous spot markets. Within this commodity market structure, pooled equilibrium prices are determined by a broad set of public grades and standards based upon subjective measures of perceived quality and product attributes. As a market information mechanism, pooled lot pricing systems are a highly ineffective mechanism for signaling changes in consumer demand for specific product and service attributes and passing this information back through the channel to producers. This inefficiency in information transfer has been identified as a key driver of the fall in beef demand over the past few decades (Purcell, 2002). Another possible reason for the inefficient transmission of information through the pricing mechanism is the lack of control over price received in terms of the commodity producer's profit equation.

$$(1) \quad \pi = pq - cq$$

Within this equation firm profit is found by subtracting variable costs from revenue where p is the price received by the producer and c is the per unit cost of production, and q is quantity produced. As commodity producers generally perceive prices received as given or something over which they have little control, their strict reliance on improving efficiency as a means to increase profitability at first glance seems warranted.

The strategy literature however identifies two methods that lead to a sustainable competitive advantage; cost leadership and product differentiation (Grant, 2002). By achieving a cost advantage over the competition, firms with lower costs of production are able to earn profits (or reduce losses) even at low market prices. However, this strategy may not bear fruit for many in the beef industry given that fewer than 10% of producers have the necessary cattle numbers to achieve economies of size (Langemeier, McGrann and Parker, 1990; USDA, NASS).

Conversely, product differentiation, where premium prices are earned through distinguishing characteristics of the product offering, may provide small beef producers an opportunity to create sustainable competitive advantage. In that vein, several studies have recently shown that by providing additional value to downstream channel participants can increase the price beef producers receive. Lalman and Smith (2001) found Oklahoma cattlemen earned a price premium for preconditioned cattle when compared to an average price for calves in the area. Similarly, a Montana study found prices for 600-pound calves to be over \$12.00/head higher when the calves were enrolled in an approved age- or source-verified program while premiums for vaccination programs were over \$14.00/head (Vanek et al., 2007).

In addition to the premiums received, participation in such programs may also allow producers access to carcass data following processing. This data could aid in on-farm decision making as it relates to culling decisions and genetic selection, albeit ex post. In the absence of this level of production data, culling and genetic selection decisions are largely based on efficiency measures, whereas it is also important to consider how these decisions impact product quality.

Over the past two decades, as beef demand fell and market share was lost to poultry and pork producers, many beef producers began establishing various forms of integrated marketing alliances to produce specific product offerings to meet consumer demand for certain attributes, such as all natural, organic, or grass-fed beef alternatives. Alliance participation provided producers the benefit of higher prices along with the assurance of a marketing channel through which they could market their value-added cattle. It also often produced a positive externality of access to more fine-grained market and channel information from various stakeholders.

In segmented markets and their aligned marketing channels, the majority of the information is gathered by the channel captain who owns the architectural knowledge. This firm or individual then shares or directs the other component participants with respect to input and output requirements, such as genetic selection or production practices to be followed (Gow, Oliver and Gow, 2002; 2003). This firm-level market orientation is important as it allows for a more efficient

method of information transfer of consumer attribute requirements to producers for use in the production of value-added products.

Given the above examples, we argue that it is important that producers adopt a suitable market orientation irrespective of whether they market through either a commodity or value-added marketing channel. Through increased market awareness, highly market oriented producers can internalize market information, make appropriate strategic and operation adjustments to earn higher prices by providing customers (both immediate and terminal) the specific product attributes they demand.

Conceptual Model and Theoretical Foundations

Recent contributions to the market orientation literature have highlighted the importance of organizational learning in the development of a firm's market orientation (Farrell and Oczkowski, 2002). A commitment to learning is important as superior market knowledge, if continually generated, enables the firm to quickly react to changes in the market (Leonard-Barton, 1992). If higher prices and sustainable excess rents are to be earned for products and services that provide consumers with their desired attributes, it is important that firms learn which attributes provide the most value, and if and how the required attributes may change over time.

An important consideration when establishing a culture which fosters organizational learning is that firms must prevent turning core competencies, in this case market learning, into core rigidities by not focusing on continuous learning using a variety of sources (Leonard-Barton, 1992). Failure to continuously learn results in market embeddedness which is similar to Hamel and Prahalad's (1991) 'tyranny of the served market,' where a firm's narrow focus on current customers can limit the ability to identify changes in the market as a whole.

The establishment and integration of appropriate learning processes within beef firms and marketing channels should lead to better knowledge about consumer attribute demand and increased ability to improve product offerings through new product, process or service introductions or other innovations. These organizational solutions are based off of a knowledge culture which sees both the internal as well as external vantage points of the profit equation. In the beef industry, grass-fed, fully-traceable, or other desired product attributes could be introduced in markets where there is unmet expressed demand or unfulfilled latent demand.

Using a survey of business executives of both large and small firms, Baker and Sinkula (1999a) found that a learning orientation influenced both innovation and firm performance. In a similar study, Baker and Sinkula (1999b) found support for

the direct affects of market orientation and learning on performance, but no significant affect for the mediating relationship of learning on market orientation.

