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STRATEGIC IMPLICATIONS OF DATA GATHERING ACTIVITIES IN SMALL FIRMS: A COMPARISON BETWEEN FAMILY AND NONFAMILY FIRMS

Donald Gudmundson
University of Wisconsin Oshkosh
Gudmund@uwosh.edu

C. Burk Tower
University of Wisconsin Oshkosh
Tower@uwosh.edu

E. Alan Hartman
University of Wisconsin Oshkosh
Hartman@uwosh.edu

ABSTRACT

The empirical research presented in this article examines data gathering activities and processes of small businesses and compares those activities and processes in family and nonfamily firms. MANOVA and t-test analyses were used in analyzing questionnaire data from 1245 respondents in 89 small businesses. For these small firms, the results indicated differences in the relative use of types of information gathered and processes used. Further, the study found differences between family and nonfamily firm data gathering activities and processes used. Finally, the study indicated that the type of customer to whom a firm sold had an impact on the data gathering activities of a small business and impacted family and nonfamily firm data gathering differentially.

INTRODUCTION

As we enter the 21st century, knowledge management is becoming increasingly important competitive issue for businesses. Rastogi (2000) argues that since we have moved out of the industrial age and into the information age, management of information and knowledge is key to developing and sustaining competitiveness. "New knowledge provides the basis for organizational renewal and sustainable competitive advantage... Strategic management researchers have begun to identify knowledge as the key resource that managers need to appreciate and understand if they are to create sustainable competitive advantages" (Inkpen, 1998, p.69). It has been argued that information management "has become an important tool that helps build organizational competitive advantage in today's globalized and turbulent environments" (Arnand, Manz, & Glick, 1998, p.796). Rastogi states that "competitive edge today, more than ever, resides in creativity and capabilities, expertise and skills, improvement and innovation. All of them have their source and locus in the pursuit of learning and the cultivation and use of knowledge" (Rastogi, 2000, p.39).

Researchers have begun to develop conceptual models of knowledge management. One such model suggests that knowledge management consists of a set of activities, including "creating knowledge, discovering knowledge, borrowing or buying knowledge, capturing knowledge, distributing knowledge, adding value to knowledge, information or data, retrieving knowledge, information or data, and measuring and updating knowledge" (Kirrane, 1999, p.31). This model suggests that knowledge, which may be useful to the firm, is gathered from both internal and external sources. These data are then processed within the firm and distributed to organizational members. Other researchers also have recognized that managers gather and use both internal and external data when attempting to align their organizations with the external environment (Beal, 2000; Pineada, Lerner, Miller, & Phillips, 1998; Arbuthnot, Slama, & Sisler, 1993; Smeltzer, Fann, & Nikolaisen, 1988).

This emphasis on the acquisition and management of knowledge by organizational members suggests that the processes these organizational members use to gain more knowledge are crucial to keeping their firms competitive. While much of the knowledge management literature focuses on the manipulation and use of data once it has entered an organization, the literature on environmental scanning suggests that the gathering of data by the firm is a key element in this process. Without the data, managers in the firm have little new knowledge to manage.

In addition, organization theorists have asserted that relationships between an organization and its external environments have a direct bearing on performance (Culnan, 1983; Bourgeois, 1985; Pfeffer & Salancik, 1978). Data gathering also has been depicted as a key component in the strategic management process (Hambrick, 1982; Daft & Weick, 1984; Dollinger, 1985; Daft, Sormunen, & Parks, 1988; Beal, 2000). These data gathering activities are commonly labeled "scanning" in the strategic management literature. While scanning is not well defined, it often is used to refer to external data gathering activities (Dollinger, 1985; Johnson & Kuehn, 1987; Hambrick, 1981; Hambrick, 1982). It is suggested that organizations gather external data in an attempt to align strategies with the demands of external environments. Knowledge management is, therefore, a crucial part of the strategic management process.

This study examines data gathering activities of owners/managers in small firms to determine if they focus more heavily on internal or external sources when engaging in data gathering activities. The research also studies the relationship between ownership structure (family vs. nonfamily) and data gathering activities.

