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**THE EFFECTS OF THE SMALL BUSINESS FOUNDER'S NEED FOR
COGNITION ON EARLY STAGE PERFORMANCE**

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ABSTRACT

This study assesses the relationship between the need for cognition and early stage organizational performance for a sample of small business owners who started new childcare ventures. Their need for cognition was assessed as a predictor of performance that was measured by sales growth. The data supported a significant positive relationship between need for cognition and performance as predicted. This study suggests that the cognitive characteristics of small business owners can influence the performance of their businesses.

INTRODUCTION

Small businesses represent an appropriate research setting for investigating relationships between individual cognition and economic performance. Often small businesses are owned and managed by a single individual who is assisted by a handful of employees. These smaller, single owner businesses represent a significant segment of the economy. According to a NFIB poll (Dimarob, 2005), single individuals own 59% of small businesses, and 85% are managed by the owner(s). Firms with fewer than ten employees comprise 4.6 million businesses or 78.6% of the number of businesses in the United States (U.S. Census Bureau, 2004). Decisions small business owners make to configure their small businesses to adequately fit the environments in which they operate are likely to affect the performance of their businesses.

Because assessing the environment and configuring the business to fit that environment often involves substantial cognitive activity by the owner, the cognitive characteristics of

the owner can affect the early stage performance of small businesses. This study assesses the relationship between need for cognition (Cacioppo and Petty, 1982), a cognitive attribute reflecting a stable individual tendency to engage in effortful cognitive activity, and sales growth, a metric of organizational performance, for a sample of small childcare businesses.

THEORY AND HYPOTHESES

Prior research has provided evidence of a link between environmental fit and performance in established organizations. Venkatraman and Prescott (1990) offered a conceptual framework relying on a normative profile they hypothesized would be appropriate for a company in a given environment. Using two samples drawn from the Profit Impact of Marketing Strategy (PIMS) research database, they offered evidence of a negative relationship between performance and misalignment from a normative strategic model. Pelham (1999) found evidence to suggest alignment of both strategy and firm competencies with

environmental conditions are necessary to achieve good performance. Beal (2000) found evidence of a relationship between the alignment of strategy and the environment, and scanning behavior. This study operationalized scanning behavior as the scope and frequency of scanning undertaken by company CEOs. Forte, Hoffman, Lamont and Brockmann (2000) sampled 235 short-term acute-care hospitals in Florida and found evidence supporting the relationship between organizational performance and the fit between organizational strategy, using the Miles and Snow (1978) typology and environmental contingencies. Dobni and Luffman (2003) found evidence suggesting that certain organizational structures will outperform others only in certain environmental conditions, rather than uniformly in all environmental conditions. These and other studies support the premise that greater organizational performance is the result of better strategic alignment with the environment. Additionally, appropriate organizational strategy decisions and related organizational configuration stemming from both accurate scanning of the environment to acquire relevant information and correct interpretation of that information will also result in greater organizational performance (Venkatraman and Prescott, 1990; Yeung, Selen, Sum, and Huo, 2006). The effortful gathering and evaluation of information, along with the careful consideration of alternative courses of action reflects a logic-based reasoning process rather than simply a hasty, intuitive decision process based on little or no information.

