AN ABSTRACT OF THE DISSERTATION OF

Robert L. Fuller for the degree of Doctor of Education in Education presented on April 10, 2008.
Title: An Empirical Comparison of the Absorptive Capacity and Responsiveness of Russian and American Growth-Oriented Small and Medium Enterprises (SMEs).

Abstract approved:

Darlene F. Russ-Eft

This study examines the relationship between organizational absorptive capacity and organizational responsiveness to changes in their environment exhibited by growth-oriented SMEs in Russia. Adopting the theoretical framework and methodology used by Liao, Welsch and Stoica in their 2003 study of the absorptive capacity and organizational responsiveness of U.S. growth-oriented SMEs, this study compares and contrasts their results for U.S. SMEs with the results for the sample of Russian SMEs.

A Russian translation of the data collection questionnaire was administered to senior managers of 825 SMEs from across Russia. A sample of 91 Russian growth-oriented SMEs for the study was identified from the respondents..

Analysis was carried out using a hierarchical multiple regression analysis approach. First, a full regression model was run with organizational responsiveness as the dependent variable, and the two constructs of absorptive capacity (external knowledge acquisition and internal knowledge dissemination), environmental turbulence, strategic orientation, firm size and age were the independent variables.

Next, interaction terms for pairs of the independent variables were substituted into the second block of the multiple regression model one at a time, in order to test the interaction effects of the variables over and above the variables alone. In all, seven multiple regression models were examined.

This study confirmed the primary hypotheses of Liao et al. for the sample of Russian SMEs: organizational responsiveness of growth-oriented SMEs is positively related to the external knowledge acquisition and internal knowledge dissemination capabilities of the firm. The current study could not confirm other of Liao et al.'s hypotheses regarding the moderating effects of strategic orientation and environmental turbulence. This research demonstrated a positive relationship between organizational age and responsiveness for the Russian SMEs that was not present for the American SMEs. There was also a demonstrable moderating effect of firm strategic orientation on organizational responsiveness based on age.

These findings have implications for theory, since the results demonstrated by Liao et al. could not be completely replicated. This analysis led to implications for further research and implications for practice for both entrepreneurs and entrepreneurship educators in emerging economies.

An Empirical Comparison of the Absorptive Capacity and Responsiveness of Russian and American Growth-Oriented Small and Medium Enterprises (SMEs)

by

Robert L. Fuller

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APPROVED:

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Dean of the College of Education

Dean of the Graduate School

I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

Robert L. Fuller, Author

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CHAPTER ONE: FOCUS OF STUDY AND SIGNIFICANCE

As evidenced by a recent edition of the journal *Entrepreneurship Theory and Practice* devoted to the subject (Harrison & Leitch, 2005), there is an increasing interest in the learning processes of entrepreneurs and the organizations they create and operate. Although Senge (1990) popularized the ideal of the learning organization during the 1990s, Prange (1999) pointed out that the literature has been discussing ideas such as *organizational learning*, the *learning organization,* and *knowledge management* as ways of increasing the knowledge intensity of companies for much longer, going back to the early 20th century. This has, in turn, led to a renewed focus on the essence of the learning process through which knowledge is generated (Dierkes, Berthon Anthal, Child, & Nonaka, 2001). This interest in the learning processes of entrepreneurs crosses the spectrum from *theory* (the realm of academics) to *practice* (the realm of practitioners) and from *content* (the knowledge possessed) to *learning* (the process by which knowledge is acquired). Easterby-Smith and Lyles (2003) have provided a framework for mapping the fields of organizational learning and knowledge management based on these two continua. In fact, numerous frameworks of organizational learning have been proposed in organization and management literature. Many of these conceptualize learning as a process of knowledge acquisition, knowledge assimilation, and knowledge exploitation (Argote, 1999; Cohen & Levinthal, 1990; Huber, 1991). Other researchers have looked specifically at

some of the alternative methods small and medium enterprises (SMEs) use to acquire external knowledge (McEwen, 2004; Yli-Renko, Autio, & Sapienza, 2000).

Another line of research regarding entrepreneurs and their organizations that has been growing in interest is the role entrepreneurship plays in contributing to the growth and stabilization of emerging market economies (Mustar, 2002). A recent report to the Secretary General of the UN by the Commission on the Private Sector and Development (2004) pointed out that:

> Entrepreneurship flourishes perhaps most in small and medium firms with significant potential for growth and innovation. This dynamic segment is typically the hotbed of entrepreneurship and innovation. It can drive economic growth, create jobs and foster competition, innovation and productivity. (p. 9)

Mustar (2002) also pointed out that the most successful of these high-growth small and medium enterprises (SMEs) were characterized as "participatory and learning" (p. 50). Their top executives tended to be more academically qualified than the ordinary run of SME directors. Of special note was Mustar's characterization that the most successful high-growth enterprises in his study did their best to upgrade the abilities of their staff through ongoing training at all levels.

While the importance to economic growth and stability provided by entrepreneurship and high-growth firms, particularly SMEs, has been widely documented, basic research on the processes these firms utilize for achieving and maintaining their growth is lacking. Some research has been done on growth-oriented

entrepreneurs in the U.S., but not much is known about growth entrepreneurs in other countries. The emphasis on growth-oriented SMEs not only reflects their importance to the economies of their countries but also continues the response to the calls for more studies of entrepreneurial firms (Heneman, Tansky, & Camp, 2000). This emphasis on growth was further reinforced by Conceicao and Heitor (2002) who conceptualized the accumulation of knowledge as the fundamental driving force behind growth.

At the nexus of these two lines of investigation (organizational learning and high-growth SMEs), Liao, Welsch, and Stoica (2003) examined the relationship between a growth-oriented SME's *absorptive capacity* and its ability to respond to changes in the external environment (i.e., *organizational responsiveness*). Drawing on earlier definitions of organizational absorptive capacity (Cohen & Levinthal, 1990; Leonard-Barton, 1995; Prahalad, 1995,August; Zahra & George, 2002) and organizational learning theory (Cyert & March, 1963; Huber, 1991; March, 1991), Liao et al. posited relationships between the two major dimensions of absorptive capacity (external knowledge acquisition and intrafirm knowledge dissemination) and organizational responsiveness. Liao, et al. also looked at the moderating effects of strategic orientation and environmental turbulence on absorptive capacity. Their results demonstrated that the responsiveness of growth-oriented SMEs is expected to increase if (a) they have well-developed capabilities in external knowledge acquisition and intrafirm knowledge dissemination, (b) they have a well-developed external knowledge acquisition capability and they adopt a more proactive strategy, and (c)

they face a turbulent environment and have a well-developed intrafirm knowledge dissemination capability.

One shortcoming of their study in terms of broader international application, however, was that these findings were developed from a sample of growth-oriented SMEs located only in the U.S. Another significant shortcoming of Liao, et al. is the abstraction of absorptive capacity to only two dimensions (external knowledge acquisition and internal knowledge dissemination). While this follows some theory (Heeley, 1997), later conceptualizations (Zahra & George, 2002) of absorptive capacity included more discrete dimensions of knowledge acquisition, assimilation, transformation, and exploitation. They further divided these dimensions into two categories: potential absorptive capacity, consisting of acquisition and assimilation; and realized absorptive capacity, consisting of transformation and exploitation. The distinction between Liao et al. (2003) and Zahra and George is particularly noticeable in the case of prior knowledge. Cohen and Levinthal (1990) stated "prior knowledge permits the assimilation and exploitation of new knowledge" (p. 191). Liao et al. seem to assert that their dissemination dimension subsumes assimilation, their two dimensions represent potential absorptive capacity; and since organizational responsiveness can be viewed as part of realized absorptive capacity, focusing on the additional dimensions of realized absorptive capacity would constitute "conceptual tautology" (p. 66). I believe that these shortcomings in Liao et al. are at least partially mitigated by their focus on the moderating effects of turbulent environments on absorptive capacity. This follows Zahra and George's finding that potential absorptive

capacity plays an important role in renewing a firm's knowledge base and building the skills necessary to compete in changing markets (p. 196).

Significance of the Study

This study is significant from a scholarly perspective for three reasons. First, the study takes prior work done on a sample of growth-oriented SMEs in the U.S. (Liao et al., 2003) and extends this previous research into another culture in an emerging economy by applying the same instrument to a sample of growth-oriented SMEs in Russia.

Second, the proposed study may discover that the findings of the original research either do not hold true when applied to another culture and/or economy, or may identify additional factors that may need to be considered when applying this methodology to a different culture and/or economy. This finding would provide an insight to future research possibilities involving different samples of growth-oriented SMEs in an effort to confirm and generalize the new findings or perhaps lead to new theory that would drive new research.

Finally, this study may in fact confirm and generalize the previous work by Liao et al. (2003). By confirming their hypotheses when applied to a different sample from a different culture and economy, the current study will help to validate that the findings of the previous research are generally applicable to the population of growth-oriented SMEs as a whole. This generalization may open doors for further research with different populations.

These three reasons indicate that this study will have scholarly significance. However, the study may also have practical significance as well in the realm of executive development and training both in Russia and elsewhere.

If this study confirms the hypotheses of Liao et al and identifies that their conclusions are generally applicable to the population of growth-oriented SMEs across cultures and economies, it will add new credibility to the approach of various economic development organizations, such as the Beyster Institute of the Rady School of Management at the University of California San Diego and others, whose entrepreneurship development activities in Russia and other emerging economies is based on the largely anecdotal evidence that the core learning needs of growth entrepreneurs do not vary widely across cultures. This does, however, fit with the notion of the homogeneity of management challenges among growth-oriented SMEs regardless of the specific firm size, revenue level, or industry, that has previously been identified (Chan, Bhargava, & Street, 2006).

On the other hand, if this study does not confirm the hypotheses of Liao et al. (2003), it may have a dramatic significance to the practices of those economic development organizations devoted to training growth entrepreneurs in emerging economies, such as those listed above. In this case, they will be forced to investigate other factors that may be contributing to the successes they are achieving, in order to ground their training practices in the appropriate applicable theory.

Statement of the Problem Situation

Building on the foundation of extensive research on if, how, and when organizations respond to environmental changes, Liao, Welsch, Stoica, and Yoo (2002) began an examination of the relationship between absorptive capacity and organizational responsiveness in the context of small and medium-sized enterprises (SMEs). Using the widely accepted definition of absorptive capacity put forward by Cohen and Levinthal (1990) as a multidimensional construct involving the ability to acquire, assimilate, and disseminate knowledge within the organization, Liao, et al. demonstrated a positive relationship between absorptive capacity and organizational responsiveness. Further they identified significant differences between high performing and low performing SMEs in the patterns of relatedness among the three dimensions of absorptive capacity and suggested future research into those differences. Liao et al. (2003) followed up on that study with an empirical investigation of the relationship between absorptive capacity and responsiveness of U.S. based growth-oriented SMEs. Their findings yielded an important managerial implication for SMEs, namely that developing internal organizational capacities in acquiring and disseminating knowledge is very important in aligning organizations with external environments. They suggested further research could include extending their framework to other samples of high-growth SMEs to see if the findings from the current study still hold.

Liao et al., like most of the research in organization science, was focused in the West, specifically the United States. As theory is developed, however, its ability to

explain and to predict entrepreneurial phenomena outside the U.S. is predicated on broadening the scope of inquiry to include cultural considerations (Hofstede, 1993; Stewart, Carland, Carland, Watson, & Sweo, 2003). As Stewart et al. pointed out, "…one of the more interesting domains is entrepreneurial activity in the formerly communist countries, areas where the entrepreneurial context is riddled with discontinuous ideological, political, economic, and social change" (p. 42).

Based on the seminal work of Liao et al. (2003) with U.S. growth-oriented SMEs, this study seeks to compare empirically the relationship they identified between absorptive capacity and organizational responsiveness of U.S. growth-oriented SMEs with a sample of Russian growth-oriented SMEs.

Purpose of the Study

By replicating the methods and theoretical framework used by Liao et al. (2003) with a new sample of growth-oriented SMEs from Russia, this study will highlight the similarities between Russian and U.S. growth-oriented SMEs, as well as document any statistically significant differences. Such similarities and differences will focus on the dimensions of external knowledge acquisition and intrafirm knowledge dissemination with organizational responsiveness. A positive relationship (in other words, more similarities than differences) between the results from Russia and the U.S. will provide an additional empirical element to the extant anecdotal belief in the efficacy of basing training provided to growth-oriented SMEs in emerging economies on principles proven effective with U.S. growth-oriented SMEs (Foundation for Enterprise Development, n.d.).

Delineation of the Research Problem

Liao et al. (2003) tested four sets of hypotheses derived from a conceptual model of the different dimensions of absorptive capacity to examine the effect of absorptive capacity on organizational responsiveness, as well as the moderating effect of environmental turbulence and strategic orientation. I propose to test those same hypotheses in this study with a new sample of Russian growth-oriented SMEs and then compare and contrast the findings with Liao et al.'s findings for their sample of American growth-oriented SMEs.

Theoretical Framework

Since this study is designed to replicate the methods and theoretical framework of Liao et al. (2003), it is important to describe that framework. They began with a review of what they refer to as the "traditional research on organizational responsiveness" (p. 64). This included the body of literature that attempts to identify the forces that drive transformation in organizations in response to changes in their environment. Their conclusion was that, despite the large volume of research done over the years (their review goes back to Schumpeter's (1942) seminal work), there remained significant gaps in scholars' understanding of organizational responsiveness to environmental change.

Another gap in the research upon which they based their study was the "particularly prominent void in the area of organizational adaptation in the context of SMEs, especially growth-oriented SMEs" (Liao et al., 2003, p. 65). They pointed out that most of the extant research has been done in large organizations, but that SMEs,

by comparison, are often more innovative, customer-oriented, and quicker to respond to changes than the large firms. They cited Pelham's (2000) study as they contend that SMEs are more efficient than large companies at adapting, internalizing, and crystallizing information across the entire firm.

In their theoretical framework, Liao et al. (2003) looked at the relationship between absorptive capacity and organizational responsiveness. Beginning with the most widely cited definition of absorptive capacity by Cohen and Levinthal (1990):

> …absorptive capacity refers not only to the acquisition or assimilation of information by an organization but also the organization's ability to exploit it. Therefore, an organization's absorptive capacity does not simply depend on the organization's direct interface with the external environment. It also depends on the transfers of knowledge across and within subunits that may be quite removed from the original point of entry. Thus, to understand the sources of a firm's absorptive capacity, we focus on the structure of communication between the external environment and the organization, as well as among the subunits of the organizations, and also on the character and distribution of expertise within the organization. (pp. 131-132)

Liao et al. (2003) included a graphical depiction of their theoretical framework regarding the relationship between absorptive capacity and organizational responsiveness. That model is provided here in Figure 1. SME responsiveness represents the dependent variable. The two components of absorptive capacity,

external knowledge acquisition and intrafirm knowledge dissemination, are the predictors, and size and age are the controlling variables. The relationship between absorptive capacity and organizational responsiveness is moderated by the environmental turbulence and the SME's strategic orientation. Each of these variables will be discussed in the following paragraphs.

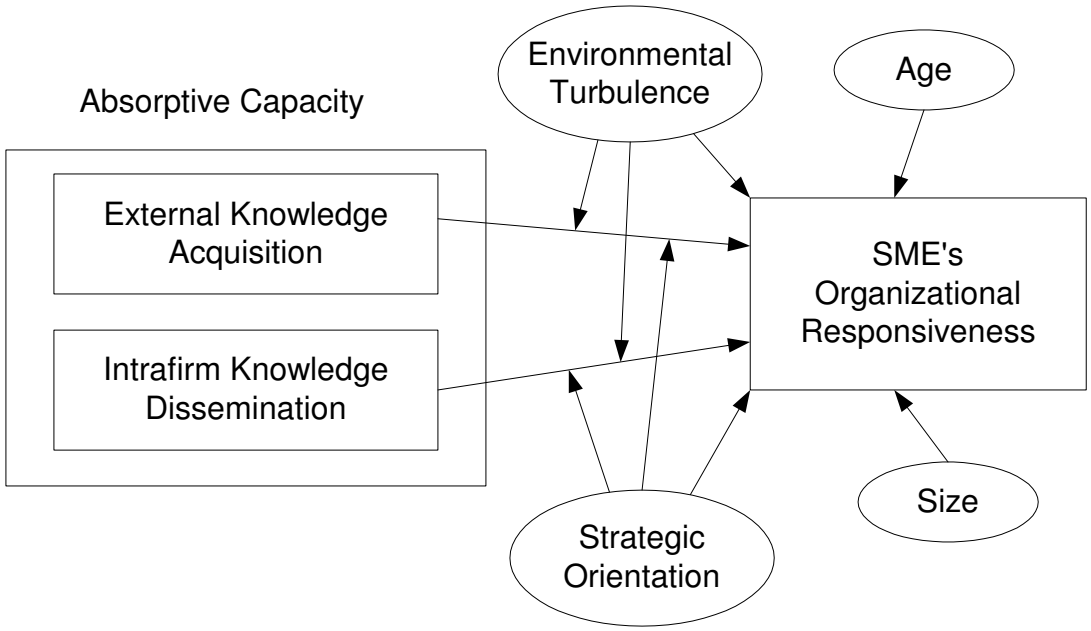

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Figure 1

Absorptive Capacity and Organizational Responsiveness (Liao et al., 2003)

External knowledge acquisition. This component represents what Liao et al. (2003) referred to as the "capability through which environmental signals are identified and information embedded in those signals is gathered and transmitted back to the organization" (p. 72). These activities include things like meeting with customers and influencers (such as retailers or distributors), meeting with industry

groups and trade partners, and looking at changes in the business environment (Kohli, Jaworski, & Kumar, 1993). How well the organization does that is then judged by the quantity of information and knowledge acquired. The more knowledge and information that can be collected over a given period of time, the better the organization's external knowledge acquisition capability (Kim, 1997).

Internal knowledge dissemination. Once the information is gathered and brought into the organization, the second major component of the organization's absorptive capacity is to identify the relevant knowledge and transmit or disseminate that knowledge to all the interested parts of the organization. Liao et al. (2003) argued that internalization of the new knowledge requires dissemination and assimilation. Effective dissemination requires significant knowledge flows and information sharing to ensure that the knowledge reaches the relevant people in the organization who can use the knowledge to design and implement a viable response (Dew, Velamuri, & Venkataraman, 2004). That response may come in the form of alternative, perhaps novel solutions that may not be closely related to the firms existing expertise. Internal dissemination of knowledge can occur through various activities in the firm such as departmental and interdepartmental meetings, company reports on customers or competitors, newsletters, or formal training programs (Kohli, Jaworski, & Kumar, 1993; Sinkula, 1994).

Organizational responsiveness. In Liao et al.'s (2003) framework, this concept refers to the action taken in response to relevant information acquired and subsequently disseminated within the organization. This view is consistent with

Kohli, Jaworski, and Kumar (1993). In Liao et al.'s view, organizational responsiveness occurs through distinct stages of knowledge and responsive action that flow to form a knowledge chain, citing Spinello (1998). Some companies have weak chains that "contribute to their lethargic unresponsiveness to turbulent market conditions" (Liao et al., p.68), while other firms exhibit knowledge chains that are "quite robust and powerful and are unfettered by impediments to organizational learning" (p. 68).

Environmental turbulence. Liao et al. defined environmental turbulence by high levels of change in key environmental variables over time, citing, among others, Dess and Beard (1984), Glazer and Weiss (1993), and Sinkula (1994). They claimed that prior empirical literature has associated environmental turbulence with changed behaviors of firms in the environment. This foundation in the prior empirical literature led them to posit that environmental turbulence creates both threats and opportunities in the relationship of the firm's fit and the environment in which it operates. An SME has to rely on its absorptive capacity to discern the threats from the opportunities. Liao et al. therefore concluded that "SMEs that operate in a more turbulent environment will engage in more active external knowledge acquisition and intrafirm knowledge dissemination as a way of realigning organizations with the external environment" (Liao et al., p. 70).

Strategic orientation. Using the typology of strategic orientation set forth in Miles and Snow (1978), Liao et al. incorporated the level of a firm's proactiveness in their theoretical framework. Miles and Snow described patterns of firm behavior

representative of the firm's level of proactivity in four ideal competitive strategy types: prospectors, defenders, analyzers, and reactors. Prospectors are characterized by their constant search for new products and markets. Defenders, on the other hand, operate within a narrow and stable product/market domain, and emphasize efficiency and resource conservation. Analyzer organizations are characterized by balance. They attempt to balance the prospectors' search for new products and markets with the defenders emphasis on efficiency. Reactors, as the name suggests, have no systematic strategy, design, or structure. Thus, reactors are not prepared for changes in their business environment. This is consistent with Gagnon, Sicotte, and Posada (2000) who conceptualized strategic orientation as entrepreneurial behavior, which is opportunity-driven and administrative behavior, which is governed by optimal use of resources. Previous empirical research (Johnson, 1995) also confirmed that strategic orientation influences the firm's perception of external events. This relationship would serve to moderate the relationship between absorptive capacity and organizational responsiveness.

Size and organizational age. Citing previous research in transaction cost theory, structural contingency theory, and resource dependence theory, Liao et al. (2003) identified size as one of the most important (and most frequently studied) organizational factors that affect firms' behavior in response to changes in their market environments. Market orientation, often used as an analog to absorptive capacity, has been shown empirically to co-vary directly with organization size (Liu, 1995). Citing work by Tushman and Romanelli (1985), they also identified that over

time organizations decline in terms of the quality and quantity of information processing. Based on this previous research, Liao et al. included organizational size and age as controlling factors in the relationship between absorptive capacity and organizational responsiveness.

Statement of Hypotheses

Based on the theoretical framework presented in Figure 1, the hypotheses tested by Liao et al. (2003) and proposed for this study are:

H1: External knowledge acquisition is positively related to SMEs' organizational responsiveness.

H2: Intrafirm knowledge dissemination is positively related to SMEs' organizational responsiveness.

H3a: The greater the environmental turbulence, the greater the impact of external knowledge acquisition on SME organizational responsiveness.

H3b: The greater the environmental turbulence, the greater the impact of intrafirm knowledge dissemination on SME organizational responsiveness.

H4a: The more proactive their strategic orientation, the greater the impact of external knowledge acquisition on SME organizational responsiveness.

H4b: The more proactive their strategic orientation, the greater the impact of intrafirm knowledge dissemination on SME organizational responsiveness.

Significantly, Liao et al. (2003) found that H1 and H2 relating the two tested aspects of absorptive capacity, external knowledge acquisition, and intrafirm knowledge dissemination, to organizational responsiveness were strongly supported

by their findings. H3a stating that environmental turbulence has a positive impact on external knowledge acquisition was not supported, but H3b stating that environmental turbulence has a positive impact on intrafirm knowledge dissemination was supported. H4a stating that a proactive strategic orientation has a positive impact on external knowledge acquisition was supported, but H4b stating that a proactive strategic orientation has a positive impact on intrafirm knowledge dissemination was not supported.

This study will compare and contrast the findings for Russian growth-oriented SMEs on these six hypotheses with the findings of Liao et al. on their sample of American growth-oriented SMEs.

Definition of Terms

The key terms used in this study are the following:

Absorptive capacity: a set of interrelated organizational capabilities related to acquiring, disseminating, and assimilating external information and knowledge. Cohen and Levinthal (1990) included not only the acquisition or assimilation of information by an organization but also the organization's ability to exploit it.

External knowledge acquisition: a firm's capability to identify and acquire externally generated knowledge that is critical to its operation. Acquisition of external knowledge reflects the identification of external environmental signals and the gathering and transmission across the organizational boundary of information from those signals.

Intrafirm knowledge dissemination: information gathered from the business environment is transferred to the organization and transformed through the internalization process consisting of dissemination and assimilation. Dissemination involves the communication of the generated knowledge to all relevant departments and individuals. Assimilation is the process of incorporating new knowledge into existing knowledge in ways that allow the organization to exploit it or add new meaning to existing knowledge.

Organizational responsiveness: refers to the action taken by an organization (specifically in this study a SME) in response to the relevant information acquired and subsequently disseminated. Organizational responsiveness is related to performance and reflects the speed and coordination with which actions are implemented and periodically reviewed.

Environmental turbulence: the environment is defined as the relevant physical and social factors outside the organizational boundary that are taken into consideration during organizational decision making. Turbulence has three components that may be a trigger to entrepreneurial activity. These include the rate of change in key components of the environment, the extent to which the environment is hostile or threatening, and the degree of complexity in the environment (Morris, 1998). Turbulence is typically measured by the number of events per period of time that change key characteristics of the environment.

Strategic orientation: Miles and Snow (1978) proposed a typology of behavior patterns representative of four ideal competitive strategy types: prospectors, defenders,

analyzers, and reactors. The key dimension underlying this typology is a firm's proactiveness in pioneering products and markets. This strategic orientation typology has been shown to be a powerful determinant of firm performance, not only for U.S. firms (Doty, Glick, & Huber, 1993), but also for a sample of international SMEs (Aragon-Sanchez & Sanchez-Marin, 2005).

