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Experience and learning in beef production: Results from a cluster analysis

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ABSTRACT

Research in agriculture and other industries has shown that innovativeness is a key driver of improved performance measures of small and medium-sized enterprises. The willingness to change current practice may be a function of the level of experience of the manager as well as the manager's commitment to learning. Firms with more experience may suffer from confirmation bias and therefore may not see the performance benefits that stem from innovative activities. Using data from a survey of 285 beef producers in Illinois, this study employs cluster analysis to segment firms along experience and learning variables. Using a non-hierarchical clustering procedure, four clusters emerge. The study employs one-way ANOVA tests to examine differences in market orientation, innovativeness and satisfaction with several performance measures across clusters. Results indicate firms with a commitment to learning have a greater propensity to seek out market information, a greater willingness to accept innovations and are more satisfied with overall performance. The paper concludes with some implications for managers and policy makers.

KEYWORDS: Cluster Analysis; Experience, Learning orientation; Market orientation; Innovativeness; Performance

1. Introduction

Previous research in the management literature has indicated prior experience is an important resource for managers (Gimeno, Folta, Cooper and Woo, 1997; Ucbasaran, Westhead and Wright, 2007). One benefit of experience is that seasoned managers may be able to sense market changes more quickly or may be more adept at assessing the value of information (Martin and Staines, 1994). Conversely, greater levels of experience may also lead to increased rigidity in accessing and applying new information (Kim, Oh and Swaminathan, 2006). One method to reduce cultural rigidity is to develop a learning orientation. Firms with a learning orientation continuously gather market information and question their beliefs and practices as it relates to their current operational strategy (Sinkula, Baker and Noordewier, 1997). As lenders and policy makers often view experience as a value-enhancing resource, further analysis into the relationship between experience and learning may shed light on the issue within the context of production agriculture. One method that may help researchers and policy makers to increase their understanding of the issue is cluster analysis. Using data-driven techniques like cluster analysis, researchers can observe patterns in data to inform current discussions while also uncovering potential areas worthy of future research.

Research in agricultural management has suggested that prior experience is an important resource that managers can draw upon (Nuthall, 2009; Wilson, Hadley and Asby, 2001). For example, previous relevant managerial experience may provide managers with prior information that they can use to make managerial decisions regarding the selection of crops to plant, varieties to purchase, timing of field applications, as well as which employee to hire. However, there may be instances where experience impedes innovation (and possibly performance) through structural rigidity (Boeker, 1997; Koberg, Chesley and Heppard, 2000). At the extreme, prior experience can inhibit learning if the manager makes incorrect inferences from the experience (Levinthal and March, 1993). For example, as managers gain more experience, confirmation bias may impede the search for additional perspectives on the competitive landscape (Evgeniou and Cartwright, 2005; Klayman, 1995).

This paper examines a sample of beef producers in Illinois to advance the understanding of the relationship between a firm's learning orientation and experience. Sinkula, Baker and Noordewier (1997, p. 309) define a learning orientation as 'set of organizational values that influence the propensity of the firm to create and use knowledge.' Specifically, this paper will use cluster analysis to examine if homogeneous subgroups exist based on managerial experience and the manager's commitment to learning and open-mindedness, two components of Sinkula, Baker and Noordewier's (1997) learning orientation scale. The beef industry provides an

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interesting context to study the relationship between managerial experience and learning orientation as, in general, technological innovation in beef production has been incremental which may lead managers to rely on their own experience when making decisions regarding the farm business. This might be a suitable strategy, as in less dynamic environments firms may not see performance increases from the development of new resources such as a learning orientation (Covin and Slevin, 1989). Moreover, while Illinois ranks in the middle of U.S. states in terms of beef production, beef production in Illinois has been increasing pointing to a need to better understand performance in a growing industry (USDA -- National Agricultural Statistics Service, 2011).