In the beef industry, we feel market sensing capabilities developed and enhanced through market learning will increase a firm's market orientation as well as the firm's ability to innovate and respond to changing consumer demands. A learning orientation could also affect the internal efficiency, or cost focus of the firm. Being efficient is a superior quality in many industries, but is of great importance for firms who participate in commodity markets. In this case, firms participating in a commodity marketing channel could increase their efficiency through their learning orientation.

Hypothesis 1: A firm's learning orientation will positively affect their market orientation.

Hypothesis 2: A firm's learning orientation will positively affect their ability to innovate.

Hypothesis 3: A firm's learning orientation will positively affect their cost focus.

Changing the operating procedures of a firm not only brings the opportunity for improvement, but it also brings risk as some changes may not be successful. Provided the modification is based on accurate market knowledge, however, the change could dramatically improve the returns of the firm. Consideration of the business environment in which the firm operates is also important. In a rapidly changing market, an entrepreneurial move that is unsuccessful could lead to negative returns and the unwillingness to change in the future. Careful consideration of the current capabilities of the firm and proposed changes can minimize this downside risk.

Using a simulation of the U.S. hog industry, Ross and Westgren (2006) show that positive rents can be earned by entrepreneurial producers. Modeling an agricultural industry, they find producers can earn positive rents through innovative processes such as segregated early weaning and contracting.² Similarly, Naman and Slevin (1993) argue innovation and entrepreneurship should be beneficial to firms in ever-changing markets, however they find that many firms instead "fall into a Hold or Harvest strategy" (pg 146). This same phenomenon could be present in the Illinois beef industry as successful firms are embedded in the practices that led to the initial success. However, the strategies that have been

² Ross and Westgren define these rents as Schumpeterian in nature (Schumpeter, 1934), as they are new and/or more efficient sources of supply for the production channel. The efficiency gain is due to more hogs per sow and lower transaction costs, respectively.

successful in the past may not be so in the future. Nadler (1994) describes this as the 'success syndrome' and this unwillingness to change in the face of turbulent environments can hamstring a firm's future success through an increased focus on historical routines which may not be appropriate or valuable in a new market.

Based on the inability to determine the successfulness of an entrepreneurial act ex ante, the direct and indirect effects of entrepreneurship on performance could be positive or negative. If the information on which the strategy change is based is from a trusted and accurate source, one would hypothesize the performance affect would be positive. However, firm performance could also be indirectly affected by the entrepreneurial nature of the manager. In their study of manufacturing firms, Matsuno, Mentzer and Ozsomer (2002) found the entrepreneurial penchant of a firm to have a positive and significant affect on the firm's market orientation, but a negative direct affect on firm performance. They also found that a market orientation has a positive direct affect on firm performance. Thus the entrepreneurship level of the firm can be said to have an indirect affect on performance. Similarly, the entrepreneur could choose to focus internally rather than externally, and as such, the entrepreneurial proclivity of the manager could positively affect the cost focus of the firm.

Hypothesis 4: The entrepreneurial nature of the firm could have a positive or negative effect on the market orientation of the firm.

Hypothesis 5: The entrepreneurial nature of the firm could have a positive or negative effect on the cost focus of a firm.

Hypothesis 6: The entrepreneurial nature of the firm will have a positive effect on the innovativeness of the firm.

A firm which is able to learn from their customers and other sources faster than the competition may have a competitive advantage in the marketplace (Slater and Narver, 1995). With this knowledge, firms can provide augmented products to meet customers current, articulated needs and also search for methods to meet the latent, or unarticulated, needs of future consumers. As a firm learns about consumer's latent needs and translates this knowledge into new products to meet these needs, performance measures should improve as these products earn higher prices and/or sales increase. In either commodity or non-commodity marketing channels, higher beef prices can be earned by providing downstream users product attributes which they value.

While not a traditional agricultural market, Slater and Narver (1994) found a significant relationship between market orientation and performance in their research on several SBU's of a forest product firm, even when accounting for competition. Similar results displaying the performance implications were found in

several business environments including large UK firms (Greenley, 1995), small to medium sized enterprises in the UK food sector (Tregear, 2003), UK manufacturing firms (Liu, 1995) as well as in buyer-supplier relationships (Bigne and Blesa, 2003).

Similarly, Day (1994) discusses how market focused firm can leverage their capabilities related to market sensing, customer linking and channel bonding to generate increased market knowledge resulting in increased profitability. While it may not be obvious, channel linking is also important in commodity industries where ownership changes across segments.³ As such, an upstream firm can focus on meeting the needs of the end-user or simply the next segment of the marketing channel. In the U.S. beef industry, a historical lack of communication between segments limited customer linking capabilities; therefore guidelines for increasing communication were outlined in the 2005 National Beef Quality Audit (NBQA), (NCBA, 2007). While traditional adversarial relationships between segments have diminished the communication needed to improve the product offering, customer linking and the ability to coordinate production with other channel member requirements may help the industry as a whole to meet consumer needs.

The ability to quickly sense market changes and react to them allows market oriented firms' greater flexibility when environmental crises occur. Food safety issues beginning with the initial occurrence of BSE in the U.S. in 2003 along with more recent food scares in other products point to an increased need to develop standards to ensure food safety from a consumer point of view, and to ensure market access from a producer perspective. A market orientation may help in determining how to implement these standards while also maintaining strategic flexibility. In their study of Thai firms during the recent Asian economic crisis, Grewal and Tansuhaj (2001) found strategic flexibility to be of greater importance than market orientation during times of crisis in highly competitive markets, but also suggest that market orientation and flexibility be concurrently developed.

