TRANSFORMING CATERPILLARS INTO BUTTERFLIES: THE ROLE OF MANAGERIAL VALUES AND HR SYSTEMS IN THE PERFORMANCE OF EMERGENT ORGANIZATIONS

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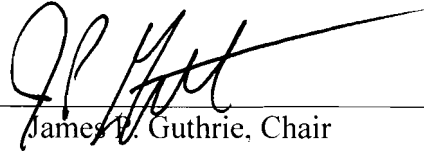
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University of Kansas, 2008

Submitted to the School of Business and the Faculty of the Graduate School of the University of Kansas in partial fulfillment of the requirements for the degree of Doctor of Philosophy.
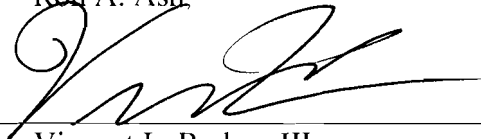
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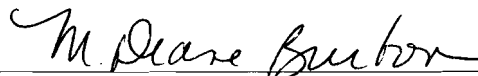
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approved version of the following dissertation:

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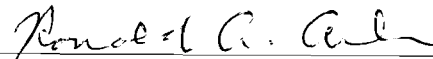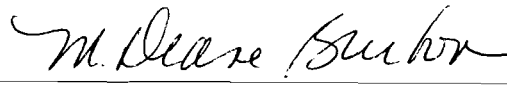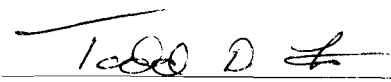
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ABSTRACT

Emerging firms are the foundation for economic growth in today's business world, yet relatively little is known about the factors that contribute to the success or failure of developing organizations. This research study helps to address this broad question by examining the role that managerial values and practices play in the performance of high-tech start-ups. Using the resource-based and dynamic capability perspectives, this research project examines three critical factors that are likely to affect the performance of emerging firms: human resource policies and practices, an overarching philosophy of partnership, and an entrepreneurial orientation. Each of these is argued to produce a sustainable competitive advantage by providing firms with the ability to dynamically configure and reconfigure resource bundles. Results indicate that high performance work systems and partnership philosophy are positively associated with sales growth and innovation. Additional findings suggest that partnership and an entrepreneurial orientation both increase the likelihood of implementing high performance work systems. Finally, the results suggest that firms combining a greater utilization of high performance work systems with an entrepreneurial orientation achieve higher levels of sales growth.

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INTRODUCTION & LITERATURE REVIEW

Shane and Venkataraman (2000) indicate that research in entrepreneurship involves the study of five distinctive domains: sources of opportunities, the process of discovery, evaluation, exploitation of opportunities, and finally the set of individuals who discover, evaluate, and exploit these opportunities. To this end, entrepreneurship scholars have identified several personal characteristics of entrepreneurs (Hostager & Neil, 1998; Shane, Locke, & Colllins, 2003), the source of opportunities in the market (Eckhardt & Shane, 2003; Shane, 2000), and the method in which these opportunities are most usefully exploited (Zahra, Neubaum, & Huse, 2000). While these studies help us to understand the nexus of individuals and opportunities, a void remains in our understanding of management factors that enable entrepreneurs to remain competitive as they evolve over time.

This is a particularly salient issue as emerging firms are frequently thought of as the primary movers that help to build viable economies and boost job creation (e.g., Fischer, Reuber, Hababou, Johnson, & Lee, 1987; Kuratko, Goodale, & Hornsby, 2001; Markman & Gartner, 2002). As a result, it is important to understand the mechanisms that build successful emergent firms. While a small body of research suggests that management values and practices may play a key role in the ultimate success of small and growing firms (Burton & O'Reilly, 2004; Way, 2001; Welbourne & Andrews, 1996), much remains unknown.

Thus, the aim of this project is to help redress this deficiency by examining the role that managerial values and work practices have in the performance of

emerging organizations. Of specific interest is the role that people management practices play in the success or failure of developing organizations. Though human capital has long been recognized as critical to the success of new organizations (Cardon & Stevens, 2004; Deshpande & Golhar, 1994; Hornsby & Kuratko, 1990), many outstanding questions remain regarding the practices that encourage the development of this valuable resource in emerging firms. For instance, what impact do *high performance work systems (HPWS)* have on the performance of emerging organizations? What specific HR practices improve the performance of developing firms? What mechanisms mediate the relationship between these practices and firm performance? What role does firm strategy play in moderating this relationship?

In addition to the specific role of HPWS, this project also examines the role that a *partnership philosophy* has in affecting the performance of young and emerging firms. A partnership philosophy represents a more general approach to managing people and is less formally instituted than HPWS. A philosophy of partnership represents a high level of commitment and trust between management and employees in the decision-making and practices of the firm. It is likely that young and small firms have fewer of the formal pieces found in HPWS, but a general philosophy of partnership and commitment may still affect the performance of nascent firms.

Finally, also of significant interest to the study are the managerial values that spur firms to continually emphasize and focus on innovation as they grow over time. This mindset has generally been referred to as an *entrepreneurial orientation*, and it emphasizes the strategic posture that entrepreneurial organizations seek to maintain

and develop as they continue to expand. While new firms are by definition entrepreneurial at the beginning of their life-cycle, the role that a continued entrepreneurial orientation plays in ongoing success remains unclear.

This dissertation seeks to examine these basic questions and ideas by carefully analyzing the effect that high performance work systems, a philosophy of partnership, and entrepreneurial values have on the performance of developing organizations. Specifically, these factors will be discussed and analyzed in the context of dynamic, high-tech industries. In addition, these factors will be analyzed in conjunction with the important organizational variables that may moderate the relationship between HR practices, attitudes of partnership, entrepreneurial values, and firm performance variables. Specifically, the following research questions are proposed, which are graphically represented in Figure 1.

RQ#1: What impact do high performance work systems have on various measures of firm performance?

RQ#2: What role does a philosophy of partnership play in the performance of growing firms?

RQ#3: What impact does an entrepreneurial orientation have on the performance of emerging organizations?

RQ#4: Do high performance work systems moderate the relationship between entrepreneurial orientation and firm performance in emerging firms?

RQ#5: Do high performance work systems moderate the relationship

between partnership and firm performance?

RQ#6: Does firm strategy moderate the relationships between HPWS,

partnership philosophy, EO, and measures of firm performance?

Helping to provide answers to these questions will contribute to existing

knowledge in a number of ways. First, this research will complement existing

scholarship on the role of high performance work systems in determining firm

performance. More specifically, a burgeoning literature has been established by

strategic human resource management scholars linking indices of commitment-based

systems to measures of firm performance (e.g., Arthur, 1994; Huselid, 1995, Guthrie,

2001), however, these studies have generally focused on established organizations,

leaving much unknown in regard to the efficacy of such practices in developing

organizations.

Moreover, arguments have been made indicating that high performance work

systems may be particularly salient during the establishment and development of

firms (e.g., Welbourne & Andrews, 1996). Specifically, scholars argue that early

practices tend to become engrained in the organization as inertia is established, thus

indicating that practices instituted during the process of firm formation will have

lasting effects on the on-going success of the organization (Aldrich & Marsden, 1988;

Hannan & Carroll, 1992). In particular, considering that employment practices are

frequently low on the priority list of emerging firms (Cassell, Nadin, Gray, & Clegg,

2002), it is important to research this area to provide the necessary evidence regarding

the role that these factors play in determining the ultimate success of young organizations.

In addition, a valuable contribution can be made to the growing body of research, which has been developed discussing the path-dependent nature of employment practices (e.g. Baron, Burton, & Hannan, 1996; Baron, Hannan, & Burton, 1999; Burton, 2001; Hannan, Burton, & Baron, 1996). These studies have helped us to understand the initial blueprints for organizing work in emerging companies and have revealed multiple models of employment relationships in high-tech start-ups. In addition, these studies have developed an understanding of the role that the initial values and practices of an enterprise play in the evolution and development of firm policies and practices over time. As a result, a strong conceptual base for the origination of HR policies and practices in high-tech start-ups has been established. In order to continue to build on this work, additional analysis is necessary to carefully consider the performance consequences associated with the values and practices that govern young and emerging organizations.

Also, given the reality that many young firms are unable to dedicate resources to formal HR practices, it is also useful to analyze the role that the commitment-based values, expressed via a partnership philosophy, play in the performance of young, technology-based organizations. While these emerging firms may be unable to formally implement selection, training, performance appraisal, and compensation plans, they are still able to express the important values of commitment and trust, which may ultimately affect the performance of the firm.

In addition, this research adds to the entrepreneurial orientation literature by further analyzing its importance in growing firms. As managerial values have been shown to influence the performance of young firms (Burton & O'Reilly, 2004), additional evidence is needed to clarify the specific values that help firms succeed in a turbulent business environment. Also, by studying the interaction effect between commitment-based HR systems and an entrepreneurial orientation additional guidance can be provided on the proper configuration of values and practices.

In summary, this project offers a number of contributions to existing scholarship including: a better understanding of managerial values and practices in nascent firms, the role these attributes play in the success or failure of young firms, and the importance of firm level moderators. Each of these will be discussed in more detail below; however, prior to examining the role of these factors directly the theoretical basis for the proposed relationships is analyzed.

1.1 The Resource Based View and Dynamic Capabilities

The theoretical logic underpinning this study is the resource based view (RBV) of the firm, which postulates that firms can gain a sustainable competitive advantage over rivals to the extent that they are able to leverage resources that are unique, valuable, rare, inimitable, and non-substitutable (Barney, 1991; Wernerfelt, 1984). The strategic human resource management (SHRM) literature has argued that, perhaps more than any other resource, the human resource meets these criteria and is

therefore a useful avenue in which to invest and develop (Wright, Dunford, & Snell, 2001).

One of the key tenets of the resource-based view is that resources are created and developed in a causally ambiguous manner (Barney, 1991). Thus, SHRM scholars have consistently held that firm level practices are not, in and of themselves, the source of competitive advantage, but rather that the people who are selected and developed via these practices represent the true link to a sustainable advantage over industry rivals (Wright, McMahan, & McWilliams, 1994). This causal ambiguity, by definition, makes it difficult to theorize the exact processes by which HR practices develop firm level resources (Lockett & Thompson, 2001); however, the current literature supports a general model similar to that depicted in Figure 2. This model reflects current theorizing in the strategic management literature, which indicates that firm level processes contribute to organizational success to the extent that they promote the combining of resources into value-creating organizational strategies (Eisenhardt & Martin, 2000; Wiklund & Shepherd, 2003). These relationships are discussed more thoroughly below in an examination of dynamic capabilities.

As demonstrated in Figure 2, SHRM research has generally theorized that HRM systems motivate superior firm performance by increasing the levels of human and social capital within the firm (Bartel, 1984, Huselid, 1995; Koch & McGrath, 1996; Lepak, et al., 2007), while simultaneously motivating behaviors that are congruent with firm strategy, benefit organizational members, and creatively utilize

organizational resources (Appelbaum, Bailey, Berg, & Kallerberg, 2000; Drummond & Stone, 2006; Schuler & Jackson, 1987).

Lado and Wilson (1994) argue that these improvements in organizational capital and employee behaviors create four core competencies that provide a sustainable competitive advantage. In particular, they argue that high performance work systems create a culture and environment driven by managerial vision, internal labor markets, a focus on innovative ideas that exploit new opportunities, as well as a corporate reputation that engenders good will and customer satisfaction (Lado & Wilson, 1994). This general management philosophy can be termed a partnership model of management, which is likely to be crucial to the development of sustainable competitive advantage through managerial practices (Guest & Peccei, 2001). Empirically, scholars have found support for this model in linking indices of high performance work systems to lower levels of turnover (Arthur, 1994; Guthrie, 2001; Huselid, 1995), increased productivity (Arthur, 1994, Huselid, 1995, MacDuffie, 1995, & Youndt, Snell, Dean & Lepak, 1996), financial performance (Becker & Huselid, 1998; Huselid, 1995; Guthrie, 2001), and product quality (MacDuffie, 1995).

Similarly, a general argument can be made indicating that an entrepreneurial orientation has the opportunity to build and sustain a competitive edge. An entrepreneurial orientation, also known as entrepreneurial proclivity (Matsuno, Mentzer, & Ozsomer, 2002), refers to a firm's predisposition to engage in innovative processes, practices, and decision making. Scholars suggest that an entrepreneurial orientation is a core competency that offers a non-replicable strategic advantage (e.g.,

Wunderer, 2001). Despite evidence suggesting that an EO is a strategic orientation that consumes financial resources in the short term (Covin & Slevin, 1991), additional findings intimate that an EO positively affects firm performance and that its impact on performance grows with time (Wiklund, 1999; Zahra, 1991; Zahra & Covin, 1995). In addition, research indicates that entrepreneurial proclivity affects the way firms arrange their organizational structure and their ability to be market oriented, which suggests that EO is a core competency that helps to arrange firm-level resources into forms that produce sustainable competitive advantages (Matsuno, et al., 2002).

EO has generally been described as a combination of three elements: innovativeness, proactiveness, and risk-taking (Covin & Slevin, 1989; Wiklund, 1999; Wiklund & Shepherd, 2003). Scholars have theorized that an entrepreneurial posture allows firms to more readily support new ideas, create new processes, anticipate the needs of the market, and invest resources in the design and development of new products and services (Lumpkin & Dess, 1996; Miller & Friesen, 1978). Thus, this internal value system is likely to create and utilize resources more effectively than firms competing without an entrepreneurial orientation (Wiklund & Shepherd, 2003). Moreover, this strategic posture is difficult to imitate, given the myriad of combinations available to align internal processes.

Dynamic Capabilities. While the above cited literature establishes a general connection between managerial values and practices and firm performance, much is unknown about the exact processes that link these constructs. This can largely be

attributed to the ambiguities associated with the resource-based view. In fact, the resource based view has been the target of multiple criticisms in the academic community. Scholars have expressed concern that the RBV fails to provide specific guidance to practitioners, imprecisely defines competitive advantage, and that it has limited application in dynamic environments (D'Aveni, 1994). In addition, critics argue that the basic logic of the RBV is tautological, because most frequently firms are identified as successful and then analyzed *ex post* for the resources that lead to superior performance (Foss & Knudsen, 2003; Priem & Butler, 2001). In response to these criticisms there is a growing stream of literature that attempts to build upon the RBV perspective to discuss dynamic capabilities as a source of enduring success (e.g., Eisenhardt & Martin, 2000, Helfat & Lieberman, 2002; Teece, Pisano, & Shuen, 1997).

Teece and Pisano (1994) define dynamic capabilities as a "subset of the competences/capabilities which allow the firm to create new products and processes and respond to changing market circumstances" (1994: 541). Similarly, Zahra and George (2002) conceptualize dynamic capabilities as change-oriented capabilities that enable firms to redeploy and reconfigure their resource base to meet shifting customer demands and competitor strategies. In other words, while resources represent the stock of factors available to, or under the control of the firm, dynamic capabilities are the firm-level processes that allow for the successful deployment and reconfiguration of those resources (Amit & Schoemaker, 1993; Helfat & Lieberman, 2002). Processes related to product development, strategic decision making, knowledge

acquisition, resource procurement, technological capabilities, organizational reputation, organizational culture, labor relations, and alliancing have frequently been referred to as examples of dynamic capabilities available to firms (Carmeli & Tishler, 2004; Eisenhardt & Martin, 2000; Lee, Lee, & Pennings, 2001; Yli-Renko, Autio, & Sapienza, 2001; Zollo & Winter, 2002).

As mentioned above, because they are replicable and fungible, dynamic capabilities in and of themselves are not the proximate source of competitive advantage (Eisenhardt & Martin, 2000). Instead, competitive advantage lies with the resource configurations resulting from these capabilities. Thus, dynamic capabilities support the operational or substantive capabilities and resources of the firm (Helfat & Peteraf, 2003; Teece et al., 1997; Zahra, Sapienza, & Davidsson, 2006; Zollo & Winter, 2002), which in turn, may yield competitive advantage in a firm's product/service market(s). It is the combination of these processes and resources that create causally ambiguous, socially complex, and path dependent sources of competitive advantage (Reed, Lubatkin, & Srinivasan, 2006).

As such, dynamic capabilities support the basic logic of the RBV in denoting resource bundles as the true link to competitive advantage, while providing answers to several of the criticisms of the RBV. Specifically, dynamic capabilities are tangible, holding the promise of offering more concrete guidance to practitioners. In addition, the study of dynamic capabilities allows scholars the opportunity to falsify theoretical arguments linking dynamic capabilities to firm performance and avoid tautological reasoning (Eisenhardt & Martin, 2000). Finally, dynamic capabilities

provide organizations with the opportunity to reconfigure resources in fast-changing environments, increasing the salience of such processes in a Schumpeterian world where existing resources and capabilities are 'creatively destroyed' (Teece et al., 1997). In doing so, dynamic capabilities also provide theoretical grounding for the nature in which resources can be reconfigured to match the demands of a changing environment.

For the purposes of the present analysis, both managerial values and HR policies/practices are treated as having the potential to serve as dynamic capabilities. To the extent that both a partnership-based philosophy and high performance work systems build human and social capital within the firm, organizations are in a better position to quickly adapt and change to meet the fluid and shifting demands of external markets. For example, employment systems that build human capital through rigorous selection and investments in training enhance dynamic capability. In addition, firms also enable dynamic capabilities through employment philosophies and practices that build social capital (Subramaniam & Youndt, 2005).

Human capital refers to the knowledge, skills, and abilities embedded within a firm's human resources that are the direct result of learning, education, and training (Becker, 1964). Human capital has been specifically identified as a dynamic capability that allows firms to create and reconfigure resources to attain a sustainable competitive advantage (Adner & Helfat, 2003; Carmeli & Tishler, 2004, Reed et al., 2006). Moreover, many studies have found a consistent link between human capital (a resource) and firm performance (Carmeli & Tishler, 2004; Hitt, Bierman, Shimizu,

& Kochar, 2001; Reed et al., 2006; Skaggs & Youndt, 2004; Youndt & Snell, 2004). These studies, conducted in a myriad of industries ranging from professional service firms to single line of business manufacturers, highlight the key role that human capital plays in building and sustaining competitive advantage.

In addition to human capital, social capital also has demonstrated the ability to produce comparative advantages. Social capital pertains to the strength of relationships inside the firm and the ability to facilitate knowledge sharing and employee interaction (Youndt & Snell, 2004). This definition focuses on the aggregate quality of social relationships within the organization. To the extent that firms build strong social ties within the organization, they are more likely to achieve high levels of teamwork, collaboration, and discretionary behaviors (MacDuffie, 1995).

Yli-Renko, Autio, & Sapienza (2001) found that social capital leads to knowledge acquisition which in turn develops knowledge exploitation capabilities in the form of new product development, technological distinctiveness, and cost-efficiency. Similarly, Subramaniam & Youndt (2005) found a positive relationship between social capital and measures of both incremental and radical innovation capabilities. Also, Youndt and Snell (2004) found a positive relationship between social capital and firm-level performance in a study of single-industry organizations across multiple industrial sectors. In addition, social capital has been found to interact with human capital to provide firms with the capability to achieve radical innovation (Subramaniam & Youndt, 2005).

These studies highlight the important role that both human and social capital play in helping firms to compete. As discussed above, this view reflects current understandings in the SHRM literature, which traditionally views a partnership-based philosophy and system of employment practices as a means to achieve competitive advantage through the development of knowledge embedded within individuals and their social connections (Boxall, 1996, Lepak & Snell, 1999; Pfeffer, 1994; Snell & Dean, 1992; Youndt et al., 1996). Specific high performance work practices related to rigorous selection and in-depth training have been linked positively to measures of human capital (Youndt & Snell, 2004).

In addition, an analysis of intellectual capital profiles by Youndt, Subramaniam, and Snell (2004) found that firms with more sophisticated HR systems had higher levels of both human and social capital. Also, Adner and Helfat (2003) identify managerial human capital, social capital, and cognition as dynamic capabilities that influence heterogeneity in managerial decisions and firm performance amidst environmental change. Finally, HPWS also help to produce social capital within an organization by reducing horizontal barriers between organizational units through participative and collaborative approaches to management (Youndt & Snell, 2004).

In addition to HPWS, a philosophy of partnership is also likely to build valuable social capital within organizations. By demonstrating strong commitment to employees organizations are able to develop trust within the firm and a strong level of commitment to organizational goals (Guest & Peccei, 2001). These firms are then

likely to build tight networks within the firm that support collaboration, discretionary behaviors, and knowledge exchange (Wright, Dunford, & Snell, 2001). In doing so the firm is able to tap into valuable social capital that provides them with an advantage over industry rivals who experience lower levels of commitment and collaboration.

While these studies speak to the value of a partnership philosophy and HPWS in general, the SHRM literature also argues that these factors may be particularly beneficial to organizations competing in dynamic markets. In particular scholars argue that HPWS and commitment based philosophies help to build organic management systems with broad skill sets and organizational flexibility (Datta, Guthrie, & Wright, 2005). By aligning interests, building tacit knowledge, promoting information sharing, and providing participatory mechanisms, HPWS provide resource configurations and strategic redeployments that lead to a comparative advantage (Datta, Guthrie, & Wright, 2005; Wright & Snell, 1998).

While less well documented than the literature on HPWS and human and social capital, entrepreneurial orientation research also suggests that an EO may serve as a dynamic capability. With a focus on being proactive, innovative and risk taking an EO assists firms in quickly creating and realigning resources to meet the demands of the market. In fact the entrepreneurship literature suggests that EO represents one of the most crucial capabilities for venture performance (Covin & Slevin, 1991; Lee, Lee, & Pennings, 2001; Lumpkin & Dess, 1996). An EO allows a firm to proactively manage its resource stock in anticipation of future demands, while simultaneously

providing the risk-taking propensity necessary to redeploy resources to meet market requirements. These entrepreneurial processes play a seminal role in reshaping the combination of substantive capabilities that allow a firm to achieve the strategic variety necessary to respond to environmental challenges (Miller, 1983; Zahra et al., 2006). In support of the general supposition that EO represents a dynamic capability, Lee et al. (2001) found an empirical relationship between EO and sales growth in a sample of Korean high-tech start-ups. Similarly, Wiklund and Shepherd (2003) argue and find support for EO's influence on the important organizational resources of opportunity discovery and exploitation. Furthermore, the authors establish a link between opportunity recognition, exploitation, and firm performance in a sample of small and medium-sized Swedish firms. These findings suggest that an EO allows firm leaders to be innovative in the reconfiguration of resource bundles.

In sum, by applying a dynamic resource-based lens through the selection and development of such dynamic capabilities as HPWS, a partnership philosophy and an entrepreneurial orientation firms are able to more successfully reconfigure and realign their human, social, and organizational resources to create a sustainable competitive advantage. In addition, an alignment of high performance work systems, entrepreneurial orientation, and partnership philosophy may be particularly beneficial. Moreover, the dynamic capabilities engendered by these approaches may be especially useful for new firms competing in unstable, dynamic markets.

HYPOTHESES

2.1 High Performance Work Systems & Firm Performance

As discussed above, both a philosophy of partnership and high performance work systems are likely to serve instrumental roles as dynamic capabilities within emerging organizations. These firm level values and processes help to produce both valuable human and social capital within organizations. In addition, these two capabilities are likely to work in concert with one another to affect the performance of firms. These relationships are more completely developed and discussed below.

High performance work systems. The link between high performance work systems and the performance of small and young firms has been the subject of many calls for investigation in the entrepreneurship and SHRM literatures. For instance, Baron (2003) called for a more thorough investigation of the role that HR policies and practices play in developing and encouraging firm-level entrepreneurship. Also, in their detailed review of the entrepreneurship literature Lumpkin and Dess (1996) conclude that more research is needed that examines the internal processes of organizations and their impact on the EO-performance relationship. Thus, research question number one is designed to highlight the role that management practices can have on the performance of budding firms.

As mentioned previously, high performance work systems (HPWS) are those that attempt to build motivation and commitment in an organization's workforce. HPWS include practices such as comprehensive recruitment and selection plans, extensive training and development, incentive-based compensation, and detailed performance management systems (Datta, Guthrie, & Wright, 2005; Huselid, 1995).

The SHRM literature has consistently found positive relationships between commitment-based HR systems and a variety of firm-level outcomes, including productivity (Guthrie, 2001; MacDuffie, 1995), employee turnover (Arthur, 1994; Guthrie, 2001), and financial performance (Huselid, 1995; Lee & Milller, 1999). Most of this research, however, has been completed in large and well-established firms.