Summary of Focus and Significance

Although interest in the concepts of organizational learning, the learning organization, and knowledge management as ways of increasing the knowledge intensity of companies goes back to the early 20th century, recent literature continues to delve into the learning processes of entrepreneurs and their organizations. There is a gap in the recent literature that indicates a paucity of research in the area of entrepreneurial cognition as it applies in small and medium size enterprises (SMEs), especially growth-oriented SMEs. There is also a growing interest in entrepreneurship in emerging economies. As notable examples of the trends and forces at work in emerging economies, countries which have recently transitioned from centralized, planned economies to new market economies, such as Russia and Central and Eastern Europe (CEE), figure prominently in prior empirical research on SMEs.

This study continues that trend by replicating the methods and theoretical framework used by Liao et al. (2003) with a new sample of growth-oriented SMEs from Russia. It will highlight the similarities between Russian and U.S. growth-oriented SMEs, and document any statistically significant differences, especially as they relate to the dimensions of external knowledge acquisition and intrafirm

knowledge dissemination with organizational responsiveness. This study compares and contrasts the findings for Russian growth-oriented SMEs on six hypotheses with the findings of Liao et al. (2003) on their sample of American growth-oriented SMEs.

CHAPTER TWO: REVIEW OF RELATED RESEARCH

The purpose of this literature review is to provide a context and background for the proposed research. In addition to research previously cited on organizational learning, learning organizations, and knowledge management, a review of prior research has been carried out in several areas directly related to this study. The economic development rationale for growth-oriented SMEs discusses the key role that growth-oriented small and medium enterprises play in the development of an emerging economy. This is an important consideration in the selection of subjects for this research, because growth-oriented SMEs represent an important and growing segment being targeted for training by economic development practitioners. The impact on the management development and training of SMEs during and after transitions from controlled economies to free market economies provides an overview of some of the elements that have proven significant in the acquisition of external knowledge and the dissemination of knowledge within the firm in times of economic turbulence. The specific example of post-Soviet Russia discusses the large body of previous research into the development of entrepreneurs and the rise of the importance of SMEs in modern Russia in the period following the Soviet-era when entrepreneurship was considered a form of speculation and therefore illegal. Finally, other studies comparing Russian and American practices across various management topics suggest areas of similarity and difference.

The literature search process involved three approaches. First, academic databases were searched using appropriate keywords. Specific databases used include

ERIC and the Oregon State University catalog OASIS. Specific keywords included absorptive capacity, entrepreneur, entrepreneurship, economic development, training, education, Russia, Central Europe, SME, and small business. Next, online searches were conducted using the Google, Yahoo, and AltaVista search engines. The same set of keywords as used for the academic search was used in various combinations on the search engines. In addition to general internet searches, specific online searches were done within the Organization for Economic Cooperation and Development (OECD), United Nations Development Program (UNDP), and the European Union (EU) web sites and resource centers (e.g., SourceOECD). Finally, bibliographies of related studies (such as Liao et al., 2003 and Cseh, 1998) were collected and reviewed. These reviews usually led to further relevant articles and works, whose bibliographies were similarly reviewed and analyzed.

In the literature review two primary criteria were used for inclusion: (a) relevance to the specific study, and (b) currency. Many of the sources identified were rejected because they were more than 10 years old or because they were only tangentially related to the study. Some works, however, were retained even though they are more than 10 years old because they are considered key to the topic (e.g., Cohen & Levinthal, 1990), reference material (e.g., Borg, Gall & Gall, 1993), or simply the best example of an important point (e.g., Covin & Slevin, 1989).

Growth-Oriented SMEs

The literature review began with an analysis of the previous research on SMEs, and particularly growth-oriented SMEs. This review contributed to the study by

providing a context for the importance of growth-oriented SMEs to economic development. Much work has been done in economic development circles to identify relevant strategies for the alleviation of poverty and more rapid development of emerging economies (Acs, 1999; Audretsch, 2002; Commission on the Private Sector and Development, 2004; Fields & Pfeffermann, 2003; Gavron, Cowling, Holtham, & Westall, 1998; Mustar, 2002; Organization for Economic Cooperation and Development (OECD), 1994; United Nations Develoment Programme, 2003; World Bank, 2001, 2003, 2004). From a general identification of a robust and positive correlation between entrepreneurship and economic performance (Acs, 1999; Gavron, Cowling, Holtham, & Westall, 1998) to the more specific identification of areas of performance such as growth, firm survival, innovation, employment creation, technological change, productivity increases and exports (Fields & Pfeffermann, 2003; Mustar, 2002; Organization for Economic Cooperation and Development (OECD), 1994), entrepreneurship is seen as an engine driving change in economies (Audretsch, 2002). Mustar (2002) makes a strong case for high-growth SMEs as key players in economic growth, particularly in the area of job creation, based on his research in Western Europe, Japan, Canada, and the United States. There is also research that shows that high-growth small firms have much in common with each other, regardless of specific firm size, revenue level, or industry (Chan, Bhargava, & Street, 2006).

Research in organization science has distinguished differential postures in value creation, most often labeling those with a growth orientation as entrepreneurs (European Commission, 2002; Stewart, Carland, Carland, Watson, & Sweo, 2003;

Watkins-Mathys & Lowe, 2005). Furthermore, organizations as diverse as the United Nations Development Programme, the European Union, the Organisation for Economic Cooperation and Development, and the Foundation for Enterprise Development have all published work on the importance of growth-oriented SMEs and the entrepreneurs who start and lead them (Commission on the Private Sector and Development, 2004; Directorate-General for Enterprise, 2003; Foundation for Enterprise Development, n.d.; Mustar, 2002; United Nations Development Programme, 2003). However, other research shows that the question of how governments can support rapid-growth firms most effectively is difficult to address because of the elusiveness of clear prescriptions for rapid growth (Eshima, 2003; European Commission, 2004; Fischer & Reuber, 2003). Indeed, Fischer and Reuber (2003) concluded that many of the factors associated with high-growth firms tend to be too abstract to yield practical guidelines for policymakers to implement. The European Commission's (2004) report addressed a Europe-wide public debate of policy guidelines stemming from the Green Paper on Entrepreneurship released earlier (European Commission, 2003b). The Organisation for Economic Co-operation and Development (OECD) (1994) submitted a set of focused key issues and recommendations to support the growth and acceleration of entrepreneurship in 26 member countries, including fostering a stable macroeconomic environment and an efficient regulatory framework.

At the same time, while not limited to any particular geography, public policy has been shown to impact SME development and viability (Eshima, 2003; Sapienza,

2003). In particular, Eshima documented positive results for growth-oriented SMEs when public policy emphasis is shifted from protecting disadvantaged SMEs to assisting innovative self-motivated businesses. He cited examples of the Small Business Innovation Development Act of 1982 in the U.S. and gave empirical data from the results of the Japanese Temporary Law Concerning Measures for the Promotion of the Creative Business Activities of Small and Medium Enterprises of 1999. Sapienza showed that institutional, as well as market, factors are important to growth as an outcome for SMEs.

Innovation was also one of the growth themes addressed by Mustar (2002). He demonstrates that innovation plays an important role in the high-growth process. He particularly cites product innovation, to improve product quality and customer satisfaction, as a widely used growth strategy for SMEs. Product diversification has also been tied to a market orientation as one characteristic distinguishing of high-growth ventures (Siegel, Siegel, & MacMillan, 1993). Another issue raised in the research on growth-oriented SMEs is one of *growth intention* (Fischer & Reuber, 2003; Fischer, Reuber, Hababou, Johnson, & Lee, 1998; Sapienza, 2003), however there is not a consensus on its role. Fischer and Reuber (as well as Fischer et al.) saw it as an essential element of the growth equation, especially from the founder of a high-growth SME's perspective. "Founders believe that no one except founders can cause rapid growth to happen" (Fischer & Reuber, 2003, p. 356). Sapienza (2003), on the other hand, believed that there is an overemphasis on high growth, because most firms do not seek growth. Lau and Busenitz (2001) looked at growth intention for

entrepreneurs in a transitional economy (PRC) and found that a cognitive understanding of the environment has a direct impact on their growth intentions.

The literature on growth-oriented SMEs is as broad in context as it is deep in substance. Prior research clearly has made a case for the importance of growth-oriented SMEs to economic development, perhaps most especially in emerging economies. At the same time, however, much of the same research has also pointed out how difficult public policy decisions to support rapid growth firms have been due to the lack of common prescriptive actions. The most direct public policy seems to be to support innovative, self-motivated firms. Other research demonstrated that innovation is an indicator of market orientation. Market orientation was used in previous research, as well as Liao et al., as one indicator of absorptive capacity. And finally, the research demonstrated that growth-orientation in SMEs in the context of a transitional economy tended to be a function of the SME's capacity for external knowledge acquisition.

Transition to Market Economies

This section of the review of related research looked at the literature concerning SMEs' roles in the economic performance of those economies that transitioned from a controlled or centrally-planned economy to a market-based economy. Since Russia has been considered the most prominent country to make the transition, it was important to understand the transition experience from as broad a perspective as possible.

Much of the work done in trying to understand the impact of a transition to a market economy has focused on specific countries, most frequently in Central and Eastern Europe, where the transition was both rapid and relatively peaceful. Cseh (1998) described the learning process for managers in Romanian companies making the transition to a free market economy. Her study looked at four elements of managerial learning: (a) framing the business context, (b) elements that triggered the managers' engagement in learning, (c) learning strategies, and (d) how the managers made meaning of their learning experiences. She found the most important elements were framing the business context in terms of economic activity (e.g., performance of the banking sector, inflation, taxes, uncertainty and instability) and in terms of the managers' collective mentality (e.g., their view of the "old" system as opposed to their new reality). In addition, the managers generally sought learning in terms of strategic thinking and organizational skills rather than specific technical skills.

Others have also looked at the role of SMEs in the redevelopment process in transitional economies. Earlier studies looked at the role assumed by the re-emergence of SMEs in post-socialist transitional economies in Romania (Anton, Danciu, & Mitu, 1996), first in Czechoslovakia and later the Czech Republic (Shrader & Collins, 1991; Soulsby & Clark, 1996), and Poland (Sachs & Lipton, 1990; Shrader & Collins, 1991). Child and Czegledy (1996) examined the role of managerial learning in the wider scope of all Eastern Europe, while yet others have analyzed the implications of SME development and entrepreneurial activity in Central and Eastern Europe (Czegledy, 1996; European Training Foundation & Durham University

Foundation for Small and Medium Enterprise Development, 2000; Nagy, 1992; Soulsby & Clark, 2007). Soulsby and Clark (2007) reviewed 17 years of organizational research carried out in post-socialist Central and Eastern Europe (CEE), pointing out the contributions to organizational science from the formative relationship between the body of knowledge formed in the stable, mature market economies of the West, and the findings of research conducted in the institutionally unstable and ambiguous environments of the post-socialist era in CEE.

Some of these studies, like Cseh (1998), dealt with owner-managers in their own firms without foreign investment, while others (Child & Czegledy, 1996; Nicolescu, 1992; Sachs & Lipton, 1990) looked primarily at managers within large formerly government-owned firms or local divisions of multi-national corporations, yet all found some commonalities. The most frequently occurring commonality was related to the timing of the research – all of these countries were going through or had recently gone through a major change in their market structure that was causing managers to rethink their position. Child and Czegledy (1996) for example referred to these managers "experiencing more a transformation than a mere transition" (p.167). Cseh (1998) stated the element as "the learning of the owner-managers was stimulated mostly by the ambiguity of a quasi-market economy" (p.160). This also supports the Liao et al. (2003) finding that ties organizational responsiveness to a more turbulent environment.

Another frequently occurring commonality in the literature was a learning strategy characterized as learning from others (Cseh, 1998), peer-learning (Fischer &

Reuber, 2003; Young, 1994) or networking (Borgatti & Cross, 2003; Child & Czegledy, 1996; Geppert, 1996; Lau & Busenitz, 2001; Tortoriello, 2005; Tsai & Ghoshal, 1998). In post-socialist Hungary, Lyles, Saxton, and Watson (2004) evaluated new SME's external knowledge acquisition and strategic orientation as two of the factors that can predict venture survival in these emerging market economies. Foreign direct investment (FDI) has also been shown to have a positive impact on the survival and growth of SMEs in post-socialist CEE (Kornecki, Raghavan, & Welsh, 2008). This finding echoes the findings of the UN report that showed FDI has far reaching effects in emerging economies, including introducing competitive pressures in previously closed markets, infusing technology transfer and innovation, and serving as a principle driver of SME development and success (Commission on the Private Sector and Development, 2004).

Much of the prior literature on the transition to a market economy from a planned, socialist economy was focused on Central and Eastern Europe. The reason for this is that the transitions in CEE were recent, rapid, and relatively peaceful so they formed a convenient target for the research. Much of that research looked at how managers in larger companies and owners or managers of small businesses coped with what was characterized as a transformation rather than merely a transition. Cseh (1998) in particular identified that the managers sought out strategic thinking and organizational skills rather than technical skills due to the ambiguity they faced in a quasi-market economy. The prior research in transitioning economies tended to link organizational responsiveness to the turbulent environment. This finding is consistent

with Liao et al. Other research identified several methods SME managers employed to acquire external knowledge, including learning from others, peer learning, and utilizing professional networks.

Post-Soviet Russia

This section of the literature review looks specifically at Russia, and the changes brought about by the transition from the Soviet Union. The large body of literature looked at the macro-level environment of the Russian economic transformation. Research in Russia contributed to understanding the relationship of the development of a small business sector and economic growth in the post-Soviet era.

The body of work looking at entrepreneurial development in the transitioning economies of Central and Eastern Europe pales in comparison to the sheer volume of material written about Russia in the post-Soviet era. From early reports on the transition from the Soviet Union to a post-socialist Russian market-based economy (Ageev, Gratchev, & Hisrich, 1995; McCarthy, Puffer, & Shekshnia, 1993; Melloan, 1992; Sachs, 1994) to a recent Foreign Minister of the Russian Republic's assessment of the business climate there (Gref, 2003), both the research literature and the popular press have been filled with articles pertaining to Russia's economic transition. Much of the more recent literature dealt with the attractiveness of the Russian economy to foreign direct investment (Brzezinski & Bell, 2003; Gref, 2003; Marshall, 2003).

Berkowitz and DeJong (2001) obtained a rich statistical characterization of the relationship between entrepreneurial activity and economic growth within post-Soviet

Russia. They demonstrated that regional entrepreneurial activity exhibits a strong and enduring relationship with subsequent economic growth. Unfortunately, according to the 2003 *Global Entrepreneurship Monitor* (GEM) report, Russia remains at the bottom of the entrepreneurial hierarchy as one of the least entrepreneurial countries in the study (Reynolds, Bygrave, & Autio, 2003).

There was also a body of literature dealing with the emergence or resurgence of an entrepreneurial climate in Russia (Charalambos & Lawrence, 1996; McCarthy, Puffer, & Shekshnia, 1993; Monitor Group, 2004; Osipovich, 2004; Stewart, Carland, Carland, Watson, & Sweo, 2003; U. S. Russia Center for Entrepreneurship, 2004; Vlachoutsicos & Lawrence, 1996). The book *Taming the Wild East* (Osipovich, 2004) traced the "remarkable echoes between Russia's golden age of capitalism and today's post-Soviet business environment" (p. 9) with descriptions of successful Russian entrepreneurs from Alexander Menshikov in the time of Tsar Peter the Great [ca. 1725] to 12 illustrative tales of entrepreneurial success in the new Russia

These stories are far removed from the literature documenting the impediments, complexity, and failures of the Russian business environment. In 2004, in a series called a survey of Russia, *The Economist* (2004) ran an article on how organized crime had literally stolen one man's factory from him. Unfortunately, the trend was not isolated. The front page of the Moscow Times on February 13, 2008 ran a story about how raiders from organized crime use links to corrupt officials to illegally seize businesses (Mereu, 2008). These two articles serve to highlight the extremely complex environment in which SMEs in Russia operate. Yurchak (2002)

made the point that the rapid growth of entrepreneurship in post-Soviet Russia was a factor of a very complex and inflexible environment that the people had learned to negotiate during the Soviet-era. Addressing a conference on Russia organized by the European Business Congress, Dr. Antal Szabo, Regional Advisor on Entrepreneurship and SMEs to the United Nations Economic Commission for Europe (UNECE), stated his belief that one of the main reasons for the Russian economic crisis of the late 1990s and the slow economic development of Russia was the lack of commitment of the government to entrepreneurship and SME development (Szabo, 2002). Continuing a trend running back to the U.S.S.R. and even further back in Russia's history, on-going constraints in demand, limited access to resources, particularly institutional financing, excessive taxation and bureaucracy are all major impediments to SME development in modern Russia (Zhuplev & Kiesner, 2005). The body of research on impediments to SME development in Russia overlaps with a body of literature dealing with the role of institutions in economic development and entrepreneurship. Estrin, Aidis, and Mickiewicz (2007) identified ways in which the hostile nature of the business environment and the weak institutional framework create weak entrepreneurial entry rates. This supports the findings of earlier research on the role of fundamental and comprehensive institutional transitions (such as those in emerging economies) have on the strategic choices made by SMEs (Peng, 2003).

Vlachoutsicos and Lawrence (1996) described how the lack of a strong tradition of entrepreneurship stemming from over 70 years of Soviet thought and the educational barriers created by the lack of modern business education have posed

significant challenges to new venture creation in Russia. There was, however, a thread in the literature demonstrating small but meaningful advances toward meeting those challenges (Charalambos & Lawrence, 1996; U. S. Russia Center for Entrepreneurship, 2004; Vlachoutsicos & Lawrence, 1996). In 2004, the U.S. Russia Center for Entrepreneurship in Moscow conducted a survey and statistical research project to identify the learning needs and requirements of growth-oriented entrepreneurs in Russia, give a qualitative assessment of the type of and demand for business-skills learning programs, and obtain a demographic picture of mid-sized growth companies (U. S. Russia Center for Entrepreneurship, 2004). Recently, papers have begun to emerge on the application of educational techniques proven effective in the U.S. to colleges and universities in Russia. The team of Semenov and Toftoy (2008) recently presented a paper at an Annual Conference of the U.S. Association of Small Business and Entrepreneurship (USASBE) on their efforts to create a culturally appropriate and effective business course in Russia using Student Consulting Teams to accomplish the twin goals of teaching business students important new skills, and helping local SMEs develop more quickly through access to the student consultants to tackle their toughest problems.

Comparisons of the Russian situation with other countries abound, notably with CEE countries. Dilts, Hallam, Birmingham, and Craig (1996) wrote about their consulting experiences with recently privatized firms and support organizations in Russia and Poland, and provided recommendations for nurturing the emergence of the small business sector in those countries. Pissarides, Singer, and Svejnar (2000)

analyzed the principles and constraints voiced by the Chief Executive Officers of SMEs in Russia and Bulgaria, noting that the environmental constraints are more ubiquitous and all-encompassing in Russia than Bulgaria. Russia is often compared to countries other than those in CEE, as well. For example, Djankov et al. (2006), as part of a larger series of studies attempting to disentangle the role individual characteristics, sociological variables, and perceptions of the environment play in promoting entrepreneurship across a variety of settings in five large developing and transition countries, conducted a pilot study in Russia and China comparing entrepreneurs and non-entrepreneurs on those variables. As part of the BRIC countries, Russia is often compared to Brazil, India, and China on economic and sociological development (Fuller, 2005).

The review of prior related literature and popular literature provided a large body of literature that mainly looked at the macro-level environment of the Russian economic transformation. Research in Russia examined the relationship of entrepreneurial activity and economic growth in the post-Soviet era. However, the literature was also clear that 12 years after the transition, Russia remained near the bottom of the entrepreneurship hierarchy among nations listed in the *Global Entrepreneurship Monitor* (GEM report. This seemed to contrast with the literature showing a resurgence in the entrepreneurial climate of Russia. This is despite weak institutional support and the absence of a strong legal or regulatory framework. Comparisons in the literature abound, comparing Russia with their former trading partners in CEE, and macro-level economic comparisons with other members of the

so-called BRIC. Comparisons were most often made with China, due to the relative sizes of the two economies.

Russian and American Comparisons

This section of the literature review focused on the growing body of research that examined firm-level development in Russia. Many of the articles evaluated ideas and factors previously studied in the West, and provided insight into their application to Russian firms or managers.

While much of the literature concerning SME development in post-Soviet Russia has examined the macro-level environment, there are a growing number of studies investigating the micro-, or firm-level of development. Firm-level research into Russian companies displayed a remarkable variability of topics, but in most cases, they used ideas and factors identified in the West and then applied them to Russian firms. For example, Ardichvilli (2001) undertook an analysis of the leadership characteristics of Russian owners of SMEs and managers in larger firms using a leadership styles model developed and tested in the West and compared those findings with earlier analyses performed on U.S. owners of SMEs. Simmons' (2002) work, also using factors developed in the West, delineated the transformational influence of management styles and employee ownership on Russian enterprises. Keremetsky and Bulavka's (2002) case study involved the application of Western management practices to a particular Russian SME. Finally, there was the outright comparison of U.S. and Russian entrepreneurs, in entrepreneurial disposition and goal orientation

(Stewart, Carland, Carland, Watson, & Sweo, 2003), and looking at U.S. and Russian attitudes towards the ethical issues facing SME managers (Thelen & Zhuplev, 2001).

This study fits into this emerging body of literature directly comparing U.S. and Russian SME behaviors and attributes. By directly and empirically comparing the relationship between absorptive capacity and organizational responsiveness of Russian growth-oriented SMEs with the results obtained by Liao et al. (2003) on a sample of American growth-oriented SMEs, the proposed study will help elucidate another aspect of the similarities and/or differences between the two populations. As stated previously, the proposed study may extend and generalize the findings of Liao et al. (2003) which would have both a scholarly and a practical significance to both the domains of entrepreneurship education and economic development.

While much of the prior research on post-Soviet Russia was at a macro-level, there are a growing number of studies looking at firm-level development in Russia. Many of these articles evaluate a wide variety of ideas and factors identified and previously studied in the West, as they have been applied to Russian firms or managers. Topics include direct comparisons of U.S. and Russian leadership styles, management styles, entrepreneurial disposition, and goal orientations. This study follows that paradigm by comparing the absorptive capacity and organizational responsiveness of Russian and American SMEs.

International Comparative Research

The prior literature on techniques and approaches to international comparison research provided a backdrop on issues and trends that might affect the validity of this

study. It was important to the study because it informed much of the approach to the comparative analysis between the Russian sample and Liao et.al. (2003).

Much of the comparative literature, both of Russia and elsewhere, falls into the milieu of cross-cultural studies. There is a comprehensive body of knowledge that looks at the cultural impacts of entrepreneurship (George & Zahra, 2002; McGrath, MacMillan, Yang, & Tsai, 1992; Roland, Djankov, Miguel, Qian, & Zhuravskaya, 2004). Many behavioral studies use Hofstede's (1980) conceptualization of national culture, but more recent research has highlighted other cultural icons, such as social institutions in the mix of culture and entrepreneurship (Busenitz & Lau, 1996; Hofstede, 1993; Mitchell et al., 2002).

Cross-cultural studies in various business areas, such as marketing, have shown some basic methodological problems to the comparative analysis problem (Song & Parry, 1997; Winter & Prohaska, 1983). But comparison as a research method in the social sciences has grown in importance to the point that it has been equated to the use of the experimental method in the natural sciences (Verba, 1971).

Another key topic in the literature is the issue of cross-cultural learning. Napier (2006) described the traditional view of cross-cultural learning as "foreign 'experts' offer knowledge, skills, and talents to local 'learners'" (p. 70). She also pointed out the growing phenomenon of reverse knowledge flows, whereby the experts gain from the locals' unexpected pockets of knowledge useful for foreigners, particularly for the foreigners' cross-cultural adaptation. Issues relating to the development and validation of cross-cultural learning tools, such as the Learning

Transfer System Inventory (LTSI), have been described for Taiwan (Chen, Holton, & Bates, 2003), Thailand (Yamnill & McLean, 2005), an Arabic version for use in Jordan (Khasawneh, Bates, & Holton, 2004), and in Germany (Bates, Kauffield, & Holton, 2005). Each of these studies pointed to similarities with the English version, but also the great care it requires in translation to ensure that the words being used describe equivalent concepts.

Within the body of entrepreneurship research literature there is an apparent, growing, interest in entrepreneurship in emerging economies. Within the broader arena of international entrepreneurship in general, there have been a number of articles and papers written to describe the domain or specific definition of international entrepreneurship (McDougall & Oviatt, 2003; Oviatt & McDougall, 2005) and the methodological considerations in researching international entrepreneurship (Coviello & Jones, 2002). Narrowing the general to the more specific, Bruton, Ahlstrom, and Obloj (2008) introduced an entire issue of the journal *Entrepreneurship: Theory and Practice* on the subject of entrepreneurship in emerging economies, by looking at where we are today in the research, and where the research should go in the future. They pointed out that even though there is a steady growth of emerging economies worldwide, their review of the literature found only 43 articles that have been published in the past 17 years on entrepreneurship in emerging economies. Current research in this area includes Central and Eastern Europe (Ireland, Tihanyi, & Webb, 2008; Manolova, Eunni, & Gyoshev, 2008), and Asia, specifically Indonesia (Marino,

Lohrke, Hill, Weaver, & Tambunan, 2008) and China (Tang, Tang, Marino, Zhang, & Li, 2008).