Hypothesis 7: A market orientation will positively affect the innovativeness of a firm.

Hypothesis 8: A market orientation will positively affect firm performance.

Nelson and Winter (1982) define innovations as simply changes in routines. Innovation can also be thought of as the implementation of new ideas generated through an increased market orientation, greater entrepreneurial capacity, learning capacity and cost focus. Market oriented firms are thought to gather information

³ Schroeder and Kovanda (2003) illustrate the production/marketing channel to consist of Seed Stock producers, Cow/Calf producers, Backgrounders, Feedlots, Packers, Retailer/Wholesaler, and finally the end-user. Some producers and alliances choose to operate in more than one segment of this marketing channel.

concerning consumer's current and future needs, but what happens following the gathering and dissemination of this information? Provided a firm has the capacity to innovate, it is likely this market information is transformed into product innovations targeted at meeting consumer needs. These innovations do not need to be frame-breaking, however. Increased communication with downstream partners would be considered an innovation if communication is not typical of the business relationship. While increased communication would begin to achieve a goal of the 2005 NBQA, it could also benefit producers by providing more information to use in decision making at the farm-level.

In our study we conceptualize innovation as the willingness to use new ideas to improve the cattle operation, but leave what exactly that new idea is to the respondent. In this instance, the innovation could be a means of improving efficiency through a technological innovation or by improving the product offering through an externally focused innovation. In their study of a sector of the U.S. government, Hurley and Hult (1998) found innovation to be an important driver of performance. Similar results were found in studies using large Japanese firms, (Deshpande, Farley, and Webster, 1993) U.S. banks, (Han, Kim, and Srivastava, 1998) and New Zealand firms, (Darroch and McNaughton, 2003). In all cases market knowledge was the primary driver of the innovation. Increased market knowledge allows firms to modify routines in a way that provides the consumer with the attributes which they desire.

Hypothesis 9: The level of innovation of the firm will improve firm performance.

A market orientation is an inherently external view of the current environment in which the manager and firm operates. Market information is gathered and processed and is used to modify routines, production or marketing practices in order to improve the product offering and, hopefully, earn a price premium for doing so. However, it is still important to maintain a balance between the external and internal focus of the firm. Ignoring efficient production practices in favor of gathering consumer and competitor information is not the answer either. In fact, once an innovation has caught on in the marketplace, the entrepreneurial rent from the innovation is likely to have already disappeared as increased competition has removed the premium price. Therefore, we also model the manager's cost focus as a determinant of firm profitability.

Ritchie (2003) argued increased efficiency is a necessary condition for high net income within the beef industry. Obviously a high gross income is also important and this could be earned by increasing output or prices received. Higher prices could be earned by producing products with desired attributes, but being able to efficiently provide an augmented product may be more important in the long-run. In some sectors of the beef industry efficiency may be more important than a

market orientation in the short-run, provided the market is stable and not undergoing rapid change. A producer operating in the commodity beef sector may still feel increasing efficiency is their only method of improving performance. Support for this mind-set is given in Narver and Slater's (1990) study of the commodity SBUs of the forest product firm they studied in their seminal article. They found performance to have a U-shaped relationship to the level of market orientation in the commodity SBUs; that is, on average an SBU with a low level of market orientation outperformed those with a medium level of market orientation.

Hypothesis 10: The cost focus of the firm will positively affect firm innovativeness.

Hypothesis 11: The cost focus of a firm will contribute to higher firm performance.

Data and Survey design

To test the propositions developed in the previous section, survey questions and marketing scales were obtained from previous studies. The phrasing of the individual scales was modified slightly in order to accurately measure the same