This paper utilizes a dataset compiled from a 2007 survey of managers of beef farms in Illinois. The data is used to categorize farms into clusters based on their responses to items from learning orientation scale and previous experience in management of beef farms. This paper then uses one-way ANOVA tests to examine if differences in scores of market orientation, innovativeness and performance across groups are significant across cluster groups. Remaining sections of this article will address previous research on learning and performance, methodology, results, and will conclude with a discussion on what the results mean for managers.

2. Literature review

This paper builds upon the literatures on organizational learning and managerial experience to examine issues relating to firm-level innovativeness and performance. Performance of agricultural firms is affected by the broader economic environment as well as specific industry and firm-level factors (Schumacher and Boland, 2005). While industry-level factors are important, recent research has focused more on firm-level factors as the decision maker can influence the development of these factors (Micheels and Gow, 2012; Verhees, Kuipers and Klopcic, 2011). Previous studies have shown that innovative firms are able to achieve greater performance levels (Capitanio, Coppola and Pascucci, 2009; Verhees and Meulenberg, 2004). More recently, authors have begun to examine the effect of alternative orientations such as a market orientation and entrepreneurial orientation on firm performance (Grande, Madsen and Borch, 2011; McElwee and Bosworth, 2010). As the industry changes and firms compete for inputs, employees, and land, how firms evolve to meet these needs through the development and deployment of strategic resources will become of greater interest to researchers and policy makers.

Previous managerial experience and financial performance

Taylor (1975) has shown that older managers tend to seek more information when making a decision and were more accurate in assessing the value of information. Expanding upon this work, Martin and Staines (1994) find that many managers believe competence is a function of industry experience. These studies are based on the assumption that experience may improve decision-making and therefore may lead to greater managerial competence. However, as Argote and Miron-Spektor (2011) point out, there are cases where experience limits creative thinking through the continued use of heuristics that were successful in the past.

Within an agricultural context, Nuthall (2009) suggests there is a dearth of literature on the relationship between managerial experience and performance. Of the literature that does exist, most studies examine the relationship between experience and efficiency. For example, results from Wilson *et al.* (2001) show that managers with more experience, who actively seek information, and who manage large farms are able to achieve higher levels of technical efficiency. More recently, Hansson (2008) finds that managerial experience is significantly related to both short-term and long-term measures of efficiency.

Organizational learning and financial performance

The research on learning from an firm-level perspective has its foundations on the work by March and Simon and their co-authors (Levinthal and March, 1993; Levitt and March, 1988; March, 1991; Simon, 1991). For example, March (1991) discusses two forms of learning, exploration and exploitation. Exploration models of learning encompass ''search, variation, risk taking, experimentation, play, flexibility, discovery, innovation'' (March, 1991, p. 71). Exploitation models of learning would focus more on ''refinement, choice, production, efficiency, selection, implementation, execution'' (March, 1991, p. 71). As it relates to the current study, previous experience may tend to favour exploitation of past knowledge, and therefore managers that devote resources to improving current processes and routines cannot devote the same resources toward exploration.

Within competitive environments, financial performance may depend on the learning ability of the firm. Baker and Sinkula (1999a, p. 296) define a learning orientation as ''the degree to which firms are committed to systematically challenging the fundamental beliefs and practices'' regarding their business and the environment in which it operates. As the nature of competition changes, successful firms will be those that are better able to become aware of the changes and that can acquire the resources and capabilities needed to compete. This may mean seeking information from different sources than those used previously, which may require information seekers to challenge their own assumptions regarding the information, as well as its applicability to their specific situation.

To this end, Slater and Narver (1995) suggest that the learning orientation of the firm may be the only driver of sustained competitive advantage as rival firms may be able to imitate other sources of advantage. In an agricultural context, Bone *et al.* (2003) found that managerial attitudes and attendance at educational workshops were important factors in farm performance in a sample of Australian farmers. Furthermore, Napier and Nell (2007) find that successful farmers are using new technologies and modifying business practices to remain successful in an increasingly competitive environment. This is not possible without continuous

learning on new technologies and markets. Finally, researchers have begun to use the balanced scorecard approach, which focuses on continuous learning, as a means to assess performance within agricultural systems (Lourenzani, Queiroz and de Souza Filho, 2005; Shadbolt, 2005).