While less extensive there are a few notable studies that have discovered a positive relationship between a variety of management practices and firm performance in emerging organizations. For instance, Welbourne and Andrews (1996) found that the degree to which companies value employees (as indicated by content analyzing company reports) and the implementation of organizational-based rewards have a positive impact on the long-term survival of initial public offering (IPO) firms. In addition, in a study of small Belgian firms Sels et al. (2006) found a positive relationship between HRM intensity and productivity, while Burton and O'Reilly (2004) report a positive association between high commitment work systems and the likelihood of attaining IPO status in a sample of Silicon Valley start-ups. In addition, Burton and O'Reilly find that a firm-level value system based upon a high commitment model drives the likelihood of firm-survival. While these studies have begun to build a basic understanding of the role management practices play in emerging firms, there is still much that we do not know.

One factor limiting the current knowledge in the field, is the simple fact that the rate of adoption of formal systems of human resource management appears to be

quite low in small and emerging organizations. For instance, a study of small and medium sized enterprises in the UK, revealed that 64% of the 100 firms surveyed had no formal HR strategy, despite the fact that most felt that HR practices were useful (Cassell et al., 2002). In addition, the most commonly cited HR practices utilized were equal opportunity policies and performance appraisal systems, indicating that such firms are particularly deficient in the areas of selection, development, and compensation (Cassell et al., 2002). These results suggest that high performance work practices, may offer an even greater advantage to emerging firms, as many of their competitors and rivals of similar size are slow to implement and develop such employment systems. While research does indicate that firms begin to adopt more formal HR systems as they grow larger (Kotey & Slade, 2005), firms who adopt early may develop core competencies that provide a competitive edge prior to establishing structural characteristics that limit the implementation of innovative management practices (Bacon et al., 1996). Thus, the following is hypothesized:

> *Hypothesis 1: Emerging firms making extensive use of high performance work systems will achieve superior firm performance, relative to those not emphasizing HPWS.*

It is also expected that firms implementing commitment-based systems will achieve higher levels of innovation. Zahra et al., (2000) describe three types of innovation that firms can exhibit: product, process, and organizational innovation. Product innovation pertains specifically to the development of new products. Process

innovation refers to the number of new production related process technologies that are introduced by the company, while organizational innovation pertains to the number of new management and administration programs that a firm adopts. It is expected that many HR practices will be useful in producing all three types of innovative behavior.

Hayton (2005) has theorized that several human resource management practices are likely to enhance firm-level entrepreneurship. He notes that paying above market wages is a necessary characteristic for firms to remain innovative, as individuals must be induced to take risks and invest their time in entrepreneurial projects. Other scholars also note that incentive-based compensation has been linked to intrapreneurial behavior and firm innovativeness (Carlson, Upton, & Seaman, 2006; Hostager 1998; Soutaris, 2002). In addition, Hayton (2005) argues that firms adopting a pay structure that is based upon internal equity perceptions will achieve higher levels of innovation. Hayton also notes that HPWS are likely to be associated with environments that encourage organizational citizenship behaviors (OCBs), which increases communication, trust, and knowledge sharing, thus leading to more innovative ideas.

Similarly, Schuler (1986) draws from the literature to note that firms wishing to increase their capability of innovation must instill the following values and behaviors in their employees: creativity, a long term focus, cooperative behavior, risk taking, a results- and task-based orientation, willingness to assume responsibility, flexibility, the ability to tolerate ambiguity, and a focus on effectiveness. In order to

encourage these key behaviors Schuler emphasizes the use of a host of HRM practices, including formal HR planning, competitive pay, egalitarian pay structures, results-based performance appraisal, an emphasis on the quality of work life, and high participation in training and development, to name a few.

Beyond theorizing, relatively little empirical work has been done investigating this relationship. An exception is research set in the U.K. by Michie and Sheehan (1999), who found that firms utilizing innovative incentive plans, teamwork, employment security, job assignment flexibility, and information sharing tended to introduce more new products and processes than their counterparts. Other research indicates that firms employing more organic organizational structures are more likely to produce innovative products and services (Damanpour, 1991). Building upon these results, the following hypothesis will be tested:

> *Hypothesis 2: Emerging firms adopting HPWS will experience higher levels of product, process, and organizational innovation.*

SHRM scholars have called for research that investigates multiple dependent variables, as firm financial performance represents only one important dimension of firm success (Rogers & Wright, 1998). These authors argue that more proximal HR outcomes, such as turnover, should also be analyzed. Theoretically, firms that establish a commitment-based culture should see lower levels of turnover. In fact, multiple studies have found this to be case, as the adoption of HPWS tends to help the

firm develop organizational commitment, which reduces overall turnover levels (Arthur, 1994; Guthrie, 2001; Huselid, 1995).

Retaining talent is an important issue facing emerging organizations as they often lack the corporate name and reputation that naturally attracts job candidates (Barber, Wesson, Roberson, & Taylor, 1999). Thus, retaining key organizational members not only allows the firm to better utilize its human capital, it also cuts down on the significant costs associated with replacing employees. In addition, emerging firms that are able to retain valuable human capital, will be able to avoid the deleterious consequences associated with losing the indispensable tacit knowledge that has been developed by organizational members (Shaw, Gupta, & Delery, 2005). This relationship has been analyzed in both large (e.g., Guthrie, 2001) and small firms (e.g., Way, 2002), with results indicating that the implementation of high performance work systems decreases turnover levels. Thus, the following hypothesis will be tested:

> *Hypothesis 3: Turnover will mediate the relationship between the use of high performance work systems and firm performance.*

2.2 Partnership Philosophy and Firm Performance

In addition to high performance work systems, a managerial value that is likely to affect the performance of small and emerging organizations is a philosophy based upon partnership. This is a frequent starting point for establishing competitive advantage via people management systems. While partnership has most frequently been discussed in relation to unionized firms (e.g. Martinez Lucio & Stuart, 2002;

McCarten, 2002) the underlying principles also apply to non-unionized organizations (Knell, 1999). Multiple approaches to partnership exist (Guest & Peccei, 2001); however, the underlying philosophy behind these approaches is an integrated and collaborative approach between management and employees in meeting various business challenges (McCartan, 2002). Guest and Peccei (2001) describe partnership as a concerted effort by owners and managers to create an environment where employees take a significant psychological stake in the success of the organization through high levels of attachment, commitment, and involvement in the firm. This philosophy is predicated on employee's ability to trust management, employee involvement in decision-making, and a commitment to reward employees for organizational successes (Dietz, 2004). In addition, a partnership philosophy relies on both employees and management to focus on shared goals and interests without being derailed by potentially different positions on specific issues (Guest & Peccei, 2001). As such, partnership represents a philosophy of integration and mutuality, with a move away from adversarial relationships between labor and management (Martinez Lucio & Stuart, 2002).

McCartan discusses the primary values espoused by partnership philosophies including: mutual trust and respect, a joint vision for the future, continuous information exchange, recognition of job security and its link to productivity, and decentralized decision-making (2002: p. 60). Conceptually, partnership has been argued to increase productivity, boost quality, provide a more motivated workforce, and precipitate drops in absenteeism and turnover (Roscow & Casner-Lotto, 1998).

In addition, as argued above it is likely that this focus on the internal relationships within the firm will result in higher degrees of collaboration and knowledge sharing, which ultimately builds social capital.

Empirical research on partnership has been somewhat mixed. In a case study of unionized British firms the espoused values of partnership were linked to greater perceptions of trust in some organizations but not in all (Dietz, 2004). Similarly, a study of trade union representatives found acceptance of aspects of partnership including a commitment to less-adversarial relations between labor and management, however, failed to find evidence that partnership-based firms improved job security, transparency, involvement or work-life quality (Martinez Lucio & Stuart, 2002). At the same time partnership practices and principles have been found to be a salient factor in the implementation of organizational change initiatives (Bacon & Storey, 2000; Oxenbridge & Brown, 2002) and have also been linked to firm sales and profitability (Guest & Peccei, 2001).

A partnership philosophy may be of even greater importance in the context of small business, where firms often lack formal systems of human resources management. Under such situations employer commitment to the well-being of employees is more demonstrated through the underlying values and culture of the organization than through specific formalized practices. Evidence from case studies of 30 highly profitable small and medium sized businesses indicate that a philosophy dedicated to employee partnership underlies the practices and behaviors of owners and managers in these firms (Drummond & Stone, 2007). This study reports that

these successful firms had governing philosophies that "operate open and inclusive approaches to management, stressing routine and unmediated communication between managers and workers, flat hierarchies, autonomy, trust and teamwork…" (Drummond & Stone, 2007: 196). Therefore, while small firms may lack the formalized practices associated with high performance work systems they still benefit from integrated partnership-based approaches to management. Thus, the following is hypothesized:

> *Hypothesis 4: Firms operating with a partnership philosophy will achieve superior firm performance.*

While the rate of adoption of formal HR practices may be less well established than in larger firms, firms operating under the guiding principles of partnership are probably more likely to implement elements of HPWS. Without the implementation of certain practices the espoused values become little more than managerial rhetoric (Dietz, 2004). Similarly, as Guest and Peccei (2001) stress partnership should entail not only principles, but also practices and outcomes. Empirical work on high-tech start-ups in Silicon Valley revealed that those firms who operated under espoused commitment-based models were most likely to implement human resource policies and practices as compared to those operating under factory or engineering approaches to management (Baron et al., 1996). Thus it is expected that:

Hypothesis 5: Firms operating under a philosophy of partnership will be more

likely to implement HPWS.

In addition, firms matching their philosophy to their actions via high

performance work systems are likely to outperform those that do not implement such

practices and policies. By aligning the values of the organization with its actual

practices, firms are likely to achieve superior performance relative to those with only

an espoused philosophy. Thus it is expected that:

Hypothesis 6: High performance work systems will moderate the relationship

between a partnership philosophy and firm performance, such that firms

making extensive use of HPWS will outperform those not emphasizing the use

of HPWS.

2.3 Entrepreneurial Orientation and Firm Performance

The third research question seeks to increase understanding of the extent to

which an entrepreneurial orientation will aid performance in emergent firms. As

Lumpkin and Dess (1996) stress, new entry does not equate directly with an

entrepreneurial orientation. While the emergence of a new firm does serve as an

example of entrepreneurship, the values that govern start-ups vary from firm-to-firm.

Scholars have argued, however, that in order to grow and remain competitive,

emerging organizations must continue to embrace innovation (Kanter, 1985; Simsek,

Lubatkin, & Floyd, 2003). In order to meet this demand, firm leaders must remain

steadfast in their pursuit of an entrepreneurial orientation. As mentioned previously,

an entrepreneurial orientation reflects a strategic posture that focuses on risk-taking and innovation in strategic business decisions (Covin & Slevin, 1989).

Covin and Slevin (1989) liken an entrepreneurial orientation to Miles and Snow's (1978) conceptualization of prospector firms or Mintzberg's (1973) notion of entrepreneurial organizations. Lumpkin and Dess (1996) take EO a step further by stating that "an EO refers to the processes, practices, and decision-making activities that lead to new entry" (1996: p. 136). This definition effectively equates an entrepreneurial orientation with the classic act of entrepreneurship, which is new entry, by describing the firm-level processes that lead to market entry (Lumpkin & Dess, 1996).

An entrepreneurial orientation is composed of three main factors: innovation, proactiveness, and risk taking propensity (e.g. Covin & Slevin, 1989; Miller, 1983; Wiklund, 1999; Wiklund & Shepherd, 2003).[1] The first dimension, innovativeness, refers to a firm's general aptitude to support new ideas, experiment with new and creative processes, and separate themselves from established practices in the industry (Lumpkin & Dess, 1996). As a complement to innovativeness, proactiveness refers to the first-mover advantage generally enjoyed by entrepreneurial firms (Lumpkin & Dess, 1996). Finally, risk-taking alludes to a willingness to invest resources in high-risk projects and press the development of products and services with uncertain probabilities of success (Miller & Friesen, 1978). Combined these three

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[1] Note that Lumpkin and Dess (1996) include both autonomy and competitive aggressiveness as additional elements of an entrepreneurial orientation; however, most of the current empirical research has relied on the three main factors mentioned above, thus they will be featured in this project.

characteristics allow firms to more readily anticipate and meet the demands of the market ahead of rival firms that adopt a strategic orientation more aligned with controlling costs and increasing efficiency. As such, it serves an important role as a dynamic capability, which allows firms to create and reconfigure resource bundles in the face of ever-changing industry demands.

Conceptually, an entrepreneurial orientation has been argued to provide firms with the opportunity to reap the first sustainable profits from given markets (Zahra & Covin, 1995), enjoy long-term profitability (McGrath, 2001), and dominate supply and distribution channels (Wiklund & Shepherd, 2003). In addition, scholars argue that in today's business climate where product lifecycles continue to shrink, firms must remain dedicated to innovation in order to ensure a steady revenue stream (Hamel, 2000). Empirically, an entrepreneurial orientation has consistently been linked to firm performance (e.g., Wiklund & Shepherd, 2003; Wiklund, 1999) and sales growth rates (Covin, Green, & Slevin, 2006).

Delving more deeply into the relationship between entrepreneurial orientation and firm performance, scholars have also examined indirect effects models linking EO to measures of performance. Specifically, an entrepreneurial orientation has been found to have a positive indirect effect on firm performance through its role in creating favorable organizational structures and a strong market orientation (Matsuno et al., 2002). In addition, an entrepreneurial orientation has been shown to interact with firm-level knowledge resources such as, market and technological knowledge, to facilitate further increases in firm performance (Wiklund & Shepherd, 2003). These

findings demonstrate EO's role as a firm-level dynamic capability that helps to alter and align resources to achieve sustainable competitive advantages.

While much of the research on the EO-firm performance link has been conducted using large organizations it is probable that this relationship holds in smaller and emerging firms as well. For instance, a study of technology start-up firms in South Korea found an entrepreneurial orientation to be positively related to firm sales growth (Lee, Lee, & Pennings, 2001). As firms enter new markets and begin to establish themselves, it is important they remain innovative, proactive, and exhibit a willingness to take risks in order to outperform their rivals. In addition, emerging firms may be better situated to leverage an entrepreneurial orientation as they are less likely to suffer from the structural and cultural inertia that tends to inhibit more established firms. Thus, the following is hypothesized:

Hypothesis 7: An entrepreneurial orientation will be positively associated with firm performance.

Aligning EO and HPWS. Research question number four addresses the question of whether or not an aligned entrepreneurial strategy and commitment-based HR systems will result in greater firm performance. Researchers in the area of strategic human resource management have frequently debated whether firms should adopt "best practices", or whether a contingency approach that considers a firm's strategy and environmental factors should be employed. For instance, Pfeffer (1994) has argued for the implementation of seven employment practices that establish firms

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as "employers of choice", regardless of their strategic posture or competitive environment. His seven practices include: employment security, selective staffing, an organizational design that emphasizes decentralized decision-making, comparatively high compensation contingent on firm performance, extensive training, reduced status differentials, and extensive sharing of financial and other performance related information.

Others, however, have argued that firms must fully understand their own competitive position and employment relationships prior to implementing such high performance work practices. For instance, Lepak and Snell (1999, 2002) argue that the practices firms utilize should depend upon the value and uniqueness of the job position. Further, they demonstrate that it makes financial sense to contract-out positions that are neither valuable nor unique, while utilizing high performance work practices for those positions that are perceived as value-adding (Lepak & Snell, 2002).

In addition to understanding the differences in various employment relationships, SHRM scholars postulate that, in order to achieve a sustainable competitive advantage, firms must utilize a system of HR practices that achieve fit both horizontally with other employment practices, and vertically with the firm's strategic direction (Delery, 1998; Wright & Snell, 1998). Specifically, Wright and Snell (1998) argue that in order to achieve maximum performance a firm must ensure that its strategy is congruent with a set of mutually reinforcing HR practices, employee skills, and employee behaviors. In other words, a firm's employment

practices, from selection to compensation, must carry the same set of goals and objectives in order to mutually reinforce the same set of behaviors (Delery, 1998; Sels et al., 2006; Schuler, 1986). At the same time these goals must be aligned with firm-level strategy, such that firms competing on the basis of cost, differentiation, or other factors must develop different employment systems. While there are multiple structural arrangements that may serve to increase innovation, it remains important for these various factors and practices to be aligned with one another (Schuler, 1986).

Descriptively, research indicates that firms do make an effort to align their employment practices with their overall strategy. For instance, Arthur (1992) found that a firm's classification as either a cost leader or a differentiator led them to adopt control-based HR systems or commitment-based HR systems, respectively. In addition, the theoretical idea that congruence leads to superior firm performance has received support in empirical research. For instance, MacDuffie (1995) found that firms implementing a congruent set of production tactics, strategies, and high performance work practices achieve higher levels of firm performance than those with incongruent organizational systems.

In line with this empirical and conceptual research, it is important for entrepreneurial firms to develop a system of HR practices that provide the proper culture and incentive-base to match their entrepreneurial orientation. As Shrader and Siegel (2007) note, human capital is likely to play an especially important role in the context of entrepreneurial ventures. Firms that are able to build such systems are likely to create a multiplicative effect on firm performance. In fact, Atuahene-Geme

and Ko (2001) did find an empirical relationship demonstrating that firms with an entrepreneurial orientation tend to also have more sophisticated HR systems that focus on innovation in selection and rewards.

In addition, scholars argue (Birkinshaw, 1997; Lumpkin & Dess, 1996) that firms with an entrepreneurial orientation need to emphasize "dispersed" entrepreneurship where the values of innovation and risk-taking are promoted throughout all members of the organization, not simply in the top management team or one functional area. This idea was first discussed in the seminal work of Burns and Stalker (1961) who argued that firms embracing an EO are likely to be better served by "organic", as opposed to "mechanistic" approaches to HR, since these firms are likely to face "changing conditions, which give rise constantly to fresh problems and unforeseen requirements" (Burns & Stalker, 1961: 121). Consistent with these sentiments, entrepreneurship scholars have also theorized that a decentralized, flexible (i.e., "organic") management structure is a better fit for the EO firm (Lumpkin & Dess, 1996).

There is significant overlap between current discussions of high performance work systems and Burns and Stalker's (1961) descriptions of organic management systems (cf. Datta et al., 2005). A high performance work system fosters broad perspectives and experience sets, aligned interests, information sharing and participatory mechanisms – all of which enhance prospects for spontaneity, innovation and alternative strategy-generation throughout the organization (Wright & Snell, 1998). By developing broad repertoires of skill and behavior, many high

performance work system elements promote organizational flexibility and innovative employee behavior.

This view has found empirical support by Matsuno et al. (2002) who demonstrate that firms with an entrepreneurial orientation tend to be less likely to implement formalization, centralization, and departmentalization. Additional research by Covin and Slevin (1988) revealed that the "organicness" of an organization's structure moderates the relationship between entrepreneurial decision-making and firm performance. Thus, it is likely that many firms adopting a strategy based upon continued innovation are also likely to implement congruent HR systems that support the goals of an entrepreneurial orientation.

Hypothesis 8: Emerging firms with an entrepreneurial orientation will be more likely to adopt high performance work systems than those lacking an entrepreneurial orientation.

Furthermore, given the research cited above (e.g., Delery, 1998; MacDuffie, 1995), firms that adopt management practices that are aligned with their general innovative strategy are more likely to be successful than those with incongruent practices. For instance, Burton and O'Reilly (2004) found a positive interaction between a commitment-based value system and several HR practices on the likelihood of achieving IPO status in a sample of high-tech start-ups. In addition, these authors report that the practices alone were not significant predictors of success, however, when coupled with a congruent value-system the interaction term had a

positive and significant effect on firm performance. Thus, the following is
hypothesized:

> *Hypothesis 9: High performance work systems will moderate the relationship*
> *between an entrepreneurial orientation and firm performance, such that firms*
> *making extensive use of high performance work systems will outperform those*
> *not emphasizing HPWS.*

2.4 Competitive Strategy & High Performance Work Systems

Another important contingency factor likely to affect the relationship between
HPWS and firm performance is a firm's competitive strategy. Competitive strategy is
likely to drive important workforce management decisions and also to affect the
overall effectiveness of such initiatives. The SHRM literature has recognized the
importance of strategic decisions in the link between HR practices and firm
performance. In particular, MacDuffie specifies the following conditions under
which employees can make a significant difference: (a) when employees possess
knowledge and skills which top managers lack; (b) when employees are motivated to
apply this expertise through discretionary effort; and, (c) when the firm's business or
production strategy can only be achieved when employees contribute such
discretionary effort (1995: 199).

These factors are most prevalent in strategies focused on innovation,
providing unique service or product features, and differentiation. Under these
strategic umbrellas greater employee discretion is necessary, which requires a greater

depth and breadth of skills, a higher level of organizational commitment, and a more significant reliance on employee competencies. Furthermore, competitive strategies that enhance discretion are conceptually and empirically more aligned with high performance or commitment-based HR systems (Arthur, 1992). Perhaps the best known theoretical model supporting this contingency argument is the "behavioral perspective" (Jackson, Schuler & Rivero, 1989).

The rationale behind this theoretical perspective is that employee role behaviors are instrumental factors in the effective implementation of competitive strategies. Under a generic strategic typology, such as Porter's (1980) framework, differentiation and low cost strategies are thought to require different HR policies and practices in order to encourage particular sets of employee attitudes and behaviors to cultivate competitive success. As articulated by Arthur (1992), a cost leadership business strategy will often be associated with close supervision, narrow, well-defined job responsibilities, condensed training and skill requirements, low levels of employee influence and limited participation.

Conversely, firms competing on the basis of differentiation require vastly different employment and management systems. These organizations often need to quickly alter production and organizational processes to meet shifting market and customer preferences. The increased uncertainty leads to greater need for employee skill depth and breadth as well as a higher level of initiative and commitment. In terms of HR systems, high performance practices such as broadly defined tasks, decentralized decision-making, information sharing, greater levels of training and

more significant use of cross-utilization and teams are all consistent with providing employees with the opportunity, skills and motivation to contribute to firm success in environments demanding greater levels of involvement. Arthur has labeled these two different approaches to HR as "control" versus "commitment" systems and empirically documented the fact that competitive strategy and employee relations systems tend to be aligned (1992). In addition, a study of Taiwanese firms found an interaction effect between product market strategy and strategic human resource management systems, where firm strategy related to cost-control and innovation moderated the relationship between HR systems and firm performance (Chang & Huang, 2005). Thus, the following hypothesis will be tested:

> *Hypothesis 10: Competitive strategy will moderate the relationship between the extensive use of high performance work systems and firm performance, such that a stronger relationship will be established in firms focused on differentiation.*

Industry Context. Industry norms play a substantial role in affecting organizational practices and culture (Pennings & Gresov, 1986). Furthermore, industry characteristics have long been recognized as important factors that affect firm strategy decisions and ultimately firm performance (e.g., Burns & Stalker, 1961; McGahan & Porter, 1997; Porter, 1980). For instance, strategic management research demonstrates that in order for firms to achieve success, they must achieve a certain level of congruence between their internal processes, organizational structure, and

their external environment (e.g., Lumpkin & Dess, 1996; Haleblian & Finkelstein, 1993). In light of this work, it is important to discuss the above hypothesized relationships in light of the industry sectors that will be analyzed in this study.

This study focuses on firms operating in the high-tech sector. These industries will be more thoroughly discussed below; however, all of the firms in the analysis share similar characteristics in that they operate within an industrial context that is dynamic, uncertain, and relatively unstable. Given the uncertainties present in these environments it is especially important that these firms utilize dynamic capabilities that allow them to adapt to environmental shifts. Empirical evidence suggests that such capabilities as EO and HPWS aide firms competing in changing environments.

For instance, Covin & Slevin found that industries "characterized by precarious industry settings, intense competition, harsh, overwhelming business climates, and the relative lack of exploitable opportunities" (1989: 75) require firms to implement an entrepreneurial orientation in order to remain successful. Similarly, research indicates that dynamic industries that are low in capital intensity, hold high growth potential, and require differentiation increase the salience of high performance work systems (Datta et al., 2005). As such, under a dynamic capabilities perspective the high-tech sector serves as a particularly poignant context to study the effects of HPWS, EO, and partnership on firm performance.

METHODS

3.1 Sample

The sample is derived from the National Establishment Time-Series (NETS) database. The NETS database contains records of over 30 million establishments across the United States that have begun operations since 1990. The NETS database utilizes Dun & Bradstreet market reports to longitudinally detail firm sales performance, employment growth, and credit status across the life cycle of each firm. In a joint effort between Walls & Associates and Dun & Bradstreet, the NETS database was created by taking annual snapshots of the Duns Marketing Information file to track establishment activity, growth, and movement across the United States (Kauffman Research Portal, 2008). The NETS database was first made available in 2003 and has since been used to track business growth and movement (Neumark, Zhang, & Wall, 2005) and job creation (Neumark, Wall, & Zhang, 2008). Though the database is relatively underutilized currently, the longitudinal nature and the specificity of the data will likely ensure that NETS becomes a more and more popular tool among entrepreneurship researchers.