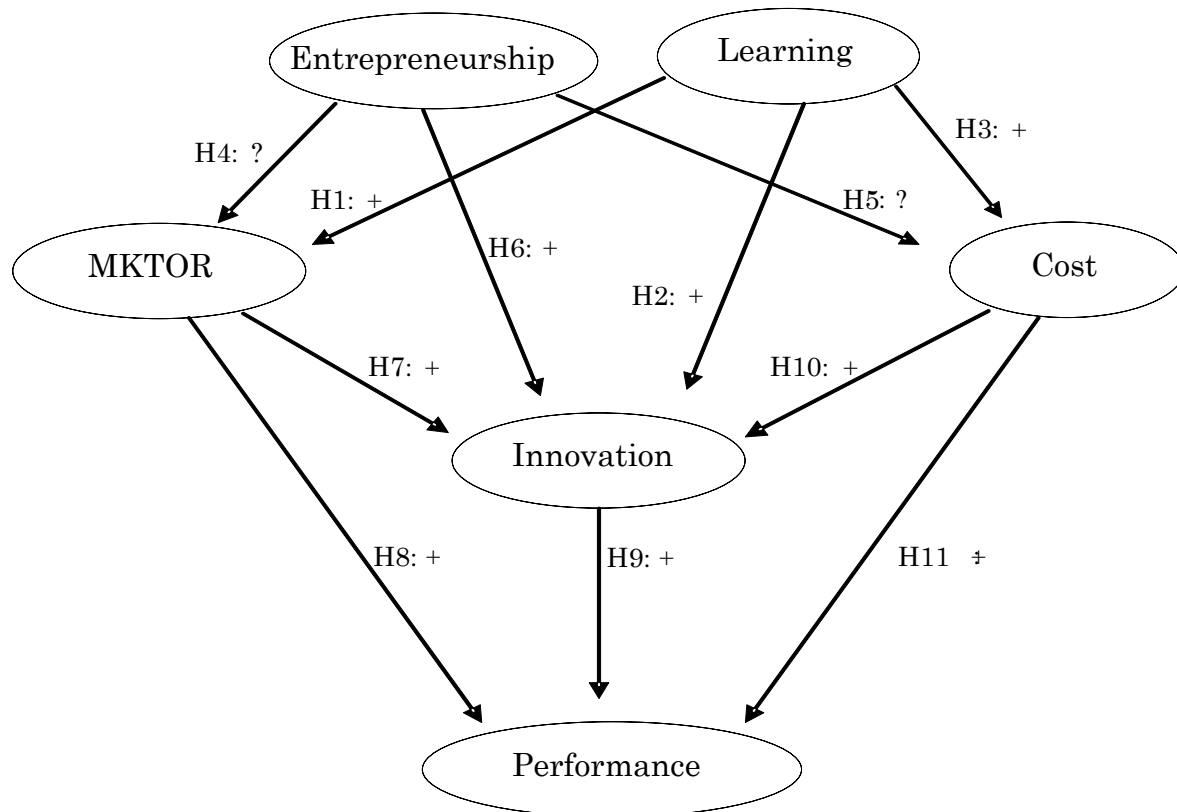


Figure 1: The Conceptual Model with Hypothesized Relationships.

construct in an agricultural setting. To check face validity, questions were examined by University of Illinois extension specialists to determine question clarity and scale relevance. Following modifications, a small sample of Farm Business Farm Management Association (FBFM) farm cooperators were mailed surveys and were asked to read through the questions and provide comments. Following pilot testing of the survey instrument, changes were made to the survey to improve the readability while also hoping to increase the response rate relative to a less user-friendly survey.

The sample population was taken from a mailing list was obtained from the Illinois Beef Association containing names and addresses of 1569 beef producers in the state. An initial wave of the survey was mailed out to half of the survey population in June with a reminder card following 2 weeks later. Four weeks after the initial mailing, a second survey was sent to non-respondents. This resulted in an initial sample size of 170. In the fall, the survey was sent to the second half of the mailing list in an attempt to increase the sample size. In total, 347 usable surveys were returned resulting in a 22.1% response rate.⁴

Respondents were asked to provide answers to survey questions using a 6-point Likert scale. A neutral choice was omitted in order to force respondents to either agree or disagree with the statement in question. Previous studies have shown 6-point scales to be of similar quality to 5-point and 7-point scales (Preston and Colman, 2000). As late respondents have been shown to be similar to non-respondents, the sample was tested for differences as outlined in Armstrong and Overton (1977). No significant differences were found between early and late respondents.

Construct Development

Independent Variables

We used the scale first developed by Narver and Slater (1990) to measure the market orientation of Illinois beef producers. In this scale, a firm's market orientation is comprised of their customer and competitor focus as well as the coordination of market knowledge within the firm. As with all the measures we used, we modified the verbiage to fit with production agriculture and pre-tested the scales with extension personnel so construct meaning was not lost in translation. We also chose to model market orientation as a higher-order factor, meaning the indicators were influenced by a latent variable, (Customer Focus, Competitor Focus, and Coordination) which was influenced by the firm's overall market orientation.

⁴ In surveys where only a few responses were missing, responses were imputed through a regression procedure in SPSS. This method attenuated the loss of sample size that would occur had listwise deletion been employed.

To measure organizational learning, questions from Farrell and Oczkowski (2002) were used (See Appendix). These items sought to measure the 'learning culture' of the farm business. The entrepreneurial tendency was measured with scales used in Matsuno, Mentzer and Oszomer (2002). The indicators measured the inclination of managers to use innovative marketing strategies to improve performance or whether they chose to 'play it safe' when it comes to forming solutions to management problems. Innovation was measured using a scale tested by Hurley and Hult (1998). Similar to the entrepreneurship scale, the innovation scale measured the penchant for managers to utilize innovative strategies to solve problems on the farm. The final independent variable measures the cost focus of the firm. This was operationalized by using a combination of scales developed by Homburg, Workman and Krohmer (1999) and Kotha and Valdamani (1995). The scale measured the manager's focus on production efficiency and cost reduction as a means of improving performance.

Dependent Variable

The independent latent variables were used to measure subjective performance on beef farms in Illinois. Seven subjective performance indicators were included in this study to measure both the producers' satisfaction with individual and comparative performance. Respondents were asked, using a 6-point Likert scale, to rate their satisfaction with their return on assets, cash flow, production and marketing investments, and overall performance. To assess comparative performance, respondents were asked to rate the overall performance of the farm business, as well as prices received, relative to their competitors. Subjective performance was used as our sample consisted of small, privately held businesses which are generally unwilling to share confidential financial data, even in an anonymous setting. While objective measures of performance would be preferred, Dess and Robinson (1984) showed a strong correlation between subjective and objective measures of performance. Single informants were used in this study, so some bias may be introduced due to 'halo effects,' which occur when indicators measuring dependent constructs are biased by the independent variables. However, this bias could not be eliminated as these firms are generally one-farmer operations.