DATA ACQUISITION IN SMALL BUSINESS

While much of the research in knowledge management has focused on large organizations, several studies have examined the scanning activities of small businesses (Dollinger, 1985; Lang, Calantone, & Gudmundson, 1997; Beal, 2000). Much of this research has focused on the data gathering activities of the small business owner/manager. This research suggests that small firms differ from large firms in their data gathering activities.

Other research found that small firms rely on informal information sources (Birley, 1985), prefer information sources that are rich, informal, and accessible (Fann & Smeltzer, 1989), and that managers of small firms with an entrepreneurial orientation prefer human rather than written information sources (Schafer, 1990). Beal's (2000) study attempted to identify relationships between data gathering activities and the strategic alignment of small businesses. Significant positive relationships between frequency of scanning indices and external alignments were not found. One explanation for this that Beal posited was that "CEOs of small manufacturing firms, constrained by their involvement in daily operations, may not have time for frequent scanning of their external environments" (Beal, 2000, p.44). This suggests that owners/mangers in small firms may focus more on internal data acquisition activities than on external data gathering activities.

H1: Owners/managers of small firms will utilize internal data gathering activities more frequently than external data gathering activities.

Data Acquisition in Family Business

Several theorists have identified the importance of the role played by family business in the U. S. economy (Gersick, Davis, McCollom, Hampton & Lansberg, 1997; Ward, 1987). Statistics suggest that 80% of all businesses in the U. S. are family-owned firms and that approximately 50% of the GNP of the U.S. is generated by family firms (Ward & Arnoff, 1990; Kirchhoff & Kirchhoff, 1987). Yet, little empirical research has examined the data gathering and processing activities of family businesses.

Theorists have argued repeatedly that strategic planning processes and related activities of family businesses would likely differ significantly from strategic planning processes and related activities of nonfamily firms (Ward, 1988; Harris, Martinez & Ward, 1994; Gudmundson, Hartman, & Tower, 1999; Beal, 2000). It has been stated that these differences exist because of the contradictions that arise between the family system and the business system. Ward (1987) states that "the very nature of business often seems to contradict the nature of the family. Families tend to be emotional; businesses are objective. Families are protective of their members; businesses, much less so. Families grant acceptance unconditionally. Businesses grant it according to one's contribution" (p. 54). These differences between family and nonfamily firms are not necessarily positive or negative for family businesses, but, it is argued, they do have the potential to significantly impact the strategic decision making processes and outcomes in these organizations. This line of reasoning suggests that these differences between family and nonfamily firms also should impact knowledge management activities.

Researchers also have argued that a general lack of strategic planning in family businesses has contributed to the high failure rate among family businesses as they attempt to survive from one generation to the next (Ward, 1988). The inward orientation of family businesses has been discussed as affecting family members' perceptions of the business environment (Davis, 1983). It is suggested that the family system attempts to create and maintain a cohesiveness that supports the family "paradigm." This paradigm is described as the core assumptions, beliefs and convictions that the family holds relative to its environment. Information that is not consistent with this paradigm is resisted or ignored. Davis suggests that this resistance to information that runs counter to the family paradigm results in less change by family businesses than by nonfamily businesses. This seems to suggest that family businesses may differ from nonfamily businesses in the amount, and possibly the type, of data that is gathered. Family businesses may focus more on gathering data from internal sources than from external sources and may be less interested in gathering data about the internal or external environments that runs counter to their organizational reality. The following two studies provide indirect support for this contention.

An empirical study comparing the adoption of TQM practices of family and nonfamily firms found that family firms are more likely to be non-adopters of TQM than nonfamily firms (Ellington, Jones & Deane, 1996). The authors state that this is due to family firms' "status quo attitude", greater emphasis on short-term decision making, centralized decision making processes, and the lack of formal training programs that are a key element of TQM programs. The results of another empirical study suggest that family businesses grow more slowly than nonfamily businesses (Gallo, 1995). The researchers also concluded that family businesses function with less risk than nonfamily firms, they function with a higher level of equity control, and they are more closed to outsiders, thus less likely to use them as sources of information. It is argued that these differences lead to the lower growth rates of family businesses. The results of these studies suggest that a relationship may exist between the ownership structure of businesses (family vs. nonfamily) and data acquisition activities.