This chapter includes a review of literature on comparative analyses in the milieu of cross-cultural studies. The prior research points to basic methodological problems with comparative analyses across cultures. Much of the cultural literature has relied on Hofstede's (1980) seminal analytical framework. However, more recent research, including Hofstede himself (1993), has looked at other cultural icons for comparison. This has paved the way for development and validation of new tools, such as cross-cultural learning tools. There also seems to be another thread of international comparative research that is interested specifically in entrepreneurship in emerging economies. This thread appears to be growing, but there have historically been few articles published in this area of interest.

Topic Linkages in the Literature

The purpose of this section of the review of related literature was to identify the relationships between the variables contained in Liao et al.'s theoretical framework that had been previously investigated. This was a very important part of understanding the results of the analysis from a historical perspective.

Within the theoretical framework developed by Liao et al. (2003) and adopted by this study, the literature review turned up a number of items that link two or more of the topics included in the framework. The most prolific topic in the framework is that of external knowledge acquisition. Links were identified between external knowledge acquisition and organizational responsiveness of Russian SMEs (Gianella

& Tompson, 2007), organizational learning (Chandler, 2008; Spicer & Sadler-Smith, 2006), knowledge management (Madhavan & Grover, 1999), market orientation (Kohli & Jaworski, 1990; Li, Zhao, Tan, & Liu, 2008), and between external knowledge acquisition and both organizational responsiveness and human capital (Porter, 1990, March-April). Conceicao and Heitor (2002) adopted as fact the concept that external knowledge acquisition, which they viewed as accumulation of knowledge, is the fundamental driving force behind economic growth. This view of growth was explained in a later study as the relationship between a learning culture, where external knowledge acquisition was shown as critical to performance and an organization's innovativeness as a source of their competitive advantage (Lin & Yang, 2006). Yli-Renko, Autio, and Sapienza (2000) used the construct of social capital to link external knowledge acquisition to internal knowledge dissemination through knowledge exploitation.

Internal knowledge dissemination was linked to organizational responsiveness by Lord and Ranft (2000). Organizational responsiveness was further linked to both growth (Golann, 2006) and to environmental hostility (Lindelöf & Löfsten, 2006). Environmental turbulence has been linked to market orientation (Becherer & Maurer, 1997) which is often used as an analog for external knowledge acquisition (Kohli & Jaworski, 1990; Kohli, Jaworski, & Kumar, 1993). Environmental turbulence has also been linked in the research to strategic orientation (Williams, 1992, Spring). Henderson (1999) linked strategic orientation to organizational age. Organizational size has been linked to organizational learning (Jobs for the Future, 1992) and market

orientation (Liu, 1995). The *Jobs for the Future* report finds that small firms can more easily organize to accomplish learning internally, while larger firms have more resources to access external sources of learning.

The other linkages that became apparent in the literature review were studies that link one or more methods of action to one of the variables of interest. Most often the researchers looked at the efficacy or utilization of some method of external knowledge acquisition. Many of the articles focused in on SMEs, but others did not, looking instead at how large firms and small firms vary in their utilization of the activity in question. For example, McEwen (2004) linked external knowledge acquisition to the technique of environmental scanning, one method of action used by both SME and large firm managers..

Several studies have shown training to be an essential, if not solely adequate method of acquiring external knowledge (European Commission, 2003a; European Training Foundation & Durham University Foundation for Small and Medium Enterprise Development, 2000; Foundation for Enterprise Development, n.d.; Martin, Wech, Sandefur, & Pan, 2006; U. S. Russia Center for Entrepreneurship, 2004). The Centre for Urban & Regional Development Studies (2002) looked at how SMEs use business support services as their source of external knowledge acquisition. Juma and Yee-Cheong (2005) used the concept of external knowledge acquisition to define economic change in a society. They described economic change as the process by which knowledge is transformed into goods and services. They went on to state that

creating links between external knowledge acquisition and enterprise generation is one of the greatest challenges facing developing countries.

To summarize this section, the literature has many articles that link two or more of the variables contained within Liao et al.'s (2003) theoretical framework. One unique feature of Liao et al. is that it includes all of these areas in one framework related to growth-oriented SMEs. These articles operationalize the variables in comparison with each other, often in other contexts, such as large companies. External knowledge acquisition offers the most linkages in this literature. Many of the articles are analyses of the various methods or approaches used to develop external knowledge acquisition or internal knowledge dissemination.

Analysis of Liao, Welsch, and Stoica (2003)

This study has adopted the methodology and theoretical framework of the 2003 article by Liao, Welsch, and Stoica entitled "Organizational Absorptive Capacity and Responsiveness: An Empirical Investigation of Growth-Oriented SMEs" that appeared in the journal *Entrepreneurship Theory and Practice*. That article showed some key strengths regarding both internal and external validity, but at the same time contained some weaknesses in both form and substance.

One notable thing that was apparent reviewing Liao et al. was the comprehensive introduction to the subject of absorptive capacity and the relevance of their emphasis on growth-oriented SMEs. They pointed out that even though there have been increasing calls in the literature for more studies of entrepreneurial firms, there has actually been very little attention in the literature devoted to SMEs, and

especially the organizational responsiveness of SMEs. This was followed by an in-depth review of the related literature related to traditional research on organizational responsiveness. In this review they identified gaps in the existing literature, notably the extent to which the findings of research in organizational adaptation based on large, well-established companies can be extended to SMEs. The result of their comprehensive literature review is a thorough grounding in the extant theory related to absorptive capacity and organizational responsiveness.

From this foundation they built a clear theoretical framework. This framework illustrated the hypothesized relationships between the elements that would become both the dependent and independent variables in their subsequent analytical models.

The comprehensive literature review also led to a logical conclusion that supported their emphasis on research with SMEs. This research helped to address the research gap they identified regarding the economic importance of SMEs, yet the limited nature of previous studies in this area.

Another strength of Liao et al. (2003) was demonstrated in their choice of both objective and subjective measures of growth orientation in order to select their sample of growth-oriented SMEs. This process showed their recognition of and attempts to mitigate threats to internal and external validity in their study. Campbell and Stanley (1963) identified eight specific threats to internal validity that might produce effects that confound the effect of the experimental stimulus if they are not controlled in the design. They also listed four factors that may jeopardize external validity or

representativeness of the sample. Liao et al.'s design appeared to control for these possible threats.

While Liao et al. (2003) presented a strong article, there were some areas of improvement or weakness that were noted. One area that became apparent was the lack of a clear definition for small and medium enterprises (SMEs). Unlike the European Union or some other countries, the U.S. has no single definition of what constitutes an SME. For some industries or industry sectors, organizational size determines their status as an SME, while in others it is revenues upon which that determination is made. Liao et al. did not address those criteria; instead they referred only to size (specifically less than 500 employees).

Another weakness of the study was the small sample size. While their sample of 107 certainly falls within the range identified as statistically acceptable (Soper, 2008), the small size of *N* in this study called into question the level of the effect they were able to measure (Garson, 2005).

Another potential weakness also relates to their sample. All of the respondents to their survey were located in a single state within the U.S. This limited geographic scope limits the task environment of the respondents to a single homogenous environment. This could have opened the study to a potential threat to external validity by limiting its representativeness. As Shadish, Cook, and Campbell (2002) stated, "the embeddedness of experimental results in a particular local context seems to provide little basis for generalizing results beyond that context" (p. 341).

Given the cross-sectional nature of their research design (sometimes referred to as a "one-shot" design), there is the possibility that Liao et al.'s sample may have reflected on their organizational results based on the survey questions, and changed their views of their previous situation. This is an example of what is known as a *retrospective pretest design* (Russ-Eft & Hoover, 2005). The weakness of this design is that it depends on the respondents' accuracy of recall, or even their willingness to share their experience truthfully for fear of looking bad to the researcher.

Liao et al. (2003) also exhibited a weakness of form in addition to the more substantive issues raised previously. They listed several implications for future research in the article, but have limited implications for practice. Entrepreneurs and SME managers could potentially benefit from the findings of this research, but the limited practical recommendations that were given were clouded in technical jargon. Less academically-inclined practitioners may not be able to discern the implications for their action given by the authors.

Liao et al. (2003) has much to commend itself in terms of its contribution to the body of knowledge and its strong theoretical foundations. While there were some weaknesses in the article that were identified, none of them appeared to negate the value of the research done. After a thorough analysis of the approach and the authors' efforts to control the threats to both the internal and external validity of their design, Liao et al. is worthy of replication and extension into a new population.

Summary of the Literature Review

The literature review has provided insight into several issues that are significant to the proposed study. By showing the importance of growth-oriented SMEs to the economic development of economies, particularly emerging economies, the literature review has placed the proposed study in context with current thinking in economic development practice. This context ties directly to the recent movement by governments and non-governmental organizations (NGOs) towards encouraging the development of entrepreneurship as a prescription for the alleviation of poverty, a key goal for many governments and NGOs.

The literature review also informed the proposed study in the areas of learning contexts and learning strategies for executive development and training among owner-managers of small and medium enterprises, particularly in economically turbulent situations. The literature review demonstrated the research interest in executive development and training not only in Eastern and Central Europe, but particularly in Russia in the post-Soviet era.

The analysis of Liao et al. (2003) confirmed that, although data gathering may be problematic, it is possible to survey entrepreneurs about their absorptive capacity and organizational responsiveness in a meaningful and valid way. Based on the weaknesses demonstrated in Liao et al. it was apparent that a larger and broader geographic representation in the sample would have been beneficial.

The literature review made it clear that understanding the SME sector in Russia is an important area of research. It also demonstrated that there is a growing

body of research that looks at the micro-, or firm-, level of development. Firm-level research into Russian companies displayed a remarkable variability of topics, but in most cases, they used ideas and factors identified in the West and then applied them to Russian firms. This comparison often yielded a basis for deciding if a particular approach or idea was generally applicable across national and cultural borders.

CHAPTER THREE: DESIGN OF STUDY

In an effort to maintain a valid comparability with the study to be replicated (i.e., Liao, Welsch, & Stoica, 2003), this study adopted their methods and data analysis procedures. This study relied on the theoretical framework regarding the relationship between absorptive capacity and SMEs' responsiveness derived by Liao et al., and attempted to replicate their study across a different sample of the population of growth-oriented SMEs, in this case Russian growth-oriented SMEs.

Research Methodology

Like Liao et al. (2003), this study utilized a survey method for data collection. The data collected were evaluated for completeness and screened for inclusion in the sample as growth-oriented SMEs. The collected data for each of the independent and dependent variables were subjected to a principal component analysis to reduce the data and determine measure reliability (unidimensionality) for the items to be included in the analysis. Mean factor scores were computed for each of the four independent variables (predictors) and the dependent variable for inclusion in the subsequent analyses. Organizational size and age were included as control variables. A series of hierarchical multiple regression analyses were then conducted on the resulting variables. The results of these analyses were then compared to the findings from Liao et al. to identify similarities and differences between the two studies.

Research Design

Consistent with the theoretical framework put forward by Liao et al. (2003), this study looked at the relationship between absorptive capacity and organizational

responsiveness for growth-oriented SMEs. The primary difference between Liao et al. and this study is in the sample – while Liao et al. looked at U.S. growth-oriented SMEs, this study looked at Russian growth-oriented SMEs.

Population and Sample

The population identified for this study consisted of all Russian SMEs. The specific target population was identified as growth-oriented Russian SMEs. All of the firms represented in the sample were clients, members, or affiliates attending the annual conference of a Moscow-based business association that promotes the development and advancement of small and medium-sized businesses across Russia.

The senior-most executives in 825 SMEs attending the Moscow conference were asked to complete the translated questionnaire. Around the world, different definitions are used for SMEs. In Russia, as in the U.S., SMEs are defined differently based on the industry in which they operate. For this study, we used a broad definition to include as many industry sectors as possible. This definition was businesses with less than 500 employees or less than $100 million in annual sales revenue. This definition matches previous research done in Russia by the U.S. Russia Center for Entrepreneurship (2004). The business association sponsoring the conference agreed to distribute a copy of the survey to every conference attendee in their packet of conference materials.

Usable questionnaires were eventually returned by 114 (13.82%) of the firms, representing 15 of the standard industry sectors for Russia (U. S. Russia Center for Entrepreneurship, 2004). The largest percentage of respondents was in the combined

wholesale/retail sector (31.9%). The business services sector came next at 20.5%, followed by the high tech sector at 10.5%. The remaining firms represented a mix of agriculture, construction, financial services, food processing, manufacturing, media, natural resources, publishing, and telecommunications. Table 1 demonstrates that these sample response percentages compare favorably with census data for the population of SMEs in the major cities of Russia (U. S. Russia Center for Entrepreneurship, 2004).

Table 1

Comparison of Industry Sectors – Population and Sample

Industry Sector Name	*Population (percent)*	*Sample (percent)*
Retail	22.8	14.3
Wholesale	20.0	17.6
Business Services	19.2	10.5
Manufacturing	12.7	7.7
High Tech	8.0	10.5
All Others	17.3	29.4

The two main threats to validity created by the low response rate and the self-selection approach to data collection are non-response bias and a sample that is not representative of the population. A chi-square test, $\chi^2(14, N = 114) = 31.18, p < .01$, comparing industry sectors of respondents against census industry sector data for

Russian SMEs shows no internal sample bias, helping to address the representativeness threat Non-response bias remains a potential threat to validity.

Data Collection Procedures

Although response rates to mail surveys of entrepreneurs in the U.S. are typically very low (Newby, Watson, & Woodliff, 2003), research sampling in Russia is even more problematic. In Russia, researchers face a number of obstacles, including the undependability of the Russian postal system, a general distrust of foreigners, and a reticence by entrepreneurs to discuss personal or business issues outside a small circle of trusted confidants, and a wide-spread distrust of surveys in general that remains from the Soviet era (Stewart, Carland, Carland, Watson, & Sweo, 2003; Vlachoutsicos & Lawrence, 1996). Therefore, instead of relying on traditional sampling techniques such as mail surveys, a more innovative approach was used. This approach was designed to elicit a greater response rate than mail surveys and avoid the most common threats to internal and external validity (Campbell & Stanley, 1963).

The data gathering instrument used by Liao et al. (2003) is a detailed research questionnaire concerning the company's operations, past and future market environment, and sources of business information regularly used. This questionnaire was translated from English into Russian by a professional translation company that employs Russian natives living in the U.S. who are subject matter experts in the domain of business and management for their translations. The translated instrument was disseminated and collected by the staff of the U. S. Russia Center for Entrepreneurship (CFE) located in Moscow, Russia. This is a reputable entrepreneur

service agency affiliated with the University of California, San Diego, and known for conducting a variety of previous research studies of Russian growth-oriented SMEs.

Each participating firm attending the annual conference for the SME association conference in Moscow received a commemorative folder with copies of the conference slides, handouts, background materials, and so forth. The data collection survey form (in Russian), a cover letter, and a return envelope were included in that folder. The CFE Executive Director was given the opportunity to welcome the attendees to the conference during the opening plenary session. During his address he explained the purpose and need for the survey and asked the senior-most executive of each firm who were conference participants to complete the survey and return it. CFE had a prominent booth at the trade fair associated with the conference, where they provided a bin to anonymously collect the completed surveys. Throughout the 3-day conference whenever announcements were made, participants were reminded and encouraged to complete and return their surveys.

Data Analysis

Liao et al. (2003) used a combination of a subjective growth intention measure and objective growth rates to create their sample of growth-oriented firms. On the questionnaire, respondents were asked to allocate 100 points among four statements: "my organization emphasizes growth and acquiring new resources;" "my organization emphasizes efficiency and smooth operations;" "my organization emphasizes competitive actions and responses;" and "my organization emphasizes stability" (Liao et al., p. 71). Only the first statement is related to SMEs' growth intention, so

respondents that allocated at least 25 points to that statement were included in their subsample for subsequent screening procedures. This procedure is similar to that used by Covin, Slevin, and Covin (1990) to screen their sample for growth-seeking small firms. Liao et al. then used SMEs' self-reported sales growth data, selecting only those that had at least 6% growth rate in last two consecutive years. Their final sample consisted of 107 growth-oriented SMEs.

The current study used a similar approach for the subjective growth intention screening to identify those firms with a stated growth-orientation, namely ≥ 25 points on the question, "my organization emphasizes growth and acquiring new resources." However, examination of the sales growth data reported by the respondents indicated that a large percentage (58.8%) were consistently experiencing sales growth rates in excess of 20% per year, and had been for the three years prior to the data collection. Fischer and Reuber (2003) stated that rapid growth (which they define as >20% per year) is difficult to sustain and often problematic for the firms. Previous research on high-growth SMEs (Chandler & Jansen, 1992; Fischer & Reuber, 2003; Fischer, Reuber, Hababou, Johnson, & Lee, 1998; Sapienza, 2003; Siegel, Siegel, & MacMillan, 1993) all concluded that high-growth firms (based on sales growth) share common characteristics regarding their relationship to growth. Therefore, Russian SMEs responding to the survey were included in the sample of growth-oriented SMEs if they met either the subjective/objective criteria of Liao et al. (i.e., at least 25 points on the growth intention question and average self-reported sales growth >6%), or had an average sales growth rate of >20% in two of the previous three years, regardless of

their stated growth intention. The rationale, based on the previous research on high-growth SMEs, is that if they are experiencing rapid growth greater than 20% per year and surviving, they must ceteris paribus be growth-oriented. However, this may represent a different part of the SME growth continuum, and may affect both internal and external validity.

The final sample consisted of 91 growth-oriented Russian firms. While this appears to be a small *N*, an online A-priori sample size calculator for multiple regression indicates that a sample of 81 or greater is adequate to detect medium size effects, using multiple regression modeling (with six predictor variables), at the alpha = .05 level with a power of 0.7 (Soper, 2008).

Operationalizing the Variables

While this study attempted to strictly adhere to the methods and tools used by Liao et al. (2003), it became apparent in operationalizing the variables for the subsequent multiple regression analyses that there were palpable differences in the data returned from this survey of Russian SMEs and Liao et al.'s sample of U.S. SMEs. Previous empirical studies in cross-cultural research have pointed out that "multiple measures that involve clusters of variables are compounded when measurements are made across cultures, because these clusters may not measure the same dimension from one culture to another" (Winter & Prohaska, 1983, p. 422). This became particularly evident in running the principal component analyses where the factors derived were ultimately different than those reported by Liao et al. For example, the case of the environmental turbulence variable below provides a concrete

example of this phenomenon. A histogram, distribution curve, and some descriptive statistics for each variable are given in Appendix C.

Absorptive capacity. As defined by Liao et al. (2003), absorptive capacity refers to "a set of interrelated organizational capabilities of acquiring, disseminating, and assimilating external information and knowledge" (p. 66). This definition is consistent with previous research (Cohen & Levinthal, 1990; Heeley, 1997; Zahra & George, 2002). Liao et al. operationalized absorptive capacity through two major components that capture the multidimensionality of absorptive capacity: external knowledge acquisition and internal knowledge dissemination. Absorptive capacity is measured in this instrument through these two multi-item constructs as described below.

a. External knowledge acquisition. This component represents the organization's capability to gather information from their environment that might be useful for business purposes. These activities include things like meeting with customers, retailers, and distributors; meeting with industry groups and trade partners; and looking at changes in the business environment (Kohli, Jaworski, & Kumar, 1993). How well the organization does that is then judged by the quantity of information and knowledge that is acquired. The more knowledge and information that can be collected over a given period of time, the better the organization's external knowledge acquisition capability (Kim, 1997). Based on previous work by several researchers (Kohli, Jaworski, & Kumar, 1993; Narver & Slater, 1990; Slater & Narver, 1994) Liao et al. (2003) developed an 11-item measure of external knowledge

acquisition that includes items dealing with how often the responsible entities in the business unit meet with clients, competitors, and others. Respondents were asked to rate each item anchored on a 5-point Likert scale, with 1 representing "strongly disagree" and 5 representing "strongly agree." A principal component analysis with varimax rotation on the Russian SME data set yielded a clear factor structure, retaining six items that loaded with a score over .50 and had no significant cross-loadings. A Cronbach's alpha of .72, which is above the value of .70 suggested by Nunnally (1978) and Smith (2002), indicated an acceptable level of inter-rater reliability. For subsequent analyses, a mean factor score was computed for the external knowledge acquisition variable.

b. Internal knowledge dissemination. The second dimension of the absorptive capacity construct represents a firm's capacity to disseminate and share knowledge within the organization. Once the information is gathered and brought into the organization through the external acquisition process, the organization must identify which information is relevant to their situation. The relevant information must then be disseminated to all parts of the organization in an effort to reach those relevant people in the organization who may, in turn, be able to use the knowledge to design and implement a useful response. This view is consistent with previous research (Dew, Velamuri, & Venkataraman, 2004; Faems, Janssens, & Van Looy, 2007; Kohli, Jaworski, & Kumar, 1993; Sinkula, 1994). Internal dissemination of knowledge can occur through a variety of activities in the firm. Various means of transmitting information within the firm, such as departmental and interdepartmental meetings,

company reports on customers or competitors, newsletters, or formal training programs can be used to disseminate knowledge internally. The 12-item scale developed by Liao et al. to measure the internal knowledge dissemination construct was adapted from the same three previous studies (Kohli, Jaworski, & Kumar, 1993; Narver & Slater, 1990; Slater & Narver, 1994) upon which they based their external knowledge scale. Respondents were asked to respond to statements such as "data on customer satisfaction are disseminated at all levels in the organization," again using the anchored 5-point Likert scale, where 1 is "strongly disagree" and 5 is "strongly agree." A principal component analysis with varimax rotation yielded four components with eigenvalues greater than one and explained 57.71% of the variance. Items indicating usage of inter-departmental systems (for goal monitoring, planning, interdepartmental meetings, and cross-functional discussions, etc.) grouped together on one factor that accounted for a large portion of the total variance explanation (22.78%). Following the procedure recommended by Smith (2002), factors accounting for less than 10% of the variance were discarded to form a smaller feature vector. After eliminating those items with significant cross-loadings, the Cronbach's alpha for the remaining items was an acceptable .74. Again, the factor mean score was computed for the subsequent analyses.

Environmental turbulence. It is widely accepted in the literature that the environment within which a firm operates is a primary source of uncertainty for managers (Amit, Guillen, Klapper, & Quesada, 2007; Dess & Beard, 1984; Glazer & Weiss, 1993; Peng, 2003). Liao et al. (2003) also cataloged a body of prior empirical

literature that associates environmental turbulence with changed firm behavior. The instrument operationalized the environmental turbulence variable using a 14-item scale derived from prior research (Glazer & Weiss, 1993; Sinkula, 1994). Respondents were asked to rate the degree of change for various characteristics of the task environment including technology, competition, market/customers, suppliers, and regulations. Their rating for each of the 14 characteristics was captured using an anchored 5-point Likert scale, where 1 represented "very few changes" in a characteristic of the environment and 5 represented "very many changes" for a characteristic. Factor analyzing the items using a principle components analysis with varimax rotation, yielded three factors with eigenvalues greater than one. This differed slightly from Liao et al. (2003), who got two factors with three items loaded high (> .50).

In the current study, items tended to load high on one of the three factors without much cross-loading. Analysis of the factors revealed that topically they aligned with the three components of turbulence identified in previous research (Dess & Beard, 1984): environmental munificence, environmental dynamism, and environmental complexity. According to Dess and Beard, the first two components are market-driven and thus might apply to any competitive business environment. However, the third component, complexity, reflects environmental turbulence that cannot easily be anticipated by the firm, such as instability caused by institutional changes in fundamental areas like politics, the judicial system, and taxation policies. Peng (2003) contended that:

> …the Russian economy of 2001, despite having experienced a decade of decline in GDP, was still *more complex* [italics added] than that of 1991, when the former Soviet Union collapsed, as measured by the diversity of participants and the scale and scope of market processes. (p. 278)

It is possible that in emerging economies such as Russia, managers tend to perceive complexity more consistently in their environment than do managers in the more mature U.S. economy where Liao et al. used this scale. This is consistent with the experience of research in other emerging economies as well (Marino, Lohrke, Hill, Weaver, & Tambunan, 2008). Retaining items that loaded with a score ≥ .60 rather than .50 as suggested in Garson (2005), and eliminating two items that heavily cross-loaded on two factors yielded a 10-item measure with a Cronbach's alpha of .81. The factor mean score for these responses was calculated for use in the subsequent analyses.

In an effort to better understand the role of environmental turbulence a supplemental multiple regression analysis was conducted using each of the factors of environmental turbulence (munificence, complexity, and dynamism) as a separate independent variable. The model revealed nothing new, as none of the correlation coefficients for the three new turbulence variables proved to be statistically significant. Results of this analysis are provided for review in Appendix E.

Strategic orientation. Following several previous interpretations of strategic orientation (Delery & Doty, 1996; Miles & Snow, 1978; Shortell & Zajac, 1990), Liao

et al. (2003) defined this construct as the rate of product and market innovation. Three items were adapted from earlier research (Williams, 1992, Spring) to assess strategic orientation of growth-oriented entrepreneurs. These items measure the extent to which growth-oriented SMEs emphasize building brand loyalty, speed of response, and market timing. Respondents were asked to rank a list of nine strategic priorities that included these three items, from 1, representing the most important priority in the firm to 9, being the least important priority in the firm. These three items formed a single factor with a Cronbach's alpha of .68. While less than the widely-accepted, but stringent, value of .70 for internal reliability promulgated by Nunnally (1978), Garson (2005) stated that an alpha greater than or equal to .60 is sufficient to consider the items unidimensional enough to combine in an index or scale.