Approximately 50,000 establishments were originally extracted from the database across industry groups operating in the computer hardware, software, peripherals and consulting sectors. In particular, firms operating within SIC designated industry codes 5045 and 7371-7379 were targeted for inclusion in the sample. This limited set of industries allows for a test of firms operating within sectors that have traditionally been classified as technology intensive (e.g., Baron et

al., 1996; Burton & O'Reilly, 2004; Insch & Steensma, 2006; Schilling & Steensma, 2002; Tegarden et al., 2005). Firms that were greater than 10 years old, employed less than 10 people, and were listed as subsidiaries of larger organizations were eliminated from the sample. These firms were eliminated in order to avoid bias from having firms in vastly different life cycle stages, with too few employees to establish management practices, and those that may be influenced by larger corporate offices. Furthermore, firms with inadequate contact information were removed from the sample. This resulted in a pool of 2,018 firms.

3.2 Procedure

Prior to mailing the initial surveys, pilot testing was completed with three executives of similar organizations who provided feedback on the nature of the questions and the length of the survey. This information was used to further refine the survey instrument. Survey based measures of turnover, innovation, sales growth, net sales, high-performance work systems, partnership philosophy, entrepreneurial orientation and other demographic information were mailed to the senior most contact person listed in the NETS database. A compact disc (CD) was sent with a direct link to an online survey along with a letter explaining the purposes of the study. The online survey allowed the screens to appear in random order, thus controlling for an ordering effect in the responses (Shadish, Cook, & Campbell , 2002). All potential respondents were offered an executive summary of the study results at the conclusion of the project. Up to four follow-up e-mails were sent to the individuals in the database for which complete e-mail address information was available. Those that

were inaccessible via e-mail were sent reminder phone messages and an additional mailing. These contacts resulted in 215 responses, providing an overall response rate of 10.7%. Many respondents were hesitant to provide financial information as all of the companies surveyed were private firms. Also, of these 215 responses, 25 of the firms were older than 10 years of age and were subsequently removed from the analysis. As a result the percentage of usable responses ranges from 105 to 190 depending upon the analysis.

While low overall, the response rate for this study is in line with other surveys of top executives (Hambrick, Geletkanycz, & Fredrickson, 1993; Simsek, 2004) and small businesses in general (Heneman, Tansky, & Camp 2000; Neck et al, 2004; Voordeckers, Van Gils, & Van den Heuvel, 2007). Survey respondents were on average male (89.7%), between 26 and 67 years old ($\mu = 47$), with a bachelors degree or higher (91%). The firms in the study were primarily being led by one of the individuals that founded the firm (84.3%), not interested in an initial public offering (92.6%), and did not receive venture capital financing (83.8%) to start their business. Table 1 provides additional demographic and background information on the responding organizations.

Response bias was assessed by examining the differences in 2005 net sales, employee levels, and firm age between responding and non-responding firms. The comparable information was retrieved from the NETS database and indicated that responding firms were slightly smaller (25 versus 31 employees) and generated slightly less sales volume (2.5M vs. 3.4M). However, these comparisons

demonstrated no statistically significant differences between 2005 net sales (t = -1.257, p = .209), total employees (t = -1.502, p = .133) or firm age (t = .326, p = .745).

In addition to the aforementioned t-tests, nonresponse bias was also assessed using a time trend extrapolation test (Armstrong & Overton, 1977). This test assumes that late responders are more similar to nonresponders than those who reply at the onset of the study. In the present analysis individuals who responded after the second contact were considered late respondents. This analysis was completed by using a multivariate general linear model (GLM) procedure to test the null hypothesis that there is no significant difference between early and late responders on the constructs of interest. The procedure allowed me to simultaneously compare the two responding groups with respect to firm age, total employees, net sales, high performance work system use, partnership philosophy, and entrepreneurial orientation. This analysis indicated no significant difference between the two groups (Wilks' lambda = .934, p = .282).

3.3 Assessment of Reliability and Validity

Several steps were taken to determine the validity and reliability of the self-report data. First, intraclass correlation coefficients (ICC) were examined between the self-report measures and those from the NETS database. ICC values are a rating of the ratio of between rating variance to total variance (Shrout & Fliess, 1979). In this case ICC(1) values were created to assess the degree of agreement between the self-report measures and the archival NETS data. An ICC(1) estimate is viewed as

the proportion of variance in a measure explained by group membership (Bryk & Raudenbush, 1992; Datta et al., 2005). Typically when the ICC(1) value is large, a rating from a single individual is likely to provide a relatively reliable estimate of the group mean; however, when ICC(1) is small multiple responses from an organization are necessary to establish a reliable estimate of the group mean (Bliese, 2000, Datta et al., 2005). The results of this analysis demonstrate a high degree of consistency between the self report measures and the NETS data for both sales (ICC1 = .564) and number of employees (ICC1 = .759). While no common agreement exists for the acceptable range of an ICC(1) value, both of these items greatly exceed the median ICC(1) value of .12 reported by James (1982).

Reliability was also assessed by seeking an additional respondent for each firm that participated in the study. Primary respondents were asked to identify a second individual who was privy to the strategic emphasis and management values of the organization. Many respondents responded by stating that they were the only one with such information in the firm and that others would not have an accurate perception of the company's strategic goals and values. This sentiment is similar to the views expressed by others examining the strategic focus of small organizations (Brigham, De Castro, & Shepherd, 2007; Fiegener, 2005; Gabrielsson, 2007). In total, 16 secondary responses were provided. Reliability information for each of the scales based upon the secondary responses is provided below in the description of the measures.

Given the difficulty of attaining second respondents, steps were taken to attempt to control for the presence of common method variance, which is a common problem when a single source is asked to provide both independent and dependent variable information (Shadish et al., 2002). First, different response formats were presented for various scales in order to create a psychological separation between the various measurement screens. In addition, web pages (each containing one scale) were presented in a different order, in order to control for the possibility of an ordering effect (Shadish et al., 2002).

The potential presence of common method bias was examined by using Harman's single factor test, which is conducted by loading each of the study variables into an exploratory factor analysis (EFA). The logic behind this test is that a single factor will be revealed in the EFA if substantial common method variance is observed (Podsakoff & Organ, 1986). This test resulted in 27 factors with an Eigenvalue exceeding 1.0, and explained 98.1% of the cumulative variance. This test provides evidence that common method variance was not substantial (Podsakoff & Organ, 1986); however, given the large number of variables in the study it cannot be ruled out completely.

Finally, in addition to the survey-based measures, semi-structured interviews were conducted with a member of the management team from six firms in the sample. These qualitative assessments allowed me to have a better feel for the phenomena of interest and added richness to the quantitative responses. The semi-structured interview questions are available in Table 17.

3.4 Measures

Entrepreneurial Orientation (EO). EO was measured using the scale

developed by Miller (1983) and Covin and Slevin (1989), which is a widely accepted

and utilized (e.g., Atuahene-Gima & Ko, 2001; Brown, Davidsson, & Wiklund, 2001;

Covin, 1991) nine-item, 7-point scale that is partially based on prior items adapted

from Khandwalla (1976/1977), and Miller and Friesen (1982). This scale measures

the extent to which a firm is proactive, innovative, and willing to take risks (Covin &

Slevin, 1989). While this EO measure has frequently been used in studies of larger

organizations, there have also been multiple studies completed using the EO scale in

smaller firms (e.g., Covin & Slevin, 1989; Wiklund & Shepherd, 2003; Wiklund &

Shepherd, 2005).

The scale has been validated by the publishing authors and has subsequently

received validation in cross-cultural contexts (Kreiser, Marino, & Weaver, 2002).

Covin and Slevin (1989) report an inter-rater reliability of .87 for the scale, which

was found to load on a single factor. In addition, Wiklund and Shepherd (2003) found

a reliability estimate of .75 for the scale. These authors also found a .64 reliability

estimate in a sample of Swedish firms (2005). The specific items utilized can be

found in Appendix C.

In the present analysis the Cronbach's α reliability estimate for the scale is

.854. Given the high level of internal consistency and the theoretical logic suggesting

that entrepreneurial orientation is a single latent construct, an average of the nine

items was taken to reflect a firm's entrepreneurial orientation. In addition, an ICC(1)

value of .744 was found by using the primary and secondary responses from each firm (n = 16).

Partnership Philosophy. As discussed previously, the core values defining a philosophy of partnership are: mutual trust and respect, recognition of job security and its link to productivity, a joint vision for the future, continuous information exchange, and decentralized decision-making (McCartan, 2002). While scholars generally agree upon these key features (e.g., Dietz, 2004; Guest & Peccei, 2001), there is little guidance on the exact items for measuring this construct. As much of the current research on partnership has been conducted using case studies, the empirical work of Guest and Peccei (2001), as well as the conceptual ideas of McCartan (2002) were used to identify nine items that measure the key areas mentioned above. The specific items are available in Appendix C. These items focus on the principles of a partnership philosophy rather than partnership-based practices which are likely to overlap significantly with the HPWS measure. The Cronbach's α for the scale is .818 indicating strong agreement across the items. As such, an average of the nine items was taken to reflect a firm's partnership philosophy. The ICC(1) value based upon the primary and secondary responses was .132 (n = 17). Although low, this value exceeds the median reported by James (1982) and is similar to that reported for similar constructs in the SHRM literature (e.g., Takeuchi, Lepak, Wang & Takeuchi, 2007).

Additionally, when the two firms with the largest difference scores between rater 1 and rater 2 are removed the ICC(1) value increases to .238 (n = 15). A t-test

was conducted between the two groups which revealed no significant differences between first and second respondents ($t = -.391$, df $= 28$, $p = .699$). Therefore, while perceptions of partnership are not shared as uniformly as the assessment of the other perceptual measures, there does not appear to be a systematic difference between first and second respondents.

High Performance Work Systems (HPWS). High performance work systems were measured using an index adopted from Way (2002) and Sels et al. (2006). These items are based on previous scales used in the strategic human resource management literature (Huselid, 1995; Guthrie 2001), but are aimed at assessing practices in smaller organizations. The 21 items used to create the HPWS index is available in Appendix C. Respondents were asked to provide an estimate of the percentage of employees who were covered by the listed practices in the years 2005 through 2006. Each item is then restricted to a range of 0% (no employees covered by the selected practice) to 100% (all employees covered by a selected practice). These items were then summed to create an overall index of HPWS use in each organization.

This approach is consistent with previous work in the SHRM literature, which advocates the use of a system level measure for both methodological and theoretical reasons (e.g., Becker & Gerhart, 1996; Delery, 1998; Way, 2002). In particular, Delery (1998) notes that SHRM scholarship tends to be most interested in organizational level phenomena, which are most readily influenced by systems rather than individual practices. Thus, providing a measure that indexes the prevalence of a

high performance work system is the most appropriate methodology for the research questions of interest.

The Cronbach's α for the index is .724, suggesting sufficient inter-item agreement. However, Gerhart et al. (2000) have suggested that an ICC(1) value is more representative of the reliability of high performance work systems usage, since this tends to be a system level construct. The ICC(1) value for the present analysis is .542 (n = 12), which is comparable to the .62 ICC(1) value obtained by Datta et al. (2005) in a similar analysis of high performance work systems, though notably with only 12 secondary respondents.

Business Strategy. Business strategy was measured using 12 items developed by Carter et al. (1994) in an analysis of new venture strategies. These items were selected on the basis of their salience to this sample of relatively young firms. The specific items utilized are available in the appendix. The Cronbach's α for the scale is .524, which suggests that the items are not representing a single strategic focus. As a result of the low reliability estimate a principal components factor analysis with varimax rotation was run to determine the dimensions of strategic focus represented by the scale. This analysis revealed a five-factor solution with Eigenvalues above 1.0. The loadings are presented in Table 2. As revealed in Table 2, the factors loaded on five of the original strategic areas delineated by Carter et al. (1994): market sensitivity, technological focus, product distinctiveness, customer service and price[2].

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[2] Items "Offering a convenient location" and "Offering contemporary products" were removed from the analysis as each failed to load on any factor above .40.

The next step in the analysis was to determine the generic strategies employed by each of the organizations based upon the five strategic dimensions identified in the exploratory factor analysis. In order to identify each organization's generic strategy a two-step cluster analysis was performed in a similar manner to the analysis completed by Carter et al. (1994). First, the items that composed each strategic dimension were averaged to create a factor score for each strategic dimension. Second, in order to control for the presence of outliers, the strategic dimensions were standardized by computing Z-scores. Third, I followed previous research in strategic HRM (Arthur, 1992) by using Ward's (1963) minimum variance method to analyze the linkages between observations on the standardized strategic dimensions. Ward's method groups observations by attempting to minimize the error sum of squares. The advantage of Ward's method, and similar hierarchical cluster analysis methods, is that is provides a dendrogram, or an upside down tree to determine the appropriate number of clusters (Arthur, 1992). Generally a "flattening" in the graph signifies the optimal number of groups (Carter et al., 1994). In this case the dendrogram provided strong evidence for a three cluster solution.

The final step in the process was then to specify a three cluster solution in a K-Means cluster analysis. The means and standard deviations for the three different groups on the strategic focus factors are presented in Table 3. Evoking the strategic archetypes presented in the Carter et al. (1994) analysis, firms in this sample were competing as price competitors, equivocators, and quality differentiators. Price competitors are those firms that are competing primarily on the basis of low cost

products and services. Quality differentiators are those that "rely more heavily on distinctive products, superior service, and high technology…." (Carter et al., 1994: 33). Finally, equivocators are those that fail to compete strongly on the basis of either cost or differentiation. As Porter (1985) and Carter et al. (1994) point out, these firms tend to be 'stuck in the middle' with an uncertain strategic model. As an additional validation of the results a One Way ANOVA was performed based upon cluster membership for the five strategic dimensions. These tests and subsequent follow-ups revealed significant differences between the groups on market sensitivity ($F = 37.64$, $p < .001$), technological focus ($F = 31.65$, $p < .001$), product distinctiveness ($F = 61.83$, $p < .001$), customer service ($F = 23.19$, $p < .001$) and price ($F = 5.59$, $p < .01$).

3.4.1 Dependent variables

Rogers and Wright (1998) note that SHRM research needs to consider multiple measures of "firm performance" when detailing the link between work practices and firm success. To this end, this study seeks to examine three measures of firm performance, turnover, innovation, and sales growth.

Sales growth was assessed using self-reported sales growth figures from 2006. 2006 was selected as the base year to assess sales growth as survey instruments were originally sent out in November of 2007. While survey respondents were asked to provide a projection of their 2007 sales growth figures, I wanted to ensure that the performance metric was based upon a completed business year. Respondents to the survey were asked to identify the most important performance metric for their organization from a list of seven items: return on assets, achieving IPO status, sales

growth, market share growth, probability of being acquired or merged, and market visibility. Respondents were asked to allocate a total of 100 points between these 7 categories. The average allocation for sales growth was 47.24 points, followed by return on assets with 20.05 points and market share growth with 14.97 points. Increasing the likelihood of attaining IPO status was lowest with an average score of 1.33. In addition, 71% of the respondents allocated the greatest share of their total points to sales growth. Thus, sales growth was utilized as the primary dependent variable in the financial analysis.

In addition, to its salience in the minds of firm leaders, sales growth has also been used as a primary outcome variable in numerous studies of small business and entrepreneurship (e.g. Brau, Brown, & Osteryoung, 2004; Carlson, Upton, & Seaman, 2006; Carr, 1997; Covin, Green, & Slevin, 2006; Covin, Slevin, & Heeley, 2000; Reuber & Fischer, 2002) and has also been utilized as a primary outcome measure in the SHRM literature (e.g., Batt, 2002). Productivity was also included as a dependent variable in the analysis, which was measured by dividing total sales by the number of employees. Subjective measures of 2006 net sales and employment levels were used to create this variable. The self-report measures were based upon categorical measures of firm performance. These items are available in Appendix C.

While not ideal, subjective categorical measures of performance have a significant history of use in research linking managerial practices to firm performance (e.g., Delaney & Huselid, 1996; Guthrie, 2001; Wright, McCormick, Sherman & McMahan, 1999; Youndt, Snell, Dean & Lepak, 1996). Also, since privately held

firms are often reluctant to report financial information much of the current research

on small business relies on subjective measures of performance (e.g., Chandler &

Hanks, 1994; Zahra & George, 2000; Wolff & Pett, 2006). Recent evidence provided

by Wall et al. (2004) indicates strong convergent validity between subjective

measures of firm performance and objective measures. Thus, it appears that properly

constructed subjective measures of firm performance can be valid indicators of

objective performance metrics.

Innovation. Innovation was measured in two ways. First a perceptual measure

of innovation was used that is based upon the items developed by Zahra, Neubaum,

and Huse (2000). Using factor analysis these authors found three innovation factors:

product innovation, process innovation, and organizational innovation using a 13 item

scale. Zahra et al. (2000) found a Cronbach's α between .70 and .78 for the three

innovation indices. The original authors also validated the scale using archival

sources and interviews with executives.

In the present analysis, the Cronbach's α for the scale was .812. In addition,

an exploratory principal components factor analysis with varimax rotation yielded the

same three factor solution. The three factors identified were related to product,

process, and organizational innovation. The items loading on each of these factors

were averaged to create factor scores for each of the three dimensions of innovation.

In addition, an overall innovation scale was created by averaging the 13 items.

Similar to the methodology used by Zahra et al. (2000), the perceptual

measure were supported by asking executives to indicate a) "the number of new

products your company has introduced to the market over the past two years", b) "the number of new process (production)-related technologies developed by your company over the past two years", c) "the number of new programs in management and administration in the past two years". These items were all significantly correlated with the perceptual measures of product ($r = .192$, $p < .05$), process ($r = .255$, $p < .01$), and organizational ($r = .493$, $p < .01$) innovation.

Turnover. Turnover was calculated by asking respondents to indicate the percentage of employees who left voluntarily during each year from 2004 through 2007. Obtaining turnover data from key respondents is the modal approach in the SHRM literature (e.g., Guthrie, 2001; Huselid, 1995).

Controls. Standard control variables for industry classification, firm size, firm age, ownership structure, and venture capital financing were controlled for by using single item responses in the survey. Venture capital financing is an important control variable, as evidence suggests that venture capitalists seek to formalize the management practices of firms in their portfolio (Burton & O'Reilly, 2004). As such, an additional question was included on the survey asking respondents to indicate the percentage of their firm's initial financing that was obtained from venture capitalists.

RESULTS

4.1 Data Screening & Analytic Technique

The analysis was completed using both ordinary least squares (OLS) regression and structural equation modeling (SEM). These methods are both appropriate for analyzing cross-sectional data. Prior to analyzing the data a number of screening techniques were utilized. First, as reported above, non-response bias was assessed by examining differences in location, size, and net sales.

Next, missing data was analyzed and imputations were performed. Nonfinancial data were considered missing at random (MAR) and were therefore imputed using multiple imputation procedures (King, Honaker, Joseph, & Scheve, 2001). Data imputation allows researchers to retain a larger number of observations than traditional listwise approaches. In addition, multiple scholars have argued that listwise deletion, regression-based single imputation and mean substitution are biased and unacceptable means for treating missing data (e.g., Graham Cumsille, & Elek-Fisk, 2003; Little & Rubin, 1987; Rubin, 1996; Rubin, 1987).

Approximately 30% of the usable responses had one or more data fields imputed using the Amelia II program (Honaker, King, & Blackwell, 2008). Multiple imputation consists of two primary steps. First, the program selects a random sample of cases with complete responses to assess the distribution of the data set. Second, several random samples are selected from the distribution of the variable with the missing responses to provide an estimate of that variables distributional characteristics (Tabachnick & Fidell, 2001). Once these steps are taken missing

values are imputed with different values to reflect varying levels of uncertainty. These procedures allow the researcher to retain a greater number of observations while still maintaining unbiased and efficient estimates (Graham et al., 2003; Schafer & Olsen, 1998).

Following the imputation procedures, univariate outliers were treated via the winsorizing technique (Lynch & Perry, 2002), which replaces extreme values with those either plus or minus three standard deviations from the variable's mean. This technique allows the analysis to be done without the bias associated with outlying values, while still maintaining a maximum number of data points. Each variable was also analyzed for skewness and kurtosis as well as heteroskedasticity with appropriate transformations taken as needed. In particular, firm size (number of employees) displayed a high level of positive skewness. As such, the natural log of total employees was used as the measure of firm size in the study. The voluntary turnover measure also exhibited a high degree of skewness and was therefore transformed by adding 10 (to avoid taking the natural log of 0) to the voluntary turnover percentage and taking the natural log of the new value. In addition, the productivity variable also appeared skewed and was therefore transformed by taking the natural log of net sales divided by total employees.

4.2 HPWS Usage in Emerging Organizations

Table 4 provides the descriptive information related to the overall usage levels of the various HR practices surveyed. This table reveals that the most extensively

used HR practices include: merit based promotions ($\mu = 88\%$, $\sigma = .19$), merit-based compensation decisions ($\mu = 87\%$, $\sigma = .22$), providing employees with strategic information ($\mu = 81\%$, $\sigma = .24$), providing routine performance feedback ($\mu = 80\%$, $\sigma = .26$), and structured interviews ($\mu = 78\%$, $\sigma = .31$). The most infrequently utilized HR practices are generic skills training ($\mu = 26\%$, $\sigma = .28$), employment tests ($\mu = 36\%$, $\sigma = .36$), job security ($\mu = 39\%$, $\sigma = .35$) and telecommuting ($\mu = 40\%$, $\sigma = .35$). Approximately 25% of the responding organizations indicated that they employ professional employer organizations or use other outsourcing arrangements for one or more of their HR functions. The most frequently outsourced functions are payroll administration and HR forecasting.

Tables 5 & 6 provide further breakdowns on the key variables of interest based upon strategic cluster and industry group respectively. Table 5 demonstrates that quality differentiators tend to be larger, focus more on partnership, utilize a higher degree of HPWS and are more entrepreneurially oriented than either cost leaders or equivocators. Quality differentiators also have lower overall levels of voluntary and involuntary turnover than either cost leaders or equivocators.

A One Way ANOVA confirms these mean differences between HPWS ($F(2,152) = 2.852$, $p < .10$), partnership philosophy ($F(2,151) = 4.725$, $p < .05$) and entrepreneurial orientation ($F(2,151) = 7.993$, $p < .01$). Follow-up tests using Tukey HSD multiple comparisons demonstrates that quality differentiators invest more in HPWS than cost leaders ($p < .10$), emphasize partnership more than both cost leaders

($p < .05$) and equivocators ($p < .05$), and have higher levels of an entrepreneurial orientation than both equivocators ($p < .10$) and cost leaders ($p < .001$).

Table 6 indicates that the highest degree of sales growth in the sample in 2006 was in the prepackaged software (7372) and the computers, peripherals, and software (5045) sectors. Amongst those industries with at least 10 respondents the data processing and preparation (7374) exhibited the lowest level of sales growth. The computer integrated systems and design (7373) industry exhibited the highest level of voluntary turnover at 11.61% while the computers, peripherals, and software industry (5045) exhibited the lowest level of voluntary turnover 2.50%. The software industry (5045) also exhibited the highest level of product, process, and organizational innovation relative to the other industry sectors in the study. Finally, the prepackaged software (7372) industry exhibited the highest average level of entrepreneurial orientation and HPWS, though none of these differences were found to be statistically significant in an ANOVA analysis.

4.3 OLS Regression Results

Table 7 contains the descriptive statistics for each of the variables assessed in the analysis along with the correlations between the constructs. The descriptive information suggests a statistical relationship between the HPWS index ($r = .25$ $p < .01$) and sales growth and also between partnership philosophy and sales growth ($r = .26$, $p < .01$). The HPWS index is also related to overall innovation levels ($r = .21$, $p < .05$), product innovation ($r = .17$, $p < .05$) and organizational innovation ($r = .21$, $p < .01$). In addition, the bivariate correlations between the HPWS index and both

entrepreneurial orientation ($r = .27$ $p < .01$) and partnership philosophy ($r = .18, p < .05$) are statistically significant.

Regression analysis was utilized to perform the various hypothesis tests. The results of the regression analysis can be seen in Tables 8 – 13. Hypothesis 1 predicted a significant relationship between the HPWS index and firm performance. This hypothesis receives partial support as a significant relationship exists between the HPWS index and firm sales growth ($\beta = .029$, $p < .01$) after controlling for the effects of firm age, founder leadership, size (employees), venture capital financing, and industry classification. The addition of the HPWS index increased the R^2 value by 5.5% ($F(1,112)$ $\Delta = 8.675, p < .01$). However, no significant relationship was found between the HPWS index and productivity ($\beta = -.0120, p > .10$). These results can be found in Tables 8 and 9 respectively.