Construct Reliability

The latent constructs and indicator variables used in this analysis were all taken from previous studies which reported scale reliability measures as well as survey questions. As these scale measures and indicators were all previously tested, a confirmatory factor analysis was conducted to test for consistency with previous studies. Following factor analysis testing for internal consistency, individual items were deleted if they were found to not have significant loadings on the core factor.

As outlined in Worthington and Whittaker (2006), items that did not have factor loadings greater than 0.32 were removed. Item-to-total correlations less than 0.2 were removed in accordance to Streiner and Norman (1995) as they are likely to be measuring a different construct from the other items in the scale. The purified measurement scales along with their means, standard deviations, item-to-total correlations, factor loadings, extracted variances, and coefficient alphas are shown in Table 1. Cronbach alphas are all shown to be greater than 0.70 in accordance with previous research (Nunnally, 1978; Nunnally and Berstein 1994). Variance

Table 1: Reliability Analysis of the Measurement Scales

Scale	Items	Mean	Std Dev	Corrected Item-to- Total Correlation	Factor Loadings	Variance Extracted	Alpha
Customer Focus	Cust1	3.93	1.168	0.647	0.844	0.5950	0.762
	Cust2	3.77	1.102	0.624	0.826		
	Cust4	3.91	1.238	0.381	0.576		
	Cust5	3.73	1.267	0.616	0.809		
Coordination	Coord1	3.38	1.418	0.523	0.730	0.5858	0.757
	Coord2	3.94	1.304	0.524	0.733		
	Coord3	3.87	1.216	0.619	0.814		
	Coord4	4.17	1.184	0.574	0.781		
Competitor Focus	Comp1	3.76	1.378	0.548	0.601	0.5504	0.861
	Comp3	3.74	1.256	0.587	0.669		
	Comp4	4.14	1.240	0.526	0.615		
	Comp5	3.15	1.344	0.670	0.835		
	Comp6	3.00	1.266	0.712	0.807		
	Comp8	3.90	1.250	0.648	0.768		
Learning	Learn2	4.80	0.904	0.620	0.805	0.6308	0.794
	Learn3	4.92	0.929	0.703	0.869		
	Learn4	4.91	0.961	0.685	0.851		
	Learn5	4.33	1.045	0.438	0.627		
	Ent2R	3.24	1.069	0.500	0.791		
Entrepreneurship	Ent4R	3.21	1.127	0.567	0.836	0.6144	0.683
	Ent5R	3.71	1.153	0.428	0.720		
	Innov1	4.52	1.018	0.578	0.803		
Innovation	Innov2R	4.66	1.173	0.550	0.758	0.5706	0.740
	Innov3	4.54	0.941	0.595	0.807		
	Innov5R	4.85	1.105	0.430	0.642		
	Cost1	4.98	0.894	0.653	0.847		
Cost Focus	Cost2	4.94	0.934	0.581	0.808	0.5099	0.726
	Cost3R	4.88	1.143	0.389	0.621		
	Cost4	3.98	1.269	0.333	0.516		
	Cost5	4.54	0.989	0.573	0.727		
	Perf2	4.09	1.176	0.689	0.844		
Performance	Perf3	4.07	1.104	0.718	0.822	0.6975	0.784
	Perf4R	3.85	1.353	0.422	0.854		
	Perf5	4.02	1.027	0.620	0.642		
	Perf6	3.73	1.125	0.290	0.943		
	Perf7	3.63	0.996	0.529	0.705		

extracted for each scale is also shown to be above 50% for all latent constructs, which demonstrates the variance due to the scale is larger than the variance due to measurement error (Fornell and Larcker, 1981).

Discriminant validity was also checked to ensure observed variables were measuring only one factor, and thus were not highly correlated with other latent variables. As shown in Table II, diagonal entries (the square root of the extracted variance from each latent variable) are all larger than the off-diagonal entries which show the Pearson correlations between latent variables. As described in Fornell and Larcker (1981), discriminant validity is shown when the square root of variance extracted is greater than any correlation with other latent constructs. The results in Tables 1 and 2 show the measurement model exhibits a high degree of convergent and discriminant validity.

Table 2: Discriminant Validity^a

	Customer Focus	Coordination	Competitor Focus	Learning	Entrepreneurship	Innovation	Cost Focus	Performance
Customer Focus	0.77							
Coordination	.540**	0.77						
Competitor Focus	.542**	.615**	0.74					
Learning	.260**	.336**	.235**	0.79				
Entrepreneurship	.167**	.206**	.139**	.191**	0.78			
Innovation	.278**	.317**	.200**	.483**	.326**	0.76		
Cost Focus	.262**	.345**	.281**	.460**	.132*	.498**	0.71	
Performance	.230**	.228**	.205**	.238**	.182**	.253**	.180**	0.84

^a Items along the diagonal are the square root of the extracted variance for each latent variable. Off-diagonal entries display correlations.