3. Methodology

This research utilizes non-hierarchical cluster analysis using the two-stage clustering method within SPSS (version 21.0). Cluster analysis is a statistical method that uses data of heterogeneous firms to create several homogeneous subgroups. For example[2], previous studies have used cluster analysis to assign members to clusters according to their use of meetings and extension (Rosenberg and Turvey, 1991), their view of themselves as entrepreneurs (Vesala and Vesala 2010), extensiveness of livestock systems (Usai *et al*., 2006) and animal husbandry practices (Kiernan and Heinrichs, 1994). Additionally, researchers in the management and marketing literatures have clustered firms by market orientation strategies (Gellynck *et al*., 2012; Greenley, 1995), innovativeness (Hollenstein, 2003) and knowledge management practices (Zack, McKeen and Singh, 2009).

Data for this paper come from responses of managers of beef operations to a questionnaire on managerial culture on beef farms in Illinois. The sampling frame (n=1569) was based on a mailing list of members of the Illinois Beef Association in 2007. In total, respondents operating cow-calf herds and feeding out steers and heifers returned 347 usable questionnaires. This study uses responses from 237 cow-calf producers in Illinois in order to focus the research on one particular segment within the beef value chain.[3] Respondents in the cow-calf sub-sample (n=285) are on slightly older than the average farmer in Illinois (68 years of age versus U.S. average of 57 years of age) (USDA -- National Agricultural Statistics Service, 2007) and have managed their operations for an average of 31.45 years. The sample demographics are in line with general demographics of beef production in the U.S., where over 30% of beef cattle farms are operated by farmers over 65 years of age (USDA -- National Agricultural Statistics Service, 2007). Cow-calf producers in the sample operate farms that are on average 942 acres and with herd sizes that average 69 animals.

The survey asked managers to rate their level of agreement with questions that related to their level of market orientation, innovativeness, performance, and the learning orientation of the firm, and provided definitions where appropriate. Additionally, the survey asked respondents how long they have been managing their operation.[4] Measurement scales were anchored with strongly agree (Strongly Agree =6) and strongly disagree (Strongly Disagree =1), with the neutral response removed. To limit 'straight lining' the survey, some items were negatively phrased. In these cases, disagreeing would imply agreeing with a positively phrased item[5]. To measure the market orientation of the respondent, the survey included 19 items from Narver and Slater's (1990) market orientation scale. Slater and Narver (1995, p. 67) define a market orientation as "the culture that (1) places the highest priority on the profitable creation and maintenance of superior customer value while considering the interests of other key stakeholders; and (2) provides norms for behaviour regarding the organizational development of and responsiveness to market information." Their measurement scale, therefore, examines the degree to which firms are aware of customer needs and competitor responses, as well as how managers utilize this information within the firm. To measure commitment to learning, the survey included three items from Sinkula, Baker and Noordewier's (1997) learning orientation scale. This scale examines the view that learning is an investment that the firm can deploy to achieve certain advantages in the market as well as the need to question assumptions the firm makes about the market in which they operate. A scale developed by Hurley and Hult (1998) was included to measure firm innovativeness. For the purposes of this study, innovation is broadly defined as a change in routine (Nelson and Winter, 1982), and therefore innovativeness is thought of as a firm's willingness to pursue change in the organization. The innovativeness scale asked farm managers to rate their level of agreement with different items that examined the penchant for managers to utilize innovative strategies to solve problems on the farm. Finally, satisfaction with farm performance was measured using six subjective indicators. We use subjective performance as opposed to objective measures of performance as our sample consisted of small, privately held businesses that are generally unwilling to share confidential financial data, even in an anonymous setting. While self-rated scales may introduce bias to the results, this has been shown to be limited in surveys where the respondent is anonymous (Nederhof, 1985). Furthermore, research has shown that subjective scales are correlated with their parallel objective measures (Richard, Wu and Chadwick, 2009; Wall *et al*., 2004). Appendix A displays the survey items as well as reliability statistics.