Supplemental analysis was undertaken to determine the HR practices that were most strongly associated with sales growth. Each of the 21 HR practices was entered into a separate model following the control variables in order to avoid the bias associated with the high levels of multicolinearity among the HR practices. This analysis indicated that training in company specific skills ($\beta = .178$, $p < .05$), compensation decisions based on merit ($\beta = .224$, $p < .10$), employee financial ownership ($\beta = .144$, $p < .10$), compensation based on group performance ($\beta = .176$, $p < .05$), internal promotions ($\beta = .187$, $p < .10$), telecommuting options ($\beta = .142$, $p < .10$), firm performance contingent pay ($\beta = .434, p < .001$), and the use of self-

managed teams ($\beta = .157$, $p < .10$) were all associated positively with sales growth. These results can be found in Table 10.

Hypothesis 2 predicts that firms adopting HPWS will achieve higher levels of product, process, and organizational innovation. This hypothesis receives partial support as the HPWS index is positively associated with overall innovation ($\beta = .053$, $p < .05$), product innovation ($\beta = .066$, $p < .05$), and organizational innovation ($\beta = .083$, $p < .01$). However, no relationship is found between the HPWS index and process innovation ($\beta = .026$, $p > .10$). The results of the full model can be seen in Table 11.

Table 12 contains the results of the regression models used to test Hypothesis 3, which predicts that voluntary turnover will mediate the relationship between HPWS utilization and sales growth. The Baron and Kenny (1986) approach was utilized to test for mediation. Under this approach the independent variable (HPWS) must be significantly related to the mediating variable (voluntary turnover). The bivariate correlation between HPWS and voluntary turnover is nonsignificant ($r = -.05$, $p > .10$), as is the regression coefficient ($\beta = -.0030$, $p > .10$). As a result Hypothesis 3 fails to find support.

Hypothesis 4 predicts that firms with a partnership philosophy will achieve superior firm performance. This hypothesis receives mixed support as partnership was found to be positively associated with sales growth ($\beta = .116$, $p < .05$) but unrelated to productivity ($\beta = .036$, $p > .10$). These results are found in Tables 8 and 9 respectively. Table 13 presents the results for Hypothesis 5, which predicts that

firms with a partnership philosophy will be more likely to adopt HPWS. This

hypothesis is supported as a positive association is revealed with HPWS (β = .747, p

< .05). Hypothesis 6 suggests that HPWS will moderate the relationship between

partnership and firm performance. To test this alignment hypothesis the variables of

interest (HPWS and partnership) were mean-centered and included in an interaction

term. Table 8 shows that the interaction test failed to achieve significance (β = -

.0034, p > .10).

Hypotheses 7-9 inquire about the role of an entrepreneurial orientation in

determining firm performance. Hypothesis 7 predicts a positive relationship between

EO and firm performance. This hypothesis is not supported as EO was not related to

either sales growth (β = .014, p > .10) nor productivity (β = .035, p > .10). These

results can be viewed in Tables 8 and 9. Hypothesis 8 suggests that firms higher on

the EO scale will be more likely to adopt HPWS. This hypothesis is supported as a

positive relationship is shown to exist (β = .751, p < .01), which can be seen in Table

13. Hypothesis 9 predicts an interaction effect between HPWS and EO on firm

performance. After mean-centering the constructs of interest the test of the

interaction between HPWS and EO is shown to be significantly associated with firm

performance (β = .025, p < .05). The addition of the interaction explained

approximately 4.1% additional variance in sales growth ($R^2 \Delta$ = .041, F(1,111) Δ =

5.211, p < .05). The results of this test can be seen in Table 8. To further analyze the

interaction effect, the interaction term was assessed using the graphing procedures

outlined by Aiken and West (1991). This graph can be seen in Figure 3 and

demonstrates that HPWS plays a stronger role in influencing performance in more entrepreneurial firms.

Hypothesis 10 suggests that a firm's general strategy will moderate the relationship between the use of HPWS and firm performance, such that firms focused more strongly on differentiation rather than cost will benefit from the use of HPWS. A One Way ANOVA was used to test the difference in use of HPWS among firms identified as quality differentiators, cost leaders, and equivocators. This analysis indicated that firms within different strategic clusters were marginally different with respect to their use of HPWS ($F = 2.862$, $p < .10$). Follow up tests using the Tukey HSD procedure for multiple comparisons demonstrated that the most significant difference was between quality differentiators and cost leaders with a mean difference of 1.155 ($p < .10$). To specifically test Hypothesis 10 an interaction term was created between the quality differentiator strategic group and both the cost leaders and equivocators. The interaction term was then inserted into a separate model following the control variables and independent variables of interest. The results of this analysis are available in Table 8 and were found to be non-significant ($F\Delta$ (1,110) = 2.421, $p > .10$). Hypothesis 10 is therefore not supported.

4.4 Structural Equation Modeling Results

In addition to the OLS models, structural equation modeling was also performed to further support these findings and determine the best fitting model for predicting firm performance with all dependent variables included in the analysis. SEM is a broad analytic framework that allows scholars to combine path analysis

with confirmatory factor analysis. SEM offers unique capabilities and a great deal of flexibility to researchers (Tomarken & Waller, 2005). By providing fit indices of complicated models, researchers are able to more directly test the research questions of interest, instead of settling for a series of "mini-tests" using multiple regression techniques (Tomarken & Waller, 2005). In addition, SEM models offer other benefits above standard regression analysis, such as the ability to group items into latent constructs (Tomarken & Waller, 2005), remove unreliability via the use of latent constructs (Bollen, 1989) and a direct test of mediating variables (Bollen, 1987).

LISREL 8.80 (Joreskog & Sorbom, 1993) with maximum likelihood estimation was used to perform the structural equation analyses in this study. Figure 4 demonstrates the basic structural model that was analyzed in the study. In addition to this model alternative models were assessed including a turnover mediation model and several moderation models testing the interaction of HPWS with both partnership and entrepreneurial orientation and also a business strategy moderating model.

Model fit for each of the SEM models presented below was evaluated using three common fit metrics: χ^2 significance tests, root mean square error of approximation (RMSEA), and the Comparative Fit Index (CFI). While many alternative fit indices are available in the SEM literature, Rigdon (2001) recommends that researchers focus on these three. The χ^2 statistic is used to provide a test of the equivalence of the observed sample covariance matrix and the covariance matrix implied by the model. RMSEA is utilized to measure the discrepancy between the observed data and the modeled data per degree of freedom and is therefore less

sensitive to sample size. The CFI is utilized to compare the fit model with a null

model that leaves latent constructs uncorrelated.

4.4.1 Measurement model

The first step in structural equation modeling is to establish an appropriate

measurement model. This model is represented graphically in Figure 5. As depicted

in this figure the latent constructs were identified using parcels of the various items

included in the analysis. Parceling allows for a more thorough representation of the

latent construct by increasing reliability and decreasing the likelihood of

distributional violations (Little, Cunningham, Shahar, & Widaman, 2002). In

addition, parcels tend to be more effective with relatively smaller sample sizes,

because they require fewer parameters to be estimated (Bagozzi & Edwards, 1998;

Bagozzi & Heatherton, 1994; Little et al., 2002) and allow for a larger subject to item

ratio (Marsh & Hocevar, 1988).

Parcels were created for each of the three primary independent variables and

also for the innovation measure by averaging theoretically linked items of

unidimensional constructs. These parcels were created in such a way that the items

would represent meaningful indicators of the underlying constructs of interest. To

this end, the HPWS latent construct was represented by five parcels of manifest

variables including: employee selection, training and development, performance

management, compensation, and employee involvement. With the exception of the

selection parcel the other four parcels all mapped significantly on to the HPWS latent

construct: selection ($\lambda = -.030^3$, p > .10), training and development ($\lambda = .458$, p <.001), performance management ($\lambda = .523$, p < .001), compensation ($\lambda = .618$, p <.001) and employee involvement ($\lambda = .729$, p < .001).

The latent construct of Partnership Philosophy was represented by three parcels: trust, commitment to employees and communication with employees. Each of these is significantly represented by the latent construct: trust ($\lambda = .830$, p <.001), commitment ($\lambda = .865$, p <.001) and communication ($\lambda = .687$, p <.001). Entrepreneurial Orientation is represented by three parcels of items pertaining to risk taking, proactiveness, and innovation. Each of these was significantly represented by the latent construct as well: risk taking ($\lambda = .886$, p <.001), proactiveness ($\lambda = .740$, p <.001) and innovation ($\lambda = .674$, p <.001). Firm level innovation was represented significantly by the parcels of product innovation ($\lambda = .937$, p <.001), process innovation ($\lambda = .518$, p <.001) and organizational innovation ($\lambda = .276$, p <.05).

Within the measurement model the modification indices indicated that a more refined model would be established if correlations between the following latent constructs were allowed to be freely estimated: firm age and partnership, firm age and venture capital financing, venture capital financing and entrepreneurial orientation, and finally sales growth and innovation. In addition, the modification indices indicated that the residuals for the parcels measures training and development should be allowed to correlate with the residuals for the parcels reflecting employee selection and also performance appraisal. Correlated residuals were also found on the

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[3] Estimates retained from completely standardized solution.

innovation construct between organizational innovation and both product and process innovation. As a result an iterative process was undertaken to refine the model based upon these modification indices. The results of this process are presented in Table 14.

The final measurement model is presented graphically in Figure 6. In addition to the latent constructs of interest, controls were also entered into the model for venture capital financing, age and size (number of employees). Although the χ^2 statistic is significant for this model ($\chi^2 = 161.192$; d.f. = 116; p = .004) the ratio of χ^2 to degrees of freedom is 1.39, which indicates satisfactory model fit (Carmines & McIver, 1981). In addition, the RMSEA (.0463) index of fit is well below .08 and the CFI (.938) and NNFI (.918) are both above the .90 threshold that Kline (1998) recommends.

4.4.2 Structural model

Following the establishment of the measurement model a structural model was fit to test the main effects of partnership, EO, and HPWS on sales growth and HPWS on the innovation construct. The structural model exhibited strong model fit ($\chi^2 = 162.040$; d.f. = 117; p = .004l; RMSEA = .0455; CFI = .938). The structural path information is presented in Table 15 while the loading and residual data for this model are presented in Table 16. The structural model indicates that venture capital financing is positively associated with both sales growth ($\beta = .346$, p < .01) and innovation ($\beta = .314$, p < .01). In addition, firm age is negatively associated with sales growth ($\beta = -.243$, p < .01). The structural model supports Hypothesis 1 by

showing a significant relationship between HPWS and sales growth at the latent level (β = .420, p <.01). Hypothesis 2 was also supported as a significant relationship was found between HPWS utilization and levels of innovation (β = .348, p <.01). Significant relationships were not found between partnership and sales growth or between EO and sales growth. Therefore, the structural model does not support Hypotheses 4 and 7. The final structural model with nonsignificant paths removed is portrayed in Figure 7.

The structural model was also modified slightly to test Hypotheses 5 and 8 which predict that both partnership and entrepreneurial orientation will predict the adoption of HPWS. The model was changed to remove the correlations between these constructs and replace them with regression paths. The resulting model achieved strong model fit (χ^2 = 164.793; d.f. = 118; p = .0029; RMSEA = .0460; CFI = .936) and shows a significant association between HPWS and both partnership (β = .228, p <.10) and entrepreneurial orientation (β = .414, p <.05). Therefore, Hypotheses 5 and 8 receive support.

4.4.3 Turnover mediation model

Hypothesis 3 predicts that turnover will mediate the relationship between HWPS and firm performance. This relationship was assessed by fitting a structural model which included voluntary turnover as a single indicated construct mediating the relationship between HPWS, partnership and the dependent variables. The model fit statistics indicated that this model is a relatively poor fit to the original data matrix (χ^2 = 258.35, df = 136, p < .0001; RMSEA = .0728; CFI = .850). The model

produced does indicate a marginal negative relationship between turnover and sales growth (β = -.169, p < .10); however, no relationship is shown between HPWS and voluntary turnover (β = -.088, p > .10). As a result Hypothesis 3 is not supported, however, the model does indicate a negative relationship between partnership and voluntary turnover (β = -.191, p < .10). The results of this model are presented graphically in Figure 8.

4.4.4 Interaction effects

Prior to testing the interaction effects a significant change was made to the structural model. In order to guard against losing statistical power the latent HPWS construct was refit to be indicated by a single manifest variable. The sum of the 21 HPWS items was used as an indicator of HPWS in order to minimize the number of estimates necessary to test the interaction terms. While single indicated constructs are not as desirable as multi-indicated constructs (Pedhazur, 1997), sample size restrictions necessitated a change to the model. The new structural model is presented graphically in Figure 9 and is shown to have strong model fit (χ^2 = 96.111, df = 67, p = .0114; RMSEA = .0520; CFI = .947).

The hypothesized interaction between HPWS and EO was tested using the residual centering approach described by Little, Bovaird, and Widaman (2006). This approach allows the researcher to avoid multicolinearity issues when testing interactions between two latent constructs. Little et al. (2006) argue that the residual centering approach uses all possible information from the manifest variables, requires

no recalculations of parameter estimates and provides stable models that that can be readily interpreted.

The process involves taking the product of the manifest variables that serve as indicators for the two latent constructs. In this case the three entrepreneurial orientation parcels were multiplied by the HPWS parcel. This resulted in three product terms: H*E1, H*E2, and H*E3. Each of these product terms was then regressed on to its constituent parts. The residuals from these models were then retained as orthogonalized indicators of the interaction construct. In other words, the residual from the model in which H*E1 was regressed on H and E1 was retained. The process was then repeated for H*E2 and H*E3. These three residuals then serve as the indicators for a new latent construct that serves as the interaction term between HPWS and EO. For a complete description of this process please see Little et al. (2006) or Little, Card, Bovaird, Preacher, and Crandall (2007).

The model including the interaction between HPWS and Entrepreneurial orientation exhibits strong model fit (χ^2 = 91.476, df = 71, p = .0514; RMSEA = .0479; CFI = .959). This model is graphically presented in Figure 10. This model also shows support for Hypothesis 9 as the latent interaction term (β = .427, p < .05) is positively associated with sales growth. This suggests that matching an entrepreneurial orientation with a commitment-based model of employment has a positive effect on firm performance.

A similar procedure was utilized to test the hypothesized interaction between HPWS and partnership. An orthogonal interaction construct was created between the

three indicators of partnership and the HPWS index. The model containing this interaction term also demonstrated strong model fit (χ^2 = 81.486, df = 71, p = .185; RMSEA = .0335; CFI = .978), but failed to support Hypothesis 6 as the interaction term was not significantly associated with firm performance (β = .044, p > .10).

Hypothesis 10 was tested using a multi-group SEM model based upon a firm's classification as an equivocator, cost leader, or quality differentiator. The first step in testing a multi-group model is to ensure that the constructs are measured comparably across the different groups (Little, Card, Slegers, & Ledford, 2007). This process involves a multi-step procedure in which the researcher must establish configural invariance, weak invariance, and strong invariance before meaningful comparisons can be made across groups. The lowest level of invariance is represented in a configural model which simply assumes that the same factor structure fits across all sub-groups (Little et al., 2007). This is tested by establishing a multi-group model with each model having the same pattern of free and fixed parameters. In the present analysis configural invariance was met as each group fit the structural model presented in Figure 9.

The second step in the process is to establish weak factorial invariance, which indicates that the same factor loadings for each construct-item relationship is similar across the different groups. Weak factorial invariance is tested by equating the factor loadings (λ's) for each of the three groups (Little et al., 2007). Weak factorial invariance was able to be established in the present analysis as a χ^2 difference test indicated that there was no significant degradation in model fit as a result of equating

the loadings across the different groups ($\chi^2\Delta$ = 11.9, df = 12, p > .250). The third step

in establishing invariance was to test for strong factorial invariance. Strong factorial

invariance is established if both the loadings and the intercepts of the indicators are

equated without significant model degradation. An additional χ^2 difference test was

completed after equating the intercept information for the three sub-groups. This test

indicated no significant model degradation ($\chi^2\Delta$ = 9.996, df = 12, p > .250). The

complete results from the invariance tests are available in Table 17.

According to Little et al. (2007) once strong factorial invariance is established

meaningful comparisons can be made across groups. In the present analysis the

comparison of interest is the regression coefficient between the HPWS index and

sales growth. Since the latent standardization method was relied upon to set the scale

for the model (i.e., latent variances set equal to 1.0) an additional step had to be taken

before a meaningful comparison could be made regarding the role of HPWS in

predicting sales growth. More specifically, the associations across latent constructs

for the second and third groups of the model are estimated in covariance metric, while

the information presented for the first group is estimated in correlation metric (Little

et al., 2007). In order to ensure that all parameters are compared in the more

interpretable correlation metric, Card and Little (2006) propose using phantom

constructs. Phantom constructs are included by regressing the lower order construct

(original construct) on to a new higher order construct, which is achieved by setting

the regression coefficient between the higher and lower order constructs at 1.0 for the

first group and allowing it to be freely estimated for groups 2 and 3 (Little et al., 2007). This is modeled graphically in Figure 12.

To test Hypothesis 10 a nested model comparison was made between the model with the regression coefficient between HPWS and sales growth freely estimated in each of the three groups and one in which the association was constrained to equality. While this analysis revealed different regression coefficients for each of the three groups (equivocator $\beta = .546$, $p < .05$; cost leader $\beta = .181$, $p > .10$; quality differentiator $\beta = .195$, $p > .10$), the difference was not statistically significant ($\chi^2\Delta = 4.152$, $df = 2$, $p > .10$). Therefore, Hypothesis 10 fails to receive support.

4.4.5 Summary of SEM Results

To briefly summarize, the SEM results were supportive of a main effect between HPWS and sales growth using two different operationalizations of the HPWS construct. The SEM models were also supportive of a relationship between HPWS and levels of innovation. The results of the models also support a main effect for both partnership philosophy and entrepreneurial orientation in predicting HPWS utilization. Further, the results of an orthogonalized interaction test demonstrated a positive and significant interaction between EO and HPWS on sales growth. The models did not support a turnover mediation model, a main effect for EO on sales growth, a moderating role for firm strategy, or an interaction effect between partnership and HPWS on sales growth. These results are further summarized in Table 19 and are assessed below in the discussion section

4.5 Analysis of Interview Data

As a supplement to the quantitative analysis, semi-structured interviews were conducted with six of the survey respondents to get a more complete assessment of the phenomenon of interest. A brief description of the firms participating in the semi-structured interviews is presented in Table 18 along with the list of questions that guided each interview. The semi-structured interviews were all completed over the phone and focused on four main areas of interest: firm strengths, current challenges facing the firm, selecting quality employees, and retaining employees.

With regard to the first area of interest, the firms listed a number of factors that had helped them to achieve success. Responses ranged from getting out in front of the industry to license patents, exceptional client service and customer support, intellectual property, doing more for less, flexibility and intellectual property. In addition, five of the six interviewees mentioned that people were either their greatest single asset or among the greatest assets of the firm. As one respondent put it, "we've benefited from intellectual property rights, but the people that do the work are our greatest asset… I'd put my people up against anybody." When asked what the firm's greatest asset was another respondent simply said "People, our product is our people."

The second area of focus related to the current challenges facing the firm. Responses ranged from protecting patent rights against larger competitors, managing customer relationships, developing new business, competing against global competition, rapidity of change, and the current economic downturn. In addition to these concerns, five of the six respondents mentioned something regarding finding

good people, retaining current employees, or integrating new employees into the company culture. For instance, one respondent mentioned "We've been a very organic company, our challenge now is to integrate new people into the company that haven't been here since the beginning."   Another respondent mentioned that "finding quality employees is our biggest challenge," while an additional respondent mentioned the need to find people with the proper skill set that still fit with the company's culture.

In regard to employee selection, most of these companies relied heavily on referrals from current employees to staff their businesses. Many mentioned that they used online job boards and company web sites to recruit, but that the primary means of hiring had been through a referral and interview process. One respondent mentioned that the company had hired 85-90% of their employees through employee referrals.

Another respondent discussed his company's innovative approach to staffing in which they have mixed "farmshoring" with an apprenticeship program to deliver high quality service at a low price. Farmshoring refers to moving software development activities from either overseas, or from the U.S. coasts, to the Midwest where cost of living and labor are less expensive. The apprenticeship program developed by the firm involves hiring current college and technical school students at the beginning of their program and staffing them on client projects to "learn the ropes" and provide a less expensive form of labor for some of the lower-level development tasks. These apprentices then move through a staged process and once

they graduate from college are considered full consultants in the organization. The respondent mentioned that this selection system helped the company to decrease costs and develop a talented workforce.

Regardless of the method of employee selection, the respondents all noted the importance of finding good employees. When asked what he specifically looked for in new employees one respondent answered, "passion, patience, and persistence." Another respondent mentioned that the most important thing he looks for is "finding someone who will fit with our culture."

Along with recruitment and selection, employee retention was clearly an emphasis area for each of the firms. The interviewees noted a number of different things that they do to retain key employees. One mentioned that the firm created the FITO (fun-in-the-office) committee to implement fun and inexpensive ways to energize employees. Another mentioned that his employees never had to buy their own snacks or drinks, because he kept the company break room well stocked at all times.

Others mentioned more traditional ways of retaining employees such as making sure that they paid their "A" contributors above market salaries. Another respondent indicated that they offered their employees a 401k plan with matched contributions. In addition, another respondent mentioned that they were constantly working to provide employees with new opportunities and interesting work. Finally, one respondent mentioned an innovative profit-sharing plan in which 25% of the company's profit was distributed to employees based upon performance evaluations.

The company pays half of the profit-sharing bonus out directly following the year in which the profit was realized and pays the other half the next year if the employee is still with the firm. The respondent mentioned that this not only helps to retain employees, but also provides significant bonuses each year.

DISCUSSION

The primary objective of this study was to investigate the ways in which managerial values and practices affect firm performance and levels of innovation in a sample of young high-tech firms. The aim of the study was to determine the use of a system of employment practices in a sample of relatively young firms operating in the high-tech sector and the performance consequences of adopting high performance work systems. In addition, the study also examined the direct and moderating roles of both a partnership philosophy and entrepreneurial orientation on firm performance outcomes. These relationships were investigated in order to further assess the role of HPWS, a philosophy of partnership, and an entrepreneurial orientation as potential dynamic capabilities that impact firm performance.

In this chapter I will review and interpret the primary findings of this study as they relate to the existing literature, review the theoretical and practical implications of the findings, discuss the limitations of the study design and execution, and finally provide directions for future research.

5.1 Discussion of Results

This study tested ten specific hypotheses regarding the relationship between and among high performance work systems, partnership, entrepreneurial orientation and firm performance metrics, including sales growth, productivity and levels of innovation. Table 19 provides a brief summary of the hypothesis test results and their outcomes in both the OLS and SEM analyses.

Hypothesis 1 predicts that high performance work systems will be positively associated with firm performance. This hypothesis was partially supported as HPWS was found to have a positive and significant effect on sales growth in both OLS and SEM models, however, no relationship was found between HPWS and productivity. This finding fits with much of the research in strategic human resource management which has consistently found a positive relationship between commitment-based HR systems and firm performance (e.g., Burton & O'Reilly, 2004; Arthur, 1994; Guthrie, 2001; Huselid, 1995; Sels et al., 2006; Welbourne & Andrews, 1996). This finding contributes to this existing literature base by demonstrating that the effect for HPWS holds in small, private, and relatively young firms operating in the human capital intensive high-tech sector. While one would expect the relative usage of sophisticated HR systems to be less in this sample of firms, it appears that the effect is still significant as it pertains to sales growth. This is a particularly important finding as sales growth was noted by the participants in the study to be the primary metric with which they judge the performance of their firms.

The failure to find support for the relationship between HPWS and productivity is also noteworthy. While the link between HPWS and productivity has been established in larger organizations (e.g., Datta et al., 2005), this linkage was not supported in the current study. A null effect for HPWS on a measure of productivity was also found by Way (2002) in a sample of small U.S. firms. These results are surprising because theory would suggest that certain elements of a HPWS, such as

ownership based compensation or profit sharing would be strongest in smaller firms, where the link between individual and firm performance is more readily observed. However, supplemental analysis available in Table 10 suggests that performance-based compensation is actually negatively related to productivity in this sample of firms.

Interestingly, this analysis also shows that job security and pay position are the only positive predictors of productivity. The latter is supportive of the efficiency wage hypothesis (Lazear & Rosen, 1981), which suggests a potential incentive effect for paying above market wages. In addition, providing higher levels of job security may motivate employees to take more productive risks. This group of results demonstrates a need for further theoretical and empirical research on the link between various human resource management practices, HR systems as a whole, and labor productivity in small and emerging companies. It may be that sales per employee is not a refined enough metric to accurately assess productivity in firms that are simply trying to retain a positive cash flow. Alternatively, it may also be that in this sample of primarily service oriented businesses productivity (as measured in this study), may not be as telling of a performance metric as it is in larger manufacturing based businesses.