Other support for the relationship between ownership structure and data gathering comes from Harris, Martinez, and Ward (1994). In their review of the strategy literature related to family business, they provided a list of family business characteristics that, previous research suggests, influence strategy and related activities. These include:

- "Inward" orientation (Cohen & Lindberg, 1974)
- Slower growth and less participation in global markets (Gallo 1993)
- Long-term commitment (Danco, 1975)
- Importance of family harmony (Trostel & Nichols, 1982)
- Employee care and loyalty (Ward, 1988)
- Lower costs (McGonaughy, Walker & Henderson, 1993)
- Generations of leadership (Ward, 1988)

Although the authors identified these characteristics as affecting strategy in family businesses, they did not postulate specific impacts on the actual strategies. Their conclusion was that "the assessment of these family business characteristics and their influence on strategy leaves more questions than answers" (p. 171). Since knowledge management plays such a crucial role in the strategic planning process, we suggest that these characteristics also will impact knowledge management activities.

Research cited above suggests that family firms are inwardly oriented, are closed to outsiders, are resistant to new ideas, are risk averse, have a status quo attitude and have centralized decision making processes when compared to nonfamily firms. These characteristics suggest that managers in a family firm will tend to consider as unimportant much of what goes on in the external environment. As a result, these managers will gather less external data than managers in nonfamily firms.

Family businesses are resistant to change because the family element wants to preserve the organization as it is. Data running counter to this mindset is ignored. Even the internal data gathering activities will concentrate on utilizing processes that gather data from sources that will provide the acceptable data. This suggests that family businesses also will gather less internal data than nonfamily firms.

H2: Owners/managers in family firms utilize internal data gathering activities less frequently than owners/mangers in nonfamily firms.

H3: Owners/managers in family firms utilize external data gathering activities less frequently than owners/managers in nonfamily firms.

METHODS

Sample Selection and Data Collection

The family and nonfamily small businesses were selected from directories of manufacturing and service organizations within a midwestern state. Those businesses employing fewer than 250 employees but more than 25 employees were sent a letter requesting participation in a research project. A follow-up telephone call requested an appointment to meet with the CEOs/Owners. If they agreed to be interviewed and to participate, the logistics of questionnaire distribution and return were agreed upon to ensure confidentiality.

Of those CEOs interviewed, 89 of 90 allowed data collection from their managerial employees. Either questionnaires were distributed by company mail, with completed questionnaires returned to the researchers by U.S. mail; or, questionnaires were distributed and collected on site by a member of the research team. Using these procedures, 1476 questionnaires were returned. Of those, 1245 provided complete data on all variables.

Organizational Variables

To determine which of the organizations were family businesses, a three-step process was employed. First, each CEO/Owner was interviewed about various aspects of the business including ownership (publicly held, privately held, partnership) and characteristics of the leadership team. Second, a research assistant called each organization and asked to speak with someone familiar with the organization's ownership (this was always someone different than the CEO). This person was then asked if the organization was family owned or considered a family business, if it was owned primarily by a single family and if there were family members in leadership roles in the organization. Third, the researchers reviewed the interview and telephone questionnaires and then classified each organization as either a family business or not. It was classified as a family business if the data from the interview and survey indicated that a single family controlled the business and was active in the management of the business. This corresponds to the base definition used by Westhead and Cowling (1998).

Westhead and Cowling (1998) also showed that differences between family and nonfamily businesses often did not appear until organizational variables such as type of customer were included in the analysis. To understand more fully the potential relationship between family and nonfamily businesses with respect to use of data to manage the organization, another organizational level variable was studied. That variable being customer type (business versus consumer). Based on information obtained from the CEO/Owner, two researchers classified each organization into one of the two customer types. If there was disagreement about the classification, a third researcher reviewed the information and determined the classifications to be used. Table 1 displays the number of respondents and number of organizations by type of customer, and ownership.