4. Results

Figure 1 and Table 1 display the result of the cluster analysis. Using two-step clustering, four clusters emerge from the data. The distribution of firms across clusters is uniform and the ratio of largest cluster to smallest cluster is only 1.49 (119/80). Cluster 1 consists of 80 firms that have more than 17 years of experience but have the highest learning scores (are more likely to strongly agree with statements) as their average summated score for the five-item learning orientation scale is 20.46. This cluster seems to consist of firms who are relatively new to beef production and want to move quickly along the learning curve. Cluster 2 consists of

[2] This list is non-exhaustive.

[3] In total, 285 respondents were involved in cow-calf production. I removed cases from the dataset if manager age minus managerial experience was less than 10. Low or negative scores indicate a misunderstanding of the experience question, which is an important component of this research.

[4] The actual question was, "How many years have you produced cattle on your farm?"

[5] To allow for comparison with other items, negatively phrased items were reverse coded so that a score of 1 on a negatively phrased item would be akin to a score of 6 on a positively phrased item.

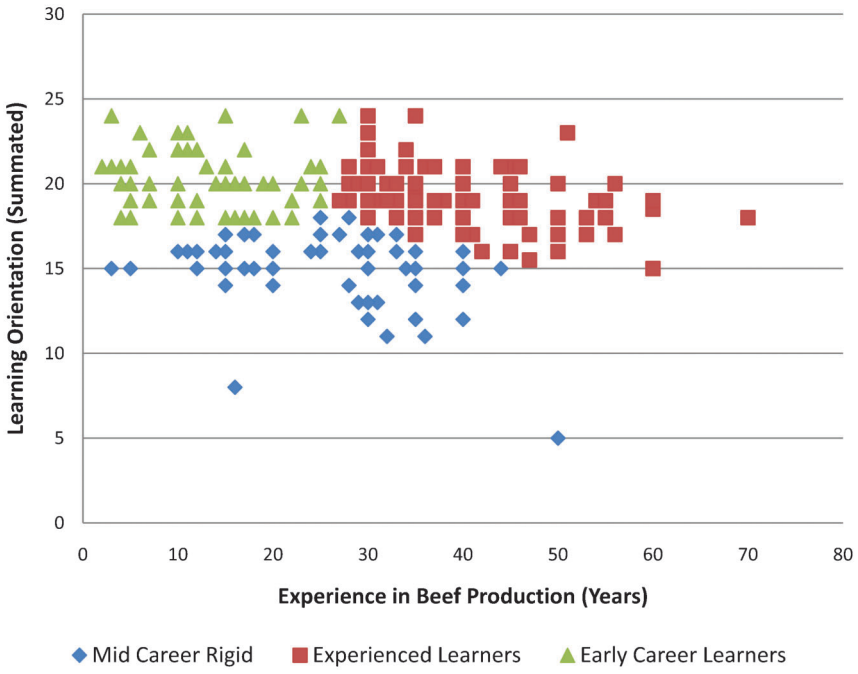

Figure 1: Scatter plot of managerial experience and learning orientation

119 firms that on average have almost 45 years of experience in beef production along with a high summated learning orientation score (average of 18.52). This cluster seems to contain firms that are quite experienced and see learning as a valuable resource in terms of keeping up with industry trends. Cluster 3 consists of 86 firms with an average of just over 26 years of experience in beef production but the lowest learning orientation scores (average summated score is 14.97).

Table 1: Differences in cluster inputs and farm characteristics across clusters (standard deviation in parentheses)