Hypothesis 2 predicts that firms utilizing high performance work systems will also see higher levels of product, process, and organizational innovation. The OLS regression analysis finds partial support for this hypothesis as HPWS was positively associated with an aggregate innovation measure, product innovation, and

organizational innovation indices. The OLS models failed to support the connection

between HPWS and process innovation. In addition, an SEM model was fit with a

single latent construct for innovation that was indicated by the three types of

innovation. This model also supports Hypothesis 2 by showing a significant

relationship between HPWS and levels of innovation. Taken together this group of

results is suggestive of a relationship between high performance work systems and

levels of innovation, which is supportive of conceptual research that has supported a

link between HR practices and innovation (e.g., Hayton, 2005; Schuler, 1986).

In Hypothesis 3 voluntary turnover was predicted to be a mediator between

HPWS and firm performance. The results of this analysis failed to support a

mediating role for voluntary turnover among this sample of firms. Though the

correlation between high performance work systems and turnover was negative, this

relationship was not statistically significant. Furthermore, no statistically significant

relationship between voluntary turnover rates and firm performance were evident in

this sample. This finding diverges from the strategic human resource management

literature, which has consistently found a negative relationship between HPWS usage

and turnover (Arthur, 1994; Guthrie, 2001; Huselid, 1995; Way, 2002; Yalabik,

Chen, Lawler, & Kim, 2008). Of particular note is the study by Way (2002), which

found a negative relationship between an index of high performance work systems

and voluntary turnover rates in a sample of small firms. In addition, the SHRM

literature has argued theoretically (Dess & Shaw, 2001) and demonstrated empirically

(Shaw et al., 2005) that voluntary turnover is negatively related to firm performance.

The results of this study may be explained by several factors. First, it is possible that turnover in this group of firms is simply much lower and less dispersed than in previous studies. For instance, Shaw et al. (2005) report a mean voluntary turnover percentage of 17% for the sample of firms examined. Way reported a turnover percentage of 10%. Similarly, Guthrie (2001) reported a mean turnover rate of 12.92%, while Yalabik et al. (2008) report a turnover rate of 13%. The mean turnover rate for this study was only 8.8% with a standard deviation of 9.7%. It is possible that these relatively young firms have not experienced a great deal of turnover, which may have restricted my ability to thoroughly test Hypothesis 3. It is also possible that voluntary turnover rates in the high-tech sector have slowed with the rise and fall of the dotcom era. More likely, this sample of firms may be too small and too young to be experiencing the type of turnover rates common to larger organizations.

An additional consideration in the prediction of turnover rates using high performance work systems, is that these firms may be small enough and young enough to not have a clear system of employment practices in place to deter voluntary turnover. Supportive of this conclusion is the finding that a partnership philosophy was negatively associated with voluntary turnover rates ($\beta = -.002$, $p < .10$). This suggests that while a firm system of HR practices may not have crystallized in many of these firms a managerial value system dedicated to trust, commitment, and communication is still an effective means for reducing voluntary turnover. In other words, while the practices may not have been associated with lower turnover rates,

the underlying commitment-based model is still likely to affect voluntary turnover decisions.

A final consideration is sample size. Only 105 firms were comfortable reporting voluntary turnover information. It is possible that the models in the study lacked the power necessary to truly test the association. Regardless, this null finding suggests that alternative measures of employee retention or additional theory building may be necessary in the context of emerging organizations.

Hypothesis 4 builds off of the logic of a commitment based model to suggest that firms operating under a philosophy of partnership will achieve superior performance. This hypothesis receives partial support as the OLS models demonstrate a significant positive relationship between partnership and sales growth; however, the SEM models fail to find a significant path. It should be noted that in the simpler SEM models that relied on a single indicator for the HPWS construct, the relationship between partnership and sales growth was marginally significant (β = .169, p < .10). Therefore, while the effect for partnership is not large, it does appear that valuing commitment to employees, eliciting employee feedback, communicating operating and strategic information to employees, and building a high level of trust between managers and employees is related to improved firm performance. Again, this supports the commitment based models discussed in the strategic human resource management literature. In addition, it lends credence to the arguments for employment systems based on mutuality that are frequently stressed in the literature on partnership (Guest & Peccei, 2001; McCartan 2002).

As an extension to the role of partnership in organizational functioning, Hypothesis 5 suggests that firms holding stronger beliefs related to partnership will be more likely to adopt high performance work systems. This relationship received support in both the OLS and the SEM models. A clear relationship seems to exist between the values espoused by employers and the employment practices offered. Given the fact that a common respondent provided the information for both partnership and the HPWS measure does suggest that this finding should be interpreted cautiously. Further research using multiple respondents is necessary to more conservatively test the relationship between espoused values and firm-level practices.

Hypothesis 6 predicts that matching partnership with HPWS usage will maximize the effect on firm performance. This was tested using an interaction term in the OLS models and via an orthogonalized interaction construct in the SEM models; however, neither found a statistically significant moderation effect. One explanation for this null effect is that the relatively small sample size may have lacked enough power to detect differences across different levels of partnership. Some support for this conclusion is found by performing a sub-group analysis with a mean split of the sample based upon the partnership score of each firm. This analysis shows a marginally significant positive relationship between HPWS and sales growth in high partnership firms ($\beta = .028, p < .10, n = 58$) but no relationship was found in low partnership firms ($\beta = .025, p = .137, n = 61$).

It is also possible that partnership and HPWS do not display a significant enough level of discriminant validity. An examination of the correlation matrix between the HPWS parcels and the partnership parcels (available in Table 20) is suggestive of discriminant validity across the two constructs; however, the employee involvement parcel does correlate highly with trust ($r = .22, p <.01$), commitment ($r = .27, p <.01$) and communication ($r = .31, p < .001$).

The next set of hypotheses tested the significance of an entrepreneurial orientation in determining firm performance and the adoption of high performance work systems. Hypothesis 7 predicts a main effect for entrepreneurial orientation on firm performance. Neither the OLS models nor the SEM models reveal a significant relationship between EO and firm performance in this sample of firms. This finding diverges from a segment of the entrepreneurship literature, which has consistently demonstrated a link between EO and firm performance metrics (e.g., Wiklund & Shepherd, 2003; Wiklund, 1999) including sales growth rates (Covin et al., 2006; Lee et al., 2001).

Subsequent data analysis did reveal a positive and significant relationship between two of the EO items and firm sales growth. Specifically, the item inquiring about a firm's competitive posture was positively related to sales growth ($\beta = .052, p < .05$) and also the item reflecting a firm's proclivity toward high-risk projects was positively related to sales growth ($\beta = .050, p < .10$). However, none of the aggregate sub-scales related to innovation, risk-taking, or proactiveness were significantly associated with firm sales growth.

The reasons for this divergence from existing scholarship are not readily apparent; however, the industry context for this sample of firms may be a potential explanation. The high-tech sector tends to be an area that is dominated by innovation and risk-taking. As such, it is possible that an entrepreneurial orientation is a necessary, but not a sufficient condition, for achieving success. Similarly, it may be that the firms in this study are simply too young to realize the benefits of being oriented toward entrepreneurship. Almost by definition these firms are "entrepreneurial", in the sense that they are less than 10 years old and on average have only been in existence for 7 years. This may not have been a sufficient enough amount of time for firms to fully develop their posture toward entrepreneurship relative to their competitors, whereas existing studies have focused on much older firms. For instance, Covin et al. (2006) analyzed data from 110 manufacturing firms who were on average 48 years old and had approximately 750 employees. Similarly, Wiklund and Shepherd (2003) used a sample of Swedish firms that were on average 32 years old and employed 112 people. These older samples may have been better positioned to differentiate based upon entrepreneurial orientation.

Hypothesis 8 predicts that more entrepreneurial oriented firms will be more likely to adopt high performance work systems. This relationship was strongly supported in both the OLS and the SEM models. This finding builds upon previous scholarship that has suggested that more entrepreneurial firms need to adopt more organic systems of management (Covin & Slevin, 1988; Lumpkin & Dess, 1996; Matsuno et al., 2002). Indeed, it appears that firms oriented more toward risk-taking,

proactiveness, and innovation are more likely to adopt a system of HR practices that allows for flexibility and decentralized decision making.

Hypothesis 9 builds upon this finding by testing the "vertical fit" hypothesis between a firm's entrepreneurial posture and utilization of high performance work systems on firm performance. This fit has long been discussed in the SHRM literature as a necessary factor in maximizing the benefit of implementing a commitment-based employment model (e.g., Delery, 1998; MacDuffie, 1995; Wright & Snell, 1998). This hypothesis received support in both the OLS models and the SEM models, which suggests that firms coupling an attitude toward innovation with a set of employment practices that emphasize the selection and retention of valuable human resources achieve higher levels of sales growth.

The final hypothesis test also examined a strategic fit hypothesis. In this case, the focus was on a firm's product-market strategy. Using the procedures discussed by Carter et al. (1994) to identify the strategic elements of this set of new ventures, five strategic elements were identified: market sensitivity, technological focus, product distinctiveness, customer service, and price focus. Firms were then clustered based upon their respective scores on these strategic factors. This analysis produced three strategic archetypes in the present sample: equivocators, cost leaders, and quality differentiators. Hypothesis 10 predicted that firms identified as quality differentiators would benefit most from utilizing high performance work systems. This relationship has been supported in other contexts (e.g., Huselid, 1995); however, the effect in this study was non-significant in both the OLS and SEM results.

This null result is surprising considering the higher mean level usage of high performance work systems in differentiators and the higher overall growth in sales for this set of firms relative to either equivocators or cost leaders. One of the potential reasons for the null finding is that product market strategy measures may not have been a good source of identifying strategic orientations for this sample of firms. These firms were fairly homogonous with respect to the products and services that they offered and the way in which they attempted to compete. Most of the companies were service-oriented firms who were primarily responsible for implementing software solutions. As such, the strategic focus of a majority of these firms was finding ways to deliver excellent customer service and retain key clients. For instance, one of the survey respondents commented after completing the survey, "we're in the service business. The core tenets of our company are: honesty, hard work, doing what we say we'll do, showing up when we say we will, technical ability, and being our clients advocate. Integrity, team work, and ability frequently separate us from our competitors." An additional respondent noted, "your survey focused a lot on products, we deal in the services industry, no product...except employee time."

As these comments point out, most of the firms in the sample did not produce a product that could be differentiated, rather they worked to modify and implement software solutions to meet client needs. As such, questions related to building brand identification, making capital investments in production, offering convenient locations and offering specialty products may not have been meaningful to this

sample of firms. Thus, despite the fact that I was able to empirically cluster firms into strategic groupings, these groupings may not reflect practical distinctions.

This finding does point to a potential need in the realm of strategic human resource management research. While strategic differentiations based upon the generic typologies of Porter (1980) and others have been useful in studying the interplay between strategy and high performance work systems in established manufacturing businesses, new models may need to be developed to provide a more balanced understanding of this connection in service-oriented businesses and other knowledge intensive settings. To be clear, the dimensions of cost leadership and differentiation may still hold, but a greater emphasis in measurement needs to be placed on items related to customer service, client satisfaction, and other differentiable service dimensions, with less of a focus on product development and production.

5.2 Implications for Research and Practice

Taken together the results of this dissertation offer a number of theoretical and practical implications. From a research perspective, this study adds to the growing body of literature on high performance work systems. The relationship between utilizing more sophisticated forms of management within more organically structured firms and firm performance was extended to the context of young and small high-tech businesses. This helps to further build this line of research and move HR studies out of large and traditionally manufacturing based businesses into more service and technology based organizations. In doing so, the results of this study further build

upon the logic of the resource-based view of the firm, by showing a strong connection between people management practices, the values underlying these practices, and firm performance. In doing so, this dissertation helps to build knowledge in an area that has received multiple calls for investigation (i.e., Baron, 2003; Katz, Aldrich, Welbourne & Williams, 2000; Tansky & Heneman, 2000), but relatively few empirical studies.

The results of this analysis also help to further extend the strategic HR discussion beyond the HR department. Despite the fact that few of the companies studied had any type of a formal human resources department, they still seem to benefit both from the values espoused by a partnership based model of employment and also from a system of practices built on the underlying values of commitment. This finding has important theoretical and practical importance for the HR field, as it demonstrates that the focus need not necessarily remain on building the HR department, but rather should be placed on building HR skills and competencies in general managers and executives. Furthermore, in settings which make it difficult to implement formal practices, the findings of this study indicate that firm leaders still benefit from having an attitude of commitment and partnership toward employees.

An additional contribution of this study was the demonstration of a strong connection between an entrepreneurial orientation and high performance work systems. A number of scholars have theorized about the relationship between HR systems and corporate entrepreneurship (e.g., Hayton, 2005; Schuler, 1986), but few studies have been completed that examine the relationship between these constructs.

Results of this study indicate that more entrepreneurial firms are also more likely to utilize high performance work systems. Furthermore, the results indicate that there is a significant interaction between EO and HPWS in predicting firm sales growth. This finding suggests that more entrepreneurially oriented firms benefit more from the use of high performance work systems. From a practical standpoint this suggests that organizations adopting an aggressive posture toward entrepreneurship benefit from developing bundles of HR practices that support the selection and retention of talent. Firms that are able to match their strategic posture to the specific set of practices are more aptly configured to compete in dynamic environments.

Study results are also instructive to the entrepreneurship literature, as this study begins to take steps toward understanding the internal firm-level processes that help to build successful ventures, which has been recognized as a need in the entrepreneurship literature (e.g., Lumpkin & Dess, 1996). Furthermore, the comments of the business leaders who participated in the semi-structured interviews suggest that finding ways to select and retain talented employees is a key concern. This study may help to answer these questions by showing the link between managerial practices and firm performance.

The results of this study also add to the entrepreneurship literature by providing preliminary evidence that employment systems and managerial values may serve as dynamic capabilities that help a firm to compete in uncertain environments. The findings for the HPWS index and the values related to partnership in the context of relatively young high-tech firms indicates that firms adopting a commitment-based

model of employment are better able to compete in dynamic environments. While the cross-sectional nature of this study makes it difficult to assess true dynamic capabilities, it does suggest that high performance work systems may serve an important role in helping firms to configure and reconfigure resource bundles in uncertain industrial contexts.

From a descriptive standpoint the overall usage of the high performance work systems items in this sample of firms is also noteworthy. In particular, the focus on merit as a means of rewarding employees both financially and with promotions is clearly a priority for this segment of firms. Nearly 50% of the firms indicated that 100% of their employees were compensated and promoted based upon merit. This finding makes intuitive sense as none of the participating firms were unionized in any way. Additionally, given the competitive nature of the industries these firms compete in, it is expected that they would demand high levels of performance from their employees and are willing to reward employees accordingly. Of particular interest was the significant relationship between performance-based compensation and sales growth. In this sample of firms, companies that primarily rewarded employees on the basis of individual, team, and firm performance exhibited stronger growth in sales.

Also of note is the relatively small percentage of firms that offer any type of generic skills training or that utilize employment testing. While the former is likely to be considered a luxury that simply cannot be afforded, one would expect that small companies may benefit from rigorous employment testing. Indeed, the semi-structured interviews suggest that this sample of firms relies heavily on employee

referrals followed by some type of interviewing procedure to recruit and select new employees. While this is likely an easy path for entrepreneurs to follow early in the firm's life cycle, it is likely that these firms would benefit from a more rigorous selection process as they continue to grow and expand.

5.3 Limitations & Directions for Future Research

The results of this study should be interpreted in light of several significant limitations. First, the relatively small sample size and the low response rate suggest that generalizations should be made cautiously. Despite the fact that tests of nonresponse bias did not reveal any significant differences, it is still possible that other high-tech firms differ in substantive and systematic ways from those who participated in the study. The generalizablity of the study findings is also limited to relatively young firms operating in the high-tech sector. Therefore, conclusions from this study may not necessarily hold in different contexts. An additional limitation is the reliance on a single respondent for both independent and dependent variable information. Common method bias may be present in the results of this study. These concerns will be alleviated over time as the NETS database will be utilized to track firm performance.

An additional limitation of this study is its retrospective nature. Although common in the strategic HR literature (Black & Lynch, 2001; Guthrie, 2001; Huselid & Becker, 1997; Ichinowski & Shaw, 1999), retrospective studies may suffer from a memory effect (Wright, Gardner, Moynihan, & Allen, 2005). In this study respondents were asked to recall the HR practices that were in place from 2005

through 2006, however, this data was not collected until late 2007 and early 2008. As a result it is possible that respondents were unable to accurately recall the practices utilized and the approximate percentage of employees covered by each practice. This limitation is tempered by the fact that it is unlikely that most of these firms have gone through major restructuring initiatives that would have drastically altered the employment practices they utilized. In other words, it is likely that current and past practices differ very little, though I lack the data to support this conclusion.

An additional limitation of this study, which is common to many in the field of strategic human resource management, is the potential for reverse causality between the HPWS index and firm performance. While this cannot be ruled out completely, separate regression models were run with sales growth from 2004 and 2005 predicting the use of HPWS and no significant effect was found. This provides some evidence that cautious causal claims can be made about the role of HPWS in sales growth, though future longitudinal analysis is necessary to more fully develop this relationship.

Longitudinal studies also need to be undertaken to further examine the ability of HPWS, EO, and partnership to serve as dynamic capabilities. The current study is a snapshot in time, which makes it difficult to study how exactly these constructs of interest help firms to continue to evolve and change over time. Further analysis of the "black box" linking HR systems and firm performance needs to be undertaken to more fully understand the ways in which HPWS firm leaders to select, build, and retain talent. Similarly, a more thorough investigation of how risk-taking,

proactiveness, and innovation benefit firms operating in complex and fluid environments will bolster the theoretical arguments of the dynamic capabilities framework.

Further, additional research is necessary to fully explicate the link between HR systems and strategic business processes. As Becker and Huselid (2006) note, additional studies need to be conducted to link HR systems to intermediate firm-level outcomes. The current study was limited by an inability to accurately define firm-level strategy. This is clearly a direction where additional contributions can be made by building better strategic archetypes to differentiate this sample of firms as well as more appropriate measures for parsing out differences in strategic orientations. As opposed to measuring the moderating role of generic strategy typologies, additional research needs to examine the links between generic strategy, high performance work systems, strategic business processes and firm performance (Becker & Huselid, 2006). While this study shows that the presence of a set of "best practices" improves sales growth, it does not link the HR system to the specific strategic levers that alter firm performance. Furthermore, additional research needs to be completed to show how differences in the quality of implementation of these practices affect performance differentially.

Similarly, additional research is necessary to clearly identify an entrepreneurial orientation as a dynamic capability. Further longitudinal work needs to be completely to show the ways in which risk-taking, innovation, and proactiveness help firms to adopt and implement more successful strategies that

improve firm performance. Until studies of this nature are completed, we must be

careful in labeling either high performance work systems or an entrepreneurial

orientation as dynamic capabilities.

5.4 Next Steps

As mentioned above the current study has a number of noteworthy limitations. I hope to address many of these in future extensions of this study. First, the threat of common method bias from having the same respondent providing data on both the independent and dependent variables of interest will be partially relieved with the refresh of the latest NETS database. This database should be available by the end of 2008, which will allow me to assess the implications of HPWS, partnership, and EO on the sales growth metrics contained in the NETS database. This refresh has been pre-purchased and I plan to reassess the relationships of interest at that time.

The ability to utilize the NETS database for dependent variable information will also be helpful as it will increase the number of usable responses. As mentioned previously, respondents were apprehensive about providing any type of financial performance metrics, but many were willing to provide the other information requested in the survey. The addition of the NETS database will therefore increase my usable number of responses to 190 firms.

This dataset will also serve as a strong foundation to perform future studies on firm survivorship. Frankly, survival among this population of firms may be the most important "performance" metric available. A recent study by the Bureau of Labor Statistics showed that only 31% of new businesses survived seven years and only 25% of firms in the information sector (information technology, data processing, consulting, etc.) survived to their seventh birthday (Knaup & Piazza, 2006). 57% of the firms that I have high performance work system, partnership, and entrepreneurial

orientation data on have yet to reach the seven year mark. As a result, future studies

utilizing this data set can be done to assess the implications of survivorship on the

basis of HPWS utilization, partnership philosophy, and entrepreneurial orientation.

Furthermore, there appears to be little information available regarding the continued

development and survival of firms after the seven year mark. This dataset will allow

me to continue to track the performance of these firms from year-to-year to observe

differences in survival and employment growth.

Finally, I hope to be able to resurvey those firms that survive periodically over

the coming years. I have diligently worked to demonstrate my appreciation to those

individuals that responded to the survey. As a result, I have established relationships

with many who seem to be genuinely interested in this area of inquiry. At the

conclusion of the dissertation project, I plan to develop a detailed executive summary

of the study results for each of the firms that participated in the study. My hope is

that this information will both be instructive and helpful to those who responded in

the near term and will also help to open future doors for continued research.

5.5 Conclusion

One of the survey respondents put it best when he said that "Finding and keeping the right people is the biggest challenge we face." The bottom line from this study, which matches the bottom line of many others in the field of strategic human resource management, is that people matter. The research undertaken in this study supports the basic logic that systems and values designed to select, develop, motivate and retain talented individuals have implications for firm performance. Moreover, these policies and practices seem to play an even more salient role in firms that rely on innovation and an entrepreneurial spirit to compete in today's dynamic business world. Given the recognized importance of entrepreneurial firms (Drucker, 1985; Phelps, 2007), the findings of this study should be instructive in building knowledge related to the key factors that help new ventures engage in the "metamorphosis" that transforms start-ups into successful and sustainable businesses.