TABLE 1
Distribution of Organizations by Customer Type and Ownership Structure

Customer	Family	Organizations	Respondents
Business	No	37	728
Business	Yes	27	379
Consumer	No	15	250
Consumer	Yes	10	119

Data Utilization Variables

The questionnaire included 24 questions that focused on the extent to which various types of data were gathered by the organization. The questions emanated from the strategic planning, marketing and organizational design literatures (e.g., Lawrence & Lorsch, 1969). Responses to these items were on a Likert scale, with "1" being "never used to gather data" to "5" being "used very frequently to gather data". These items were factor analyzed (Principle Components), which indicated four factors (using an eigen value of 1.0). Cronbach reliability analysis of these factors revealed that all four factors had acceptable levels of reliability. For each respondent, four factor scores were calculated. Each factor score was formed by summing the responses to the items defining the factor and dividing by the number of items in the factor. Table 2 summarizes the items and internal reliability for each factor, while descriptive statistics for these factors can be found in Table 3.

TABLE 2
Items Comprising Each Factor and Scale Reliability

Factors	***Specialized Processes***	***Analytical Tools***	***External Data***	***Performance Measures***
Variables	Task Forces	Statistics	Track competitors	Short term (less than 1 yrs)
	Liaison personnel	Cost control	Survey clients	Intermediate term (1-5 yrs)
	Interdepartmental committees	Budget variances	Forecasting	Long term (more than 5 yrs)
	Staff specialists to obtain data for decisions	Information Systems	Market research	Individual performance appraisal
	Operations research techniques	Costs assigned to units	Systematic searches for opportunities	Formal review of department goal achievement
	Staff specialists to study problems	Profits assigned to units		
	Creative meetings			
Reliability	.86	.81	.79	.76

Data Analyses

The data analyses were designed to test the three hypotheses. The first hypothesis proposed that owners/managers of small firms utilize internal data gathering activities more frequently than external data gathering activities. To determine this, t-tests were computed between the four factors (*Specialized Processes, Analytical Tools, External Data and Performance Measures*). Only the *External Data* factor is an external activity while the other three are internal activities.

The second and third hypotheses (Owners/managers in family firms utilize internal data gathering activities less frequently than owners/mangers in nonfamily firms and owners/managers in family firms utilize external data gathering activities less frequently than owners/managers in nonfamily firms) are organizational level questions. To appropriately test these hypotheses, it was necessary to aggregate the data for each firm, resulting in one score for each factor per firm. To determine the effect of ownership and customer type on these factors, a Multivariate Analysis of Variance (MANOVA) analysis was performed using a 2 (CUSTOMER) x 2 (OWNERSHIP) factorial design.

RESULTS

Results from the t-tests revealed that all four factors were used at different frequencies. *Analytical Tools* were used most frequently to gather data, with *Performance Measures* second, *External Data* third, and finally *Specialized Processes*. Two of the internal activities were used more often than external while, *Specialized Processes* were used less often. In general, Hypothesis 1 was supported. Table 3 summarizes these t-test results.

TABLE 3
t-Tests Between the Four Factors and Descriptive Statistics for each Factor

Factors	*Specialized Processes*	*Analytical Tools*	*External Data*	*Performance*
Analytical	-17.72 **	------	-------	-------
External Data	-13.78 **	9.17 **	-------	-------
Performance	-19.38 **	2.84 *	-7.14 **	-------
Mean	2.48	3.32	2.92	3.18
Std. Dev	.43	.44	.41	.47