Variable	Cluster			F-Test
	Early Career Learners (1)	Experienced Learners (2)	Mid-Career Rigid (3)	
Experience (*Years*)	13.44 (6.90)	39.99 (9.59)	25.45 (9.99)	167.835***
Learning Orientation (*Summated Scale*)	20.23 (1.78)	18.96 (1.88)	15.13 (2.13)	136.689***
Learning Orientation Items				
The basic values of this farm include learning as a key to improvement.	5.26 (0.57)	5.04 (0.65)	4.04 (0.79)	67.401***
Our take is that learning is an investment, not an expense.	5.45 (0.53)	5.10 (0.78)	4.18 (0.95)	50.297***
Learning on my farm is seen as a key commodity necessary to guarantee survival.	5.45 (0.50)	5.06 (0.83)	4.28 (0.93)	40.227***
Not afraid to challenge assumptions about customers.	4.98 (0.71)	4.54 (0.77)	3.54 (0.99)	56.289***
How perceive marketplace must be continually questioned.	4.53 (0.90)	4.29 (0.89)	3.37 (0.94)	33.592***
Herd Size (*Cows and Calves*)	84.11 (102.72)	134.03 (179.16)	130.92 (195.38)	1.832
Farm Size (*Acres*)	567.84 (709.69)	1073.18 (1527.35)	918.13 (1052.14)	3.307*
Age of operator (*Years*)	46.69 (12.43)	61.59 (9.59)	52.92 (8.51)	44.949***
Education[#]	4.13 (1.27)	3.65 (1.38)	3.89 (1.37)	2.489
Number of cases	62	99	76	

Notes: #: 1=Some high school, 2=High school graduate, 3=Some college, 4=Vocational/Tech degree, 5=College graduate, 6=Graduate degree.
In this and following tables, ***, **, * signify significance at the 0.001, 0.01, and 0.05 levels, respectively.

Table 2: Means of market orientation, innovativeness and performance across clusters

Variable	Cluster			F-Test
	Early Career Learners (1)	Experienced Learners (2)	Mid-Career Rigid (3)	
Customer Orientation (Summated)	12.52[a]	11.76[a]	10.13[b]	12.685***
Competitor Orientation (Summated)	26.60[a]	26.83[a]	23.22[b]	7.344***
Coordination (Summated)	16.15[a]	16.17[a]	13.79[b]	10.964***
Innovativeness (Summated)	25.65[a]	23.59[b]	22.17[c]	19.301***
Performance (Summated)	23.49[ab]	24.08[a]	22.25[b]	3.053*

Notes: Within rows, means that share superscripts are not significantly different at the 0.05 level of significance. Summated scales are calculated by summing individual items from measurement scales. Refer to Appendix A to see the actual items.

As the learning orientation input variable was a summated scale, meaningful differences across learning scores are not obvious. Firms in Cluster 1 (termed 'Early Career Learners') have the highest scores on each item while firms in Cluster 3 (termed 'Mid-Career Rigid') have the lowest scores. Firms in cluster 2 (termed 'Experienced Learners') had the second highest scores across learning items. In terms of other characteristics, manager age is significantly different across clusters, while herd size and number of acres operated are not significantly different. Highest level of education received is not significantly different across clusters.

After firms were assigned into clusters, comparisons of market orientation, innovativeness, and performance scores were conducted using one-way ANOVA (Analysis of Variance). Table 2 displays the results of this comparison. In line with results from previous studies (Baker and Sinkula, 1999b; Farrell, Oczkowski and Kharabsheh, 2008), firms that have higher learning orientation scores also have higher scores on market orientation, organizational innovativeness, and performance. It is interesting to note that significance between scores seems to relate more to the learning orientation of the firm than on the level of experience. Firms in Cluster 3 (Mid-Career Rigid) appear to be significantly different from firms in the other clusters in terms of market orientation, innovativeness, and satisfaction with performance. Young firms with higher learning orientation scores (Cluster 1) appear to be somewhat more innovative than more experienced firms and those not as committed to learning (Clusters 2 and Cluster 3).