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APPENDIX A – TABLES

List of Tables

Table 1 - Firm Demographic Information

Firm Information		
	Mean	Range
Firm Age	7.04	4-10 years
Employees	49	10-435 employees
Net Sales (2005)	$2.2M	$100k-15M

Location – Respondents		
Region	Total	Percentage*
Northeast	38	8.10%
Southeast	61	11.10%
Midwest	54	16.90%
Southwest	30	12.00%
West	32	8.10%

Industry		
Description	SIC Code	Total
Computers, Peripherals & Software	5045	12
Computer Programming Services	7371	75
Prepackaged Software	7372	24
Computer Integrated Systems Design	7373	26
Data Processing And Preparation	7374	16
Information Retrieval Services	7375	6
Computer Facilities Management	7376	2
Computer Rental & Leasing	7377	1
Computer Maintenance & Repair	7378	1
Computer Related Services, Nec	7379	52

*percentage of respondents per geographic region

Table 2 - Factor Analysis of Strategic Focus Items*

Survey Item	Rotated Factors (Varimax)				
	1	2	3	4	5
Low prices					0.849
Superior customer service			0.769		
High quality products/services			0.822		
Intense marketing		0.825			
Response to market		0.796			
Specialty products					
Distinctive goods or services				0.659	
More customer choices				0.828	
Utilizing new technology	0.731				
Developing new technology	0.796				
Eigenvalue	2.161	1.419	1.253	1.244	1.105
Percentage of Variance	21.60%	14.18%	12.53%	12.44%	11.06%
Cumulative Percentage of Variance	21.60%	35.79%	48.32%	60.77%	71.82%

*Factor Loadings above .40 presented

Table 3 - Clusters Based Upon Strategic Focus

Cluster	Description	n	Technology		Price		Service		Market Response		Prod Distinctiveness	
			M	SD	M	SD	M	SD	M	SD	M	SD
1	Price Competitors	52	3.32	0.85	3.03	0.93	4.28	0.59	2.59	0.70	3.78	0.66
2	Quality Proponents	67	4.39	0.61	2.69	1.27	4.83	0.27	3.74	0.72	4.15	0.52
3	Equivocators	38	4.00	0.75	2.24	1.06	4.59	0.43	3.10	0.76	2.86	0.53

TABLE 4 - HR PRACTICE USE IN EMERGING ORGANIZATIONS

HR Practice	Mean Use	SD	100% Employees Covered	>= 75% Employees Covered	>=50% Employees Covered	> 0% Employees Covered
Structured Interviews	77.53%	0.31	46.57%	65.20%	80.39%	92.65%
Employment Tests	36.13%	0.36	11.27%	19.61%	35.78%	63.73%
Company Specific Training	50.77%	0.35	18.63%	29.90%	53.43%	87.75%
Generic Skills Training	26.10%	0.28	3.92%	8.82%	22.06%	69.61%
Training Effectiveness Evaluated	42.66%	0.37	15.69%	24.51%	40.69%	75.98%
Routine Performance Feedback	79.55%	0.26	41.67%	64.22%	86.76%	95.10%
Merit-based Promotions	87.89%	0.19	49.51%	79.90%	94.12%	96.57%
Merit-based Compensation	86.69%	0.22	49.02%	79.41%	90.69%	95.10%
Employee Ownership	37.28%	0.40	19.61%	24.51%	34.31%	64.71%
Group-based compensation	50.06%	0.38	21.08%	30.88%	52.94%	79.90%
Employees Provided Operational Information	73.89%	0.28	31.86%	57.84%	80.88%	95.10%
Employees Provided Financial Information	61.31%	0.35	30.39%	43.14%	63.73%	90.20%
Employees Provided Strategic Information	81.36%	0.24	42.65%	65.69%	89.22%	96.57%
Internal Promotion	54.39%	0.29	11.27%	26.96%	60.29%	92.16%
Telecommuting	40.32%	0.35	13.24%	21.08%	39.22%	81.86%
Flex-time	59.53%	0.35	25.98%	41.67%	58.82%	89.71%
Job Security	38.56%	0.35	7.84%	22.06%	40.20%	70.10%
Self-managed teams	45.73%	0.34	11.76%	23.04%	47.55%	81.86%
Employee participation programs	42.13%	0.35	14.22%	23.04%	40.69%	80.39%
Pay Position*	60.86%	0.19	-	-	-	-
Percentage of Pay Based on Performance**	35.19%	0.32	-	-	-	-

*Indicates the average self-reported market pay position
**Reflects the average percentage of pay for employees based on merit

Table 5 - Descriptive Statistics Based on Product-Market Strategy

	Quality Differentiators		Cost Leaders		Equivocators	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
Size (Employees)	55	76	43	45	36	29
Partnership Philosophy	4.272	0.588	3.959	0.664	3.924	0.750
HPWS	12.075	2.930	10.920	2.265	11.802	2.573
Entrepreneurial Orientation	5.002	0.922	4.289	1.134	4.564	0.782
Voluntary Turnover	6.70%	0.061	11.00%	0.139	10.40%	0.086
Involuntary Turnover	5.30%	0.052	8.60%	0.066	7.70%	0.066
Average Turnover	6.10%	0.041	9.80%	0.086	9.50%	0.075
Sales Growth (2006)	35.50%	0.245	27.00%	0.409	27.50%	0.433
Product Innovation	3.209	1.066	2.649	1.136	2.961	0.962
Process Innovation	2.570	0.893	2.118	0.913	2.063	0.862
Organizational Innovation	3.070	1.046	2.629	0.898	2.790	0.990

Table 6 - Industry Based Descriptive Statistics

Variable	5045 (n=12)		7371 (n=75)		7372 (n=24)		7373 (n=26)		7374 (n=16)		7375 (n=6)		7376 (n=2)		7378 (n=1)		7379 (n=52)	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Size (Employees)	32	22	45	58	73	72	80	119	34	42	36	39	39	23	17	-	37	47
Partnership Philosophy	4.444	0.465	4.102	0.710	4.111	0.572	3.922	0.551	4.244	0.720	4.306	0.292	3.944	1.179	4.000	-	4.006	0.742
HPWS	11.829	1.866	11.733	2.614	11.926	2.517	11.475	3.142	11.383	2.225	11.279	1.868	8.650	7.849	12.400	-	11.601	2.739
Entrepreneurial Orientation	4.861	0.961	4.796	0.946	5.091	0.934	4.557	1.396	4.346	0.805	3.521	0.309	4.444	1.728	4.778	-	4.467	0.946
Voluntary Turnover	2.50%	0.035	9.83%	0.075	6.29%	0.055	11.61%	0.021	4.50%	0.033	6.67%	0.058	6.25%	0.053	2.50%	-	9.02%	0.063
Involuntary Turnover	2.50%	0.035	6.97%	0.060	5.83%	0.054	6.25%	0.066	3.00%	0.041	10.00%	0.000	0.00%	0.000	10.00%	-	8.43%	
Average Turnover	2.50%	0.035	8.81%	0.060	6.02%	0.043	8.93%	0.121	3.75%	0.025	8.33%	0.029	3.13%	0.027	6.25%	-	8.66%	0.059
Sales Growth (2006)	38.00%	0.339	36.48%	0.405	44.23%	0.356	32.18%	0.355	8.22%	0.331	21.00%	0.201	17.75%	0.216	3.00%	-	24.50%	0.278
Product Innovation	3.677	1.297	3.009	1.131	3.069	1.101	2.967	1.217	2.410	0.953	2.486	1.061	2.250	0.354	1.750	-	3.012	0.960
Process Innovation	3.093	1.236	2.322	0.895	2.484	1.005	2.233	1.025	2.063	0.645	2.130	0.635	2.100	0.424	1.000	-	2.215	0.908
Organizational Innovation	3.627	0.957	2.728	0.992	3.046	0.972	2.744	0.779	2.722	0.804	2.879	0.830	3.250	1.414	2.000	-	2.952	1.160

Table 7: Descriptive Statistics & Correlations

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Sales Growth	0.31	0.36	1.00														
2. Productivity (sales/ee)	87764.00	56329.00	-0.13	1.00													
3. Firm Age	7.05	1.39	-0.15	0.00	1.00												
4. Employees	48.97	65.92	0.15	-0.38	0.09	1.00											
5. VC financing (%)	0.06	0.18	0.37	-0.04	0.13	0.02	1.00										
6. Turnover	0.08	0.07	-0.04	-0.06	0.19	0.05	0.20	1.00									
7. Voluntary Turnover	0.09	0.10	-0.08	-0.11	0.20	0.07	0.11	0.90	1.00								
8. Involuntary Turnover	0.07	0.06	0.03	0.10	0.13	-0.06	0.28	0.68	0.29	1.00							
9. HPWS Index	11.63	2.67	0.25	-0.04	0.08	0.08	0.04	-0.09	-0.05	-0.14	1.00						
10. Partnership	4.08	0.67	0.26	0.01	-0.16	0.07	-0.03	-0.21	-0.20	-0.15	0.18	1.00					
11. Entrepreneurial Orientation	4.66	1.01	0.12	-0.03	0.03	-0.02	0.15	-0.19	-0.30	0.05	0.27	0.20	1.00				
12. Innovation	2.67	0.74	0.16	-0.02	0.08	0.00	0.12	-0.17	-0.21	0.00	0.21	0.12	0.43	1.00			
13. Prod. Innovation	2.96	1.09	0.18	-0.04	0.06	-0.05	0.18	-0.06	-0.17	0.15	0.17	0.09	0.52	0.77	1.00		
14. Proc. Innovation	2.30	0.92	0.04	-0.13	0.03	-0.06	0.11	-0.16	-0.13	-0.13	0.09	0.00	0.29	0.82	0.52	1.00	
15. Organizational Innovation	2.86	1.00	0.14	0.12	0.10	0.11	-0.04	-0.16	-0.18	-0.03	0.21	0.18	0.14	0.63	0.18	0.27	1.00

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Table 8

Results of Regression Analysis: Sales Growth[a]

</div>

Variable	Model 1	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 3c
Constant	.5160 (.2377)	.2142 (.2559)	-.1762 (.3228)	.4276 (.2694)	-.1809 (.3250)	.0640 (.2758)	.0783 (.2723)
Firm Age	-.0579* (.0230)	-.0612** (.0224)	-.0523* (.0226)	-.0574* (.0230)	-.0522* (.0227)	-.0515* (.0224)	-.0743* (.0242)
Founder Leading Company	-.1140 (.1215)	-.1050 (.1181)	-.0898 (.1169)	-.1229 (.1229)	-.0892 (.1175)	-.1228 (.1177)	-.1073 (.1184)
Size (natural log of employees)	.0757* (.0348)	.0716* (.0340)	.0672* (.0336)	.0749* (.0349)	.0682* (.0341)	.0687* (.0334)	.0738* (.0340)
Venture Capital Financed	.1927* (.0898)	.1881* (.0873)	.1863* (.0862)	.1754† (.0933)	.1865* (.0866)	.1791* (.0893)	.1977* (.0877)
Industry	.2057 (.2000)	.1635 (.1950)	.1403 (.1930)	.1939 (.2011)	.1410 (.1938)	.1523 (.1921)	.1673 (.1947)
High Performance Work Systems		.0290** (.0106)			.0247* (.0107)	.0311** (.0109)	.0491** (.0168)
Partnership Philosophy			.1159* (.0478)		.0932† (.0481)		
Entrepreneurial Orientation				.0220 (.0313)		.0136 (.0323)	
Strategy (Differentiation = 1)							.4002 (.2678)
HPWS*Partnership					-.0034 (.0166)		
HPWS*EO						.0252* (.0104)	
HPWS*Differentiation							-.0352 (.0228)
R^2	.129	.185	.173	.133	.212	.226	.202
$R^2\Delta$		.055**	.044*	.004	.000	.041*	018

[a] Unstandardized coefficients are reported; the figures in parentheses are standard errors. $n = 119$ for all models.

Table 9

Results of Regression Analysis: Productivity[a]

Variable	Model 1	Model 2a	Model 2b	Model 2c
Constant	11.26*** (.6593)	11.38*** (.6593)	11.07*** (.8133)	11.07*** (.8133)
Firm Age	.0866 (.0600)	.0884 (.0604)	.0973 (.0603)	.0945 (.0603)
Founder Leading Company	.3996 (.3120)	.3992 (.3120)	.3891 (.3083)	.3660 (.3110)
Size (natural log of employees)	-.3406*** (.0876)	-.3392*** (.0876)	-.3363*** (.0865)	-.3352*** (.0863)
Venture Capital Financed	.1197 (.2303)	.1223 (.2313)	.0838 (.2280)	.0585 (.2358)
Industry	.6222 (.4938)	.6400 (.4973)	.6149 (.4903)	.6059 (.4904)
High Performance Work Systems		-.0120 (.0271)		
Partnership			.0266 (.1199)	
Entrepreneurial Orientation				.0318 (.0778)
R^2	.156	.158	.158	.159
$R^2\Delta$		.002	.005	.005

[a] Unstandardized coefficients are reported; the figures in parentheses are standard errors. $n = 113$ for all models.

*$p < .05$
**$p < .01$
***$p < .001$

Table 10 - HR Practices and Firm Performance[a]

HR Practice	Sales Growth			Productivity		
	Beta	SE	p-value	Beta	SE	p-value
Structured Interviews	-0.0108	0.0966	0.9110	-0.2473	0.254	0.332
Employment Tests	-0.0889	0.0759	0.2440	-0.0862	0.2055	0.676
Company Specific Training	0.1777*	0.0804	0.0270	0.0141	0.2155	0.948
Generic Skills Training	0.0861	0.0954	0.3690	-0.3495	0.2464	0.159
Training Effectiveness Evaluated	0.0965	0.0769	0.2120	-0.1539	0.2001	0.444
Routine Performance Feedback	0.0626	0.1121	0.5780	-0.0944	0.2979	0.752
Merit-based Promotions	0.1832	0.1500	0.2250	-0.1391	0.4007	0.729
Merit-based Compensation	0.2236†	0.1191	0.0630	0.0186	0.3267	0.954
Employee Ownership	0.1443†	0.0763	0.0610	-0.3403†	0.2041	0.098
Group-based compensation	0.1757*	0.0739	0.0190	0.2835	0.1952	0.149
Employees Provided Operational Information	0.0603	0.0976	0.5380	-0.0323	0.2583	0.901
Employees Provided Financial Information	0.0992	0.0817	0.2270	-0.0234	0.2149	0.913
Employees Provided Strategic Information	0.1711	0.1218	0.1630	-0.4384	0.3213	0.175
Internal Promotion	0.1870†	0.1007	0.0660	0.0653	0.2712	0.810
Telecommuting	0.1424†	0.0806	0.0800	-0.0921	0.2156	0.640
Flex-time	0.0895	0.0850	0.2940	-0.1403	0.225	0.534
Job Security	-0.0253	0.0837	0.7630	0.4562*	0.2176	0.038
Pay Position	0.0963	0.1634	0.5570	0.7643†	0.4217	0.073
Percentage of Pay Based on Performance	0.4339***	0.0844	0.0000	-0.6563**	0.235	0.006
Self-managed teams	0.1561†	0.0854	0.0700	0.1302	0.2251	0.564
Employee participation programs	0.0740	0.0811	0.3640	0.0363	0.2157	0.867

[a]As a result of multicolinearity all HR practices were entered into separate regression models, following the control variables listed in Table 8.

† $p < .10$

*$p < .05$

**$p < .01$

***$p < .001$

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Table 11

Results of Regression Analysis: Innovation[a]

Variable	Model 1	Model 2 Innovation	Model 2 Product Innovation	Model 2 Process Innovation	Model 2 Org. Innovation
Constant	2.347***	1.733***	2.239**	2.045*	.7277
	(.4265)	(.4853)	(.7178)	(.6240)	(.6589)
Firm Age	.0297	.0267	.0365	.0062	.0546
	(.0423)	(.0416)	(.0616)	(.0535)	(.0565)
Founder Leading Company	.1568	.1956	.1056	.1343	.3951
	(.1931)	(.1904)	(.2817)	(.2449)	(.2585)
Size (natural log of employees)	-.0247	-.0309	-.1207	-.0855	.1209
	(.0683)	(.0672)	(.0994)	(.0864)	(.0913)
Venture Capital Financed	.5721	.5684	1.204*	.6719	-.1479
	(.3409)	(.3351)	(.4956)	(.4308)	(.4549)
Industry	.5451†	.5134†	.6418	.4785	.4931
	(.3042)	(.2993)	(.4426)	(.3848)	(.4063)
High Performance Work Systems		.0534*	.0663*	.0267	.0839**
		(.0212)	(.0322)	(.0273)	(.0288)
R^2	.043	.082	.081	.037	.094
$R^2\Delta$		.039*	.026	.008	.043

[a] Unstandardized coefficients are reported; the figures in parentheses are standard errors. $n = 157$ for all models.

† $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$

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Table 12

Results of Regression Analysis: Voluntary Turnover[a]

Variable	Model 1	Model 2a	Model 2b
Constant	2.304*** (.0060)	2.307*** (.0066)	2.314*** (.0080)
Firm Age	.0003 (.0005)	.0004 (.0006)	.0001 (.0006)
Founder Leading Company	-.0004 (.0027)	-.0004 (.0027)	-.0001 (.0027)
Size (natural log of employees)	.0014 (.0009)	.0014 (.0009)	$.0016^{\dagger}$ (.0009)
Venture Capital Financed	.0020 (.0022)	.0021 (.0022)	.0022 (.0022)
Industry	-.0022 (.0057)	-.0017 (.0058)	-.0006 (.0057)
High Performance Work Systems		-.0030 (.0003)	
Partnership Philosophy			-.0023* (.0012)
R^2	.045	.056	.082
$R^2\Delta$		.011	.037*

[a] Unstandardized coefficients are reported; the figures in parentheses are standard errors; $n = 105$ for all models.

$^{\dagger}p < .10$
$*p < .05$
$**p < .01$
$***p < .001$

Table 13

Results of Regression Analysis: High Performance Work Systems[a]

Variable	Model 1	Model 2a	Model 2b
Constant	11.19***	8.095***	8.082***
	(1.622)	(2.215)	(1.807)
Firm Age	.0833	.1193	.0799
	(.1610)	(.1600)	(.1552)
Founder Leading Company	-.7392	-.6899	-.9592
	(.7080)	(.7191)	(.6853)
Size (natural log of employees)	.1537	.0808	.1199
	(.2557)	(.2557)	(.2479)
Venture Capital Financed	-.0305	.1278	-.4651
	(.6475)	(1.269)	(.6381)
Industry	.7984	.4176	.4145
	(1.369)	(1.135)	(1.325)
Partnership		.7467*	
		(.3306)	
Entrepreneurial Orientation			.7512**
			(.2133)
R^2	.017	.054	.094
$R^2\Delta$		.037*	.077**

[a] Unstandardized coefficients are reported; the figures in parentheses are standard errors; $n = 155$ for all models.

*$p < .05$

**$p < .01$

***$p < .001$

Table 14 - Measurement Model Modifications (*n* = 118)

Modification	χ^2	df	p	RMSEA	CFI
Original Model	196.780	124	0.000	0.064	0.900
Correlating Age & Partnership	192.500	123	0.000	0.063	0.905
Correlating Age & VC investment	189.380	122	0.000	0.063	0.908
Correlating VC & EO	186.684	121	0.000	0.061	0.910
Correlating SG & Innovation	179.940	120	0.000	0.057	0.918
Correlating T&D and Selc. Residuals	168.120	119	0.002	0.049	0.933
Correlating T&D and Perf. Management Residuals	166.678	118	0.002	0.048	0.933
Correlating Prod. Innovation & Org. Innovation Residuals	163.754	117	0.003	0.047	0.936
Correlating Process Innovation & Org. Innovation Residuals	161.192	116	0.004	0.046	0.938
Final Measurement Model	**161.192**	**116**	**0.004**	**0.046**	**0.938**

Table 15 - Structural Model Paths[a]

Path	β	t	β (Standardized)
Firm Age ---------------> Sales Growth	-.302	-2.876**	-.243
Firm Age ---------------> Innovation	-.053	.601	-.047
Venture Capital ------------> Sales Growth	.429	3.879**	.346
Venture Capital ------------> Innovation	.355	3.081**	.314
Size -------------------> Sales Growth	.101	1.051	.082
Size -------------------> Innovation	-.017	-.197	-.015
HPWS-----------------------> Sales Growth	.521	3.160**	.420
HPWS-----------------------> Innovation	.393	2.863**	.348
Partnership -----------------> Sales Growth	.158	1.360	.127
EO------------------------> Sales Growth	-.129	-.954	-.104

[a]Model fit information: $\chi^2 = 162.40$, df = 117, p = .004; RMSEA = .0455 CFI = .938

*$p < .05$

**$p < .01$

Table 16 - Structural Model Loading & Residual Information

Construct	Indicator	Loading (SE)	Standardized Loading[a]	Residual	R^2
HPWS	Selection	-.009 (.030)	-.030	.079	.001
	T&D	.130 (.030)	.458	.064	.210
	Perf. Management	.080 (.016)	.523	.017	.274
	Compensation	.121 (.019)	.618	.024	.382
	Employee Involvement	.142 (.019)	.719	.018	.531
Partnership	Trust	.605 (.061)	.830	.166	.689
	Communication	.552 (.070)	.687	.341	.472
	Commitment	.684 (.065)	.865	.157	.748
Entrepreneurial Orientation	Innovation	.777 (.100)	.674	.726	.454
	Risk Taking	1.13 (.102)	.886	.350	.784
	Proactiveness	.827 (.095)	.740	.566	.547
Innovation	Product	.709 (.141)	.937	.142	.879
	Process	.331 (.061)	.518	.615	.268
	Organizational	.192 (.095)	.276	.921	.076
Sales Growth	Sales Growth	.338 (.025)	1.00	.000[b]	1.00
Venture Capital	VC	.180 (.012)	1.00	.000	1.00
Firm Age	Age	1.39 (.091)	1.00	.000	1.00
Size	LN(Employees)	.740 (.048)	1.00	.000	1.00

[a]Estimates from the completely standardized solution

[b]Single indicator residuals were fixed at 0.0 to avoid underidentified models

Table 17 - Invariance Tests

Model	χ^2	df	p	$\Delta\chi^2$	Δdf	p	RMSEA	CFI	Constraint Tenable
Configural Invariance	329.551	225	<.001	---	---	---	0.0753	0.769	NA
Loading Invariance (Weak)	341.451	237	<.001	11.9	12	>.250	0.0681	0.769	Yes
Intercept Invariance (Strong)	351.447	249	<.001	9.996	12	>.250	0.0625	0.774	Yes
Homogeneity of Variances	361.600	253	<.001	20.149	16	>.100	0.0662	0.760	Yes
Phantom Unconstrained	338.182	237	<.001	---	---	---	0.0639	0.776	NA
Phantom Constrained	342.334	239	<.001	4.152	2	>.100	0.0662	0.772	Yes

Table 18 - Profiles of Firms Participating in Semi-structured Interviews

Firms	Primary Product/Service	Year Founded	Number of Employees	Location	Respondent Position
A	Software Development & Implementation	2000	24	Overland Park, KS	CEO & Founder
B	Software Implementation	2000	59	Minneapolis, MN	CEO
C	IT Consulting	1998	150	Chicago, IL	President & Founder
D	IT Consulting/Online Marketing	1999	85	Overland Park, KS	VP (Account Management)
E	Software Development & Implementation	2004	10	Topeka, KS	CEO & Founder
F	Software Development & Implementation	2004	10	Miami, FL	CEO & Founder

Interview Questions

1. What inspired you to start your business? (asked only to founders)
2. What are the factors that have helped to make your organization successful?
3. What do you feel is your firm's greatest asset?
4. How much of an emphasis do you place on selecting employees and what process do you use to hire them?
5. What types of practices do you use to retain employees?
6. What are the most significant challenge facing your organization today?
7. How much of a focus does your organization focus on innovation and how is that manifested in the day-to-day management of the firm?
8. What makes your organization different from others in your industry?

Table 19 - Results of Hypothesis Tests

Hypothesis	Description	Supported in OLS Models	Supported in SEM Models
H1	Emerging firms making extensive use of HPWS will achieve superior firm performance, relative to those not emphasizing HPWS.	Partial (Supported for Sales Growth, but not for productivity)	Supported for sales growth
H2	HPWS will lead to product, process, and organizational innovation.	Partial (Supported for overall innovation, product, and organizational innovation)	Yes
H3	Turnover will mediate the relationship between the use of HPWS and firm performance.	No	No
H4	Firms operating with a partnership philosophy will achieve superior firm performance	Supported for sales growth	No
H5	Firms operating under a philosophy of partnership will be more likely to implement HPWS.	Yes	Yes
H6	HPWS will moderate the relationship between partnership and firm performance	No	No
H7	EO will be positively associated with firm performance	No	No
H8	Firms with an EO will be more likely to adopt HPWS.	Yes	Yes
H9	HPWS will moderate the relationship between EO and firm performance.	Yes	Yes
H10	Competitive strategy will moderate the relationship between HPWS and firm performance	No	No

Table 20 - Partnership Construct Validity

Parcel	Description	1	2	3	4	5	6	7	8
1. HPWS1	Selection	1.00							
2. HPWS2	Training	0.29**	1.00						
3. HPWS3	Performance Management	0.14	0.39**	1.00					
4. HPWS4	Compensation	-0.04	0.18*	0.28**	1.00				
5. HPWS5	Employee Involvement	-0.06	0.28**	0.37**	0.37**	1.00			
6. PART1	Trust	0.12	0.02	0.04	-0.02	0.22*	1.00		
7. PART2	Communication	-0.02	-0.03	0.10	0.04	0.31**	0.58**	1.00	
8. PART3	Commitment	0.13	0.10	0.14	0.00	0.27**	0.71**	0.61**	1.00

*p < .05

**p < .01

APPENDIX B – FIGURES

List of Figures

FIGURE 1 – CONCEPTUAL MODEL

Firm Performance
Productivity
Sales Growth
Product Innovation
Process Innovation
Organizational Innovation

Firm Strategy

Employee Turnover

Entrepreneurial Orientation

HPWS
Selection
Training & Development
Performance Management
Compensation
Employee Involvement