Organizational responsiveness. This construct refers to the action taken by an organization in response to relevant knowledge acquired and then disseminated within the organization. Items in the questionnaire that are used for measuring responsiveness include marketing program implementation, product and/or service development reviews, responding to competitors actions, goal measurement and correction, and interdepartmental cooperation. The 10-item scale developed by Liao et al (2003) was based on Kohli, Jaworski, and Kumar (1993). Respondents were asked to respond to questions on the firm's responsiveness to market signals using an anchored Likert scale, where 1 is "strongly disagree" and 5 is "strongly agree." The items listed for methods or ways the firm responds include "We periodically review our product development efforts to ensure that they are in line with what the customer

wants;" "Several departments get together periodically to plan a response to changes taking place in our business environment;" and "If a major competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately." A principal components analysis with varimax rotation yielded 3 components with eigenvalues over one that accounted for 55.78% of the variance. Traditional factor analysis techniques failed to produce a reliable scale (Cronbach's alpha = .32). Once more implementing the process described in Smith (2002), ignoring the factors accounting for small percentages of variance, yielded a final single factor solution with a Cronbach's alpha of .72. As with all the variables, a factor mean score was computed for use in the subsequent analyses.

Size and organizational age. Liao et al. (2003) controlled for size and age effect in order to isolate the relationship between absorptive capacity and organizational responsiveness. Size is measured by the number of employees. Since there are typically more SMEs of smaller size than medium size, the distribution of values for the size variable tends to be non-normal and positively skewed, and that proved true with this sample. This variable was statistically corrected to a normal distribution with a logarithmic transformation. Liao et al. used this same technique to correct the distribution for the size variable.

Age was measured by the number of years since establishment of the firm.

Statistical Analysis

Consistent with Liao et al. (2003), hierarchical multiple regression analysis was employed to test the formulated hypotheses. Hierarchical regression is a

sophisticated correlational research technique for determining how well each of several variables predicts performance on some measure (Borg, Gall, & Gall, 1993). In hierarchical multiple regression analysis, the researcher enters the control and independent variables (predictors) into the regression equation in steps or *blocks* (Newsom, 2003). Five multiple regression models with different standardized regression coefficients (β) and significance levels (*t*) are used to compute the appropriate values of variation in the data explained by the model (R-Square, Adjusted R-Square) and the goodness of fit (*F*) for each hypothesis.

The statistical testing procedures were as follows. First, following the SPSS procedures for hierarchical multiple regression analysis given by Howitt and Cramer (2003), a full regression model was run. Independent variables included SME size, years since establishment (age), external knowledge acquisition, internal knowledge dissemination, environmental turbulence, and strategic orientation. The dependent variable was organizational responsiveness (known as Model 1). As with Liao et al. (2003), interaction terms were then added to the multiple regression model in order to incorporate the joint effect of two variables on the dependent variable over and above their separate effects (Garson, 2005). Interaction terms are added to the regression model as cross products of the standardized independent variables. Second, a new block was added to the model which included the interaction term created by the cross product of environmental turbulence and external knowledge acquisition (environmental turbulence * external knowledge acquisition). This formed Model 2. Models 2 through 5 thus have seven predictors instead of the six used in Model 1. The

cross product of environmental turbulence and internal knowledge dissemination was then substituted in block 2 as the interaction term to form Model 3. The cross product of strategic orientation and external knowledge acquisition was substituted in next (Model 4), and finally the cross product of strategic orientation and internal knowledge dissemination was used in a successive run of the hierarchical regression model (Model 5). Because the interaction terms formed by the various cross products of the independent variables used in successive regression models are highly correlated with one another, the interaction term in each successive model was replaced rather than simply adding the new term, to avoid the problem of multicollinearity.

A complementary, supplemental analysis was run using a step-wise multiple regression model to further evaluate the interaction effects of each block of independent variables. A discussion of that analysis and the results obtained are given in Appendix D.

Empirical Comparison

As an approach to comparing the regression results obtained for the Russian SME sample with those of Liao et al.'s (2003) American SME sample, a comparative analysis was employed. Literature in the social sciences in the 1960s and 1970s reflected a growing recognition of the value the comparative analysis method of analyzing complex subjects. The comparative method is essentially a search for similarities and differences that will explain relationships between objects, issues, and the like (Murdock, 1957). Previous research has shown the value of comparative

research in international business (Schöllhammer, 1973; Winter & Prohaska, 1983) and in cross-cultural studies (Frijda & Jahoda, 1966; Verba, 1971). Verba has suggested the use of a disciplined configurative approach that closely resembles multivariate analysis. He recommended a two-stage approach that seems to fit this situation. The method is first to look for the relationships between dependent and independent variables within each sample and then to compare these relationships between samples. The first stage, then, is having the multiple regression analysis results and descriptive statistics of Liao et al.'s (2003) analyses for their sample of U.S. SMEs, and generating the results of the multiple regression analyses and descriptive statistics for the sample of Russian SMEs. Liao et al. interpreted the relationships generated by their hierarchical multiple regression analysis, and this study generated and interpreted the results of a hierarchical multiple regression analysis for the Russian SMEs. In the second stage, the relationships between the two sets of results are evaluated for similarities and differences. If the complete dataset for the U.S. sample was available, a more sophisticated multivariate analysis could be used, such as a Chow test or Potthof analysis (Wuensch, 2007). Unfortunately, since only the regression statistics and correlation matrix are available for Liao et al.'s sample, the comparative analyses is limited to a comparison of the statistical significance of various tests, calculation of partial *F*-test scores to determine relative precision of the measures, calculation of two sample *t*-tests to examine the significance of differences in the mean values of the variables used in the two analyses, and a comparison of *z*-scores to determine which of the correlation

coefficients between variables in each study are significant. Ultimately, a conclusion is drawn as to whether the results of the current study validate and generalize the findings of Liao et al. (2003), or require further research.

Strategies for Protecting Human Subjects

The Oregon State University Institutional Review Board has strict guidelines that must be followed by researchers using human subjects. This research proposal was reviewed and approved by the university's Institutional Review Board in October 2007, and potential participants were contacted only after the research proposal was approved by the IRB. In the summer of 2005, I completed the online Human Participant Protections Education for Research Teams course through the National Institutes of Health website.

According to the Oregon State University *Human Research Handbook* (Oregon State University Research Office, 2005), research activities in which the only involvement of human participants will be in research involving the use of survey procedures qualify for review under the exempt category. This study clearly qualifies under this category since the research was carried out solely by survey instrument, and data was recorded in such a manner that human subjects cannot be identified either directly or indirectly through identifiers linked to the subjects.

Summary of Design of Study

This study looked at a sample of Russian growth-oriented SMEs to determine the relationship between absorptive capacity and organizational responsiveness. The study used a survey method for data collection, based on the instrument developed by

Liao et al. (2003), which was professionally translated into Russian. The sample of Russian SMEs was drawn from the attendees at the annual conference of an association that supports Russian SMEs. Senior executives from 825 small and medium enterprises that attended the conference were asked to participate in the survey anonymously. Usable surveys were eventually returned by 114 of the firms, a response rate of 13.82%. Respondents were asked to answer a series of questions corresponding to each of the variables, using an anchored 5-point Likert scale for each question. Responses were screened for completeness and assessed for growth orientation using both subjective and objective measures. The final sample consisted of 91 Russian growth-oriented SMEs ($N = 91$). The variables were operationalized from the survey data by conducting a principal components analyses with varimax rotation were used to reduce the data and identify unidimensional factor structures for each variable. Cronbach's alpha was used to measure internal reliability of each factor structure. Scores greater than .70 were calculated for most variables, with the exception of strategic orientation, where the Cronbach's alpha was .68. For each variable the mean value for each factor was calculated for use in the subsequent hierarchical multiple regression analysis. The size variable distribution was found to be non-normal and positively skewed. This was corrected using a logarithmic transformation.

A full regression run was made in SPSS 16.0 with organizational responsiveness as the dependent variable and external knowledge acquisition, internal knowledge dissemination, strategic orientation, environmental turbulence, firm size,

and age as the independent variables. This was labeled Model 1. Subsequent models (Model 2 – 5) were run by adding the interaction terms (cross products) for the standardized independent variables to the regression model, one at a time. To prevent multicollinearity, the previous cross product was dropped from the multiple regression model as a new one was added. Models 2 through 5 each looked at the joint effect of two variables on the dependent variable over and above their separate effects.

The results of the hierarchical multiple regression analysis were compared empirically with the results of Liao et al. (2003) using a two-stage process. The first stage consisted of gathering the results from similar analyses for both Russian and U.S. samples of growth-oriented SMEs. Those results were compared subjectively and also statistically. Calculation of partial *F*-test scores enabled the determination of the relative precision of the measures. Calculation of two sample *t*-tests examined the significance of differences in the mean values of the variables used in the two analyses. Finally, a comparison of *z*-scores sought to determine which of the correlation coefficients between variables in each study were statistically significant. Utilization of these three techniques provided an empirical comparison between the two studies upon which the conclusions were partially based.

The present study exhibits several threats to its internal and external validity as described by Campbell and Stanley (1963). In terms of internal validity, one threat is *history*. The sample of Russian SMEs may have experienced specific events or conditions within Russia that altered their perception of the study. A second threat to internal validity is that of *instrumentation*. Since the survey instrument was translated

from English into Russian, there is a possibility that the instrument did not carry the same meaning for the Russian SMEs in the current sample that the English language instrument conveyed to the sample of American SMEs in Liao et al. (2003). Another threat to internal validity comes from the high non-response rate for the survey. Campbell and Stanley refer to this threat as *attrition*. As previously noted, there is also a threat to internal validity created by the inclusion of rapid-growth SMEs in the sample, which may represent a different part of the SME growth continuum,

With regard to external validity, the sample of Russian growth-oriented SMEs may, or may not, be *representative* of the population. Given the significant result of the chi square test, the sample may have mitigated the threat of representativeness. However, the high non-response rate contributes another threat to external validity. Finally, selection of the sample for the current study from among the attendees at a conference held by a business association dedicated to supporting SME growth may also constitute a threat to external validity of the current study.

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

This chapter presents the results of the study. First, descriptive statistics regarding the variables used in the analysis are presented. This is followed by summaries of the results of the analyses of each of the seven hierarchical multiple regression models. And, finally, an empirical comparison of the findings with the results reported by Liao et al. (2003) is presented.

Descriptive Statistics

Table 2 provides descriptive statistics and the correlation matrix for the independent and dependent variables. The average age (years since establishment) of the responding organizations is 9.31 years and ranged from 1 to 78 years. The average size (number of employees) of the responding organizations is 69 people, with a range from 4 to 200 employees and a mode of 20 (8.8%). The distribution of the size variable was significantly positively skewed (Cuddleback, Wilson, Orme, & Combs-Orme, 2004), so a logarithmic transformation was used to normalize the distribution. After normalization, $M = 3.64$, $SD = 1.106$.

Of the 21 correlations listed below the principal diagonal in Table 2, 10 show significant correlations ($p \leq .05$) between independent variables or between an independent variable and the dependent variable. A significant correlation between an independent variable and the dependent variable is usually considered good, because it indicates the model explains a great deal of the variance in the dependent variable. Thus, significant correlations with organizational responsiveness (dependent variable) of external knowledge acquisition ($r = .39$; $p < .01$), internal knowledge dissemination

Table 2

Descriptive Statistics and Correlation Matrix

Variables	*M*	*SD*	Age	Size	External Knowledge Acquisition	Internal Knowledge Dissemination	Environmental Turbulence	Strategic Orientation	Organizational Responsiveness
Age	9.31	8.58	1.00						
Size (after transformation)	3.64	1.11	.22*	1.00					
External Knowledge Acquisition	2.37	.63	.00	-.02	1.00				
Internal Knowledge Dissemination	2.54	.70	.27**	-.01	.45**	1.00			
Environmental Turbulence	2.95	.63	-.12	-.05	-.25**	-.13	1.00		
Strategic Orientation	3.64	2.12	.07	.12	.18*	.17	-.18*	1.00	
Organizational Responsiveness	2.31	.60	.29**	.09	.39**	.41**	-.18*	.07	1.00

* = $p < .05$; ** = $p < .01$

($r = .41$; $p < .01$), and environmental turbulence ($r = -.18$; $p < .05$) all add to the reliability of the general regression model. This type of high correlation is ordinarily not considered "multicollinearity" (Garson, 2005).

Multicollinearity among independent variables is a concern for multiple regression analyses, as it inflates standard errors and makes assessment of the relative importance of the independent variables unreliable (Garson, 2005). This means that a small number of discordant cases potentially can affect the results strongly. However, as Garson pointed out, if sheer prediction is the research purpose, as opposed to causal analysis, high multicollinearity of the independents does not affect the efficiency of the regression estimates. Even though none of the reported levels of correlation approach the usual threshold value of $r = .80$ that indicates problematic multicollinearity among the independents (Bryman & Cramer, 1997), the SPSS 16.0 collinearity diagnostics table was used while running each hierarchical regression model to assess multivariate multicollinearity. Despite the relatively large number of significant correlations among the independent variables, multicollinearity did not appear to be an issue in this analysis.

Regression Results

Table 3 lists the results of the five models of hierarchical multiple regression analysis performed initially. Hypotheses H1 and H2 stated that firm absorptive capacity, characterized by the two constructs external knowledge acquisition and internal knowledge dissemination, would be positively related to organizational

responsiveness. As indicated in Table 3, Model 1 (R^2 = .28, p < .01) suggests that organizational responsiveness does, in fact, increase as the firm's absorptive capacity (operationalized by their external knowledge acquisition and internal knowledge dissemination activities) increases. The individual standardized regression coefficients (β) for both variables are statistically significant (external knowledge acquisition β = .27, p < .01; internal knowledge dissemination β = .22, p < .05), lending strong support for hypotheses H1 and H2. The regression coefficient for the control variable age is also statistically significant, indicating that age also contributes to the organizational responsiveness of the sample Russian SMEs (β = .21, p < .05). The other control variable, size, is not statistically significant, indicating that it does not show a major relationship with organizational responsiveness of Russian SMEs.

Hypotheses H3a and H3b state that the impact of a firm's absorptive capacity on its responsiveness would be stronger in a turbulent environment. As shown in Table 3, these hypotheses were not supported by the analysis. Model 2 indicates that the regression coefficient for the interaction variable (cross product) for environmental turbulence and external knowledge acquisition (Environmental Turbulence x External Knowledge Acquisition) is not statistically significant (β = .35, p > .05), indicating that the impact of external knowledge acquisition is independent of environmental turbulence. Hypothesis H3a is not supported. Likewise, Model 3 in Table 3 indicates that the cross product for environmental turbulence and internal knowledge dissemination (Environmental Turbulence x Internal Knowledge Dissemination) is not statistically significant (β = -.44, p > .05). This indicates that for Russian SMEs,

Table 3

Results of Initial Multiple Regression Analysis (N = 91)

	Model 1		Model 2		Model 3		Model 4		Model 5	
Variables	β	*t*	β	*t*	β	*t*	β	*t*	β	*t*
Age	.21	2.09*	.21	2.02*	.21	2.03*	.21	2.05*	.21	2.07*
Size	.06	.60	.06	.61	.05	.52	.06	.62	.06	.58
EKA	.29	2.66**	-.02	-.04	.28	2.58*	.37	1.64	.30	2.73**
IKD	.22	2.04*	.23	2.09*	.59	1.13	.22	1.99*	.10	.50
Env. Turbulence	-.06	-.66	-.32	-.74	.23	.54	-.05	-.53	-.06	-.66
Strat. Orientation	-.05	-.56	-.07	-.70	-.05	-.50	.11	.27	-.28	-.85
Env. Turbulence x EKA			.35	.60						
Env. Turbulence x IKD					-.44	-.72				
Strat. Orientation x EKA							-.20	-.41		
Strat. Orientation x IKD									.28	.72
R-Square		.28		.28		.28		.28		.28
Adjusted R-Square		.23		.22		.22		.22		.22
R-Square Change				.00		.00		.00		.00
F		5.37**		4.62**		4.65**		4.58**		4.65**
F-Change				-.75		-.72		-.79		-.72

* = p < .05; ** = p < .01

EKA = external knowledge acquisition, IKD = internal knowledge dissemination

internal knowledge dissemination is also independent of environmental turbulence. Therefore, H3b is also not supported.

Hypotheses H4a and H4b state that an SME's strategic orientation will moderate the relationship between absorptive capacity and organizational responsiveness. Again, these two hypotheses were not supported by the analysis. In Model 4 on Table 3, the regression coefficient for the cross product of strategic orientation with external knowledge acquisition (Strategic Orientation x External Knowledge Acquisition) was not statistically significant (β = -.20, p > .05). This indicates independence between a Russian SME's strategic orientation and their external knowledge acquisition activities. This result demonstrates that hypothesis H4a is not supported. In the same vein, Model 5 shows that the regression coefficient for the interaction variable Strategic Orientation x Internal Knowledge Dissemination was not statistically significant (β = .28, p > .05), signifying independence between those two variables, as well. Hypothesis H4b is also not supported.

In each of the five hierarchical multiple regressions models shown in Table 3, the regression coefficients for the variable age were approximately the same value and statistically significant (Model 1: β = .21, p < .05; Model 2: β = .21, p < .05; Model 3: β = .21, p < .05; Model 4: β = .21, p < .05; and Model 5: β = .21, p < .05). This appeared to demonstrate a significant impact on the organizational responsiveness of Russian SMEs that warranted further investigation. Table 4 lists the results of two additional hierarchical regression models testing the interaction of environmental turbulence and strategic orientation on age as a moderating factor in organizational

responsiveness. Model 6 added the interaction variable Strategic Orientation x Age. As shown in Table 4, the regression coefficient of the cross product of strategic

Table 4

Results of Additional Multiple Regression Analysis (N = 91)

	Model 6		Model 7	
Variables	β	*t*	β	*t*
Age	-.47	-1.35	-.30	-.45
Size	.07	.70	.06	.64
EKA	.30	2.83**	.29	2.64**
IKD	.23	2.17*	.23	2.08*
Env. Turbulence	-.09	-.94	-.16	-1.02
Strat. Orientation	-.35	-2.02*	-.06	-.61
Strat. Orientation x Age	.77	2.04*		
Env. Turbulence x Age			.51	.78
R-Square		.31		.28
Adjusted *R*-Square		.25		.22
R-Square Change		.03		.01
F		5.36**		4.66**
F-Change[1]		-0.00*		-.70

* = p < .05; ** = p < .01

EKA = external knowledge acquisition, IKD = internal knowledge dissemination

1. *F*-Change from Model 1 (*F* = 5.36)

orientation and age proved to be statistically significant ($\beta = .77$, $p < .05$). This demonstrates that strategic orientation is a significant moderator in the relationship between age and organizational responsiveness. In Model 7 a similar analysis was conducted with the cross product of environmental turbulence and age. Here the regression coefficient ($\beta = .51$, $p > .05$) was not statistically significant, demonstrating

that the impact of age on organizational responsiveness is independent of environmental turbulence.

Moderating Effects of Strategic Orientation

To further interpret the significant interaction effect between strategic orientation and age, the present study followed a similar analytical approach to that used by Liao et al. (2003, p. 77) for interpreting the significant interaction effect between strategic orientation and external knowledge acquisition. First, variable means from Table 2 for all variables except age, strategic orientation, and their cross product were substituted into Model 6. The result was a reduced multiple regression equation of two predictors and their cross product, of the general form:

$$y = b_0 + b_1(X_1) + b_2(X_2) + b_3(X_3).$$

where y is the dependent variable (Organizational Responsiveness); b_0 is the intercept (regression constant); $b_1, \ldots b_3$ are the partial regression coefficients; and $X_1, \ldots X_3$ are the remaining variables (Age, Strategic Orientation, and Age x Strategic Orientation).

Next, the values for high and low strategic orientation as one standard deviation above the mean and one standard deviation below the mean were selected. These values were then algebraically transformed to one standard deviation above and below the zero point, respectively. This method is consistent with the procedure followed by previous researchers (Cohen & Levinthal, 1990; Liao, Welsch, & Stoica, 2003). Substituting each of these values into the reduced equation yielded the following two linear equations, which are graphically depicted in Figure 2:

When strategic orientation demonstrates high proactiveness (mean + 1 *SD*):

organizational responsiveness = -.458 + 1.525 * age.

When strategic orientation demonstrates low proactiveness (mean – 1 *SD*):

organizational responsiveness = -.107 -.523 * age.

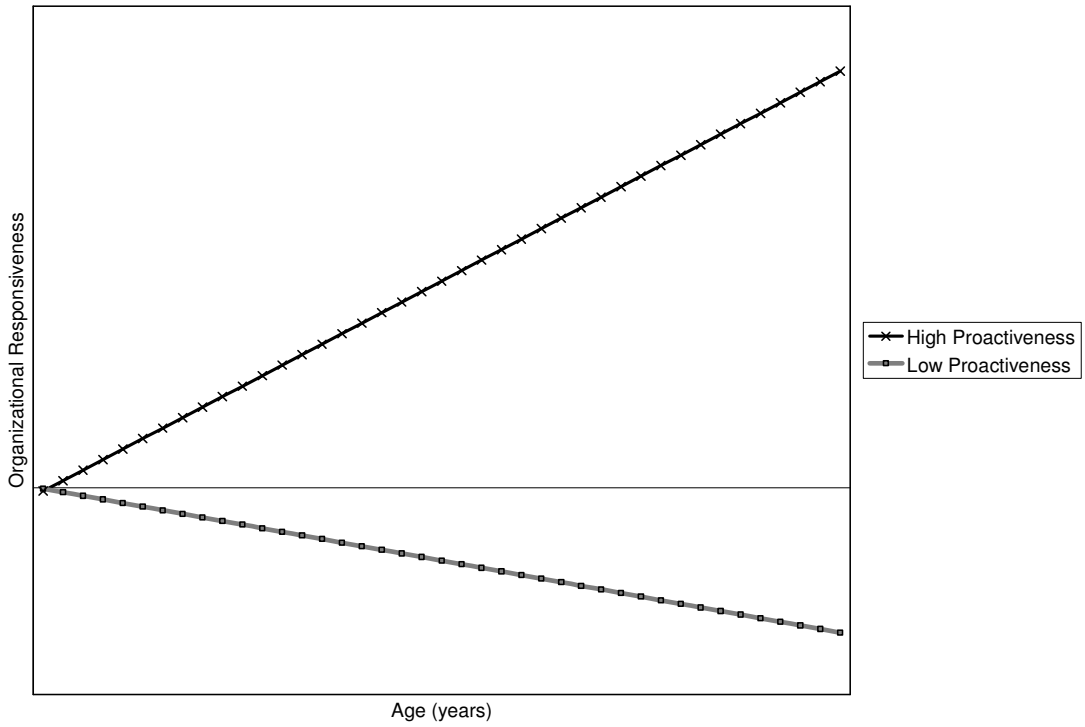

Figure 2

Moderating Effects of Strategic Orientation

As illustrated in Figure 2, the influence of age on organizational responsiveness is much stronger for SMEs with a more aggressive strategic orientation than for a SME with a less aggressive strategic orientation. This relationship appears to grow stronger the older the firm becomes. This effect is consistent with previous research showing strategy's moderating effect on the relationship of age to

responsiveness as a pattern of performance outcomes that is contingent on a firm's strategy (Henderson, 1999). For SMEs in Russia with a more aggressive strategic orientation (i.e., a high level of proactiveness), such as prospectors (Miles & Snow, 1978), the effect of that orientation on their organizational responsiveness gets stronger over time. For those Russian SMEs with a less aggressive strategic orientation (i.e., a low level of proactiveness), such as those that Miles and Snow (1978) characterize as defenders, age has a negative effect on organizational responsiveness that only gets more negative over time. For the specific case of Russia, it may be more helpful to characterize more aggressive strategic orientation as entrepreneurial behavior, and less aggressive strategic orientation as administrative behavior (Gagnon, Sicotte, & Posada, 2000). Entrepreneurial behavior is guided by opportunities that arise, while administrative behavior is constrained by the optimal use of available resources. The views of both sets of researchers (Gagnon, Sicotte, & Posada, 2000; Miles & Snow, 1978) are complementary, in that both prospectors and entrepreneurs are more market-oriented, while defenders and administrators are more resource-oriented.

Empirical Comparison

This section looks at the similarities and differences between the findings of this study and that of the predecessor study (Liao et al., 2003). To evaluate the comparative precision of the measurement of the variables between the two studies, a partial *F*-test was conducted on each of the variables. Only external knowledge acquisition for the U.S. sample exhibited a statistically significant level of precision

over the Russian sample, $F(90,106) = 2.03$, $p < .05$. A *t*-test applied to the means of the variables for both studies indicated that the null hypothesis (H0: $M_{US} = M_{Russia}$) was rejected in five of seven cases. This leads to the conclusion that there is a significant difference at the $\alpha = .05$ level between the means from the U.S. sample on the variables of size, external knowledge acquisition, internal knowledge dissemination, environmental turbulence, and organizational responsiveness, and the means of those same variables for their Russian counterparts. This result indicates that the samples are far more different than they are similar.