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Results and Discussion

Using the purified scales as variables in the path diagram (Figure 1), we tested the relationships using a structural equation model (SEM) with maximum likelihood estimation. However, when using Likert scale measures, non-normality is often an issue. This poses a problem as multivariate normality is assumed when using SEM procedures. Upon testing for multivariate normality, it was discovered the data failed to meet this assumption, so bootstrapping procedures were employed to provide unbiased estimates. Structural variables were also included in the path diagram to control for firm size (in terms of both acres and herd size), manager experience, and manager education. The number of magazines the manager receives was also included as an explanatory variable on market orientation.

Following an initial test of the model, several control variables were found to not be significant, so they were removed from the final analysis.⁵ Specifically, firm size was not found to have any impact on performance. This is an intriguing result, but is not all that amazing. The firms in this study were all relatively small, with a few exceptions, but well within the averages of cattle farms nationwide. According to the 2002 U.S. Census of Agriculture, over 90% of beef farms have herd sizes under 100 cows and calves while accounting for about 50% of beef production (USDA, NASS). This would not seem to allow for economies of size, and our results appear to corroborate this fact. The education of the manager was also found to be not significant, and was also removed from the final analysis.

The results of the SEM and fit statistics are shown in Table 3. The findings generally seem to show the data corroborates the specified hypothesis. Several fit

Table 3: Results from Path Diagram

Latent Construct	Influence	Hypothesis	Hypothesis Supported	Estimates	Standardized Estimates	Standard Error	Bootstrap Standard Error	P	
MKTOR	<-----	Magazines		0.030**	0.140	0.012	0.013	0.01	
MKTOR	<-----	Learning	H1	Yes	0.368***	0.360	0.075	0.081	< .001
Innovation	<-----	Learning	H2	Yes	0.404***	0.381	0.076	0.072	< .001
CostFocus	<-----	Learning	H3	Yes	0.527***	0.453	0.075	0.076	< .001
MKTOR	<-----	Entrepreneurship	H4		0.104**	0.135	0.051	0.050	0.041
Cost Focus	<-----	Entrepreneurship	H5		-0.045	-0.052	0.054	0.059	0.398
Innovation	<-----	Entrepreneurship	H6	Yes	0.195***	0.244	0.047	0.046	< .001
Innovation Overall	<-----	MKTOR	H7	Yes	0.147**	0.142	0.060	0.073	0.015
Performance Overall	<-----	MKTOR	H8	Yes	0.181*	0.128	0.095	0.110	0.056
Performance Overall	<-----	Innovation	H9	Yes	0.224**	0.165	0.102	0.112	0.028
Innovation Overall	<-----	Cost Focus	H10	Yes	0.255***	0.279	0.058	0.066	< .001
Performance Overall	<-----	Cost Focus	H11	No	0.028	0.022	0.087	0.091	0.747
Performance Overall	<-----	Experience			0.005**	0.335	0.002	0.003	0.006

Fit Statistics	χ^2	d.f	$\chi^2/d.f.$	IFI	TLI	CFI	RMSEA	RMSEA confidence interval
	1410.335	754	1.87	0.885	0.874	0.884	0.05	.046-.054

a ***, **, * displays significance at the 0.01, 0.05, and 0.10 level, respectively

⁵ Specifically, parameters were removed using a Wald-test. When comparing non-nested models, the AIC is a statistic which can determine better fitting models. The model AIC with all control variables was 1807.754, and AIC declined to 1573.202 following respecification, thus a better fitting model.

statistics are reported and they seem to point to a reasonable model fit.⁶ The RMSEA and χ^2/df demonstrate a good fitting model. However, the other fit measures are not quite to the typical thresholds, thus, these results should be interpreted with some caution. When interpreting the path coefficients, a one unit change in the independent latent variable would elicit a change equal to the path coefficient in the dependent latent variable.

H1-H3 examined the relationship between learning and other latent constructs. The data show building a learning culture is important if one wishes to develop a market orientation or find innovative methods to solve management problems (H1; $\gamma = 0.368$, H2; $\gamma = 0.404$, respectively). A culture of learning was also shown to have a positive influence on the cost focus of a firm (H3; $\gamma = 0.527$), thus all hypothesis were supported. The question of what these results mean also has to be determined. In an SEM framework, the coefficient $\gamma = 0.368$ for H1 can be interpreted as the marginal change in the producer's market orientation given a one-unit change in the learning orientation of the firm. Other coefficients can be interpreted similarly.

The importance of entrepreneurship on a firm's market orientation, its innovativeness and its cost focus was examined through H4, H5 and H6. In contrast to organizational learning, the data show no statistically significant influence of entrepreneurship on a cost focus, but indicated a statistically significant influence on the level of market orientation (H4; $\gamma = 0.104$) and innovativeness (H6; $\gamma = 0.195$) of firms. The data also showed firm innovativeness to be an important determinant of firm performance (H9; $\gamma = 0.224$). Through innovation, learning and entrepreneurship have an indirect effect on firm performance.⁷ The effect is indirect as the ability to learn or be entrepreneurial is meaningless without the innovations to solve the production or marketing problems managers face.