Partnership Philosophy

H1
H2
H3
H4
H5
H6
H7
H8
H9
H10
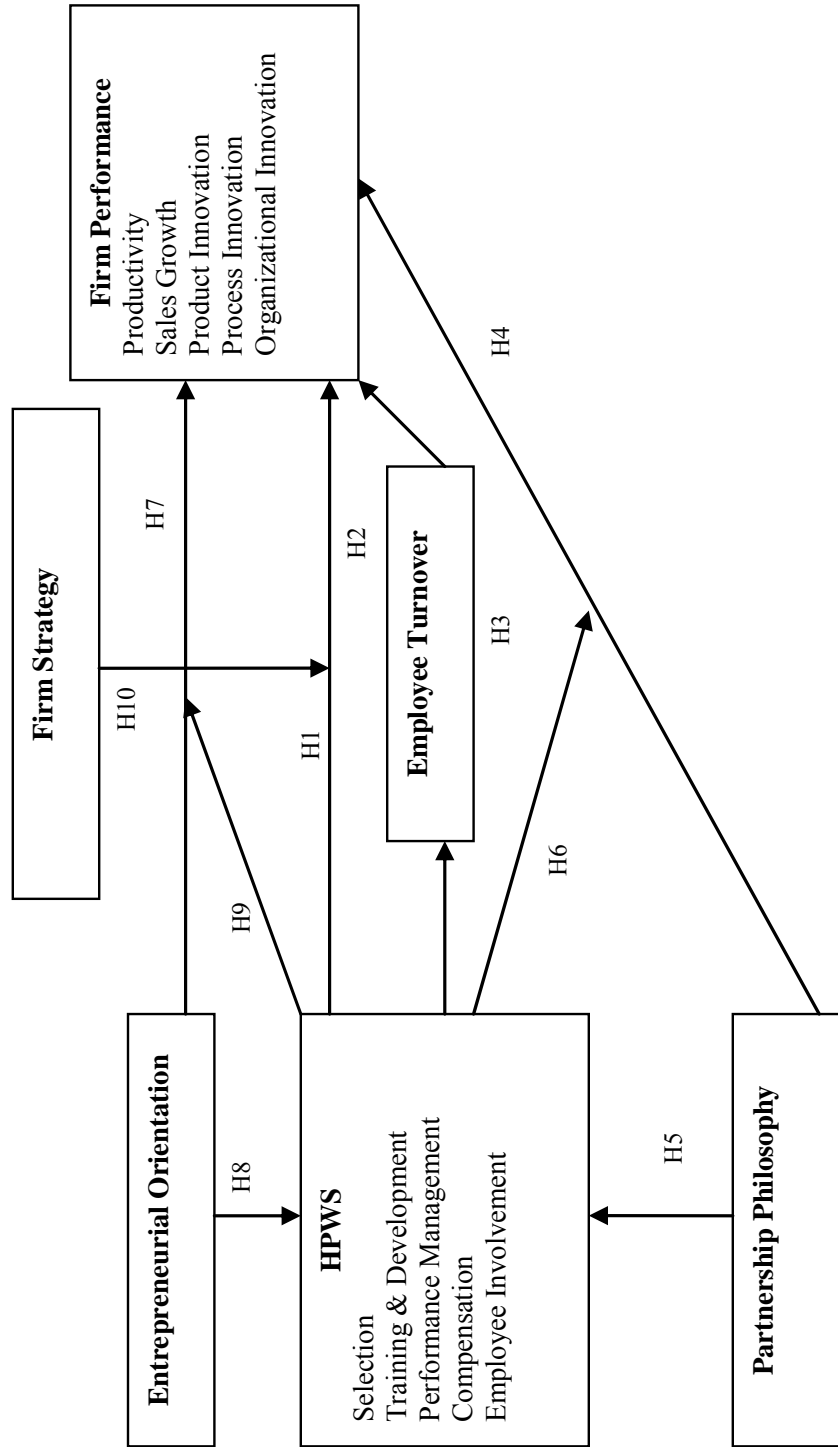
Figure 2 – Theoretical Model Linking HRM Systems to Firm Performance
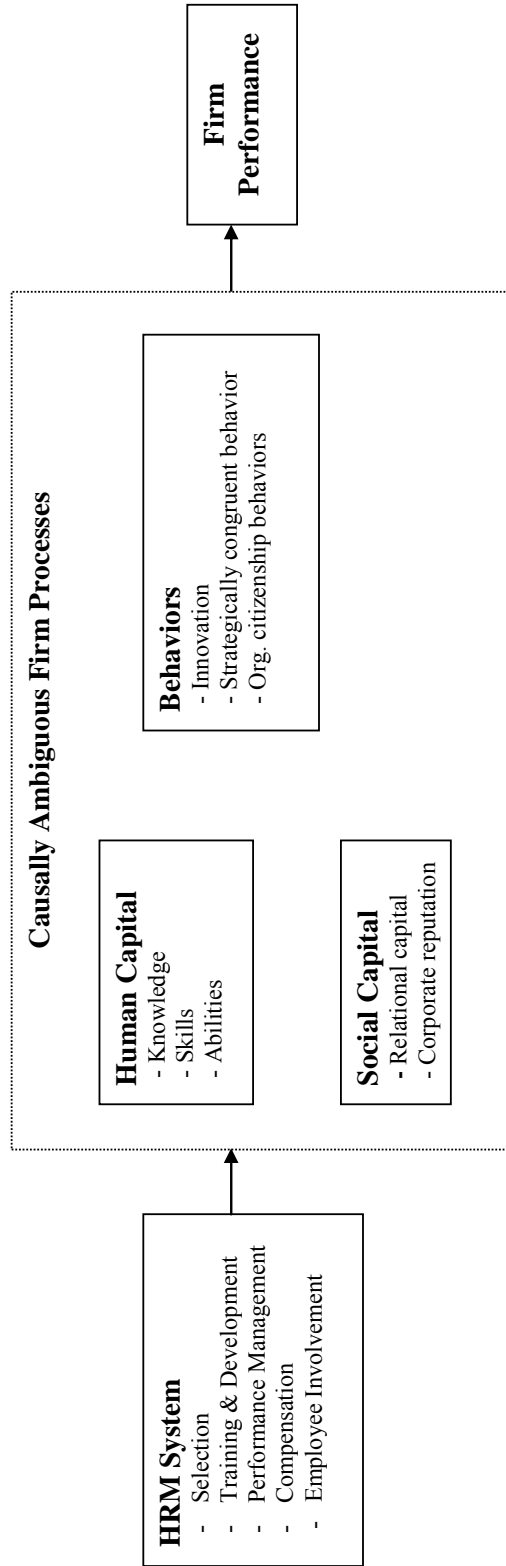
Figure 3 – Interaction between HPWS and EO on Sales Growth
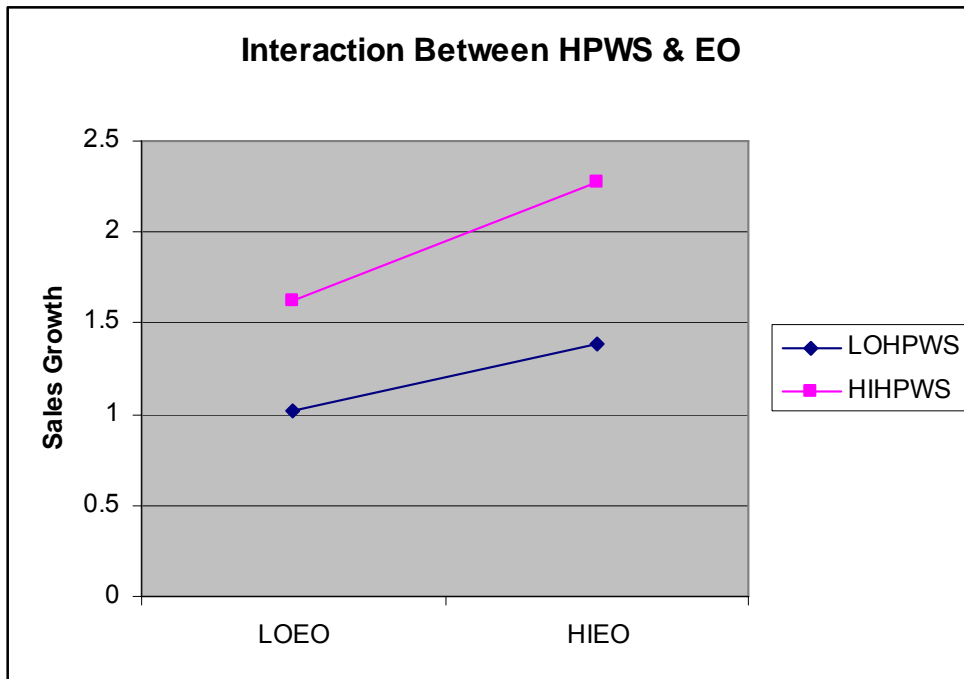
FIGURE 4: CONCEPTUAL MODEL
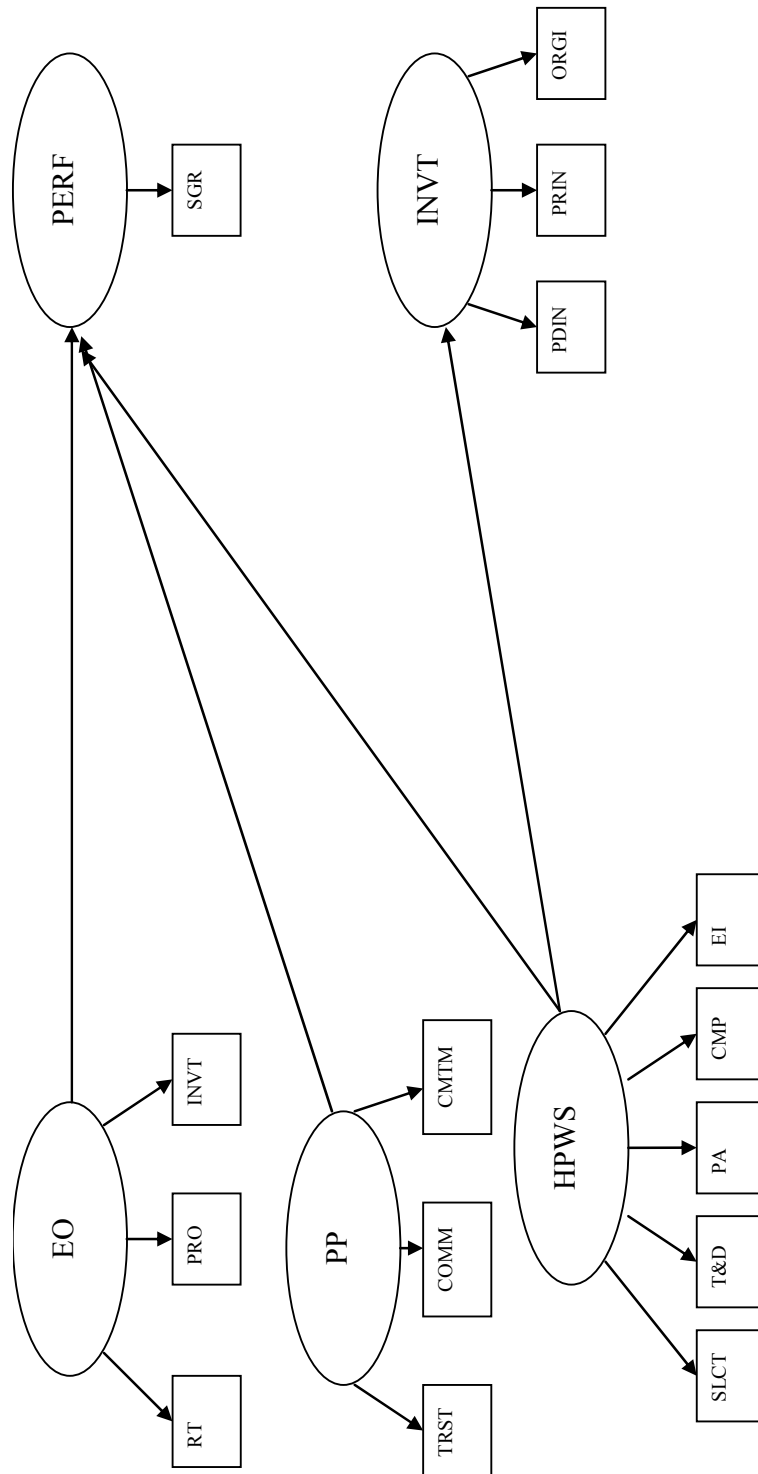
FIGURE 5: SEM MODEL – MEASUREMENT MODEL (UNMODIFIED)
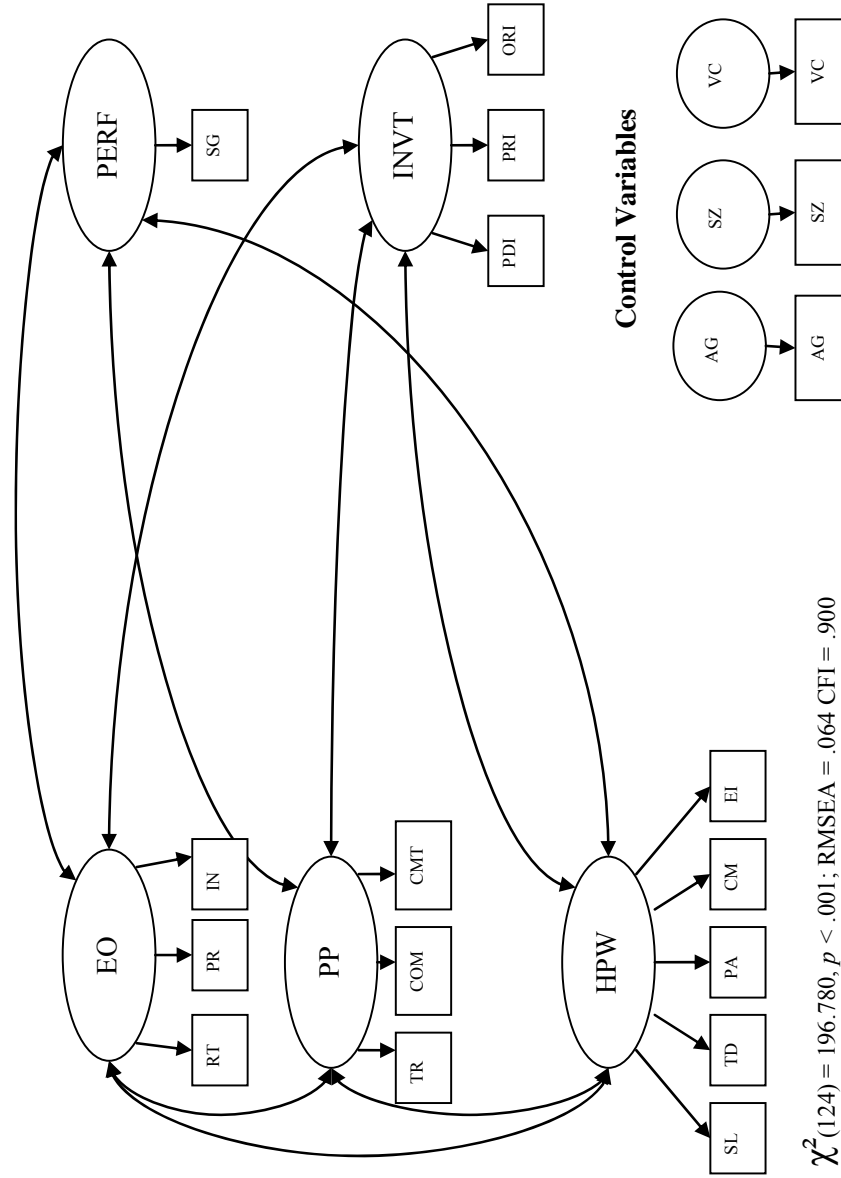
$\chi^2 (124) = 196.780, p < .001; RMSEA = .064 \ CFI = .900$

FIGURE 6: SEM MODEL – MEASUREMENT MODEL (MODIFIED)
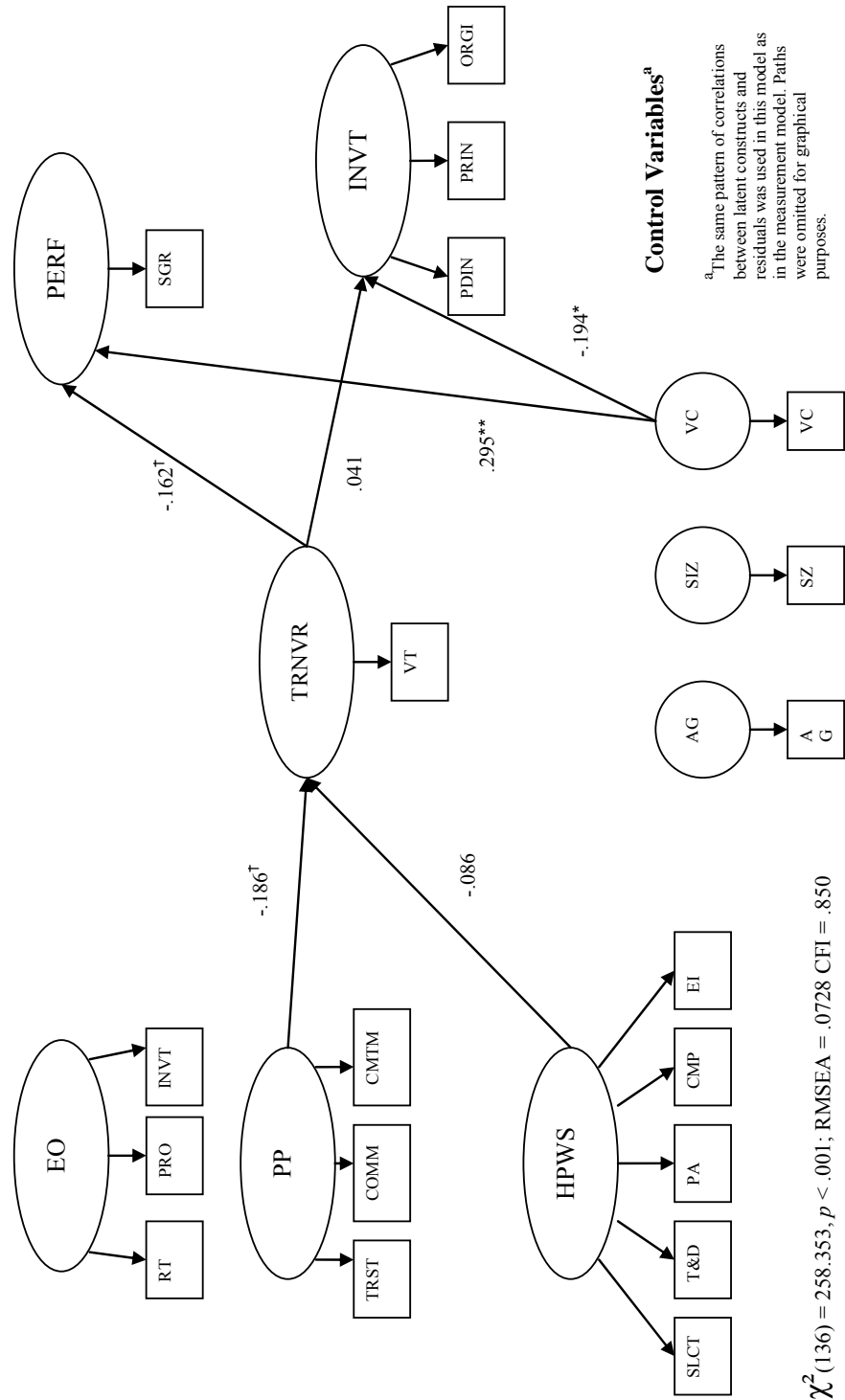
$\chi^2 (116) = 161.192, p < .01$; RMSEA = .046 CFI = .938
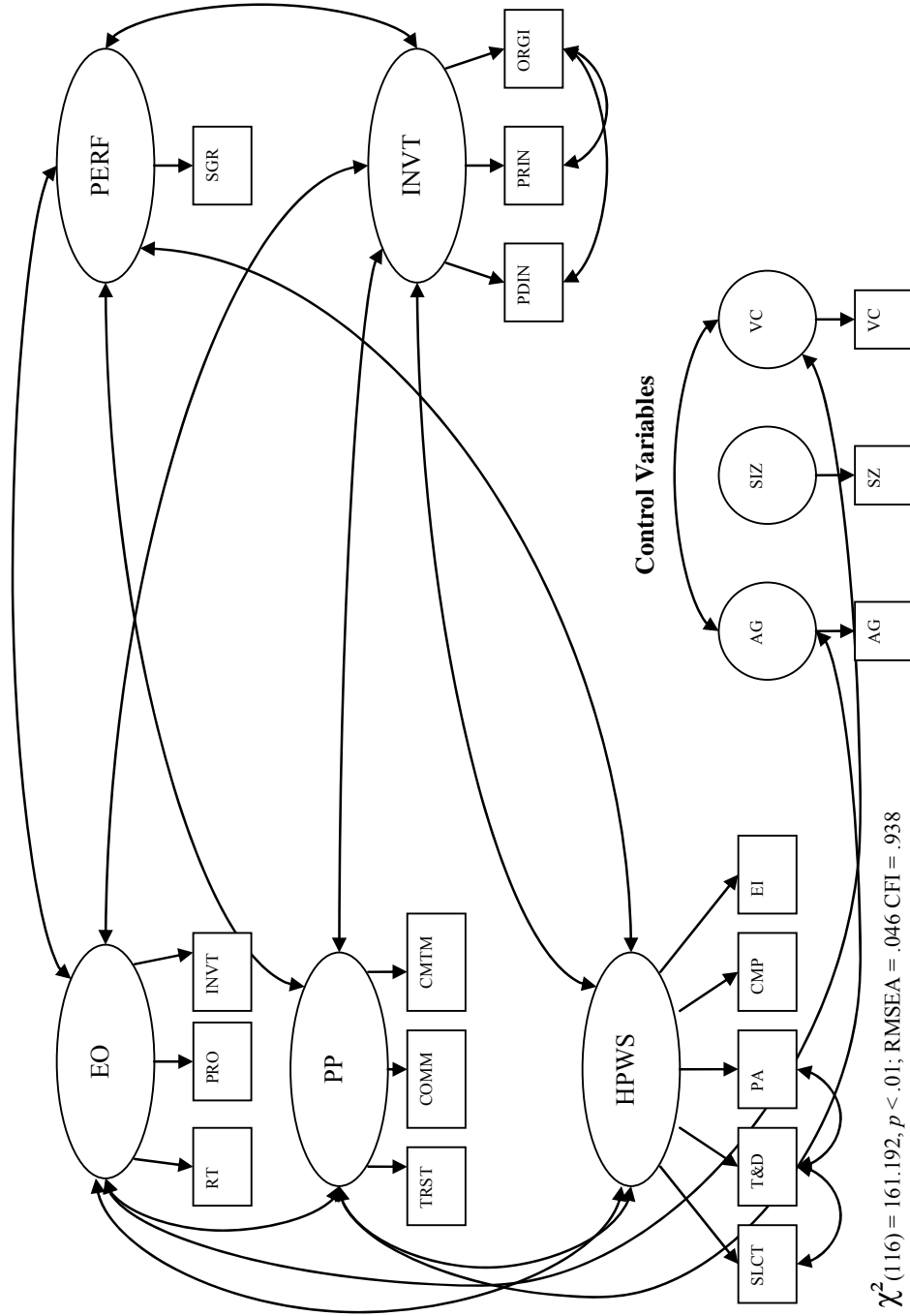
FIGURE 7: SEM MODEL – STRUCTURAL MODEL
(Nonsignificant paths removed)

Control Variables[a]

[a] The same pattern of correlations between latent constructs and residuals was used in this model as in the measurement model. Paths were omitted for graphical purposes.

$\chi^2 (117) = 162.40, p < .01;$ RMSEA $= .0455$ CFI $= .938$

.346**

.314**

-.243*

.420*

.348*
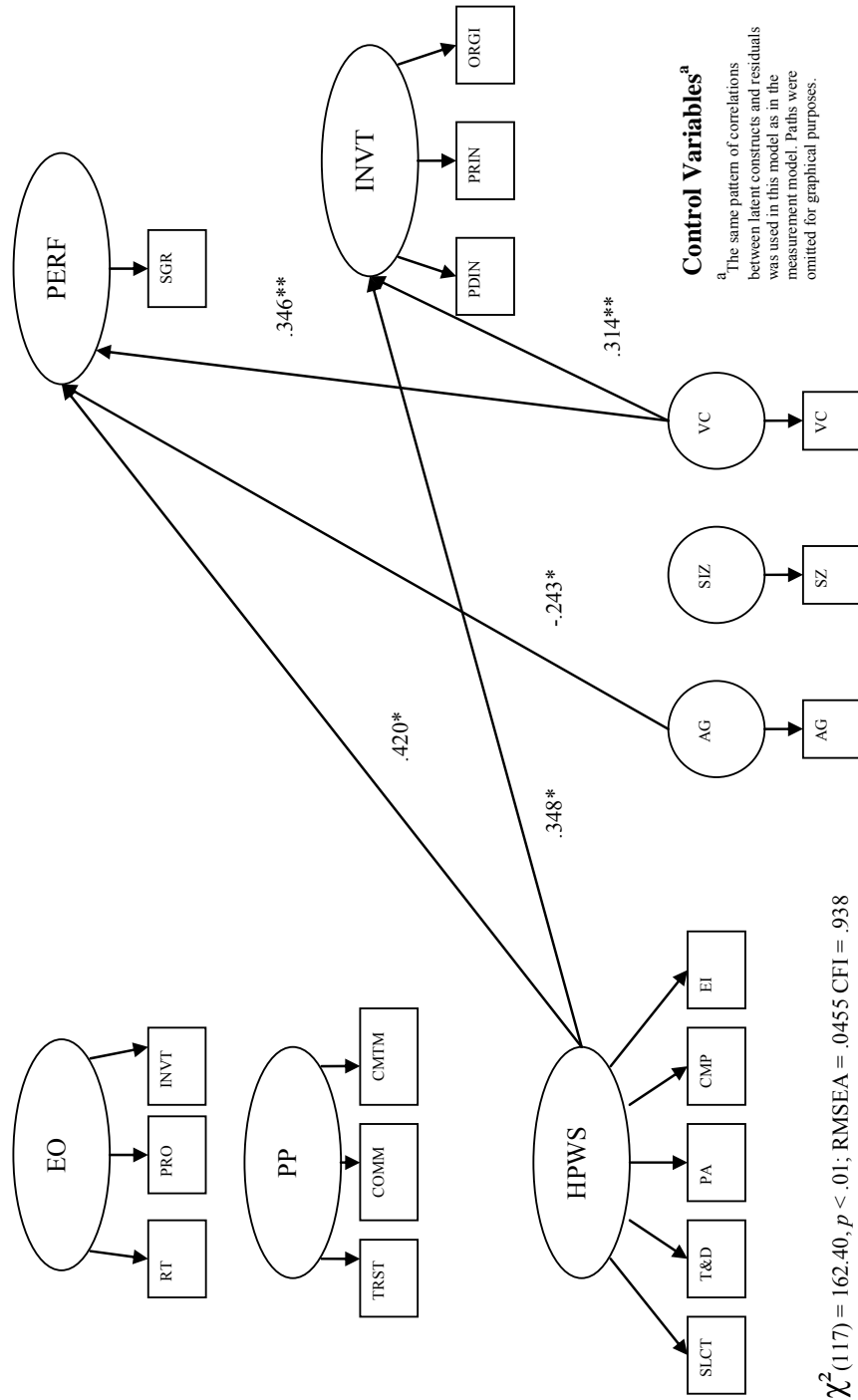
FIGURE 8: SEM MODEL – TURNOVER MEDIATION MODEL

$\chi^2 (136) = 258.353, p < .001$; RMSEA = .0728 CFI = .850

Control Variables[a]

[a]The same pattern of correlations between latent constructs and residuals was used in this model as in the measurement model. Paths were omitted for graphical purposes.