Those correlation coefficients that appeared significant ($p < .05$) in both studies were converted to *z*-scores (using Fisher's *z*-score transformation of Pearson's *r*), the difference between the z-scores computed and divided by the estimated standard error of difference between the two correlations. The result was tested against the tabular standard at $\alpha = .05$ level ($z = 1.96$) to determine significance. Analysis of the correlation coefficients from both studies indicates that only the difference between the correlation coefficient for external knowledge and organizational responsiveness in the U.S. sample ($r = .72$, $p < .01$) was statistically significant ($z = 3.52$, $p < .05$) compared to the equivalent correlation coefficient from the Russian sample ($r = .39$, $p < .01$). This test reveals that there is an importance to the correlation between external knowledge acquisition and organizational responsiveness (EKA:OR) at work in the U.S. sample that does not apply in the Russian sample. The differences in the other correlations are not statistically significant, however. This significance in the EKA:OR correlation may also indicate a

more refined recognition on the part of U.S. growth-oriented SMEs of the relative importance of external knowledge acquisition to the ability of the firm to respond to changes in their task environment.

While the primary findings of the present study (namely that absorptive capacity is positively related to organizational responsiveness for growth-oriented SMEs in Russia) are similar to the findings of Liao et al. (2003) relating to the positive relationship of absorptive capacity and organizational responsiveness for growth-oriented SMEs in the U.S., there are some acute differences. These differences include the composition of the sample, the environments in which they operate, the effects of organizational age, and possible cultural biases.

First, there are the differences in the samples analyzed. The U.S. SMEs appeared to be more homogeneous than the Russian SMEs. All of the U.S. firms came from one geographic area (Washington State), tended to be manufacturing oriented (22.3%), and tended to be younger ($M_{age} = 3.23$) but larger ($M_{size} = 4.97$) than the Russian sample. It has been shown empirically that some geographic locations have a greater capacity to create or absorb new ideas than others (NESTA Policy & Research Unit, 2007). Therefore, the environment in a single location tends to be more homogeneous than multiple locations. This similarity may be either positive or negative, but the firms in that location face an environment that is more alike than different. The Russian SMEs represented a much broader geographical base, coming from at least four different regions across Russia, and tended to be from wholesale and retail trade (31.9%), with only 3.3% coming from the manufacturing sector. The

Russian firms tended to be older (M_{age} = 9.31) and smaller (M_{size} = 3.64). While Liao et al. used a selection criteria for growth-orientation of the SMEs in their sample of an objective growth rate (>6%), over 27% of the Russian SMEs reported growth rates in excess of 30% for the past three years. These firms would generally be considered high-growth SMEs (Fischer & Reuber, 2003; Fischer, Reuber, Hababou, Johnson, & Lee, 1998; Heneman, Tansky, & Camp, 2000).

Table 5

Comparison of Sample Industry Sectors – U.S. and Russia

Industry Sector	*Russian Rank*	*Russian percent*	*U.S. rank*	*U.S. percent*
Business services	1	20.5	2	22.3
Wholesale	2	17.6	3	8.7
Retail	3	14.3	3	8.7
High tech	4	10.5	-	-
Manufacturing	8	7.7	1	43.4

Second, there are great differences in the environments in which the U.S. firms and the Russian firms operate. In the time frame during which the U.S. SMEs were surveyed, there was some level of turbulence in their environment. Manufacturing was on the decline, but moderate gains were being made in the knowledge and services sectors. SMEs in Washington State were experiencing high costs of doing business in the state, and facing intense foreign competition (Washington Alliance for

a Competitive Economy, 2004). As characterized by previous studies describing elements of the organizational environment (Dess & Beard, 1984; Sharfman & Dean, 1991), these issues are market-driven and can be characterized as either relating to dynamism (e.g., cost of doing business) or munificence (e.g., foreign competition). The Russian SMEs faced a much more hostile environment (Covin & Slevin, 1989; Wright, Palmer, & Perkins, 2005) than their U.S. counterparts. Brzezinski and Bell (2003) cited 10 systemic risk factors (political, institutional, and cultural) that inhibit business in Russia. Those factors include issues as varied as the prevalence of corruption, complex, and sometimes confiscatory tax laws, a slowly developing rule of law for businesses and investors, inadequate banking institutions, and bureaucratic arbitrariness. These issues transcend the market, and cross into the realm of environmental complexity (Dess & Beard, 1984). These 10 risk factors for SMEs in Russia combine to make not just a hostile environment, but one that can be described as "hyperturbulent," an excessively turbulent environment that threatens to overwhelm the collective adaptability of all participants in the environment (McCann & Selsky, 1984). Perhaps these environmental factors account for some of the differences noted between the two analyses related to the moderating effects of environmental turbulence on absorptive capacity and organizational responsiveness. Liao et al. (2003) stated:

> As environments become more turbulent, SME's management faces a greater volume and complexity of both information and knowledge. It seems that they choose to be more internally focused by developing

> disseminating capabilities, *buffering them from being overloaded with information and reducing uncertainty* [italics added]. (pp. 77-78)

One possible explanation for Russian SMEs is that the level of environmental turbulence is so great that this same buffering mechanism inhibits not only the external knowledge acquisition Liao et al. reported (p. 77), but, in the same way, is also strong enough to shift their focus away from internal knowledge dissemination as well.

A third difference noted between the two studies is the significance of organizational age to organizational responsiveness. Liao et al. concluded "SMEs size and age are not statistically significant, suggesting they do not have a major impact on the organizational responsiveness of SMEs." (p. 75) For the Russian SMEs in this study, however, age was statistically significant in five of the seven multiple regression models conducted. As shown in Figure 1, this study demonstrated that, for Russian SMEs, strategic orientation has a moderating effect on organizational responsiveness that gets more pronounced as the SME ages. Liao et al. demonstrates a similar moderating effect on organizational responsiveness by strategic orientation as external knowledge acquisition increases (p. 78).

It is possible that these two interpretations of the moderating effect of strategic orientation are related to one another, but the data for each respondent group (U.S. and Russian SMEs) are altered by their cultural biases, which are reflected in the way they answered particular survey questions. This would be consistent with the findings of Stewart, Carland, Carland, Watson, and Sweo (2003) in their comparative exploration of U.S. and Russian entrepreneurs and the cultural constraints identified by Hofstede

(1980, 1993) and McGrath, MacMillan, Yang, and Tsai (1992). Cohen and Levinthal (1990) stated that a firm's absorptive capacity is largely a function of the firm's prior related knowledge (p. 128). This prior knowledge can be accumulated through the process of incidental learning, and that learning may take place over time.

Incidental learning is defined as "the byproduct of some other activity, such as task accomplishment" (Marsick & Watkins, 2001, p. 25). Marsick and Watkins described a cycle of incidental learning that occurs with or without the learners' conscious awareness, where the learner interprets their context and formulates alternative actions based on recollections of past solutions and by a search for other potential models of action. This context may be as simple as an interpersonal interaction with one other person, such as a co-worker, or it might be a highly complex interaction with many actors and many political, social, or cultural norms that have never before been addressed by the learner. After an action is taken, the learner assesses the outcomes to determine whether the results were as intended. It is these concluding thoughts that form the new understandings that the learner brings when encountering a new situation. These new understandings add to the corpus of prior knowledge. This is consistent with Cseh's (1998) study of owner-managers in Romania after the fall of the Communist regime. Cseh found that the learning of the owner-managers of small, successful, private companies in post-Communist Romania was stimulated mostly by context, particularly the ambiguity of an emerging quasi-market economy. While describing their company and the critical incidents they experienced, Cseh's subjects talked extensively about the context in which they

worked, in particular as "being the whole economic, political and social environment of Romania as part of Central and Eastern Europe" (p. 89). Previous research linking prior knowledge to SME success also tends to support the idea that prior learning is a function of the age of an organization (Cooper, Gimeno-Gascon, & Woo, 1994; Gartner & Liao, in press; Shane, 2000). The implication is clear that prior learning, as one component of external knowledge acquisition, may come from many sources and may even occur beyond the learner's conscious awareness (in other words, the subject is learning without the learning being either formal or structured). Such an interpretation helps reconcile the relationship between the moderating effects of strategic orientation on organizational responsiveness as age increases demonstrated in the present study, and the moderating effects of strategic orientation on organizational responsiveness as external knowledge acquisition increases, demonstrated by Liao et al. (2003).

Table 6 compares the results of the two studies in terms of hypotheses supported.

Table 6

Comparison of Hypotheses Supported - by Study

Hypothesis	Current Study	Liao et al. (2003)
H1: external knowledge acquisition positively related to organizational responsiveness	S	S
H2: internal knowledge dissemination positively related to organizational responsiveness	S	S
H3a: greater environmental turbulence will have a greater impact on external knowledge acq.	NS	NS

Hypothesis	Current Study	Liao et al. (2003)
H3b: greater environmental turbulence will have a greater impact on internal knowledge dissem.	NS	S
H4a: the more proactive strategic orientation, external knowledge acq. will have a greater impact on organizational responsiveness	NS	S
H4b: more proactive strategic orientation, internal knowledge dissem. will have a greater impact on organizational responsiveness	NS	NS
Moderating effects of environmental turbulence on internal knowledge dissemination	NS	S
Moderating effects of strategic orientation on external knowledge acquisition	NS	S
Statistically significant correlation of organizational age in multiple regression	S	NS
Modertaing effects of strategic orientation on age	S	NS

Note: S = hypothesis supported; NS = hypothesis not supported

Summary of Empirical Comparison

Even though this study attempted to replicate the methods and theoretical framework used by Liao et al. (2003) with a new sample of growth-oriented SMEs from Russia, there appear to be many more differences than similarities between the current study and that of Liao et al. They found that H1 and H2 relating the two tested aspects of absorptive capacity, external knowledge acquisition and intrafirm knowledge dissemination, to organizational responsiveness were strongly supported by their findings, as did this study. H3a, stating that environmental turbulence has a positive impact on external knowledge acquisition was not supported in either study. H3b stating that environmental turbulence has a positive impact on intrafirm knowledge dissemination was supported by Liao et al., while the present study could not support it. H4a stating that a proactive strategic orientation has a positive impact

on external knowledge acquisition was supported in the U.S. study but not in the present study. H4b stating that a proactive strategic orientation has a positive impact on intrafirm knowledge dissemination was not supported in either study.

In addition to the differences in support for the various hypotheses, there were notable differences in the characteristics of the samples of growth-oriented SMEs from the U.S. and Russia, as well as the environments in which they operate. While Liao et al. (2003) identified a significant moderating effect by environmental turbulence on the relationship between internal knowledge dissemination and organizational responsiveness, the current study found none. Liao et al. also identified a significant moderating effect by strategic orientation on the relationship between external knowledge acquisition and organizational responsiveness, which, again, this study could not replicate. The current study demonstrated that, for this sample of growth-oriented SMEs in Russia, age is a statistically significant factor in organizational responsiveness. Liao et al. found no such significance for their sample of growth-oriented SMEs from the U.S. Based on that significant outcome, this study added two additional hierarchical multiple regression models testing the effects of the interaction variables (cross products) for age with strategic orientation and environmental turbulence. Analysis of those two additional models identified a significant interaction between strategic orientation and age in relationship to organizational responsiveness, but not between environmental turbulence and age. In order to better understand the moderating effect by strategic orientation on the relationship of age and organizational responsiveness, the multiple regression model was algebraically

reduced to a set of two linear equations and graphed. The chart of these two linear equations (Figure 1) graphically demonstrates that as an organization ages their strategic orientation affects their organizational responsiveness. For SMEs with a proactive strategic orientation, such as a prospector in Miles and Snow's typology (1978), organizational responsiveness increases as the organization gets older. For SMEs with a less proactive strategic orientation, like Miles and Snow's reactor, organizational responsiveness decreases the older the organization gets.

The current study then attempted to reconcile the two differing views of the moderating effects of strategic orientation demonstrated by the two studies. If we assume that the way the U.S. and Russian SMEs answered the survey questions was changed by their cultural biases, consistent with previous research comparing U.S. and Russian business actors (e.g., managers of SMEs, entrepreneurs, etc.) (Ardichvilli, 2001; Hofstede, 1993; Stewart, Carland, Carland, Watson, & Sweo, 2003), and that the level of environmental turbulence in Russia is causing the respondents to buffer themselves from information overload, it is possible to see that the present study and Liao et al. are perhaps reporting the same phenomenon regarding the moderating effects of strategic orientation on organizational effectiveness from different perspectives (or points of view). Using the adult learning theory component of incidental learning, it is also possible to demonstrate that the Russian SMEs' body of prior knowledge (one external knowledge acquisition process) is actively adding to the SME's absorptive capacity. Marsick and Watkins (2001) clearly demonstrated this process of incidental learning is happening continuously, even though the Russian

SME managers are not consciously aware of it. Hence, what the U.S. SMEs identified in the survey as active external knowledge acquisition, the Russian SMEs reported as merely a function of the age of the organization.

Summary of Research Findings

First, descriptive statistics were presented showing that the average organizational age of respondent firms is 9.31 years, and ranged from 1 to 78 years. The average size of respondent firms was 69 people, with a range from 4 to 200 people, and a mode of 20. The distribution of the size variable was significantly positively skewed, which was corrected with a logarithmic transformation. After transformation, the statistics for size were $M = 3.64$, $SD = 1.11$.

Multicollinearity did not appear to be a problem in the study, with all correlations meeting the usual standard of $r < .80$. After running the hierarchical multiple regression analyses for all variables, the results clearly indicated that organizational responsiveness is positively related to the organization's absorptive capacity, and that relationship is statistically significant ($R^2 = .27$, $p < .01$). This study confirmed H1 and H2, as did Liao et al. (2003). Like the previous U.S. study, this study also did not support H3a. However, H3b, which was supported by Liao et al. for the U.S. SMEs, was not supported for the Russian SMEs in the present study. The same situation applied to H4a. It was supported by Liao et al., but not by the present study. H4b was not supported by either study.

For growth-oriented Russian SMEs, age is significantly related to organizational responsiveness ($\beta = .21$, $p < .05$). This was not true of the U.S. SMEs.

This study was further able to demonstrate a significant moderating effect of strategic orientation on firm age as it relates to organizational responsiveness ($\beta = .77$, $p < .05$). This relationship is such that for firms with a highly proactive strategic orientation, organizational responsiveness continues to grow as the firm ages. For firms with a strategic orientation of low proactiveness, organizational responsiveness decreases as the firm ages. Using the principles of adult learning theory, incidental learning, and the role of prior knowledge, the study showed that this moderating effect of strategic orientation on age was similar to the moderating effect of strategic orientation on external knowledge acquisition demonstrated by Liao et al. (2003).

A comparative analysis between the two studies highlighted several issues. First, the U.S. SMEs appeared to be more homogeneous than the Russian SMEs. Second, there are great differences in the environments in which they operate. A third difference noted between the two studies is the significance of organizational age to organizational responsiveness. Comparative results of the two studies were analyzed using several statistical tools for further insight. The comparative precision of the measurement of the variables between the two studies was evaluated using a partial *F*-test conducted on each of the variables. Only external knowledge acquisition for the U.S. sample exhibited a statistically significant level of precision over the Russian sample, $F(90,106) = 2.03$, $p < .05$. A *t*-test applied to the means of the variables for both studies leads to the conclusion that there is a significant difference, at the $\alpha = .05$ level, between the means of the U.S. variables size, external knowledge acquisition, internal knowledge dissemination, environmental turbulence, and organizational

responsiveness and their Russian counterparts. This result indicates that the samples are far more different than they are similar. Using calculated z-scores compared against the tabular standard at the $\alpha = .05$ level indicates that only the difference between the correlation coefficient for external knowledge and organizational responsiveness in the U.S. sample ($r = .72$, $p < .01$) was statistically significant ($z = 3.52$, $p < .05$) compared to the equivalent correlation coefficient from the Russian sample ($r = .39$, $p < .01$). This test reveals that there is an importance to the correlation between external knowledge acquisition and organizational responsiveness at work in the U.S. sample that does not apply to the Russian sample. The differences in the other correlations are not statistically significant, however.

These findings raise definite implications for both theory and practice, relating to entrepreneurship education in emerging economies contrasted with entrepreneurship education in the U.S. (and the West, in general). This study also raises some issues that have implications for future research in this area. These implications, along with a reflective summary of this research will be addressed in Chapter Five: Reflections and Conclusions.

CHAPTER FIVE: REFLECTIONS AND CONCLUSION

As demonstrated in the literature, interest in the concepts of organizational learning, the learning organization, knowledge management, and the ways they impact the response of companies to changes in their environment goes back to the early 20th century. More recent literature continues to delve into the learning processes of entrepreneurs and their organizations, but Liao et al. (2003) identified a gap or void in the entrepreneurial learning literature in the area of organizational adaptation in the context of growth-oriented SMEs. In an effort to address that gap, their study tested four sets of hypotheses derived from a theoretical framework of the different dimensions of absorptive capacity to examine the effect of absorptive capacity on organizational responsiveness, as well as their hypothesized moderating effects of environmental turbulence and strategic orientation.

Overview of Study

The present study continues the trend of examining the learning processes of organizations, looking particularly at the growth-oriented SME gap by replicating the methods and theoretical framework used by Liao et al. (2003) with a sample of growth-oriented SMEs from Russia. This study tests the same four sets of hypotheses used by Liao et al. on a new sample of Russian growth-oriented SMEs. It concludes by comparing and contrasting the findings relating the two elements of absorptive capacity, external knowledge acquisition and intrafirm knowledge dissemination, to measures of organizational responsiveness, and any moderating effects of environmental turbulence and firm strategic orientation derived from the sample of

Russian growth-oriented SMEs with the findings of Liao et al. (2003) on their sample of American growth-oriented SMEs. The following paragraphs provide an overview of the present study.

Data Collection

Data were collected from a sample of Russian SMEs with the assistance of the U.S. Russia Center for Entrepreneurship, using a Russian language translation of the survey instrument used by Liao et al. (2003). The translation was done by a reputable professional translation service, known for their domain knowledge of business topics. No back translation (Russian back to English) was conducted. The data collected were evaluated for completeness and screened for inclusion in the subsample of growth-oriented SMEs using a set of objective and subjective criteria. Objectively, respondents were evaluated on their self reported revenue growth rate greater than six percent. Each respondent was evaluated subjectively, based on their stated growth intention. Only those meeting both objective and subjective criteria were included in the final sample. The resulting sample consisted of 91 growth-oriented SMEs from across Russia.

Statistical Analysis

The collected data for each of the independent and dependent variables were subjected to a principal component analysis to reduce the data and determine measure reliability (unidimensionality) for each of the items to be included in the analysis. Mean factor scores were computed for each of the four independent variables

(predictors) and the dependent variable for inclusion in the subsequent analyses. Organizational size and age were included as control variables.

Using SPSS 16.0 statistical analysis software, a series of hierarchical multiple regression analysis models were constructed and analyses conducted on the derived variables. The first regression model (Model 1) was a full regression pass using external knowledge acquisition, internal knowledge dissemination, environmental turbulence, strategic orientation, organizational size, and age as the independent variables. Organizational responsiveness was the dependent variable. This model was designed to test hypotheses H1: external knowledge acquisition is positively related to SMEs' organizational responsiveness, and H2: Intrafirm knowledge dissemination is positively related to SMEs' organizational responsiveness.

Next, a new hierarchical regression model (Model 2) was constructed including the same variables as Model 1 in block 1, but adding an interaction variable to block 2 of the model. This interaction variable was constructed as the cross product of external knowledge acquisition and environmental turbulence, and was designed to incorporate the joint effect of the two variables on the dependent variable over and above their separate effects. Model 3 was constructed by substituting the interaction variable for internal knowledge dissemination and environmental turbulence into block 2 in place of the previous interaction variable. Models 2 and 3 were designed to test hypotheses H3a: The greater the environmental turbulence, the greater the impact of external knowledge acquisition on SME organizational responsiveness, and H3b:

The greater the environmental turbulence, the greater the impact of intrafirm knowledge dissemination on SME organizational responsiveness.

Models 4 and 5 were constructed similarly using the interaction variables for strategic orientation and the two components of absorptive capacity in order to test hypotheses H4a: The more proactive their strategic orientation, the greater the impact of external knowledge acquisition on SME organizational responsiveness, and H4b: The more proactive their strategic orientation, the greater the impact of intrafirm knowledge dissemination on SME organizational responsiveness.

Findings

Evaluation of the results of the five hierarchical multiple regression models showed strong support for H1 and H2, but no support for H3a, H3b, H4a or H4b. In Model 1, both external knowledge acquisition and internal knowledge dissemination showed a statistically significant, positive correlation to organizational responsiveness, thus supporting both hypotheses H1 and H2. However, neither construct of absorptive capacity had a significant correlation to either environmental turbulence or their interaction variables with environmental turbulence, leading to the conclusion that the data do not support either hypothesis H3a or H3b. A similar phenomenon was apparent with Models 4 and 5 looking at the two constructs of absorptive capacity and strategic orientation. Neither external knowledge acquisition nor internal knowledge dissemination showed a statistically significant correlation to either strategic orientation or their cross products. This led to the finding that neither hypothesis H4a nor H4b were supported.

Further Regression Analyses

Unlike Liao et al. (2003), this study found no support for the interaction effects of either environmental turbulence or strategic orientation. However, this study did show a statistically significant relationship with age in each of the five original regression models. Therefore, additional regression models were run to evaluate the moderating effects of environmental turbulence and strategic orientation on age as related to organizational responsiveness. A new hierarchical multiple regression model, labeled Model 6, was run including the interaction variable (cross product) for strategic orientation and age. The regression coefficient for this interaction variable was statistically significant at the $p < .05$ level, indicating a moderating effect of strategic orientation on age as it impacts organizational responsiveness. Model 7 included the cross product of environmental turbulence and age in block 2. This model showed no statistical significance between environmental turbulence and age. Following the procedure of Liao et al. (2003) and Cohen and Levinthal (1990), a further investigation was made into the moderating effects of strategic orientation on age identified in Model 6. By holding all independent variables constant except age, strategic orientation and their cross product, the original regression model was reduced to a smaller 3 variable equation. By algebraically reducing the mean for strategic orientation to the zero point (x intercept), and substituting the value of strategic orientation to be $M + 1SD$ to indicate a high level of strategic proactivity and $M - 1SD$ to indicate a low level of strategic proactivity, the model was reduced to two linear equations, which were then graphed. That graph (Figure 2) depicts the moderating

effects of strategic orientation on age in relation to organizational responsiveness. The more proactive a Russian growth-oriented SME's strategic orientation is, the more it will positively affect organizational responsiveness as the organization ages. Conversely, the less proactive a Russian SME's strategic orientation, the more it will negatively affect organizational responsiveness as the organization ages. A possible cause of this moderating effect may be the more proactive strategy indicates a more opportunity-driven firm. This may allow the more proactive firm to react differently to the changes they face, and thus grow wiser as they grow older.

Comparative Analysis

The findings of analyses in this study were then compared to the findings from Liao et al. (2003) to identify similarities and differences between the two studies. There were differences noted in the data collection methods used, and differences in the resulting samples of growth-oriented SMEs identified for the analysis. This study, like Liao et al., found a strong, statistically significant relationship between both external knowledge acquisition and internal knowledge dissemination and organizational responsiveness in a sample of growth-oriented SMEs. However, the moderating effects of environmental turbulence and strategic orientation on the relationship of the two constructs of absorptive capacity to organizational responsiveness were markedly different between the two studies. Organizational age, while not statistically significant in Liao et al., was demonstrated to be statistically significant in this study. This led to a further analysis of whether or not there were moderating effects on the relationship between age and organizational responsiveness

by environmental turbulence and/or strategic orientation, as Liao et al. demonstrated between environmental turbulence and internal knowledge dissemination and also between strategic orientation and external knowledge acquisition.

Taking into account the role of prior learning as a form of external knowledge acquisition noted by Cohen and Levinthal (1990) and the unconscious aspect of incidental learning described by Marsick and Watkins (2001), the moderating effect of strategic orientation on age demonstrated in the current study can be viewed as analogous to, or at least complementary of, the moderating effect of strategic orientation on external knowledge acquisition demonstrated by Liao et al. (2003).

Limitations

This study, like all empirical studies, has limitations that need to be considered. The survey population, survey instrumentation, research design, and potential cross-cultural measurement bias are factors that tend to limit the use of this research.

Survey Population

Despite the best efforts and good intentions of the researcher and those assisting in data collection in Russia, the population of SMEs in Russia tends to be a difficult domain in which to gather data. Given the issues encountered by previous researchers in Russia eliciting survey data from SMEs and individual entrepreneurs (Stewart, Carland, Carland, Watson, & Sweo, 2003; U. S. Russia Center for Entrepreneurship, 2004), and the low response rates for SME surveys in general (Newby, Watson, & Woodliff, 2003), this study took a different tack and attempted to gather survey responses at a large, nation-wide gathering of SMEs in Moscow.

Despite this innovative attempt, the response rate remained low (13.82%). After selecting for growth-orientation, this left a relatively small sample of 91 firms. While the *A-priori Sample Size Calculator* for multiple regressions (Soper, 2008) indicates $N = 81$ is sufficient to detect medium size effects, using multiple regression modeling (with six predictor variables), at the alpha = .05 level with a power of 0.7, it is far from optimal. For example, Garson (2005) lists a rule of thumb for calculating sample size for multiple regression as $N \geq 104 + m$, where m = the number of independent variables. In this case, m = 6 so $N = 110$. So, while the current sample is adequate statistically, a larger sample would enable the model to test smaller effect sizes, providing wider generalizability.