Table 3 displays mean scores from each cluster on individual items comprising the market orientation scale. Firms in Cluster 1 (Early Career Learners) are

Table 3: Means of market orientation items across clusters

Variable	Cluster			F-Test
	Early Career Learners (1)	Experienced Learners (2)	Mid-Career Rigid (3)	
Customer Orientation Items				
Discover customer needs	4.31[a]	3.98[a]	3.49[b]	9.109***
Incorporate solutions in products	4.23[a]	3.80[b]	3.43[b]	9.177***
Work with lead customers	3.98[a]	3.97[a]	3.21[b]	10.238***
Competitor Orientation Items				
Share information about competitors	3.86	3.96	3.55	2.032
Discuss competitor strengths and weaknesses	4.05	3.80	3.55	2.786
Target customers where have competitive advantage	4.39[a]	4.31[a]	3.62[b]	9.649***
Collect information on competitors	3.23	3.27	2.84	2.504
Diagnose competitor goals	3.10[ab]	3.26[a]	2.71[b]	4.110*
Identify where competitors have succeeded or failed	4.11[a]	4.18[a]	3.50[b]	7.784**
Evaluate strengths and weaknesses of competitors	3.87[ab]	4.04[a]	3.45[b]	5.270**
Coordination Items				
Regularly visit customers	3.48[ab]	3.64[a]	3.00[b]	4.438*
Discuss experiences with partners	3.95	4.15	3.82	1.499
Business units work together to serve customer needs	4.19[a]	3.98[a]	3.36[b]	10.744***
Understand how we contribute to customer value	4.52[a]	4.41[a]	3.62[b]	15.270***

Notes: Scores are averages of all firms in cluster. Items were anchored with 1=strongly disagree and 6=strongly agree. Within rows, means that share superscripts are not significantly different at the 0.05 level of significance.

Table 4: Means of innovativeness and performance items across clusters

Innovativeness and Performance Items	Cluster			F-Test
	Early Career Learners (1)	Experienced Learners (2)	Mid-Career Rigid (3)	
Innovativeness Items				
Technical innovation accepted	4.97[a]	4.52[b]	4.16[c]	12.433***
Seldom seek innovative ideas[#]	5.16[a]	4.60[b]	4.24[b]	12.726***
Innovation accepted	4.95[a]	4.48[b]	4.17[b]	13.657***
Penalized for new ideas that fail[#]	5.40	5.27	5.03	2.712
Innovation is risky[#]	5.16[a]	4.73[b]	4.58[b]	5.212**
Performance Items				
Return on farm assets did not meet expectations[#]	3.65	3.88	3.63	1.055
Satisfaction with overall performance	4.18[ab]	4.27[b]	3.80[a]	4.341*
Return on production investments	4.21	4.16	3.89	2.006
Cash flow was not satisfactory[#]	3.68	3.94	3.72	1.053
Return on marketing investments	4.15	4.09	3.87	1.609
We receive higher prices than competitors	3.85	3.59	3.54	1.773

Source: Author calculations

Notes: Items with # were reverse coded. Scores are averages of all firms in cluster. Items were anchored with 1=strongly disagree and 6=strongly agree. Within rows, means that share superscripts are not significantly different at the 0.05 level of significance.

more likely to strongly agree with items that examine how these firms provide solutions to meet market needs. In terms of using competitors as a source of market information, firms in Cluster 2 (Experienced Learners) are more likely to agree with the use of competitors as a source of market information, specifically whether they try to determine which competitor strategies were successful or to evaluate relative strengths and weaknesses of other firms in the industry. Differences across high and low learners (Clusters 1 and 2 versus Cluster 3) emerge when examining how firms use the information gathered from customers and competitors. Firms in Cluster 3 are less likely than other firms to agree with items that measure if business units work together to create customer value and if employees understand how the firm creates value for downstream partners. Firms in Cluster 3 are also less likely to understand how their actions contribute to customer value.

Table 4 displays scores on individual items that measure innovativeness and the manager's satisfaction with performance. Firms in Cluster 1 (Early Career Learners) were more likely to agree with items that measured their willingness to accept technical innovation and were less likely to agree that innovation is risky.[6] While they were different in terms of summated scores, firms in Cluster 2 (Experienced Learners) and Cluster 3 (Mid-Career Rigid) were not statistically different in terms of their responses to the individual items measuring innovative activities.

While the summated performance score was significantly different across clusters, differences among individual items were not significant in five of the six items. The analysis shows the only statistically significant difference occurs in satisfaction with overall performance. Firms in Cluster 2 (Experienced Learners) were more satisfied with overall performance than firms in Cluster 3 (Mid-Career Rigid).