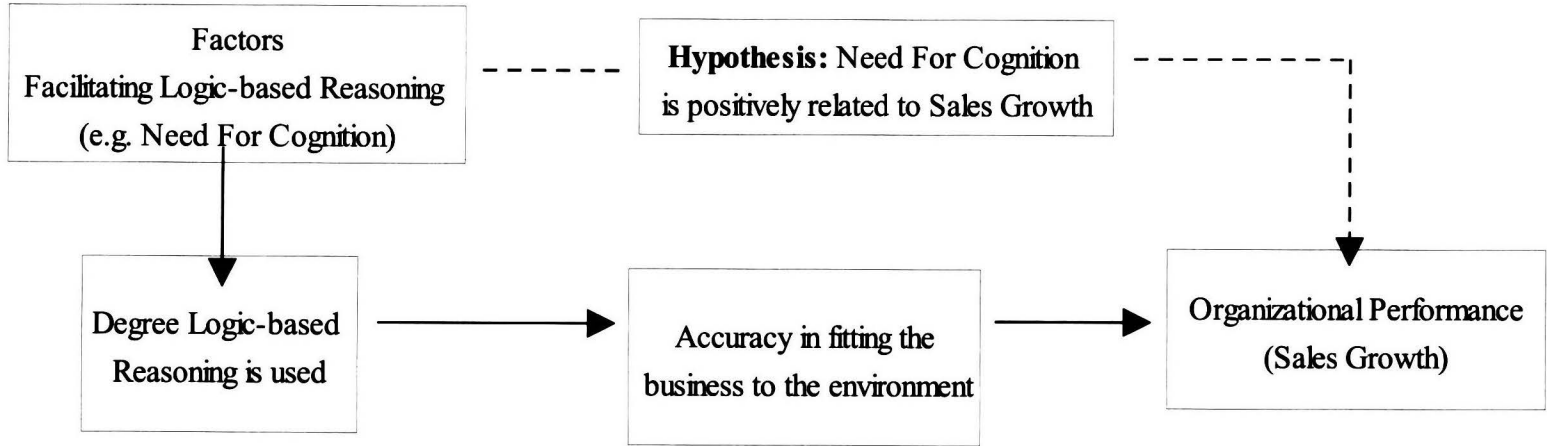
The conceptual model for this study is illustrated in Figure 1 and relates to the degree a logic-based rather than intuitive decision-making process is used by the small business owner in making important decisions. The model is based on what Kahneman (2003), Sloman (2002), Stanovich and West (2000), Epstein (1994) and others have described as dual process theories of reasoning used in decision-making. The experiential (Epstein, 1994) or System 1 (Kahneman, 2003; Stanovich and

West, 2002) method of reasoning describes a method of reasoning that is fast, automatic, effortless and affected by emotion. In contrast, the rational (Epstein, 1994) or System 2 (Kahneman, 2003; Stanovich and West, 2002) method of reasoning operates in a slow, controlled, effortful manner. Kahneman (2003) describes interaction between the two systems as a continual operation of System 1 with continual but often lax monitoring and occasional intervention of System 2 to correct or override a System 1 decision.

Sloman (1996) characterizes the systems as having overlapping domains that vary as a function of the individual's knowledge, skill, and experience. He describes each system working within a single individual as "...two experts who are working cooperatively to compute sensible answers" (p. 6). Alternatively, the two systems may derive different solutions to a problem, leaving the individual with internal conflict as to which alternative course of action to pursue. System 1 reasoning would likely result in rapid intuitive decision-making utilizing heuristics. System 2 reasoning would be more objective and logical.

Several factors have been found in experimental research to either facilitate or impede the use of logic-based (System 2) reasoning (Kahneman, 2003). Some of the factors that impair an individual's ability to utilize logic-based reasoning include time pressure (Finucane, Alhakami, Slovic, and Johnson, 2000) and concurrent involvement in multiple cognitive tasks (Gilbert, 1989, 1991, 2002). Factors that facilitate the use of logic-based reasoning include intelligence (Stanovich and West, 2002), exposure to statistical thinking (Agnoli, 1991; Agnoli and Krantz, 1989; Nisbett, Krantz, Jepson, and Kunda, 1983), and need for cognition (Shafir and LeBoeuf, 2002; Cacioppo and Petty, 1982). This experimental research has typically involved having individuals attempt to solve a probabilistic reasoning problem and then measuring the effect these factors had on the extent of correct answers were given.

Figure 1 - Conceptual Model and Hypothesis



The "need for cognition" (Cacioppo and Petty, 1982) is the variable from this list of experimentally tested variables that influence System 2 reasoning used in the present study to predict the degree the small business owner is likely to engage in logic-based reasoning. They defined the variable as "...a stable individual difference in people's tendency to engage in and enjoy effortful cognitive activity" (Cacioppo, Petty, Feinstein, and Jarvis, 1996 p. 198). Cacioppo and Petty (1982) developed an instrument to measure an individual's propensity to engage in such effortful cognition. Researchers investigating the effect of this construct on behavior have demonstrated that "... individuals low in need for cognition were likely to endorse items depicting heuristic rather than vigilant or effortful information processing, whereas individuals high in need for cognition were likely to endorse items depicting effortful rather than heuristic information processing" (Cacioppo et al., 1996, p. 202). Cacioppo et al. note that "... individuals high in the need for cognition are more likely to seek information about a wide range of tasks, issues and current events than are individuals that are low in need for cognition" (p. 238).