The cost focus of the firm was found to be influential of the firm's innovativeness (H10; $\gamma = 0.255$), allowing for an indirect affect on firm performance, but a direct effect was not supported by the data. The data also showed the degree of market

⁶ χ^2/DF is the value of the χ^2 statistic divided by the degrees of freedom of the model. Values less than 5 indicate adequate fit. IFI is the incremental fit index is a measure of fit similar to the normed fit index (NFI) however IFI was developed by Bollen to address issues of sample size and parsimony. Values again range from 0 to 1 with values close to 1 indicating good fit. TLI is the Tucker-Lewis Index and is similar to the IFI in that it corrects for model size and complexity. Values range from 0 to 1 with values above 0.90 indicating good fit. CFI is the comparative fit index and is another alternative to the NFI for studies with small samples. Values range from 0 to 1 with values over 0.90 indicating good fit. RMSEA is the root mean squared error of approximation and is a parsimony-adjusted index that corrects for model complexity. Values less than 0.05 indicate good fit and values less than 0.10 indicate mediocre fit. (Byrne, 2001)

⁷ Indirect effects can be measured by multiplying path coefficients together. For instance, the indirect effect of learning on performance is $0.404 \times 0.224 = 0.09$. Other indirect effects can be interpreted similarly.

orientation to have a significant influence on subjective performance, both directly (H8; $\gamma = 0.181$) and indirectly through innovation (H7; $\gamma = 0.147$).

The question of whether it is more important to be externally focused or internally focused was also answered in this study. The results show that, even in a commodity marketplace, a balance of both external and internal mindsets seems warranted. Firm innovation was also revealed an important determinant of firm performance in our study. Acting as the conduit through with market orientation, organizational learning, entrepreneurship and a cost focus flow, innovation was found to have a significant effect on firm performance. These results indicate that to achieve superior performance, beef producers should strive to achieve a balance between market orientation and cost focus (external and internal focus). This allows for an entrepreneurial mindset and culture of organizational learning which leads to both external market innovations and internal cost efficiency innovations. Producing in this manner allows firms to determine the needs of the market and find efficient methods of supplying those needed attributes rather than efficiently producing a non-differentiated product and selling it at competitive prices in anonymous spot markets.

Furthermore, this model, while one of many that could be supported by the data, seems to indicate a need to reassess the cost of across-the-board independence between production sectors in the beef industry as well as the benefits from seeing the product through the eyes of the consumer. Production decisions made independent of consumer demands are likely to have resulted in unmet opportunities to provide consumers value and extract additional consumer surplus out of the marketplace. Simple strategies such as increasing communication with channel members would likely lead to improved relationships with downstream partners, as well as being the first step in working towards meeting one of the new challenges of the 2005 NBQA; increasing communication between sectors (NCBA, 2007). By making production and marketing decisions based on consumer and channel needs, market oriented producers could possibly realize a greater proportion of the value of their production with minimal additional investment.

Notwithstanding our interesting results, a few limitations need to be addressed. The main limitation of our research pertains to the nature of our sample. While this study is one of the first to empirically examine the MO-performance relationship in the beef industry, caution is needed in generalizing the results. Our findings suggest a market orientation is an important driver of firm performance, which is consistent with other published studies examining the MO-performance relationship. However, would these results hold in other areas of the country? In 2007, Illinois ranked 18th in terms of number of beef farms (USDA, NASS), with 19,700 farms, but 38th in terms beef farms as a percentage of total farms (27%). Texas, on the other hand, has 149,000 beef farms according to the USDA, accounting for 65% of the total farms in the state. One could assume that if a

market orientation was important in a state where beef is not the most important agricultural industry, it should also be important in states with a larger percentage of beef operations. Future research could focus on a state or region where beef production is a more important part of the agriculture industry.

Second, this type of research would benefit from both objective and subjective performance data to remove the single informant bias typical of studies such as this. Given many states have programs where objective financial datasets are a result of cooperative extension, it would be beneficial to use these cooperators as a sample for further research. However, in this case we may be trading single informant bias for increased self-selection bias as cooperators self-select into these programs and pay a fee for the service provided. Provided it is feasible, a longitudinal study would also be valuable to further determine changes in market orientation over time and how these changes impact firm profits and other performance measures.

Theoretical Contributions and Implications

The purpose of this study was to examine the performance implications of a market orientation in an agricultural commodity industry. Overall, our findings are consistent with other studies which show a market orientation to be a positive influence on firm performance. However, the main contribution this research makes to the literature is it demonstrates the MO-performance relationship holds, even in commodity markets. Typically in a commodity value chain the goal is to be the low-cost producer, as this is perceived as the only means of increasing profitability. Using a dataset consisting of cow-calf producers and feedlot operators, we were able to find evidence which supports the hypothesis that a market orientation may also have performance implications in the beef industry.