Another limitation of the study is the geographic make up of the sample. Liao et al. (2003) drew their sample from SMEs located only in Washington State, while the sample in the present study represented several geographic regions across Russia. In countries as large and diverse as the United States and Russia it is possible that various factors may alter their business environments on a local basis (NESTA Policy & Research Unit, 2007), which may tend to affect the way the respondents interpret and answer the questions on the survey.

There is one other limitation of the study with regard to the sample that should be mentioned, and this involves non-response bias. This study had a response rate of less than 14%. Even for surveys of SMEs, this is a limited response. Due to the anonymous nature of the survey, and the venue for collection, there was no strategy for non-response follow-up. Without a non-response follow up there is no way of

knowing whether the non-respondents are similar or different from the respondents. While a chi-square confirmed that the respondents came from a random sample of industry sectors, there is no way to evaluate whether the sample was biased between responders and non-responders. If a larger number of Russian SMEs had responded to the survey, perhaps the results would have been more similar to Liao et al's results than is true in the present study.

Survey Instrumentation

The survey questionnaire used by Liao et al. (2003) is very long and complex. In an effort to maintain comparability with Liao et al. this study adopted the same instrument. There was no pilot survey done, using the rationale that Liao et al.'s use of the same survey instrument was sufficient for that purpose. Anecdotal evidence (i.e., verbal comments received by staff at the data collection site and the number of partially completed surveys returned) indicates the nature of the instrument itself may have contributed to the low response rate. Several recent researchers have developed scales which contain fewer items and/or easier measures for the same variables used in this study, which might help simplify the instrument and, at the same time, make it easier to translate into other languages. For examples of these new items, see: Covin, Slevin, and Covin (1990) for application of an instrument developed by Gupta and Govindarajan (1984) to identify SMEs with a strong growth orientation; Covin, Green, and Slevin (2006) for examples of measures of environmental dynamism and environmental hostility with fewer items, and yet high scores on measures of internal reliability; and Han, Kim, and Srivastava (1998) propose a more parsimonious

measure of market orientation by following a component-wise approach that still employs Narver and Slater's (1990) procedures used in Liao et al.

Research Design

As pointed out by Liao et al. (2003), the use of a cross-sectional research design leads to difficulty in being able to judge causality. While both the current research and Liao et al. demonstrate a positive relationship between absorptive capacity and organizational responsiveness, the design does not allow either study to establish causality. As Liao et al. puts it, "does absorptive capacity cause SME's responsiveness, or vice versa, or do they simply co vary across time? The issue of causality can be better addressed in longitudinal designs" (p. 80). The cross-sectional design is, however, subject to comparability errors in the samples that can lead to a misinterpretation of findings (Borg, Gall, & Gall, 1993). Another design limitation with the current study is the use of Liao et al.'s findings from their U.S. sample in a comparative analysis with the current sample of Russian growth-oriented SMEs taken at least five years later. Given the dynamic nature of the business environment in both countries in terms of market potential, competitive intensity, and other issues, it would be interesting to note the differences (or lack thereof) in results of a cross-national comparative study following the approach of Song and Parry (1997), with contemporary samples of growth-oriented SMEs from both countries used in the analyses. This simultaneous analysis would also help preclude the possibility of outcomes being skewed due to slight methodological differences in the approaches of different researchers over time.

Cross-Cultural Measurement Bias

Any time an instrument developed in one country in a language other than that of the subject country is used, there are potential problems with item congruence (Yamnill & McLean, 2005). While the survey instrument was translated from English into Russian by professional translators, fluent in both languages and having domain knowledge of business terms used in both countries, there is no assurance that words with comparable meanings were actually used. A more rigorous system of cross-translation, using the forward-back translation approach between multiple translators, with subjective, objective, and pilot evaluations of the translation (Chen, Holton, & Bates, 2003) could help enhance the quality of the research and reduce the biases that may occur in the usual one-way translation process.

Reflections

This study mirrors the findings of Liao et al. (2003) that suggest that the responsiveness of growth-oriented SMEs in Russia, like the U.S., is a function of their organizational absorptive capacity. Their responsiveness is expected to increase if they have well-developed capabilities in acquiring knowledge from outside the firm and in disseminating that knowledge throughout the firm. However, this study also contradicts the findings of Liao et al. that relate to the moderating effects of environmental turbulence and strategic orientation. Specifically, the earlier study showed a growth-oriented SME's responsiveness was expected to rise if: (1) they face a more dynamic environment and have well-developed capabilities to disseminate knowledge internally; and (2) they have well-developed capabilities to acquire

external knowledge and they adopt a more proactive strategic orientation (such as a prospector in Miles and Snow's 1978 typology). However, this research study could not replicate those findings for the sample of Russian growth-oriented SMEs. Neither environmental turbulence nor strategic orientation had a statistically significant relationship with either external knowledge acquisition or internal knowledge dissemination.

Furthermore, this study demonstrated organizational age is significant for Russian SMEs in relation to their responsiveness, yet Liao et al. demonstrated no such relationship with U.S. SMEs. That relationship between age and organizational responsiveness for the Russian SMEs was further moderated by strategic orientation. A more proactive strategic orientation, again such as a prospector in Miles and Snow's typology, had an increasingly positive effect on responsiveness as the organization aged. Similarly, if the SME adopted a less proactive strategic orientation, such as a defender in Miles and Snow's typology, the effect on responsiveness was progressively more negative with age.

Inductively, it appears that this moderating effect of strategic orientation on age may relate to the moderating effect of strategic orientation on external knowledge acquisition demonstrated by Liao et al. Each SME brings with it some level of prior knowledge (Cohen & Levinthal, 1990), and, through incidental learning, is constantly adding to that body of knowledge even if they are not conscious of it (Marsick & Watkins, 2001). In other words, the common doctrine that age brings wisdom may apply to organizations as well as individuals. Therefore, the effect of strategic

orientation that U.S. SMEs attribute to conscious external knowledge acquisition, the Russian SMEs are attributing to age, as an unconscious proxy for external knowledge acquisition. This phenomenon may also be a function of a perceived ambiguity of certain English words, or words that do not have exact equivalents in Russian. During the 70 years of the Soviet era, Socialist ideology associated private business dealings with speculation, profiteering, and exploitation. The lasting stigma associated with individuals pursuing business opportunities outside the sanctioned state enterprises led to a stagnation of the concepts and language used, essentially freezing their vocabulary of business terms and concepts in the very early 20th century. The West, however, was continuing to evolve in the business domain throughout the 20th century and into the 21st, resulting in new concepts and new language to express those new business concepts. In the post-Soviet era, it has not been possible to develop new Russian words to convey these business concepts, so often the business community in Russia simply transliterated the English words into Russian. The simple meaning of those words, however, does not convey the rich history and complex linguistic evolution that imbue them in English. An example of this is the word, "marketing." It has been transliterated into Russian as "маркетиг" (marketing), but remains largely frozen in the pre-Soviet era notion of only the distribution function, rather than the modern Western view of the 4-Ps of marketing (product, price, promotion, and place). This can lead to a situation where the Russian SME respondent may understand the literal meaning of a word, but not the underlying context in the same way a native English-

speaking might respond in English The outcome is the same, however, in that organizational responsiveness is enhanced by a more proactive strategic orientation.

Another topic for reflection is the differing operationalization of the environmental turbulence construct between the two studies. Liao et al. (2003) listed their reliance on one market-driven dimension of environmental turbulence as a possible limitation in their study. In the principal component factor analysis for the environmental turbulence variable in this study, all three of Dess and Beard's (1984) dimensions of the environment were apparent (dynamism, munificence, and complexity). In fact, the greatest effect (measured by the largest eigenvalue) was demonstrated in the dimension of environmental complexity rather than dynamism. Given that all three dimensions were represented in the factor analysis, it is puzzling that environmental turbulence did not present a significant effect on any of the variables. This runs counter to many of the recent studies demonstrating the moderating effects of environmental turbulence (Becherer & Maurer, 1997; Chandler, 2008; Han, Kim, & Srivastava, 1998; Liao, Welsch, & Stoica, 2003; Lindelöf & Löfsten, 2006; Sharfman & Dean, 1991). One possible explanation of this phenomenon is that since the entrepreneurs and managers of SMEs in the Russian sample live and work in what has been referred to as a hyperturbulent environment, and that is the only business environment they know, they may not feel the turbulence. This may be likened to children raised in abject poverty in a village in Africa. Poverty is all they have ever known, so absent outside influence, they are not unhappy with their lot because they do not know anything else. The possible exception to the

moderating effects of environmental turbulence for Russian growth-oriented SMEs is that the only environment they have ever operated in is extremely turbulent from a Western perspective, but is *normal* as far as they are concerned.

Implications for Theory

Even though this research attempted to replicate faithfully the methods and theoretical framework used by Liao et al. (2003), the previous results were only partially confirmed in this present study of Russian growth-oriented SMEs. Some of the findings (such as support for the positive relationship of external knowledge acquisition and internal knowledge dissemination with organizational responsiveness) were validated. Other results, such as the moderating effects of environmental turbulence on internal knowledge dissemination, were not confirmed. Therefore, it is not possible to generalize the findings of Liao et al. to all growth-oriented SMEs, particularly those in what McCann and Selsky (1984) refer to as hyperturbulent environments.

What might be the case in less turbulent or even static environments? While theory demonstrates multiple dimensions of environmental turbulence, Liao et al. examined only the market-driven constructs of turbulence. The present study derived a principal component factor that included the complexity dimension, which is not market-driven. However, even the separate factors of munificence, complexity, and dynamism did not show a relationship with organizational responsiveness (see Appendix E). More study is necessary to generalize the theoretical basis for the moderating effects of environmental turbulence on organizational responsiveness.

Implications for Future Research

Future research should address several of the limitations noted for this study, and those noted by Liao et al. (2003) in order to extend the generalizability of the findings to the broader population of growth-oriented SMEs. First, further refinement of the instrument is necessary to shorten it and simplify it for cross-cultural use. More parsimonious measures should be developed for the main predictors, such absorptive capacity, environmental turbulence (that addresses both market and non-market constructs), and the dependent variable, organizational responsiveness.

Second, a more vigorous forward and back translation process should be applied to the instrument when it is being used in other cultures. A process, such as that described in Chen, Holton, and Bates (2003) could be applied, whereby a translator (or translation team) fluent in, for example, Russian, translates the instrument from English into Russian. A second translator (or team), independent from the first, translates the instrument from Russian back into English, and any discrepancies between the original English version and the new English translation are noted. Subject matter experts help resolve any ambiguity of concepts and refine word choices. This process continues iteratively until all issues of cross-cultural understanding are resolved to the satisfaction of both translators. This will help ensure that inter-rater reliability between U.S. and Russian respondents is maximized.

Third, the refined instrument should be validated for cross-cultural use. Manolova, Eunni, and Gyoshev (2008) described a process employing structural equations modeling (SEM) and a confirmatory factor analysis to validate their

instrument for use in emerging economies in Eastern Europe. A similar process could be applied to validate the refined, translated questionnaire. As Manolova et al. pointed out, each country operates within its own set of regulatory, normative and cognitive institutions, many of which are culturally based. In order for researchers to be able to generalize the theories and metrics developed for more mature Western, market-based economies to the less mature, transitional emerging economies, they need to verify that the theories and metrics are universal rather than context-specific. This instrument validation would assist with the generalization of the results as universally applicable across cultures.

Fourth, sufficiently large, contemporaneous samples should be drawn from the population of growth-oriented entrepreneurs in both the U.S. and Russia, and a simultaneous cross-cultural comparison study conducted, following Verba's (1971) two-stage approach, where the researcher, in stage one, first looks for the relationships between dependent and independent variables within each sample, and then, in stage two, compares those relationships between samples. With access to the two contemporaneous samples, the researcher could apply a Chow test to compare regression results obtained for one group of subjects to results obtained in the other group of subjects (Garson, 2005) as a more robust approach to comparison than this study could aspire to, with access only to a single set of data and the published results from Liao et al. This process would help promote the adaptation of theory developed in a mature economy to reflect the context of the emerging economy, as suggested by Bruton, Ahlstrom, and Obloj (2008).

Fifth, future research could also further investigate the replicability of the moderating effects of strategic orientation on organizational responsiveness, posited by this study on the basis of organizational age, and by Liao et al. (2003) on external knowledge acquisition. Are these two phenomena related or not related or do they simply coexist as a function of the two samples tested?

Sixth, this study reaffirms Liao et al.'s (2003) suggestion that future research address the gap they identified in research and empirical evidence on the relationship of organizational responsiveness and performance in the context of SMEs. Specifically, what role, if any, does absorptive capacity have in that relationship? This study (as well as Liao et al.) demonstrated a clear relationship between two constructs of absorptive capacity and organizational responsiveness in growth-oriented SMEs. An interesting research question would be to ask if there are similar relationships between absorptive capacity and how well a firm performs.

Finally, another valuable extension of the present research in entrepreneurial cognition would be a study to examine the effects of entrepreneurial training interventions on one or more of the dimensions of absorptive capacity. If the purpose of entrepreneurship training is to increase knowledge acquisition and dissemination in SMEs, does that in fact happen? If it does happen, does that have any measurable impact on the SMEs in some dimension, such as organizational responsiveness, performance, or even survival?

Implications for Practice

This research confirms Liao et al.'s (2003) implications for managers of growth-oriented SMEs, namely to "sensitize SME managers to the importance of absorptive capacity in maintaining organizational responsiveness to external environmental changes" (p. 79). An implication of this research for entrepreneurs and SME managers in Russia is that there may be a correlation between absorptive capacity and organizational responsiveness. Further, this correlation or relationship, having been documented for growth-oriented SMEs in both the U.S. and Russia, is something they may want to investigate and implement in their firms. Activities that enhance external knowledge acquisition and those that improve internal knowledge dissemination can be easily incorporated into their daily operations in such a way that they may improve their organization's abilities to more effectively respond to changes in their business environment. External knowledge acquisition is accelerated through participation in business associations, meeting with customers on a regular basis, and engaging in formal or informal training programs. Activities that have been shown to promote internal knowledge dissemination include conducting interdepartmental meetings; producing a company newsletter with industry, company, and customer news; and conducting *all-hands* meetings that include all employees in the company. By working to improve the elements of absorptive capacity, the research indicates that there is a possible link to improved organizational responsiveness. Prior research shows that successful entrepreneurs are exceptional learners (Smilor, 1997).

The present research holds implications for business associations that exist in emerging economies. These associations can work with SMEs to stress the early development of processes to acquire and disseminate knowledge. Such associations can use this research to show how acquisition and dissemination of knowledge will help SMEs react appropriately to changes in their environments.

Similarly, this research has implications for entrepreneurship educators practicing in emerging economies. Implications include developing curricula for entrepreneurs and business associations that includes the early development of processes in SMEs to acquire and disseminate knowledge. The curricula should help them understand the possible relationship between knowledge acquisition and dissemination and successful organizational response to changes in their environments identified by the current study and corroborated by Liao et al. (2003)..

One frequently used method in emerging economies is that of the training-business creation model which proposes training courses are one of the helpful, but not always necessary, conditions for SME development (Martin, Wech, Sandefur, & Pan, 2006). Yamnill and McLean (2005) defined *transfer of training* as the degree to which trainees apply the knowledge, skills, behaviors, and attitudes learned in training to their job. They further stated that the acquisition of knowledge, skills, behaviors, and attitudes in training is of little or no value if the new characteristics are not generalized to the job setting (task environment) or are not maintained over time. In 2000, Holton, Bates, and Ruona developed an empirical tool called the Learning Transfer System Inventory (LTSI), and proposed that practitioners could use this tool

to: (1) assess potential transfer of training problems before conducting major learning interventions; and (2) target interventions designed to enhance transfer of training. LTSI has now been translated into a number of languages and cross-culturally validated (Chen, Holton, & Bates, 2003; Holton, Bates, Bookter, & Yamkovenko, 2007; Holton, Bates, & Ruona, 2000; Yamnill & McLean, 2005). Because formal training is a frequently chosen method for both external knowledge acquisition and for internal knowledge dissemination, utilization of a tool such as LTSI becomes an important step for helping SMEs increase their absorptive capacity.

Until such time that future research can provide a clearer empirical relationship between absorptive capacity and organizational responsiveness for growth-oriented SMEs, particularly the moderating effects of environmental turbulence and strategic orientation that this study was not able to validate and generalize in Liao et al.'s (2003) findings, entrepreneurship educators in emerging economies should adopt and adapt proven tools, such as LTSI, to investigate other factors that may be contributing to the successes they are achieving, in order to ground their training practices in the appropriate theories applicable to emerging economies, such as Russia.

Conclusion

Applying the theoretical framework posited by Liao et al. (2003) for the relationship between absorptive capacity and organizational responsiveness for a sample of growth-oriented SMEs from the U.S., this study was able to replicate some of their findings for a sample of growth-oriented SMEs from Russia, but could not replicate all of them. This present study showed a significant positive relationship of

external knowledge acquisition and internal knowledge dissemination with organizational responsiveness. It also identified a statistically significant relationship between age and organizational responsiveness that was not evident in Liao et al.

Using these findings, this study concludes that it is not possible to generalize the findings of Liao et al. to all growth-oriented SMEs, particularly those in what is sometimes referred to as hyperturbulent environments. This conclusion has implications for future research to extend the generalizability of the findings on the relationship between absorptive capacity and organizational responsiveness, and echoes Liao et al.'s call for further research into the relationship between organizational responsiveness and performance in growth-oriented SMEs. Given the inability of this study to generalize all of the relationships between absorptive capacity and organizational responsiveness for growth-oriented SMEs, implications for practice are listed for entrepreneurs and SME managers in Russia, and more widely for business associations and entrepreneurship educators working in emerging economies. These implications for practice are intended to help entrepreneurs take advantage of research findings to promote improved responsiveness, and business associations and entrepreneurship educators to ground their training interventions in the appropriate theories applicable to emerging economies, such as Russia.

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APPENDICES

APPENDIX A

Russian SME Survey Instrument: English Language

The following questions ask for information in general about your company's products, years in business, number of employees and type of company structure. It is not our intention to ask for confidential information; therefore, we will accept approximate estimates for your answers. We will use this information only to estimate how different companies responded to our questions about the marketing environment.

Q-1 What are your company's main products and/or services?

1. _____

2. _____

3. _____

Q-2 For how many years has your company been in business? _____ (number of years)

Q-3 How many people does your company employ? _____ (number of employees)

Q-4 Does your company have a marketing department? *(Please circle only one number)*

1. Yes

2. No

Q-5 How many of your employees have marketing as their main job? _____ (number of employees)

Q-6 What is the title of the person in your company responsible for marketing decisions?

_____

Q-7 What percent of your overall budget is spent on marketing? _____ (percent of budget)

Q-8 Of the following company organizations, please indicate which best describes your company's organization? *(Please circle only one number)*

1. Sole Proprietorship
2. Partnership
3. Corporation
4. Cooperative
5. Other (please specify) _____

Q-9 The following are generally considered characteristics of the market environment for a company. How much change do you foresee in your company's environment in the following characteristics?

(Please circle only one number for each change characteristic)

		Very Few Changes	Few Changes	Moderate Number of Changes	Many Changes	Very Many Changes
A	Overall size of the market	1	2	3	4	5
B	Number of new products	1	2	3	4	5
C	Use of technology	1	2	3	4	5
D	Market growth rate	1	2	3	4	5
E	Consumer preferences	1	2	3	4	5
F	Number of new customers	1	2	3	4	5
G	Configuration of product features in the market	1	2	3	4	5
H	Nature of the overall market	1	2	3	4	5
I	Number of competitors	1	2	3	4	5
J	Competitors' positioning	1	2	3	4	5
K	Suppliers' positioning *(offerings)*	1	2	3	4	5
L	Regulations regarding the market *(number of regulations)*	1	2	3	4	5
M	Regulations regarding the market *(content of regulations)*	1	2	3	4	5

Q-10 How would you best define the buyer-supplier relationship for your industry?

(Please circle only one number for each of the following statements)

		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
A	The buyer-supplier relations are stable.	1	2	3	4	5
B	The emphasis on market share is very strong.	1	2	3	4	5
C	Brand loyalty is vital.	1	2	3	4	5
D	The buyer-supplier relations are based upon close personal contact.	1	2	3	4	5

In the previous questions, you indicated the amount of change you foresaw in the environment of your company. With the following questions, please indicate which of the answers best describe the industry and market your company is in.

Q-11 The competition in the industry is:

(Please circle only one number)

1. Relaxed *(sheltered markets, isolated competition)*
2. Extended *(market share battle, competition on scale)*
3. Dynamic *(intense rivalry, focus on innovation)*

Q-12 The market scope for most of the companies in this type of business is in general:

(Please circle only one number)

1. Narrow *(company markets localized)*
2. Defined Broadly *(national or global mass-markets and advertising)*
3. Variety *(overlaps traditional markets, transitions)*

Q-13 The best organizational characterization for the industry could be:

(Please circle only one number)

1. Guild-Like *(craftsman's guild with a high degree of protection against imitation by others. Examples: airlines, hospital industry)*

2. Scale-Orchestrated *(organization designed to serve high-volume or mass markets, with moderate imitation possibilities. Example: automobile industry)*

3. Idea Driven *(organization stripped from any isolating mechanisms such as patents. Once on the market, the products/services can be easily copied. Examples: cellular phones, computers)*

Q-14 The control orientation for almost all companies is:

(Please circle only one number)

1. Loose *(no particular driver)*

2. Moderate *(mainly cost driven)*

3. Tight *(cost and quality driven)*

Q-15 The stage of the life cycle for the main products is:

(Please circle only one number)

1. Introduction *(The product is new on the market, i.e. less than one year. It is neither widely accepted nor widely used yet. Example: color laser printers)*

2. Growth *(The product begins to be widely accepted and used. There is a constant increase in demand. Example: cellular phones)*

3. Maturity *(No significant increase in demand. The market is saturated with this type of product. Example: TVs, VCRs, credit cards)*

4. Decline *(A decline in production and usage of the product/service. Example: typewriters)*

Q-16 Please rank the following strategic priorities for businesses as they pertain to your company from 1 = the most important on your priority list, to 9 = the least important.

A. Nurture protected market ☐	D. Economies of scale ☐	G. Market timing ☐
B. Isolate firm from rivals ☐	E. Market share control ☐	H. Information ☐
C. Extract temporary profits ☐	F. Build brand loyalty ☐	I. Speed of response ☐

Q-17 The following are generally considered methods or ways that describe and/or measure how businesses search for information. Please indicate on the agree/disagree scale whether your company uses the particular method. *(Please circle only one number for each of the statements)*

		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
A	In my organization, we meet with customers at least once a year to find out what products or services they will need in the future.	1	2	3	4	5
B	In this business unit we do a lot of in-house market research.	1	2	3	4	5
C	We are slow to detect changes in our customers' product preferences.	1	2	3	4	5
D	We poll end users at least once a year to assess the quality of the products and services.	1	2	3	4	5
E	We are slow to detect fundamental					

	shifts in our industry *(e.g., competition, technology, regulation).*	1	2	3	4	5
F	We periodically review the likely effect of changes in our business environment *(e.g., regulation)* on customers.	1	2	3	4	5
G	We have designed and implemented a scanning system of our business environment.	1	2	3	4	5
H	We consider every employee in the business as a possible source of information.	1	2	3	4	5
I	We consider every client as a source of information.	1	2	3	4	5
J	Our designers meet at least twice a year with our key accounts.	1	2	3	4	5
K	Our production specialists meet at least twice a year with our key accounts.	1	2	3	4	5

Q-18 The following are generally considered methods or ways that describe and/or measure the process of information filtering within an organization. Please indicate on the agree/disagree scale whether your company uses the particular method. *(Please circle only one number for each of the statements)*

		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
A	My organization has a formal system for monitoring goals.	1	2	3	4	5
B	My organization has a formal planning system detailed for each department and activity.	1	2	3	4	5
C	My organization has developed many formal rules and routines that are used in dealing with almost any activity.	1	2	3	4	5
D	My organization has developed many in-formal rules and routines that are used in dealing with almost any activity.	1	2	3	4	5
E	When new information contradicts existing rules and routines, these rules and routines are quickly changed.	1	2	3	4	5
F	Routines delay attentive consideration of much of the information coming into the organization.	1	2	3	4	5
G	The existing rules and routines place low value on market information.	1	2	3	4	5

H	We have interdepartmental meetings at least once a quarter to discuss market trends and developments.	1	2	3	4	5
I	Marketing personnel in our business unit spend time discussing customers' future needs with other functional departments.	1	2	3	4	5
J	When something important happens to a major customer in the market, the whole business unit knows about it in a short period of time.	1	2	3	4	5
K	Data on customer satisfaction are disseminated at all levels in this business unit as a regular basis.	1	2	3	4	5
L	When one department finds out something important about competitors it is slow to alert the other departments.	1	2	3	4	5

Q-19 The following are generally considered to be methods or ways that describe and/or measure the responsiveness of a business organization to market signals. Please indicate on the agree/disagree scale whether your company uses the particular method. *(Please <u>circle only one number</u> for each of the statements)*

		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
A	It takes us more time than needed to decide how to respond to our competitors' price changes.	1	2	3	4	5
B	For one reason or another we tend to ignore changes in our customer's product or service needs.	1	2	3	4	5
C	We periodically review our product development efforts to ensure that they are in line with what customers want.	1	2	3	4	5
D	Several departments get together periodically to plan a response to changes taking place in our business environment.	1	2	3	4	5
E	If a major competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately.	1	2	3	4	5
F	The activities of the different					

	departments in this business unit are well coordinated.	1	2	3	4	5
G	Customer complaints fall on deaf ears in this business unit.	1	2	3	4	5
H	Even if we came up with a great marketing plan, we probably would not be able to implement it in a timely fashion.	1	2	3	4	5
I	When we find that customers would like us to modify a product or service, the departments involved make concerted efforts to do so.	1	2	3	4	5
J	We evaluate the over- or under-fulfilling of our goals and adapt accordingly.	1	2	3	4	5

The questions below relate to what your operation is like. Each of these questions contain four (4) descriptions of organizations. Please distribute 100 points among the four descriptions depending on how similar the description is to your business. None of the descriptions is any better than any other; they are just different. For each question please use all the 100 points. You may divide the points in any way you wish. Most businesses will be some mixture of those described.