This construct is particularly relevant for small business decision-making research given the preponderance of small businesses owned and managed by a single owner who usually lacks the business education and exposure to business management knowledge that such an education provides. According to a recent poll by Intuit Inc. (Schweitzer, 2007), owner of the business software company QuickBooks, approximately 77% of small business owners do not have a business degree. Individuals who embrace cognitive activity rather than avoid it are more likely to be motivated to undertake the challenges of this information gathering, and to put forth the cognitive effort required to analyze the information that is obtained. This is likely to be even more difficult in the case of the small business owner lacking the formal business education that likely would have educated

the owner as to what information is relevant to a logic-based decision and where that information might be found.

The process of gathering information and considering alternative solutions to complex business issues is often time consuming, expensive and difficult. Verplanken, Hazenberg, and Palenewen (1992) found evidence suggesting that subjects who rated higher in the need for cognition desired to see more information than subjects who were lower in the need for cognition. In addition, subjects with a higher need for cognition put more effort into external information search prior to making a decision (Verplanken, 1993). Examples of important decisions facing small business owners include specifying the basic functional aspects of the new venture and making necessary adjustments to the configuration during the initial period of operation such as changing the marketing activities or product or service offerings. The small business owner who uses System 2 reasoning will likely undertake more information gathering, make less use of heuristics in evaluation of the information that is gathered, consult more sources of information, and conduct more quantitative analysis than a small business owner who uses System 1 reasoning in making these decisions. The degree a small business owner uses System 2 reasoning should, therefore, be positively related to the correctness of the evaluation of it between the venture and the environment, and ultimately be positively related to performance.

The higher level of motivation to engage in effortful cognitive activity evidenced by persons with a higher need for cognition could be the result of several factors. Such individuals likely have previously developed skills in utilizing informational resources, received positive feedback from prior cognitive endeavors that increases self confidence and intrinsic motivation for future effortful cognitive endeavors, and have accumulated a greater knowledge base that facilitates that activity (Cacioppo et al.,

1996). Thus, the small business owner with a higher need for cognition would likely engage in more information search, indicative of System 2 reasoning, than his or her counterpart with a lower need for cognition.

Recent research in entrepreneurial cognition also supports the utility of this construct. Entrepreneurial cognition affects decision-making related to the assessment of economic opportunities, configuration of the new venture prior to startup, and adjustment of that configuration during the initial operating periods of the venture (Mitchell, Busenitz, Bird, Gaglio, McMullen, Morse, and Smith, 2007). This cognitive research seeks to explain the differences that exist between individuals in entrepreneurial behavior (Baron, 2004). Some cognitive differences are attributable to the degree of entrepreneurial learning (Krueger, 2007). For example, novice entrepreneurs tend to emphasize novelty in recognition of opportunities while repeat entrepreneurs tend to emphasize the expected financial returns when assessing opportunities (Baron and Ensley, 2006). Constructionist views of entrepreneurial cognition also support an experienced-based metamorphosis in cognition as the entrepreneur gains experience and uses that experience to improve knowledge structure and content (Krueger, 2007; Karp, 2006). Cognitive characteristics, such as the need for cognition, likely affect the rate at which this metamorphosis occurs.

Entrepreneurial ventures of significant size involve more than one individual. Therefore, the interactions of individuals with cognitive differences influence the trajectory of the venture through the collective cognition of the management team (West, 2007). Having to prepare a business plan in advance of recruiting other investors or securing substantial levels of financing usually results in more information search and analysis by the owners and their advisors (Cooper, Folta, and Woo, 1995). Unfortunately for the great numbers of single-owner small businesses,

this collective cognition may be limited to brief interactions with professional advisors such as Certified Public Accountants, SBDC personnel and bankers, or it may not occur at all. Compared to the collective decision-making by multiple owners and managers involved together in a business, the decision-making by the single owner and manager of a small business will likely be more heavily influenced by the owner's cognitive characteristics.

Analytic activities are also characteristic of System 2 reasoning (Shafir and LeBoeuf, 2002). There is empirical support for a relationship between the need for cognition and the degree individuals analyze information before making a decision. Smith and Levin (1996) found that individuals with a higher need for cognition were less susceptible to framing effects. Stanovich and West (1999) reported that individuals higher in cognitive ability and the need for cognition were more likely to give a normative response to a variety of cognitive tasks. In addition, they found subjects with a higher need for cognition and cognitive ability more readily chose a normative solution after they received slightly more information. These findings provide evidence to support the existence of a relationship between analytic performance and the need for cognition.