[6] Question was negatively phrased and reverse coded in data analysis.

5. Discussion

The goal of this research was to examine how a firm's learning orientation and managerial experience relate to firm innovativeness and satisfaction with performance. Using a two-step cluster analysis, three clusters emerged using years of managerial experience and a summated learning orientation scores as inputs. Cluster 1 consisted of firms that averaged over 17 years' experience and higher learning orientation scores. Firms in Cluster 2 were experienced in beef production as they averaged almost 45 years of experience in beef production, and had the high scores on learning orientation items. Cluster 3 consisted of firms that averaged over 26 years of experience in beef production and the lowest learning orientation scores. Mangers in Cluster 1 and Cluster 3 are of similar age (47 versus 51 years of age) and have similar levels of experience (17 versus 26 years). Given these averages and differences in learning orientation, it is possible that managers in Cluster 1 have had a prior career that is influencing their approach to beef production. Interestingly, no cluster emerged that consisted of firms that had high experience and low learning scores. This may be due to survivor bias as firms that do not view learning as a key to survival may have already exited the industry.

One-way ANOVA analysis revealed that scores on market orientation, innovativeness and performance items were significantly different across clusters. Firms that were more likely to agree with the items assessing learning orientation, that is, those with higher scores on learning orientation items, also had higher scores for items that measured the level of market orientation, innovativeness and performance. This result is in line with prior studies that suggest the that a learning orientation and a market orientation are antecedents of innovativeness (Baker and Sinkula, 2002). This finding may also corroborate the findings of Wilson *et al.* (2001) who find that farms with more experience also exhibit higher levels of technical efficiency. Perhaps the increase

in efficiency is the result of the willingness of these farms to challenge the status quo and their willingness to adopt new technologies.

Policy makers interested in helping beginning farmers improve financial performance may look to replicate models that highlight new technologies and may make it easier for managers to observe how other firms operate. For example, exemplary programs such as demonstration farms (Pangborn, Woodford and Nuthall, 2011) and the Beef Profit Partnerships model that has been successful in Australia and New Zealand (Clark *et al.*, 2007) may increase the adoption of best practices and improve the viability of small and beginning farms. While these resources are valuable as learning tools for farm managers, they also provide managers with an opportunity to discuss farming practices with other farm managers and practitioners who have a different perspective. This is important as research has shown that knowledge transfer is more likely to occur when firms are similar in terms of strategies employed and customers served (Darr and Kurtzberg, 2000). The source of information is also important, as Sligo and Massey (2007) find that farm managers may place more trust in the information coming from university personnel and other farmers as opposed to sales personnel who may be only concerned with making a sale.

This study is not without its limitations. First, the study relies on survey responses from managers of beef farms in Illinois to examine the relationship between learning orientation and managerial experience. The relatively narrow dataset may limit the ability to extrapolate these results across countries or commodities. Furthermore, as the data is cross-sectional, the study did not examine direction of causality between a commitment to learning and innovativeness and performance.

Even with these limitations, these findings corroborate the results from recent research on factors affecting performance of SMEs outside of agriculture that found that managers who emphasize continual learning are more innovative and have better performance (Real, Roldán and Leal, 2012; Rhee, Park and Lee, 2010). Moreover, the results presented here may be especially important to small and beginning farms that may not have the benefit of previous experience from which to draw upon when they face challenges. These results may therefore signal a need to refocus attention on methods that increase the learning orientation of producers. Given the evolving nature of the agricultural industry and the effects globalization and consolidation are having on competition for inputs and market access, firms who invest in the resources that enable them to recognize opportunities may be successful moving forward. Conversely, firms that do not stay abreast of these changes may find themselves unable to compete with firms that have already made significant investments in time and money in building a learning orientation. Future research could examine how agricultural firms that operate at some distance from the final consumer develop and foster a culture of learning. As both March (1991) and Simon (1991) suggest that organizational learning is a social construct, future work addressing the social aspect of a firm's learning orientation would provide much needed information.