* $p < .01$ ** $p < .001$

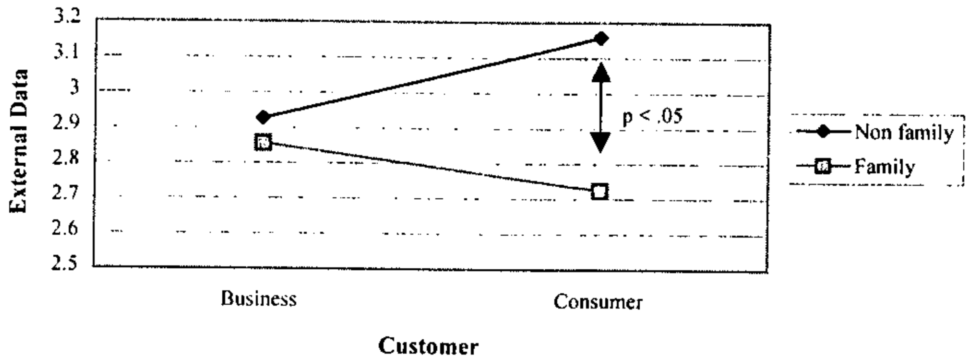
The MANOVA revealed a significant ($p < .05$) multivariate main effect for OWNERSHIP ($F(4,82)=2.84$, $p < .03$), and a significant multivariate interaction effect for OWNERSHIP x CUSTOMER ($F(4,82)=3.09$, $p < .03$). The multivariate main effect for FAMILY was generated by significant univariate main effects for *Specialized Processes*, *External Data* and *Performance Measures* (only *Analytical* did not show a significant difference between family and nonfamily organizations). The univariate Analysis of Variance showed that for all three main effects nonfamily businesses reported greater frequency of use of data gathering techniques than family businesses, which partially supports Hypotheses 2 and 3. Table 4 displays those means and significance level of the differences.

TABLE 4
Means and ANOVA Results for Family and Nonfamily Businesses

Ownership	*Specialized Processes*	*Analytical Tools*	*External Data*	*Performance Measures*
Nonfamily	2.58	3.35	2.99	3.27
Family	2.35	3.28	2.82	3.07
Difference p <	.01	Ns	.01	.003

To explore the significant multivariate OWNERSHIP x CUSTOMER interaction, a univariate ANOVA was performed for each dependent measure separately. These results indicated that one of the measures, *Performance Measures,* produced a significant interaction ($F(1,85)=8.62$, $p < .005$), while for a second measure, *External Data,* the effects were marginal ($F(1,85)=3.74$, $p < .06$). These interactions were explored using simple main effects comparisons. Figure 1 shows the results for *External Data*, while Figure 2 shows the results for *Performance Measures*. As Figure 1 shows, there were no differences between family and nonfamily businesses when selling to businesses, however, nonfamily businesses selling to consumers gathered external data more frequently than family businesses.

Figure 1
Ownership x Customer for External Data



The interaction for *Performance Measures* was a little more complex. Again there were no differences between family and nonfamily businesses selling to businesses, and a significant difference when selling to consumers where nonfamily businesses used performance measures more frequently to gather data than did family businesses. In addition, nonfamily businesses discriminated between types of customer while family businesses did not.

In summary, all three hypotheses were at least partially supported. For hypothesis 1, most internal methods of data gathering are used more frequently than external but one of three internal methods (*Specialized Processes*) was not. The effect of ownership was complex. For Hypothesis 2, nonfamily businesses used *Specialized Processes* and *Performance Measures* more frequently than family businesses with no difference between family and nonfamily in use of *Analytical Tools*. Although overall *Performance Measures* were used more frequently by nonfamily businesses than family businesses, closer inspection revealed that this occurred only when selling to consumers. Hypothesis 3 was also partially supported with family businesses differing from nonfamily businesses in their frequency of use of *External Data*, but again only when selling to consumers.

DISCUSSION

The overall results of this exploratory, empirically based study relating aspects of knowledge management and ownership structure in small businesses add interesting new insights to both knowledge management and family business research. The results clearly support prior research that suggests that family and nonfamily businesses differ in some significant ways in their approach to strategic planning, particularly with respect to data gathering and processing. Because of these differences, ownership structure appears to be a unique variable to be considered in knowledge management studies, and thus, should be considered as such in research designs.

For all the small businesses taken together, the frequency of use data regarding data types (*Analytical Tools, External Data and Performance Measures)* and frequency of use of *Specialized Processes* is interesting and important in and of itself. The fact that the frequency of use of *Specialized Processes* had the lowest absolute level of use is most likely related to the study's focus on small businesses. Specialized processes require resources and a sufficient organizational size to support and justify their use. Small business managers likely do not perceive a need for such processes in their restricted environments, particularly with only limited resources to support them.