The evidence found in prior studies that support the existence of a positive relationship between an individual's need for cognition and both the amount of information search conducted and the ability to properly analyze the information should translate into higher organizational performance. Therefore, a small business owner that possesses a high need for cognition should be more likely to utilize logic-based reasoning in decision-making than a small business owner with a low need for cognition. An increased use of logic-based reasoning should result in higher performance.

Hypothesis: A small business owner's need for cognition is positively related to organizational performance.

Sample

This study sampled the population of daycare providers licensed in Florida during 2004 and 2005. A single industry was chosen to minimize possible industry effects. The childcare industry was chosen because most businesses employed fewer than 10 employees and are owned and managed by a single person. Therefore, this characteristic maximizes the likelihood that a single person is involved in the decision-making process consistent with the research objective of assessing the effect on a cognitive characteristic on organizational performance. In addition, the state legal requirements mandating that all participants in the industry be licensed and the roster be deemed public information have allowed easier identification of all possible respondents.

The list of licensees was obtained from the supervising state agency. Licensees with an assumed business name and not obviously affiliated with a nonprofit organization were selected for the sample. Nonprofit owned daycare businesses are generally subject to decision-making by a supervisory board and therefore not relevant to the individual cognition assessment objectives of this study. A small financial reward was offered for return of the completed surveys. A test study mailing was sent to 403 potential subjects. Because the response rate was low (26/403 = 6.5%), the primary study included a revised protocol. In the revised protocol, potential respondents were called and only those agreeing to participate were sent a survey for completion. A total of 1,897 calls to business owners were attempted. Nine hundred forty two calls were unable to be completed because of disconnected phone service, wrong numbers or repetitive busy signals, resulting in 955 calls completed. Two hundred ninety three potential respondents declined to participate, and 14 identified their businesses as owned by a non-profit

organization and therefore were excluded from the sample. Thus, 648 childcare business owners were sent surveys. A 28.9% response rate (187/648) was achieved using this revised protocol. Substantially, all of the businesses had fewer than 10 employees.

Measures

Need for Cognition

The need for cognition construct stems from research by Cacioppo and Petty (1982) who defined the construct as "...people's tendency to engage in and enjoy effortful cognitive activity" (Cacioppo et al., 1996, p. 197). The scale has evolved over two decades and had been used in over 100 empirical studies. This study used the current short form version. This version contains 18 items and uses a five choice Likert scale with "extremely uncharacteristic" and "extremely characteristic" as the anchors. The scale seeks a response to items such as, "I prefer complex to simple problems."

This current scale possesses high internal consistency, with Cacioppo et al. (1996) reporting a Cronbach's alpha of approximately .90 and a unitary factor structure with the highest loading factor accounting for approximately 37% of the variance. The scale achieved a Cronbach's alpha of .82 in the present study. Its validity in determining the extent of experiential or rational reasoning has been demonstrated:

Individuals low in need for cognition were likely to endorse items depicting heuristic rather than vigilant or effortful information processing, whereas individuals high in need for cognition were likely to endorse items depicting effortful rather than heuristic information processing. (Cacioppo et al., 1996, p. 202).

Sales Growth

Small businesses typically are privately held and somewhat unsophisticated in their accounting procedures. Consequently,

measures of performance based directly or indirectly on net income are problematic for businesses of this size. Measurements of performance that use net income are often subject to variations in how certain disbursements are treated. Expenses that are somewhat personal in nature may be shown as business expenses, depreciation rates may be tax-based and not based on the economic life of the asset, and intangible assets may receive a variety of treatments. The cash method of accounting may be used for many small service businesses. This accounting method may differ materially with an accrual basis of accounting required under generally accepted accounting principles.

Because of the inherent lack of reliability in measuring performance based on income for small businesses, the increase in sales from the first full twelve months to the second full twelve months was used to operationalize performance. The amount of increase in sales should be reflective of the small business owner's ability to make logic-based decisions after scanning the environment and using the information that is obtained to properly configure the business.