Taken together, the results lead to an important discussion: Is a market orientation more important than a cost focus? The answer may be that neither is *more important* than the other, but a sense of balance between an internal and external focus is warranted. This is an important contribution, as many analysts and producers alike argue that there is only limited to no excess returns available to investing in a market orientation. Our results indicate that there are superior returns to be gained in a balanced approach. However, it must be noted that we cannot determine and measure the exact impact of investments due to the use of subjective performance measures. Examining the indirect effects of a cost focus and a market orientation through performance would point to a balanced approach (H7 and H10). The standardized effects point to a cost focus to be almost twice as important as a market orientation on innovation. However, a market orientation was found to have a positive direct effect on performance, while a cost focus was not found to have a significant direct effect. This result stems from the firm's ability, through a market orientation, to differentiate their product offering to meet the

needs of consumers while a cost focus only allows producers to acquire already developed technology, which is available to all competitors, to increase efficiency. For too long, producers operated under the impression that they could do little to influence the prices they received, and recent evidence points to the contrary, even in a commodity market (Lalman and Smith, 2001). Furthermore, the growth of production and marketing alliances would point to the gains to be made through differentiation in the marketplace.

Some managerial implications from this research may be a greater focus on communication with both up- and down-stream channel partners. This communication would foster relationship building that would lead to increased trust in what have historically been adversarial relationships. With increased communication, open innovation may begin to occur within the channel as partners can share information while creating 'win-win' situations between segments of the industry. This information could lead to improved production decisions for the upstream producers as well as an improved product to provide value to downstream processors and end-users. As shown in the importance of organizational learning and market orientation, improved quality and quantity of market information could aid in decision making could lead to improved performance measures at the farm level. Further research could begin to quantify the performance gain from a market orientation, and whether the performance implications are consistent across geographic regions and countries.

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Appendix - Questionnaire Items⁸

1=Strongly Disagree, 2= Disagree, 3= Somewhat Disagree, 4=Somewhat Agree, 5=Agree, 6=Strongly Agree

Customer Focus (based on Narver, Slater, and MacLachlan, 2004)

We continuously try to discover additional customer needs which they are not aware of yet.

We incorporate solutions to unstated customer needs in our new products and services.

We rarely brainstorm on how our products and services benefit our customers.*

We innovate even at the risk of making our previous farming practices obsolete.

⁸ Items marked with a * were reverse coded when conducting the analysis.

We work closely with lead customers and try to recognize their needs months or even years before the majority of the market may notice them.

Competitor Focus (based on Narver and Slater, 1990; Porter 1980)

Employees on our farm share information concerning competitor's activities.

We respond slowly to competitive actions which threaten our survival.*

We regularly discuss competitor's strengths and weaknesses.

We target customers where we have an opportunity for competitive advantage.

Members of our farm collect information concerning competitor's activities.

We diagnose competitor's goals.

We seldom track the performance of key competitors.*

We identify the areas where our key competitors have succeeded or failed.

We evaluate the strengths and weaknesses of key competitors.

Coordination (based on Narver and Slater, 1990)

We regularly visit our current and prospective customers.

We freely discuss our successful and unsuccessful customer experiences with our partners.

All of our business units (marketing, production, research, finance/accounting) are integrated in serving the needs of our target markets.

People on our farm understand how everyone can contribute to creating customer value.

We rarely share resources with other members of our marketing channel.*

Internal Operations/Cost Orientation (based on Homburg Workman, and Krohmer, 1999; Kotha and Vadlamani, 1995)

Improving the operating efficiency of the business is a top priority.

We have a continuing overriding concern for operating cost reduction.

We hardly ever seek to improve production processes so that we can lower costs.*

Achievement of economies of scale or scope is an important element of our strategy.

We closely monitor the effectiveness of key production processes.

Innovation (based on Hurley and Hult, 1998)

Technical innovation based on research results is readily accepted.

We seldom seek innovative ideas which we can use in our cattle operation.*

Innovation is readily accepted on our beef operation.

Individuals on our farm are penalized for new ideas that don't work.*

Innovation in our farm is perceived as too risky and is resisted.*

Learning (based on Farrell and Oczkowski, 2002)

We do not see our ability to learn faster than our competition is the key to our competitive advantage.*

The basic values of this farm include learning as key to improvement.

Our take is that learning is an investment, not an expense.

Learning on my farm is seen as a key commodity necessary to guarantee survival. We are not afraid to challenge assumptions we have made about our customers. There is total agreement on our organizational vision on our farm. All employees are committed to the goals of this farm. Employees view themselves as partners in charting the directions of the farm. We rarely question our own biases about the way we interpret customer information.*
Personnel on this farm realize that the very way they perceive the marketplace must be continually questioned and adapted.
Firms in my marketing channel do not have the same goals as we do.*

Entrepreneurial Proclivity (based on Matsuno, Mentzner, and Ozsomer 2002)

When it comes to problem solving, we value creative new solutions more than the solutions of conventional wisdom.
On our farm, we like to implement plans only if we are very certain they will work.*
We value risk-reducing management processes much more highly than innovative methods for profit seeking.
On this farm, we like to 'play it safe.'*
On our farm, we tend to talk more about problems rather than opportunities.*
We firmly believe that a change in the market creates a positive opportunity for us.
On this farm, we encourage the development of innovative marketing strategies, knowing well that some will fail.

Overall Firm Performance (based on Jaworski and Kohli, 1993)

The return on farm assets did not meet expectations last year.*
We were very satisfied with the overall performance of the farm last year.
The return on production investments met expectations last year.
The cash flow situation of the farm was not satisfactory.*
The return on marketing investments met expectations last year.
The prices we receive for our product is higher than that of our competitors.
The overall performance of the farm last year exceeded that of our major competitors.