Additionally, future research could examine where agricultural firms with a learning orientation acquire information. Historically, farm consultants have played an important role in the provision of market information and strategic planning to primary agriculture. More technologically adept farmers may find that supplementing that service with information from social media platforms (i.e. Twitter, Facebook, LinkedIn, and YouTube) is also beneficial as it provides a low-cost method to access information from a broader network of providers. Through social media, producers can participate in discussions where participants share their views and experiences on production and management issues. As these discussions may include participants located all over the world, farmers receive an antidote for structural and cognitive rigidity, which can limit innovativeness.

About the author

Eric Micheels is an Assistant Professor at the University of Saskatchewan. His research focuses on agribusiness and farm management, specifically relating to intangible and cultural resources and their strategic value to farm-based businesses. His research has been published in the International Journal of Agricultural Management, the International Food and Agribusiness Management Review, Agribusiness, and the Journal of Farm Managers and Rural Appraisers.

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Appendix A: Measurement items

Measurement Items	Mean	Standard Deviation	Item-to-Total Correlation
Learning Orientation (Alpha=0.837)			
(Sinkula, Baker and Noordewier, 1997)			
The basic values of this farm include learning as a key to improvement.	4.76	0.891	0.642
Our take is that learning is an investment, not an expense.	4.88	0.968	0.639
Learning on my farm is seen as a key commodity necessary to guarantee survival.	4.89	0.960	0.685
We are not afraid to challenge assumptions we have made about our customers.	4.30	1.055	0.499
Personnel on this farm realize that the very way they perceive the market must be continually questioned and adapted.	4.04	1.040	0.378
Customer Orientation (Alpha=0.802)			
(Narver and Slater, 1990)			
We continuously try to discover additional customer needs which they are not aware of yet.	3.94	1.199	0.698
We incorporate solutions to unstated customer needs in our new products and services.	3.80	1.134	0.658
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.	3.75	1.238	0.592
Competitor Orientation (Alpha=0.870)			
(Narver and Slater, 1990)			
Employees on our farm share information concerning competitor activities.	3.81	1.366	0.580
We regularly discuss competitor strengths and weaknesses	3.75	1.241	0.628
We target customers where we have an opportunity for competitive advantage.	4.11	1.239	0.540
Members of our farm collect information concerning competitor activities.	3.15	1.332	0.679
We diagnose competitor goals.	3.06	1.286	0.713
We identify the areas where our competitors have succeeded or failed.	3.95	1.225	0.665
We evaluate the strengths and weaknesses of key competitors.	3.78	1.263	0.721
Coordination (Alpha=0.740)			
(Narver and Slater, 1990)			
We regularly visit our current and prospective customers.	3.39	1.468	0.506
We freely discuss our successful and unsuccessful customer experiences with our partners.	3.99	1.277	0.465
All of our business units (marketing, production, research, finance/ accounting) are integrated in serving the needs of our target markets.	3.84	1.198	0.610
People on our farm understand how everyone can contribute to creating customer value.	4.16	1.167	0.571
Innovativeness (Alpha=0.712)			
(Hurley and Hult, 1998)			
Technical innovation based on research results is readily accepted.	4.50	1.020	0.477
We seldom seek innovative ideas which we can use on our cattle operation.#	4.63	1.148	0.539
Innovation is readily accepted in our beef operation.	4.52	0.942	0.529
Individuals on our farm are penalized for new ideas that don't work.#	5.20	1.020	0.297
Innovation in our farm is perceived as risky and is resisted.#	4.77	1.118	0.520
Performance (Alpha=0.819)			
The return on farm assets did not meet expectations last year.#	3.73	1.328	0.656
We were very satisfied with the overall performance of the farm last year.	4.07	1.153	0.710
The return on production investments met expectations last year.	4.07	1.092	0.756
The cash flow situation on the farm was not satisfactory.#	3.77	1.312	0.559
The return on marketing investments met expectations last year.	4.02	1.041	0.624
The prices we receive for our product is higher than that of our competitors	3.69	1.101	0.249