The results showed that internal data acquisition (*Analytical Tools and Performance Measures*) had higher frequency of use than external data acquisition, and that internal *Specialized Processes* for sharing and using information in decision making were limited in usage, are not surprising, but should be of concern to small business managers as they move forward in the information age. With quickly changing external environments, rapid recognition and understanding of these changes becomes increasingly important in adjusting competitive strategies and tactics in order to maintain and improve market positions. One would hope, therefore, that the use of external data gathering would increase over time, both absolutely and relative to internal data gathering. In addition, the use of *Specialized Processes* that focus on sharing the growing body of information gathered from the internal and external sources should increase in order to make better, and more creative use of this information in strategic planning and decision making. Thus, this study serves as an indication of concern for small business owners/managers to alter their data gathering behaviors, and as a useful baseline for future research in examining the relationships between small business internal and external data gathering and processing.

The study's finding that family businesses reported lower levels of use for all three types of information (statistically lower for *External Data* and *Performance Measures*) and for use of organizational *Specialized Processes*, has not been empirically measured in prior research. This is consistent with what might be anticipated from prior family business research as discussed in the introduction section of the paper. This ought to be of particular concern to family business owners as they deal with their specific competitive environments. While family businesses might have been quite successful in the past, their future levels of success will depend on their ability to more efficiently gather and process information to assist in more rapidly responding to their changing environments

When the type of customer to whom small businesses were selling is considered in the analysis, the differences found between family and nonfamily businesses were more complex than initially expected, and these differences need also to be noted and considered by small business owners/managers. The key results were the differences found in the use of the gathering of *External Data* and *Performance Measures* (see Figure 1and Figure 2) in selling in consumer markets. Marketing literature suggests the more rapidly changing and dynamic nature of consumer markets, combined with the typically more distant relationship with customers in consumer markets, requires more focused attention to the formal gathering and processing of information for decision making. While that appears to be the case for nonfamily firms, that clearly does not appear to be the case for family firms. This suggests that family businesses might well be operating at a less then optimal level when dealing in consumer markets, and could benefit from taking a more proactive approach in gathering internal and external information.

CONCLUSION

This study is intended to add to the developing research in the small business, knowledge management and family business arenas. The study's key contribution is its use of multiple respondents from each organization to develop an empirical database relating data acquisition to ownership structure in small businesses. As we move forward in the information age, business academicians and managers are placing increasing levels of attention on the importance of managing information and knowledge in assisting firms in their strategic planning to maintain competitive advantages. Thus, empirical research into aspects of data acquisition and use is necessary and a key ingredient in gaining an understanding of how firms manage information and factors that impact the knowledge management process.

The study also provides results that have managerial implications for both nonfamily and family business managers. The study suggests managers in all small firms might want to consider increasing both the acquisition of more external information and the use of various processes for gathering and sharing information. Further, the study indicates family businesses could possibly benefit from additional focus on all forms of data gathering and use, particularly when competing in consumer markets.

Given that the study was based on a limited sample of small businesses and on the growing body of literature suggesting the increasing level of importance of knowledge management to maintain competitive advantage in the marketplace of the information age, additional research is necessary. The key focus of that research should be on relating information gathering and use to actual competitive performance in rapidly changing markets. Given the historically conservative, internally focused nature of family business managers, results of the research are even more critical in keeping family firms healthy.

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Donald Gudmundson *is an Associate Professor of Management in the College of Business Administration at the University of Wisconsin Oshkosh. Research interests include family business, workforce diversity and organizational culture.*

E. Alan Hartman *is a Professor of Management and Dean of the College of Business Administration at the University of Wisconsin Oshkosh. Research interests include organizational innovation and family businesses.*

C. Burk Tower *is Professor of Management in the College of Business Administration at the University of Wisconsin Oshkosh. He also serves as Faculty Liaison to the Wisconsin Family Business Forum.*