Q-20 Kind of organization *(Please distribute the 100 points among **A**, **B**, **C** & **D**)*

_____ points for **A**	**(A)** My organization is a very **personal** place. It is like an extended family. People seem to share a lot of themselves.	_____ points for **B**	**(B)** My organization is a very **dynamic** and entrepreneurial place. People are willing to stick their necks out and take risks.
_____ points for **C**	**(C)** My organization is a very **formalized** and **structural** place. Established procedures generally govern what people do.	_____ points for **D**	**(D)** My organization is **very production oriented**. A major concern is with getting the job done, without much personal involvement.

Q-21 Leadership *(Please distribute the 100 points among **A**, **B**, **C** & **D**)*

_____ points for **A**	**(A)** The head of my organization is generally considered to be a **mentor**, **sage**, or a **father** or a **mother** figure.	_____ points for **B**	**(B)** The head of my organization is generally considered to be an **entrepreneur**, an **innovator**, or a **risk taker**.

_____ points for **C**	**(C)** The head of my organization is generally considered to be a **coordinator**, an **organizer**, or an **administrator**.	_____ points for **D**	**(D)** The head of my organization is generally considered to be a **producer**, a **technician**, or a **hard-driver**.

Q-22 What holds the organization together *(Please distribute the 100 points among **A**, **B**, **C** & **D**)*

_____ points for **A**	**(A)** The glue that holds my organization together is **loyalty** and **tradition**. Commitment to this firm runs high.	_____ points for **B**	**(B)** The glue that holds my organization together is a commitment to **innovation** and **development**. There is an emphasis on being first.
_____ points for **C**	**(C)** The glue that holds my organization together is **formal rules** and **policies**. Maintaining a smooth running institution is important here.	_____ points for **D**	**(D)** The glue that holds my organization together is the emphasis on **task**s and **goal accomplishment**. A production orientation is commonly shared.

Q-23 What is important *(Please distribute the 100 points among **A**, **B**, **C** & **D**)*

_____ points for **A**	**(A)** My organization **emphasizes human resources**. High cohesion and morale in the firm are important.	_____ points for **B**	**(B)** My organization emphasizes **growth** and **acquiring new resources**. Readiness to meet new challenges is important.
_____ points for **C**	**(C)** My organization emphasizes **permanence** and **stability**. Efficient, smooth operations are important.	_____ points for **D**	**(D)** My organization **emphasizes competitive actions** and **achievement**. Measurable goals are important.

The following questions ask for information in general about your company's performance. It is not our intention to ask for confidential information; therefore, note that quite broad intervals are suggested for your answers. We will use this information only to estimate how different companies responded to our questions about the marketing environment.

Q-24 Please circle the appropriate interval figures expressed in percentages for **return on equity** and **return on sales** for your business in the last year. *(Please circle only one set of numbers for each measure)*

	Percentage per year					
Return on equity *(Net profit divided by net worth)*	(-)%	0%	1-10%	11-20%	21-30%	more than 30%
Return on sales *(Net profit divided by sales)*	(-)%	0%	1-10%	11-20%	21-30%	more than 30%

Q-25 Please indicate your agreement or disagreement with the following statements about your company. *(Please circle only one number for each of the statements)*

		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
A	Our company is exceeding our sales goal.	1	2	3	4	5
B	Our company is exceeding our growth goal.	1	2	3	4	5

C	Our company is performing well.	1	2	3	4	5
D	Our company is performing better than our competitors.	1	2	3	4	5

Q-26 Please circle the interval figure that best indicates the annual sales growth of your company for the last three years. *(Please circle only one number for each year)*

Year	Average Growth (percentage)						
2005	(-) %	0%	1-5%	6-10%	11-20%	21-30%	more than 30%
2006	(-) %	0%	1-5%	6-10%	11-20%	21-30%	more than 30%
2007 *(estimate)*	(-) %	0%	1-5%	6-10%	11-20%	21-30%	more than 30%

Q-27 Is there anything else you would like to share with us about your business and/or this questionnaire?

Thank you for your time and effort in answering this questionnaire!

[Information on how/where to send completed surveys goes in this box]

APPENDIX B

Russian SME Survey Instrument: Russian Language

Предложенные ниже вопросы призваны отразить информацию общего характера о продукции Вашей компании, численности работников в ней и типе её организации. Мы не ставим целью получение конфиденциальной информации, поэтому нам подойдут приблизительные цифры в ответах. Эта информация будет использоваться только для оценки того, как разные компании ответили на вопросы относительно сферы маркетинга.

B-1 Какие основные товары и/или услуги предлагает Ваша компания?

1. _____

2. _____

3. _____

B-2 Сколько лет работает Ваша компания? _____ (количество лет)

B-3 Сколько человек работает в Вашей компании? _____ (число работников)

B-4 Имеется ли в Вашей компании отдел маркетинга? *(пожалуйста, обведите только одну цифру, обозначающую вариант ответа)*

1. Да

2. Нет

B-5 Для какого числа Ваших работников маркетинг является основным занятием? _____ (число работников)

B-6 Какую должность занимает тот, кто в Вашей компании отвечает за принятие решений в области маркетинга?

_____

B-7 Какой процент из общего бюджета расходуется на маркетинг? _____ (процент от бюджета)

B-8 Какая из указанных ниже организационных форм лучше всего описывает организацию Вашей компании? *(Пожалуйста, обведите только одну цифру, обозначающую вариант ответа)*

1. Индивидуальный предприниматель
2. Товарищество
3. АО
4. Кооператив
5. Прочее (пожалуйста, укажите) _____

В-9 Приведённые ниже факторы обычно считают характеристиками рыночной среды, в которой действует компания. Какие изменения Вы предполагаете в следующих характеристиках той среды, где работает Ваша компания?

(Пожалуйста, обведите только одну цифру для каждой характеристики изменений)

		Очень мало изменений	Мало измен-й	Умеренное кол-во изменений	Много измен-й	Очень много измен-й
А	Общий объём рынка	1	2	3	4	5
Б	Количество новых товаров	1	2	3	4	5
В	Использование технологии	1	2	3	4	5
Г	Темпы роста рынка	1	2	3	4	5
Д	Предпочтения потребителей	1	2	3	4	5
Е	Число новых потребителей	1	2	3	4	5
Ж	Конфигурация характеристик продукта на рынке	1	2	3	4	5
З	Общая природа рынка	1	2	3	4	5
И	Количество конкурентов	1	2	3	4	5
Й	Позиционирование конкурентов	1	2	3	4	5
К	Позиционирование поставщиков *(предложения)*	1	2	3	4	5
Л	Нормы и положения, действующие в отношении рынка *(количество норм и положений)*	1	2	3	4	5
М	Нормы и положения, действующие в отношении рынка *(содержание норм и положений)*	1	2	3	4	5

B-10 Какой из вариантов ответов лучше всего описывает отношения между покупателями и продавцами в Вашей отрасли? *(Пожалуйста, обведите только одну цифру для каждого из приведённых высказываний)*

		Согласен в значительной степени	Согласен	Ни то, ни другое	Не согласен	Не согласен в значительной степени
А	Отношения «покупатель-продавец» стабильны.	1	2	3	4	5
Б	Очень большое внимание уделяется доле на рынке.	1	2	3	4	5
В	Чрезвычайно важно сохранять лояльность брэнду	1	2	3	4	5
Г	Отношения «покупатель-продавец» основаны на тесном личном контакте	1	2	3	4	5

В ответах на предыдущие вопросы Вы указали, в какой степени, по Вашему мнению, изменится среда, в которой действует Ваша компания. Отвечая на следующую группу вопросов, укажите, какие варианты ответов лучше всего описывают отрасль и рынок, на котором действует Ваша компания.

B-11 Конкуренцию в отрасли можно охарактеризовать как:

(Пожалуйста, обведите одну цифру-вариант ответа)

1. Слабую *(защищённые рынки, изолированная конкуренция)*
2. Напряжённую *(«войны» за долю на рынке, конкуренция по масштабам)*
3. Динамичную (*интенсивное соперничество, внимание - инновациям)*

B-12 Для большинства компаний в этом бизнесе объем рынка, как правило:

(Пожалуйста, обведите одну цифру-вариант ответа)

1. Узок *(рынки компании локализованы)*
2. Широк *(национальные или глобальные массовые рынки и реклама)*
3. Неоднороден *(как традиционные рынки, так и свои собственные ниши)*

B-13 С точки зрения организации отрасль лучше всего можно охарактеризовать так:

(Пожалуйста, обведите одну цифру-вариант ответа)

1. «Гильдия» *(«гильдия мастеров» с высокой степенью защиты от имитации со стороны других. Примеры: авиакомпании, больницы)*

2. Ориентировка на масштаб *(организация призвана отвечать требованиям крупномасштабного производства или массового рынка при умеренных возможностях для имитации. Пример: автомобильная промышленность)*

3. Движимая идеей *(организация не имеет каких-либо инструментов изоляции, напр. патентов. После того, как её продукты/услуги выводятся на рынок, их с лёгкостью можно скопировать. Примеры: сотовые телефоны, компьютеры)*

B-14 Почти во всех компаниях контроль можно охарактеризовать как:

(Пожалуйста, обведите одну цифру-вариант ответа)

1. Мягкий *(конкретные показатели для контроля отсутствуют)*

2. Умеренный *(в основном - себестоимость)*

3. Жёсткий *(в основном – себестоимость и качество)*

B-15 Основные продукты находятся на следующем этапе своего жизненного цикла:

(Пожалуйста, обведите одну цифру-вариант ответа)

1. Внедрение *(Продукт нов для рынка, т.е. существует на нём менее года. Пока не получил широкого признания и применения. Пример: цветные лазерные принтеры)*

2. Рост *(Продукт начинает получать широкое признание и находить широкое применение. Отмечается постоянный рост спроса. Пример: сотовые телефоны)*

3. Насыщение *(Значительный рост спроса отсутствует. Рынок насыщен товарами данного типа. Пример: телевизоры видеомагнитофоны, кредитные карты)*

4. Спад *(Спад в производстве и использовании продукта/услуги. Пример: пишущие машинки)*

B-16 Пожалуйста, оцените следующие стратегические приоритеты с точки зрения Вашей компании по 9-балльной шкале (1- наиболее важный, 9 – наименее важный).

А Окучивание защищённого рынка ☐ Г Экономия на масштабах ☐ Ж Своевременность ☐

Б Защита фирмы от конкурентов ☐ Д Контроль доли на рынке ☐ З Информация ☐

В Извлечение временной прибыли ☐ Е Формирование верности брэнду ☐

И Скорость реакции ☐

B-17 Приведённые ниже высказывания соответствуют распространённым способам или методам, которыми описывают и/или измеряют то, как компании ведут поиск информации. Пожалуйста, используя шкалу «согласен- не согласен», укажите, использует ли Ваша компания тот или иной метод. *(Пожалуйста, обведите только одну цифру для каждого из приведённых высказываний)*

		Согласен в значительной степени	Согласен	Ни то, ни другое	Не согласен	Не согласен в значительной степени
А	В моей организации мы встречаемся с клиентами не реже одного раза в год, чтобы выяснить, какие товары или услуги потребуются им в будущем.	1	2	3	4	5
Б	В этом подразделении мы часто анализируем рынок собственными силами.	1	2	3	4	5
В	Изменения в предпочтениях потребителей					

	мы выявляем недостаточно оперативно.	1	2	3	4	5
Г	Не реже одного раза в год мы опрашиваем конечных потребителей, чтобы оценить качество товаров и услуг.	1	2	3	4	5
Д	Мы недостаточно оперативно выявляем фундаментальные сдвиги в отрасли *(напр., в области конкуренции, технологий, регулирования).*	1	2	3	4	5
Е	Мы периодически анализируем вероятные последствия изменений в нашей бизнес-среде (нап., *нормативного регулирования*) для потребителя.	1	2	3	4	5
Ж	Нами разработана и внедрена система отслеживания ситуации в деловой среде.	1	2	3	4	5
З	Каждый работник нашей компании рассматривается нами как возможный источник информации.	1	2	3	4	5
И	Каждый клиент рассматривается нами как источник информации.	1	2	3	4	5
Й	Наши разработчики не реже двух раз в год встречаются с основными клиентами	1	2	3	4	5
К	Наши производственники не реже двух раз в год встречаются с основными клиентами.	1	2	3	4	5

B-18 Приведённые ниже высказывания соответствуют распространённым способам или методам, которыми описывают и/или измеряют то, как организовано прохождение информации по организации. Пожалуйста, используя шкалу «согласен- не согласен», укажите, использует ли Ваша компания тот или иной метод. *(Пожалуйста, обведите только одну цифру для каждого из приведённых высказываний)*

		Согласен в значительной степени	Согласен	Ни то, ни другое	Не согласен	Не согласен в значительной степени
А	В моей организации имеется утвержденная система для мониторинга целей.	1	2	3	4	5
Б	В моей организации имеется утвержденная система планирования, где всё расписано для каждого подразделения и вида деятельности.	1	2	3	4	5
В	В моей организации разработано много формальных правил и процедур, которые применяются при осуществлении почти каждого вида деятельности.	1	2	3	4	5
Г	В моей организации разработано много неформальных правил и процедур, которые применяются при осуществлении почти каждого вида деятельности.	1	2	3	4	5
Д	Когда новая информация вступает в противоречие с существующими правилами и процедурами, такие правила и процедуры быстро пересматриваются.	1	2	3	4	5
Е	Разработанные процедуры задерживают внимательное ознакомление с большей частью информации, которая поступает в организацию.	1	2	3	4	5

Ж	В имеющихся правилах и процедурах не придаётся большого значения рыночной информации.	1	2	3	4	5
З	Не реже, чем раз в квартал мы проводим совещания представителей разных отделов, чтобы обсудить тенденции и события на рынке.	1	2	3	4	5
И	Специалисты по маркетингу в нашем подразделении внимательно обсуждают будущие потребности потребителей с другими функциональными подразделениями.	1	2	3	4	5
Й	Когда с каким-то крупным потребителем случается что-то серьёзное, об этом вскоре становится известно всему подразделению компании.	1	2	3	4	5
К	Информация о степени удовлетворенности потребителей в этом подразделении регулярно доводится до работников на всех уровнях .	1	2	3	4	5
Л	Когда один отдел выясняет что-то важное о конкурентах, то не спешит делиться этой информацией с другими отделами.	1	2	3	4	5

B-19 Приведённые ниже высказывания соответствуют распространённым способам или методам, которыми описывают и/или измеряют то, насколько быстро компания реагирует на сигналы рынка. Пожалуйста, используя шкалу «согласен - не согласен»,

укажите, использует ли Ваша компания тот или иной метод. *(Пожалуйста, обведите только одну цифру для каждого из приведённых высказываний)*

		Согласен в значительной степени	Согласен	Ни то, ни другое	Не согласен	Не согласен в значительной степени
А	Для принятия решений относительно того, как реагировать на изменения цен у конкурентов, нам требуется слишком много времени.	1	2	3	4	5
Б	По каким-то причинам мы обычно не принимаем во внимание изменения в потребностях наших потребителей относительно товаров или услуг.	1	2	3	4	5
В	Мы периодически пересматриваем процесс разработки продукции, чтобы она отвечала желаниям потребителей.	1	2	3	4	5
Г	Несколько отделов проводят периодические совещания, на которых планируют варианты реагирования на изменения тех условий, в которых ведётся бизнес.	1	2	3	4	5
Д	Если бы крупный конкурент начал кампанию по «переманиванию» наших потребителей, мы бы немедленно отреагировали соответствующими действиями.	1	2	3	4	5
Е	Деятельность разных отделов в этом подразделении хорошо координируется.	1	2	3	4	5
Ж	К жалобам потребителей в этом подразделении никто не прислушивается.	1	2	3	4	5

З Даже если бы мы разработали прекрасный план маркетинга, мы вряд ли смогли бы своевременно провести его в жизнь. 1 2 3 4 5

И Когда мы узнаём, что потребители хотели бы изменить продукт или услугу, соответствующее подразделение принимает все меры для того, чтобы удовлетворить это желание. 1 2 3 4 5

Й Мы оцениваем перевыполнение или невыполнение поставленных задач и вносим соответствующие коррективы. 1 2 3 4 5

Предлагаемые ниже вопросы помогают выяснить то, как идёт работа в Вашей компании. В каждом из вопросов предлагается четыре (4) варианта описания организации. Пожалуйста, распределите 100 баллов по этим четырём вариантам в зависимости от степени схожести того или иного варианта с ситуацией в Вашей компании. «Лучших» и «худших» вариантов здесь нет, - они просто разные. При ответе на каждый вопрос используйте все 100 баллов. Распределять баллы можно по собственному усмотрению. Для большинства компаний характерно то или иное сочетание предложенных вариантов.

В-20 Тип организации *(Пожалуйста, распределите 100 баллов между вариантами **А**, **Б**, **В** и **Г**)*

_____ Баллы за **А**	**(А)** В моей организации все друг друга знают, многое построено на **личных отношениях**. Она – как большая семья. Люди делятся всем, происходит в их жизни .	_____ Баллы за **Б**	**(Б)** Моя организация – очень **динамичное** и поощряющее инициативу учреждение. Люди готовы рисковать и брать на себя ответственность.
_____ Баллы за **В**	**(В)** Моя организация очень **формализована** и **структурирована**. Как правило, люди следуют заведённому порядку.	_____ Баллы за **Г**	**(Г)** Моя организация **чрезвычайно ориентирована на производство**. Главное, что нас волнует, - выполнить работу, и - «ничего личного».

В-21 Руководство *(Пожалуйста, распределите 100 баллов между вариантами **А**, **В**, **С** и **D**)*

_____ Баллы за **А**	**(А)** Руководитель моей организации в целом воспринимается как **наставник**, **мудрый человек**, **непререкаемый авторитет** .	_____ Баллы за **Б**	**(Б)** Руководитель моей организации в целом воспринимается как **предприимчивый сторонник новизны, готовый идти на риск**.

_____ Баллы за **В**	**(В)** Руководитель моей организации в целом воспринимается как **координатор**, **организатор** или **администратор**.	_____ Баллы за **Г**	**(Г)** Руководитель моей организации в целом воспринимается как **производственник, специалист** или «**надсмотрщик**».

В-22 Что является силой, объединяющей Вашу организацию *(Пожалуйста, распределите 100 баллов между вариантами **А**, **Б**, **В** и Г)*

_____ Баллы за **А**	**(А)** «Клей», соединяющий нашу организацию, - **лояльность** и **традиции**. «Верность» компании – очень важный фактор.	_____ Баллы за **Б**	**(Б)** «Клей», соединяющий нашу организацию, - постоянная готовность к **нововведениям** и **поощрение развития**. Девиз – «Быть первым!».
_____ Баллы за **В**	(**В**) «Клей», соединяющий нашу организацию, - **установленные правила** и **положения**. Важно, чтобы работа организации была налаженной и шла без сбоев.	_____ Баллы за **Г**	**(Г)** «Клей», соединяющий нашу организацию, - акцент на **решение задач** и **достижение целей**. В организации разделяют ориентированность на производственный процесс.

B-23 Что важно *(Пожалуйста, распределите 100 баллов между вариантами **А**, **Б**, **В** и Г)*

_____ Баллы за **А**	**(А)** В моей организации **делается акцент на кадры**. Важны высокая сплочённость и корпоративный дух.	_____ Баллы за **Б**	**(Б)** В моей организации делается акцент на **рост** и **освоение новых ресурсов**. Важна готовность решать новые задачи.
_____ Баллы за **В**	**(В)** В моей организации делается акцент на **постоянство** и **стабильность**. Важна эффективная, налаженная работа.	_____ Баллы за **Г**	**(Г)** В моей организации делается акцент на **соревновательность** и **достижения**. Важны измеряемые цели.

компании. Мы не намереваемся получать конфиденциальную информацию, и потому в качестве вариантов ответа предложены достаточно широкие интервалы. Эта информация будет использоваться только для оценки того, как разные компании ответили на вопросы относительно сферы маркетинга.

B-24 Пожалуйста, обведите соответствующие интервалы, представленные в процентах, которыми показаны **прибыль на собственный капитал** и **доход от продаж** в Вашей компании за последний год *(Пожалуйста, обведите только один вариант для каждого показателя)*

	Процентов в год					
Прибыль на капитал *(Чистая прибыль, делённая на собственный капитал компании)*	(-)%	0%	1-10%	11-20%	21-30%	свыше 30%
Доход от продаж *(Чистая прибыль, делённая на выручку)*	(-)%	0%	1-10%	11-20%	21-30%	свыше 30%

B-25 Пожалуйста, укажите своё согласие или несогласие со следующими заявлениями относительно Вашей компании. *(Пожалуйста, обведите только один вариант по каждому из утверждений)*

		Согласен в значительной степени	Согласен	Ни то, ни другое	Не согласен	Не согласен в значительной степени
А	План продаж в компании перевыполняется.	1	2	3	4	5
Б	Запланированный рост превышается.	1	2	3	4	5
В	Наша компания работает хорошо.	1	2	3	4	5
Г	Наша компания работает лучше, чем наши конкуренты.	1	2	3	4	5

B-26 Пожалуйста, обведите соответствующие интервалы значений, которые лучше всего показывают ежегодные темпы роста продаж Вашей компании за последние три года. *(Пожалуйста, обведите только один вариант по каждому году)*

Год	Средние тепы роста (в процентах)						
2005	(-) %	0%	1-5%	6-10%	11-20%	21-30%	свыше 30%
2006	(-) %	0%	1-5%	6-10%	11-20%	21-30%	свыше 30%
2007 *(оценка)*	(-) %	0%	1-5%	6-10%	11-20%	21-30%	свыше 30%

B**-27** Что ещё Вы хотели бы сообщить нам о Вашем бизнесе и/или о данной анкете?

Спасибо за то время, которое Вы уделили ответам на вопросы данной анкеты!