A single item scale measured the percentage increase in sales for these two time periods by asking the respondent to identify the increase or decrease in 10% increments ranging from a 91-100% decrease to a more than 100% increase. The instrument suggested respondents obtain this information from their tax returns thereby increasing the likelihood that their accountants reviewed the amounts used to compute the percentage change and the sales were calculated in a consistent manner. The scale results were converted to Z-scores prior to performing analyses.

Amount of capital invested

The inclusion of this control variable was based on prior research where Cooper et al. (1995) previously found a significant relationship between this variable and entrepreneurial information search. They

attributed the significance of the relationship between the amount of capital invested and the information search to a greater need to conduct more due to diligence as the requirement for capital from sources other than the owners of the business increases. These capital providers would typically require preparation of formal business plans or comprehensive loan applications. Thus, in the context of the present study, an increase in logic-based decision-making could result from the need to justify a request for funding rather than the need for cognition. This study measured this control variable with a one-item, eight choice scale with values for the amount of capital invested at the time of the first sale ranging from "under \$5,000" to "\$500,000 and over."

Years of Formal Education and Number of Business Classes Completed

The present study's hypothesis is that an individual with a higher need for cognition would be more likely to employ logic-based reasoning resulting in higher organizational performance than an individual with a lower need for cognition. An alternate cause of logic-based reasoning in making strategic decisions that is consistent with prior experimental research is the degree of exposure to normative models of management or critical thinking skills through higher education, particularly in general and business management classes. To assess this possibility two additional control variables were included in the instrument. The highest level of education was measured on a one item, six point scale with "didn't finish high school" and "doctoral degree" as the scale anchors. The number of college level business classes completed was assessed with a one item, five point scale with "none" and "4+" as the scale anchors.

RESULTS

Table 1 reports the correlations, means, and standard deviations for the variables in this

study. Table 2 reports the results of a hierarchical regression conducted to predict the sales growth criterion variable that reflected organizational performance in this study. The hypothesis was tested by assessing the significance of the regression term corresponding to each control or predictor variable. The control variable representing the amount of initial capital invested was a significant predictor of the amount of sales growth ($t = 2.95; p < .01$). However, the control variables reflecting the amount of formal education or the number of college business classes completed were not significantly related to the sales change performance criterion variable.

The hypothesis predicted that a small business owner's need for cognition would be positively related to sales growth. This study found the need for cognition was significantly related to sales growth ($t = 2.50; p < .05$). Thus, the hypothesized positive relationship was supported.

DISCUSSION AND IMPLICATIONS

Many small businesses are owned and managed by a single individual. These owner-managers make many important decisions regarding their businesses. Their decision-making characteristics are likely to affect the quality of these important decisions and ultimately the performance of their businesses. Future cognitive research may identify several individual cognitive characteristics of small business owners that are significantly related to the performance of their businesses. Some cognitive characteristics have already been identified as significant predictors of decision-making

behavior and await evaluation of their utility in predicting behavior in an economic context such as small business management.

Therefore, it is appropriate to assess the significance of the relationships between these variables that have been identified by prior research as influencing decision-making behavior in other contexts and based on their effects on organizational performance. The present study assessed the relationship between organizational performance and an owner's need for cognition (Cacioppo and Petty, 1982) as a variable that predicts how much or how little a small business owner would be motivated to undertake effortful cognitive tasks such as information gathering and analysis prior to making significant decisions regarding their business. This effortful cognitive activity is consistent with a logic-based reasoning process, rather than an intuitive reasoning process.

The small business owner's need for cognition (Cacioppo and Petty, 1982) was positively and significantly related to organizational performance in this study. The hypothesis was based on the premise that the small business owners would be more likely to engage in the laborious gathering and analysis of information prior to making major decisions if he or she enjoyed effortful cognitive activity. Therefore, they would be more likely to utilize logic-based reasoning and less likely to rely on their intuition in decision-making related to making necessary adjustments to the operations of the small business in order to achieve a better fit with the environment. The resulting improvement in fit should result in increased organizational performance.