[Информация о том, каким образом и куда отправлять заполненные анкеты]

APPENDIX C

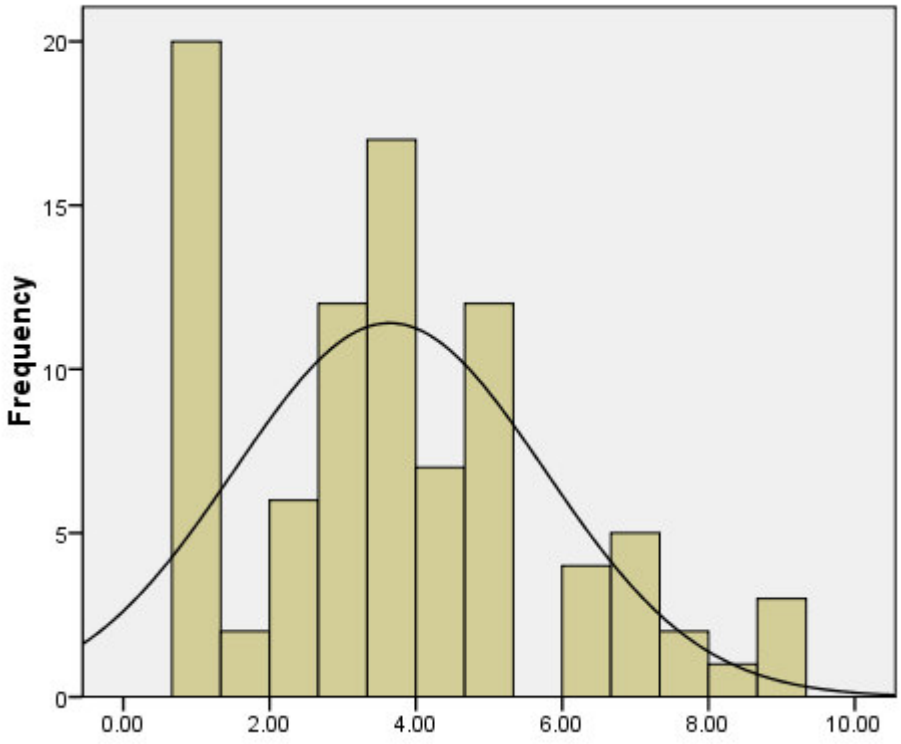
Variable Histograms and Distribution Curves

Variable Histograms and Distribution Curves

Strategic Orientation

M	*SD*	*Mode*	*Variance*	*N*
3.64	2.12	1.00	4.50	91

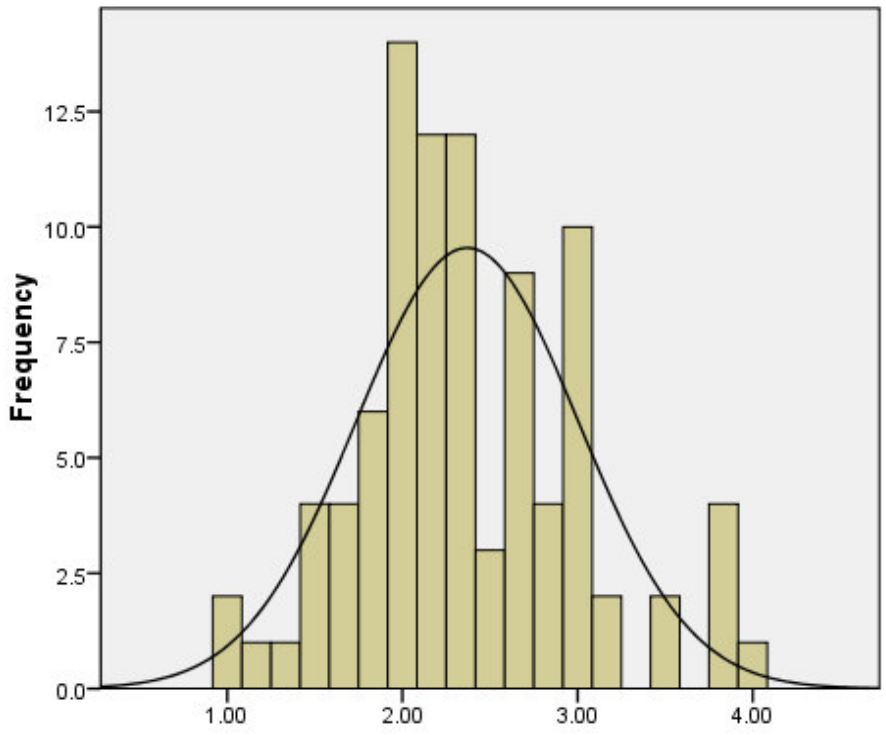
On this scale 1 = More Proactive; 9 = less proactive
Based on ranking of 1 = most important to 9 = least important on 9 items relating to the organization's strategic priorities. Three items comprise factor: building brand loyalty, speed of response, and market timing. Cronbach's alpha = .68



External Knowledge Acquisition

M	*SD*	*Mode*	*Variance*	*N*
2.37	.63	2.00	.40	91

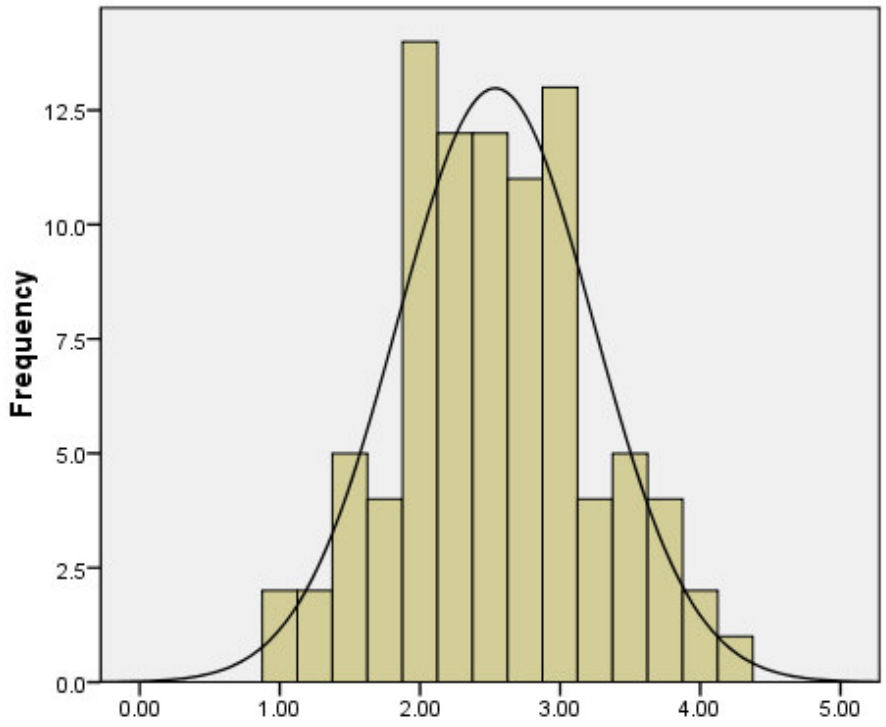
5-point Likert Scale: 1 = "strongly disagree" to 5 = "strongly agree"
6 items dealing with how often the SME meets with clients, competitors, and others
Cronbach's alpha = .72



Internal Knowledge Dissemination

M	*SD*	*Mode*	*Variance*	*N*
2.54	.70	2.00	.49	91

5-point Likert Scale: 1 = "strongly disagree" to 5 = "strongly agree"
4 items covering usage of systems for goal monitoring, planning, interdepartmental meetings and cross-functional discussions
Cronbach's alpha = .74

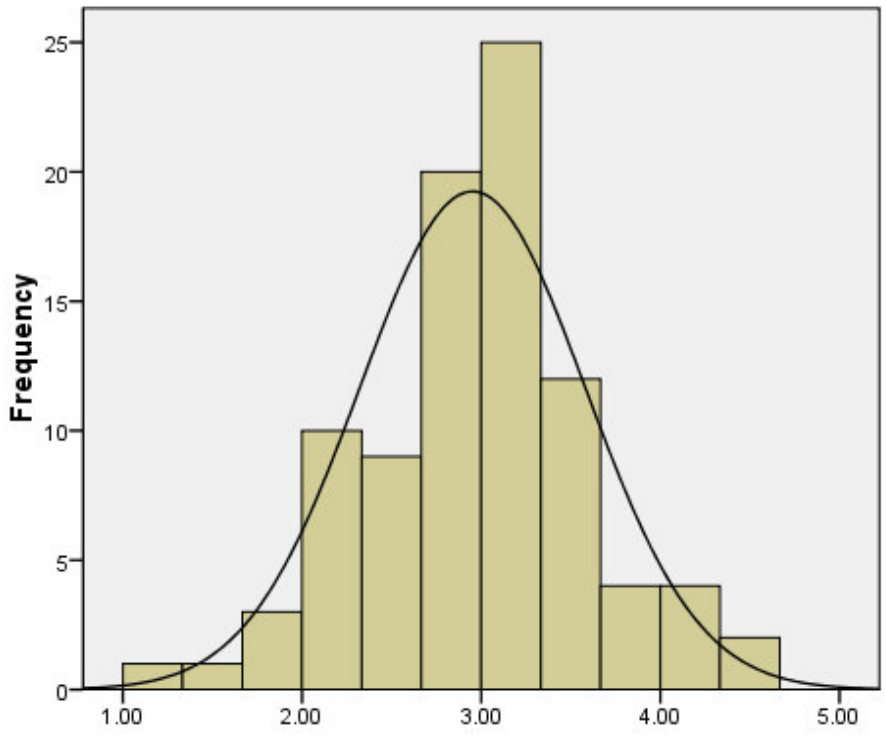


Internal Knowledge Dissemination

Environmental Turbulence

M	*SD*	*Mode*	*Variance*	*N*
2.95	.63	3.10	.40	91

5-point Likert Scale: 1 = "very few changes" to 5 = "very many changes"
10-item measure of the rate of change for technology, competition, market/customers, suppliers, and government regulations
Cronbach's alpha = .81

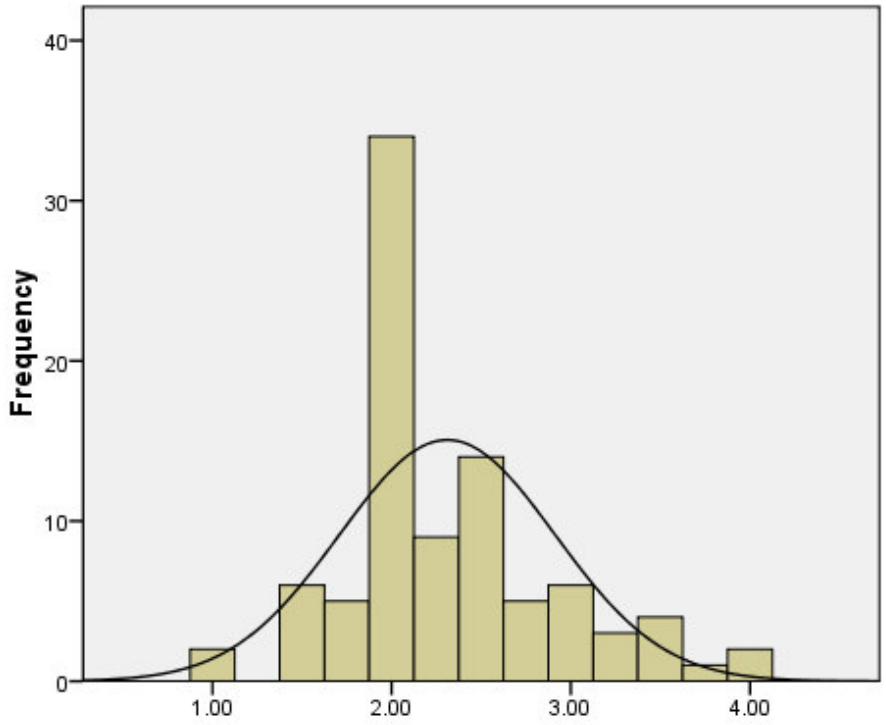


Environmental Turbulence

Organizational Responsiveness

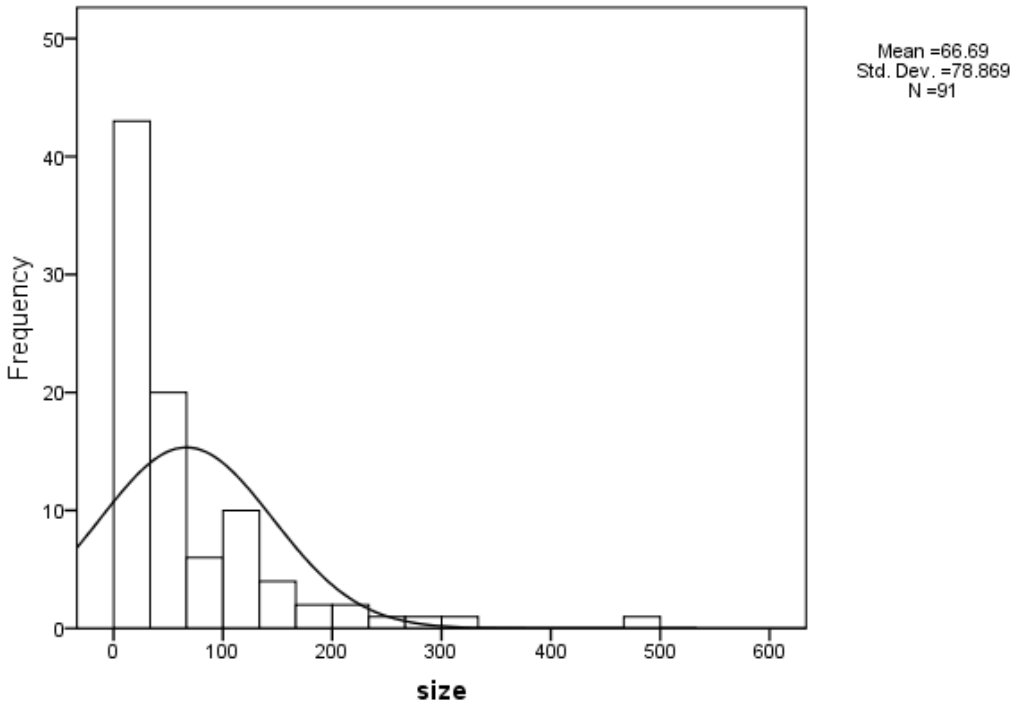
M	*SD*	*Mode*	*Variance*	*N*
2.31	.60	2.00	.36	91

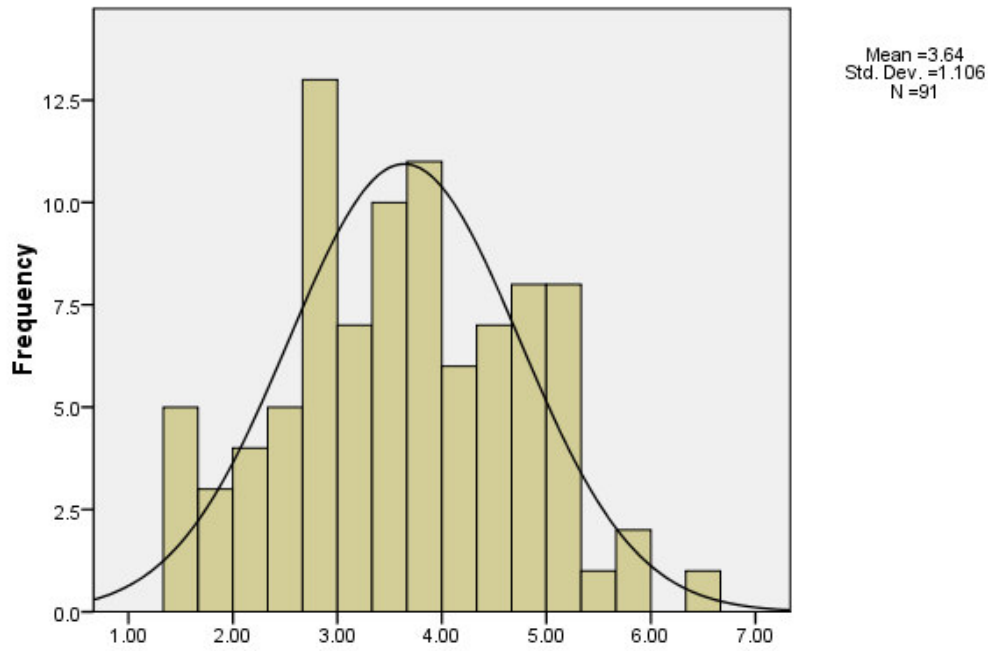
5-point Likert Scale: 1 = "strongly disagree" to 5 = "strongly agree"
4 items covering review of product development efforts, planning responses to changes in the environment, coordination of activities across departments, and responsiveness to customer requests for product modifications
Cronbach's alpha = .72



Size

Without transformation





Size with log transformation

APPENDIX D

Supplemental Analysis: Stepwise Multiple Regression Analysis

Supplemental Analysis: Stepwise Multiple Regression Analysis

In order to more clearly understand the relationship of each independent variable on the dependent variable, organizational responsiveness, a stepwise multiple regression model was run. In the first block of the analysis, age and the logarithmic transformation of size were added as independent variables. In the second block, the two constructs of absorptive capacity, external knowledge acquisition and internal knowledge dissemination, were added. In the third and final block, strategic orientation and environmental turbulence were added.

For each new model, another block was added to the analysis and statistics captured. Table D-1 lists the results of the stepwise multiple regression analysis.

Table D-1

Stepwise Multiple Regression Analysis (N = 91)

	Model 1		*Model 2*		*Model 3*	
Variables	β	*t*	β	*t*	β	*t*
Age	.28	2.70**	.32	2.20*	.21	2.10*
Size	.03	.29	.05	0.56	.06	0.60
EKA			.30	2.86**	.29	2.66**
IKD			.22	2.00*	.22	2.04*
Env. Turbulence					.06	-.66
Strat. Orientation					.05	-.56
R-Square		.08		.28		.28
Adjusted *R*-Square		.06		.22		.22
R-Square Change		.08		.01		.01
F		4.05**		11.07**		11.40**
F-Change		.00*		7.02**		.33

* = p < .05; ** = p < .01

EKA = external knowledge acquisition, IKD = internal knowledge dissemination

Model 1 consisted of organizational responsiveness as the dependent variable with organizational size and age as the independent variables in block 1. As shown in the table above, Model 1 (R^2 = .08, p < .05) suggests a slight positive correlation between organizational responsiveness and the independent variables age and size. The individual standardized regression coefficient for age (β = .29, p < .01) is the only one of the pair that is statistically significant, therefore accounting for the correlation.

In Model 2, the second block of independent variables (external knowledge acquisition and internal knowledge dissemination) was added to the analysis. The relatively large, statistically significant change in the F-statistic (*F-Change* = 7.02, p < .01) indicates that external knowledge acquisition (β = .30, p < .01) and internal knowledge dissemination (β = .22, p < .05) are major drivers in organizational responsiveness.

In Model 3 we complete the analysis by adding the final block of predictors (strategic orientation and environmental turbulence) to the analysis. Neither of the new variables are statistically significant with regard to their correlation coefficients, nor is the F-Change significant in this model (*F-Change* = .33, p > .05).

In this stepwise multiple regression analysis only hypotheses H1 and H2 would be confirmed, as they were in the hierarchical multiple regression analysis. While confirming the previous findings of the hierarchical multiple regression analysis that age, external knowledge acquisition, and internal knowledge dissemination all are statistically significant predictors of organizational responsiveness in this sample of

Russian growth-oriented SMEs, this supplemental analysis adds little to the overall findings of this study.

APPENDIX E

Supplemental Analysis: Three Turbulence Variable Multiple Regression Analysis

Supplemental Analysis: Three Turbulence Variable Multiple Regression Analysis

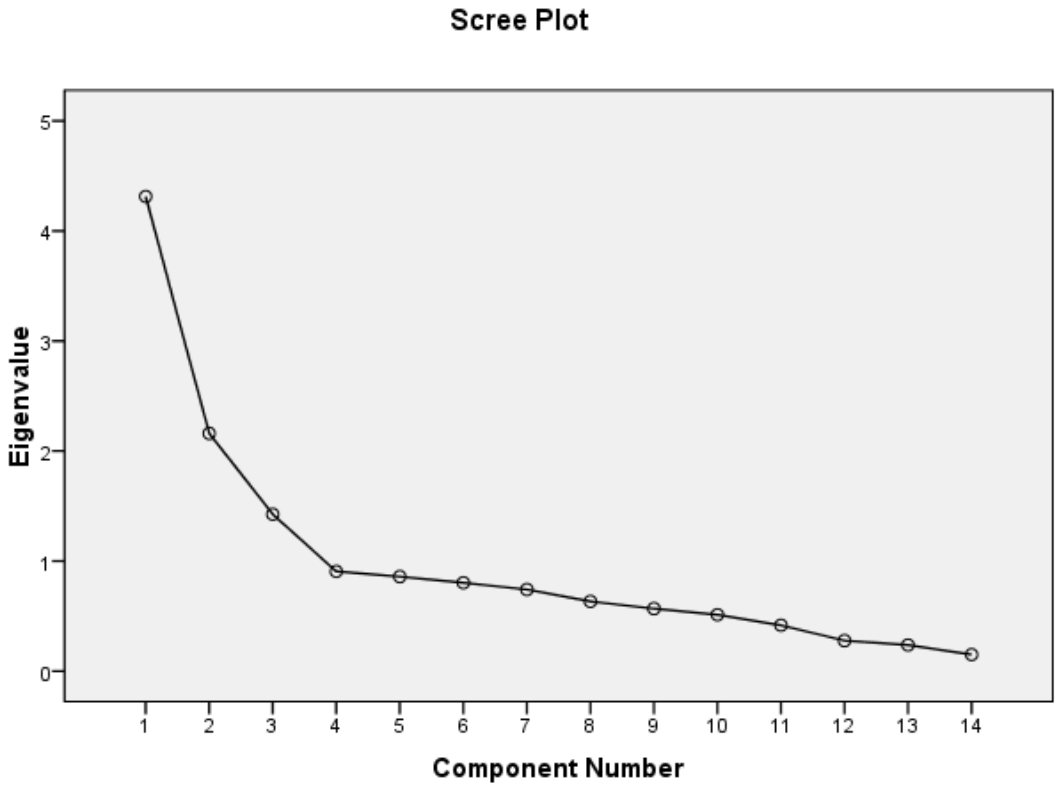
The first step in the supplemental analysis was the derivation of separate factors of environmental turbulence as new variables Results of the principal components analysis with varimax rotation follow.

Table E-1

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	4.313	30.810	30.810
2	2.160	15.427	46.237
3	1.425	10.180	56.417
4	.906	6.469	62.886
5	.859	6.132	69.018
6	.803	5.735	74.753
7	.742	5.297	80.050
8	.633	4.521	84.571
9	.567	4.053	88.624
10	.512	3.657	92.282
11	.417	2.975	95.257
12	.277	1.978	97.234
13	.237	1.694	98.929
14	.150	1.071	100.000

Extraction Method: Principal Component Analysis.



Rotated Component Matrix[a]

	Component		
	1	2	3
mktsize	**.685**	-.033	.129
nrnewprod	.460	-.035	**.508**
usetech	.482	-.076	.471
mktgrowth	**.756**	-.011	.113
conspref	**.741**	.216	.094
nrnewcust	**.713**	.118	-.061
prodconfig	.326	-.043	**.643**
mktnature	**.584**	.403	.000
nrcomp	.499	**.538**	.176
comppos	.343	**.641**	.324
suppos	-.007	485	**.502**
nrregs	-.043	**.851**	-.060
contregs	.032	**.860**	-.150
relstable	-.248	.087	**.700**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Component 1 (market size, rate of market growth, changes in consumer preferences, number of new customers in the market, and the changing nature of the market itself) corresponds to environmental munificence. Cronbach's alpha of .78 indicates an acceptable level of reliability.

Component 2 (changes in the number of competitors, changing positioning of competitors, number of regulations affecting the market, and the changing

composition of those regulations) corresponds to environmental complexity. Cronbach's alpha of .78 indicates an acceptable level of reliability.

Component 3 (number of new products in the market, rate of changes in product configuration, changing offerings by suppliers, and the level of stability in supplier/buyer relations) corresponds to environmental dynamism. Cronbach's alpha of .51 ndicates the level of reliability for this construct is less than is usually considered acceptable.

The mean factor score for each of these components was calculated as a predictor variable for the subsequent analysis.

In the second step of the supplemental analysis a stepwise multiple regression analysis was run with organizational responsiveness as the dependent variable. Independent variables, age and size, were added in block 1; external knowledge acquisition and internal knowledge dissemination were added in block 2; strategic orientation was added in block 3; and environmental munificence, environmental complexity, and environmental dynamism were added in block 4. The SPSS results follow.

None of the environmental variables proved to be statistically significant.

Descriptive Statistics

	Mean	Std. Deviation	N
orgresponse	2.3104	.60247	91
age	9.33	8.564	91
sizelog	3.6401	1.10584	91
eka	2.3700	.63382	91
ikd	2.5385	.69913	91
strator	3.6410	2.12175	91
turbmuni	3.0264	.71939	91
turbcomplex	2.9093	.85677	91
turbdyn	2.6429	.66264	91

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.290[a]	.084	.064	.58301	.084	4.055	2	88	.021
2	.521[b]	.272	.238	.52591	.188	11.073	2	86	.000
3	.523[c]	.274	.231	.52828	.002	.229	1	85	.633
4	.535[d]	.286	.216	.53331	.012	.468	3	82	.705

a. Predictors: (Constant), sizelog, age

b. Predictors: (Constant), sizelog, age, eka, ikd

c. Predictors: (Constant), sizelog, age, eka, ikd, strator

d. Predictors: (Constant), sizelog, age, eka, ikd, strator, turbdyn, turbmuni, turbcomplex

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	2.065	.213		9.718	.000					
	age	.020	.007	.282	2.698	.008	.289	.276	.275	.951	1.052
	sizelog	.016	.057	.030	.289	.773	.093	.031	.029	.951	1.052
2	(Constant)	.922	.310		2.973	.004					
	age	.015	.007	.218	2.196	.031	.289	.230	.202	.859	1.164
	sizelog	.029	.052	.053	.560	.577	.093	.060	.052	.945	1.058
	eka	.282	.099	.296	2.858	.005	.392	.294	.263	.787	1.271
	ikd	.186	.093	.216	1.998	.049	.407	.211	.184	.725	1.379
3	(Constant)	.934	.312		2.988	.004					
	age	.015	.007	.219	2.192	.031	.289	.231	.203	.859	1.164
	sizelog	.032	.052	.058	.610	.544	.093	.066	.056	.932	1.073

	eka	.287	.100	.302	2.881	.005	.392	.298	.266	.776	1.289
	ikd	.191	.094	.221	2.027	.046	.407	.215	.187	.718	1.393
	strator	-.013	.027	-.046	-.479	.633	.068	-.052	-.044	.943	1.060
4	(Constant)	1.015	.488		2.079	.041					
	age	.016	.007	.223	2.186	.032	.289	.235	.204	.839	1.192
	sizelog	.025	.053	.045	.463	.644	.093	.051	.043	.907	1.102
	eka	.284	.104	.299	2.734	.008	.392	.289	.255	.728	1.374
	ikd	.189	.096	.219	1.976	.052	.407	.213	.184	.709	1.411
	strator	-.019	.028	-.066	-.666	.507	.068	-.073	-.062	.892	1.122
	turbmuni	-.035	.089	-.042	-.392	.696	-.156	-.043	-.037	.763	1.311
	turbcomplex	-.054	.077	-.077	-.707	.481	-.152	-.078	-.066	.727	1.375
	turbdyn	.091	.093	.100	.972	.334	-.025	.107	.091	.829	1.206

a. Dependent Variable: orgresponse