Table 1.- Correlations, Means, and Standard Deviations

	Variable	Mean	S.D.	1	2	3	4
1	Initial Capitalization	1.83	1.52				
2	Education Level	2.84	1.04	.29**			
3	No. of College Business Classes	2.62	1.68	.14	.30**		
3	Need for Cognition	3.28	.64	.26**	.33**	.25**	
4	Percent change in sales	.00 ¹	1.03	.27*	.18	.07	.30**

* $p < .05$ level (2-tailed); ** $p < .01$ level (2-tailed) N=116 ¹Converted to Z-scores

Past research has identified factors that would tend to increase the small business owner's motivation to undertake effortful cognitive activity. Individuals with a higher need for cognition are more likely to be skillful in accessing information sources. For example, Das, Echambadi, McCardle, and Luckett (2003) found that individuals with high need for cognition exhibited greater Internet search activity than low need for cognition individuals that included using the web to communicate by e-mail, search for information, search for task environment related information and to read about news and current events. While the Internet is only one source of information, it does represent a common, low-cost source of information for owners of smaller businesses. For these owners, it can not only provide information directly through review of vendor and customer websites, but can also serve as a portal to other sources of information such as advisors with specialized expertise, government agencies such as the SBA, new products, and services that might be offered by the business. High need for cognition individuals that have developed experience in accessing impersonal sources such as books, journals, databases, and personal sources such as Certified Public Accountants, Attorneys, and other business owners would likely have more information available for decision-making than a low need for cognition individual.

Higher need for cognition individuals have demonstrated increased intrinsic motivation for cognitive activity in situations where any short term rewards for that activity were not expected (Thompson, Chaiken, and Hazelwood, 1993; Cacioppo et al., 1996). The extrinsic rewards for small business owners can diminish, particularly during the early stages of the business and during periods of significant change in the business environment, as refinement of the business model occurs. The higher need for cognition

owner would, therefore, be expected to be more analytic during the more challenging times for the business and more successful at

reconfiguring the business as needed.

Insights gained from this study have implications for advisors of small business owners. The ability to apply existing decision-making theory, such as the dual processes of reasoning theory, adds important insights into the actual decision-making behavior of small business owners that likely affect the performance and even the survival of their businesses. The increased cognitive motivation of a small business owner provided by a higher need for cognition is certainly a positive factor in improving decision-making. However, it is optimistic to expect that even a highly motivated small business owner will acquire a high degree of proficiency after using sophisticated analytic techniques commonly acquired through a college level business education. Therefore, interactions with small business advisors that provide the small business owner with alternative informed viewpoints and information that he or she may have been overlooked hold great potential value for improving the quality of business decision-making. Small business advisors have the capacity to expedite the information gathering and analysis by virtue of their education and experience, thereby allowing the cognitively motivated small business owner to be more comprehensive and efficient in their environmental scanning and information analysis.

Limitations and Suggestions for Future Research

The dual process theory of reasoning has received only modest testing in experimental studies and very little testing in field studies. Consequently, methods of assessing criterion variables reflective of each system of reasoning are in the early stages of development. At some future stage of theory development intermediate variables such as normative models of environmental scanning and analytic behavior could be included as part of what is conceptualized as logic-based reasoning in this study. In the interim, relationships between individual cognition

Table 2 - Results of Hierarchical Regression Analysis

Criterion: Percent Change in Sales				
Predictor Variables	B	SE_B	β	t
Step 1				
Constant	-.32	.15		-2.21*
Initial Capitalization	.18	.06	.27	2.95**
ΔR^2	.07			
Step 2				
Years of Formal Education	.11	.09	.11	1.15
ΔR^2	.01			
Step 3				
No. of College Business Classes	.02	.06	.00	.03
ΔR^2	.05			
Overall R^2	.13			
Adjusted R^2	.10			
Model F	4.18**			
N	116			

* $p < .05$ ** $p < .01$

factors that affect decision-making and organizational performance can be assessed under the assumption that these factors are likely to affect numerous important decisions made by the small business owner in a similar fashion. This assumption will likely be refined as the result of future research in this domain.

Collecting cognitively based data from small business owners often requires the use of self-report measures and reliance on the recollection of past behaviors or attitudes. However, busy entrepreneurs and small business owners are often reluctant to participate in survey-based data collection efforts (Newby, Watson, and Woodliff, 2003; Markman, Balkin, and Baron, 2002). Consequently, the length and related scope of survey instruments is limited, as is the ability to assess the relationship of large numbers of variables, and often precludes the desirable

use of multiple measures of a single construct.

Although limiting this study to a single industry reduces industry effects, it also reduces the generalizability of the results. The childcare industry participants are often very small businesses with owners that vary greatly as to business experience and education. Similar studies of participants in other industries will further assess the extent these variables affect small business performance.

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