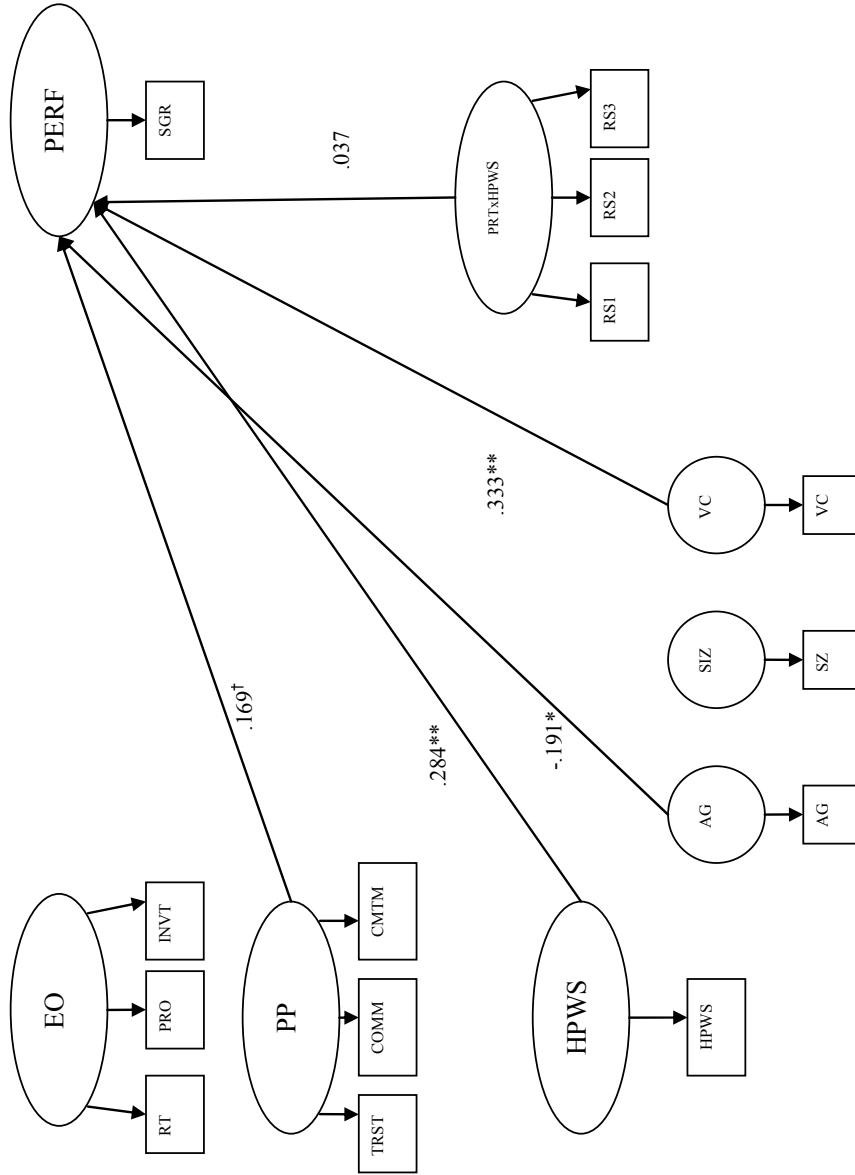**FIGURE 9: SEM MODEL – SIMPLE STRUCTURAL MODEL (Nonsignificant paths removed)**
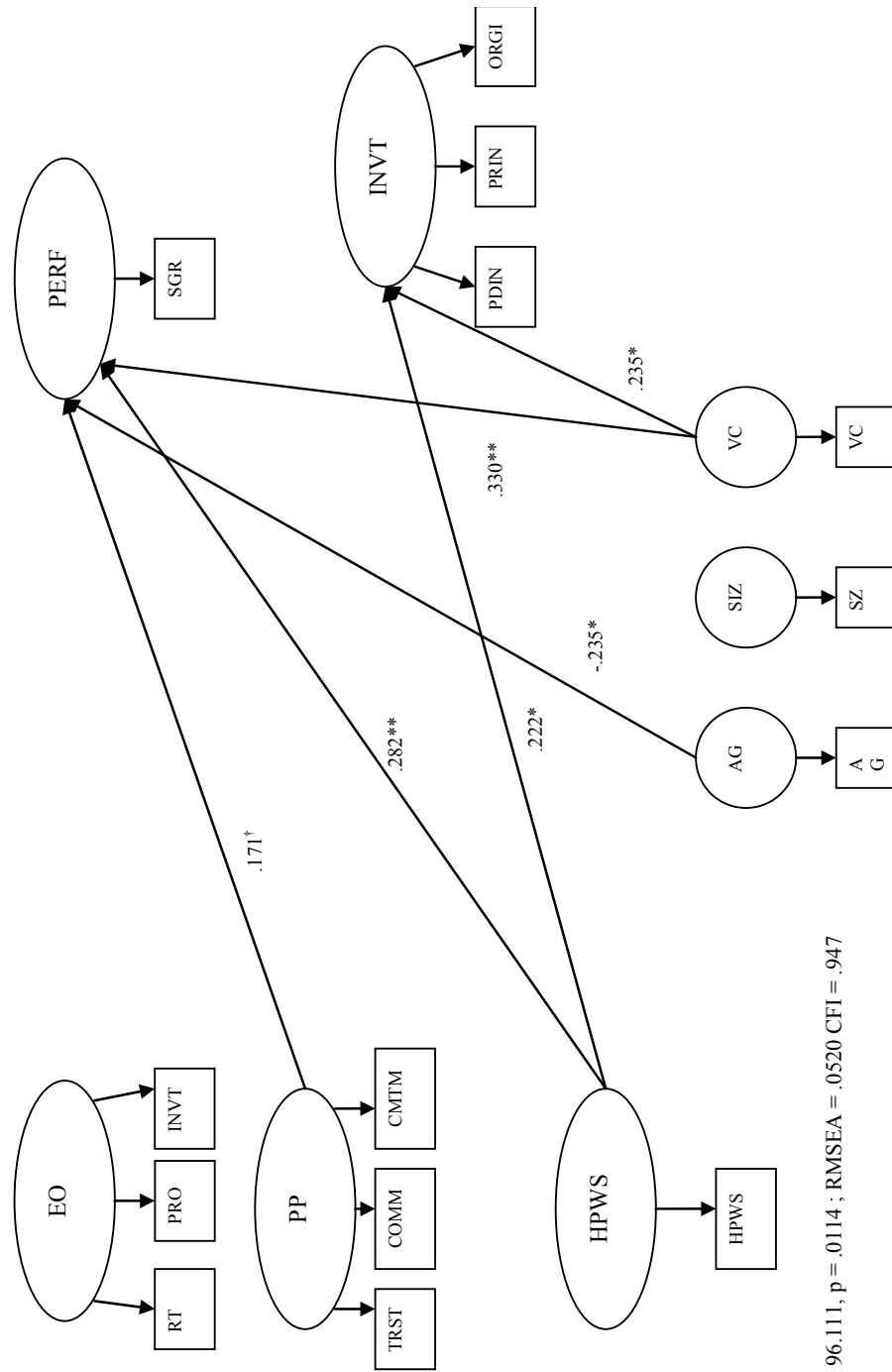
$\chi^2{}_{(67)} = 96.111$, p = .0114 ; RMSEA = .0520 CFI = .947

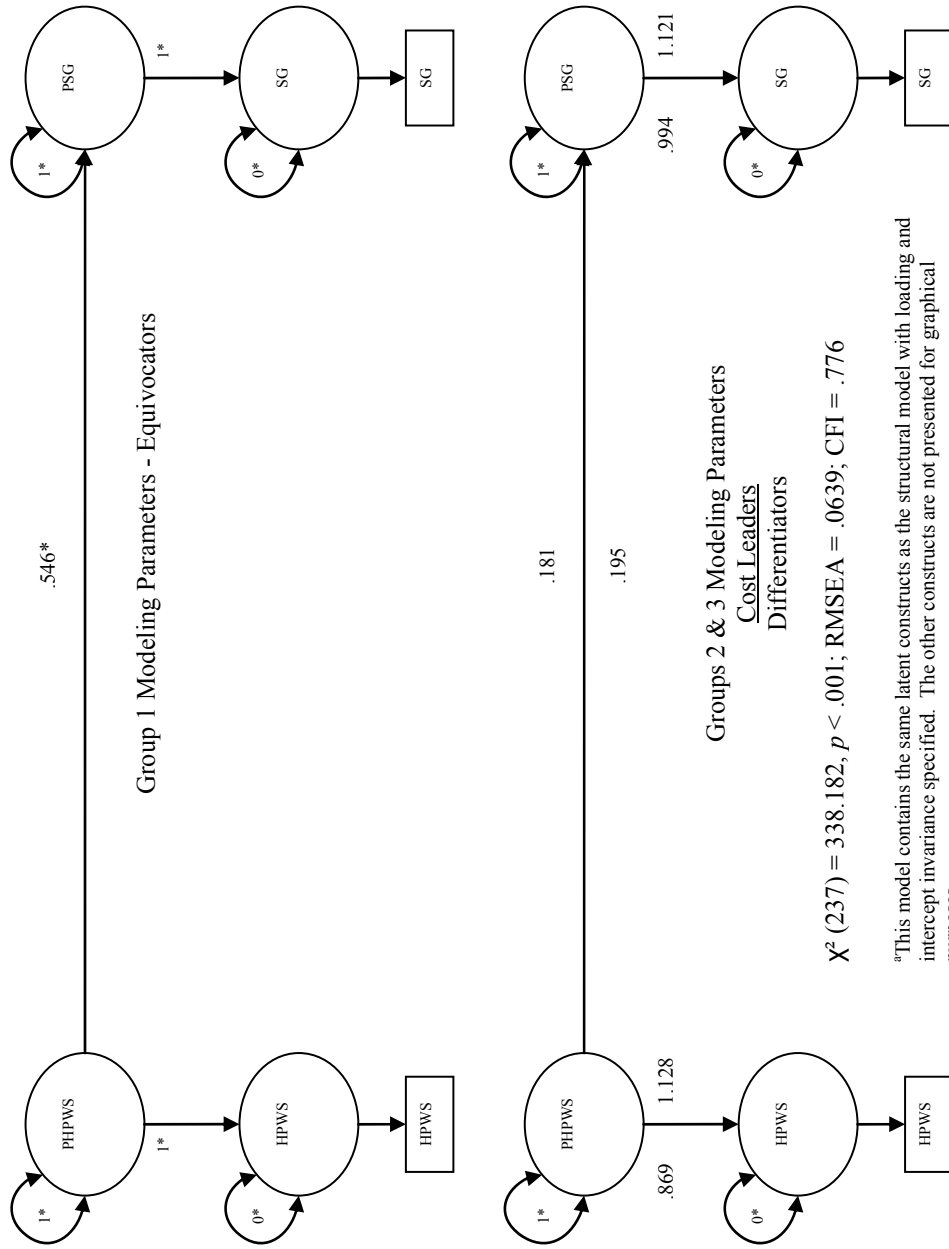**FIGURE 10: SEM MODEL – ENTREPRENEURIAL ORIENTATION BY HPWS INTERACTION EFFECT**
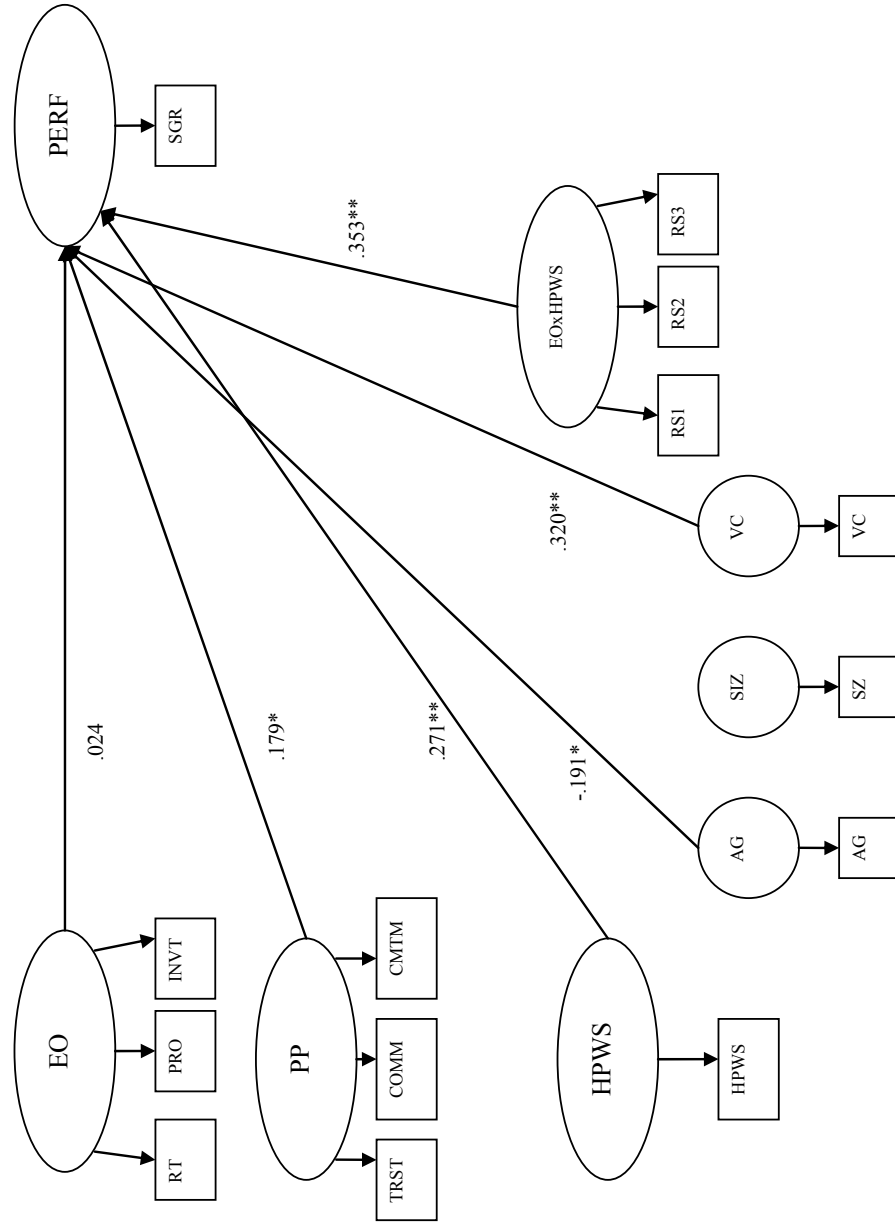
$\chi^2_{(71)} = 91.476 \, p > .05$; RMSEA = .0479 CFI = .959

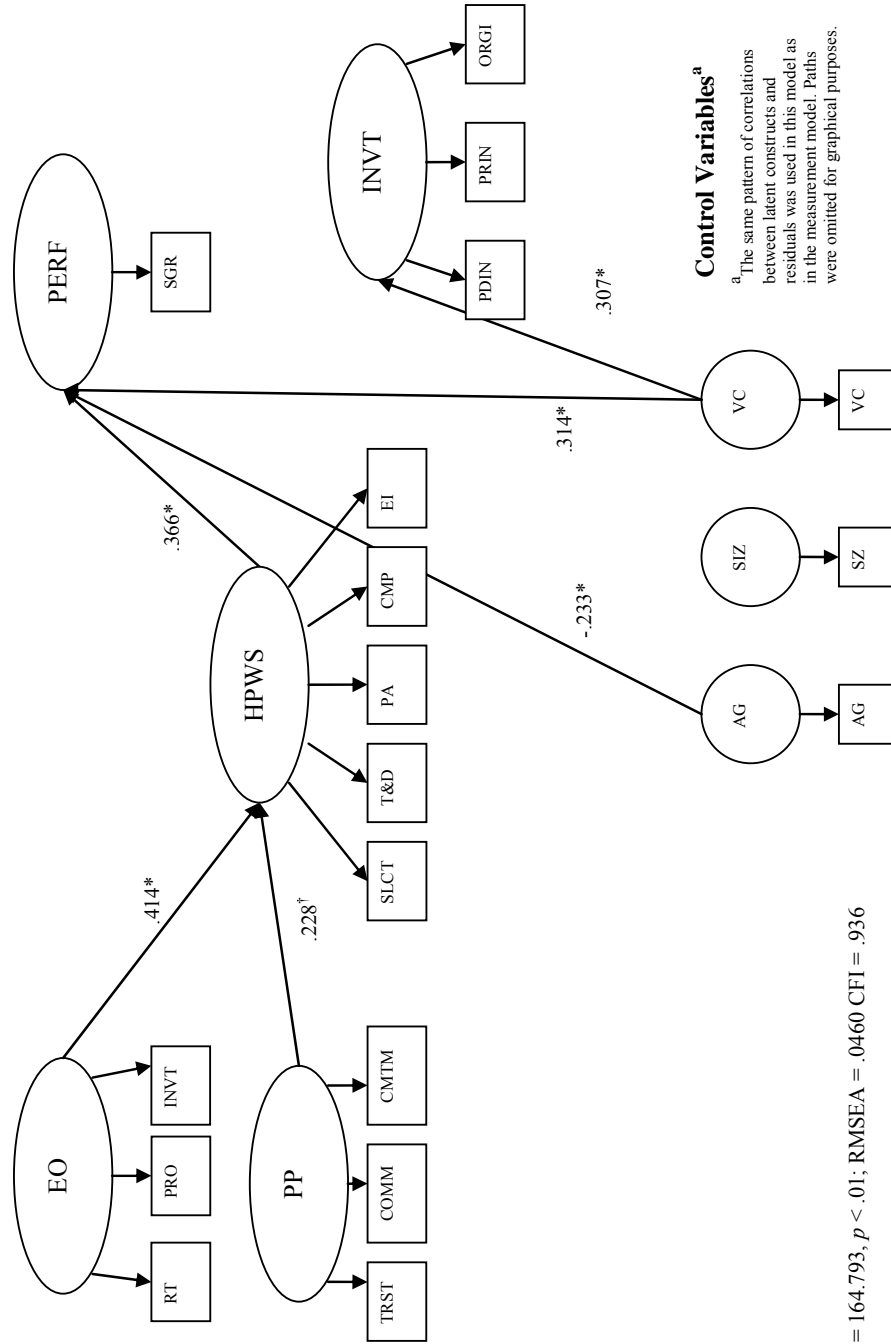**FIGURE 11: SEM MODEL – PARTNERSHIP BY HPWS INTERACTION EFFECT**

$\chi^2_{(71)} = 81.486; p > .10;$ RMSEA = .0335 CFI = .978

FIGURE 12: SEM MODEL – UNCONSTRAINED PHANTOM VARIABLE MODEL [a]

Group 1 Modeling Parameters - Equivocators

Groups 2 & 3 Modeling Parameters
Cost Leaders
Differentiators

χ^2 (237) = 338.182, p < .001; RMSEA = .0639; CFI = .776

[a]This model contains the same latent constructs as the structural model with loading and intercept invariance specified. The other constructs are not presented for graphical purposes.

FIGURE 13: SEM MODEL – HPWS MEDIATION MODEL
(Nonsignificant paths removed)

EO

INVT

PRO

RT

PP

CMTM

COMM

TRST

HPWS

SLCT

T&D

PA

CMP

EI

.414*

.228†

-.233*

PERF

SGR

.366*

INVT

ORGI

PRIN

PDIN

.307*

VC

VC

.314*

SIZ

SZ

AG

AG

Control Variables[a]

[a]The same pattern of correlations between latent constructs and residuals was used in this model as in the measurement model. Paths were omitted for graphical purposes.

$\chi^2 (118) = 164.793, p < .01$; RMSEA = .0460 CFI = .936

APPENDIX C – SURVEY ITEMS

Measurement Scales

Section 1:   Firm Level Background Information
Section 2A: Innovation Scale
Section 2B: Innovation Scale (Product, Process, & Organizational Innovation)
Section 3A: Turnover Information
Section 3B: High Performance Work Systems Scale
Section 4A: Competitive Strategy Scale
Section 4B: Entrepreneurial Orientation Scale
Section 5:   Human and Social Capital Scale
Section 6:   Partnership Philosophy Scale
Section 7:   Firm Performance Information
Section 8:   Individual Background Information

KU SCHOOL OF BUSINESS SURVEY OF MANAGEMENT VALUES & PRACTICES

SECTION I - Firm Background Information

Instructions: Please answer the following questions to the best of your ability regarding the firm's background information.

FB1: Firm Name: _____

FB2: Primary product or service offered: _____

FB3: Year of firm founding (first sale or hiring of first employee, whichever event occurred first): _____

FB4: Founder still leading company (Y/N): _____

If no, does the current CEO have previous experience with the organization (Y/N) _____

If yes, how many years has he/she been in the organization?: _____

FB5: Total employees: _____

FB6: Total exempt (managerial/professional) employees: _____

FB7: Total non-exempt (non-managerial/non-professional employees): _____

FB9: Are any employees unionized (Y/N): _____

If yes, % of non-managerial employees unionized: _____

FB10: Financed via venture capital (either in the past or currently) (Y/N): _____

FB11: Which category best describes your ownership structure (please check one)?

_____ Privately held: shares not publicly traded
_____ Closely held: shares publicly traded but owned primarily by relatively few individuals
_____ Widely held: shares publicly traded and owned by many individuals
_____ Other (please explain) _____

FB12: If privately owned, do you plan to engage in an initial public offering (IPO)? (Y/N): _____

If yes, how soon (in months) do you hope to complete this goal? _____

SECTION II - Firm Product and Process Information – Part A

Instructions: Please answer the following questions to the best of your ability regarding the firm's product and process development.

FPP1: How many new products or services has your company introduced to the market in the last 2 years: _____

FPP2: How many new process (production)-related technologies has your company developed over the past 2 years: _____

FPP3: How many new programs in management and administration has your company developed over the past 2 years: _____

FPP4: Please estimate your company's R&D spending as a percentage of annual operating expenses for the current year: _____

FPP5: What proportion of your organization's total sales comes from products or services introduced within the previous year _____ %

FPP6: What is your estimate of the average product/service life cycle length for products or services produced by your firm? _____ months

FPP7: Has your firm been granted any patents in the past two years? (Y/N) _____   If yes, how many? _____

Firm Product and Process Information – Part B

Instructions: Please indicate the extent to which your organization emphasizes the following items below on a scale of 1 to 5 (**1=very low emphasis; 5=very high emphasis**)

FPP8: Emphasis on being the first company in your industry to introduce new products to the market   _____

FPP9: Emphasis on creating radically new products for sale in new markets   _____

FPP10: Emphasis on creating radically new products for sale in the company's existing markets   _____

FPP11: Emphasis on commercializing new products   _____

FPP12: Emphasis on investing heavily in cutting edge product-oriented R&D   _____

FPP13: Emphasis on investing heavily in cutting edge process technology-oriented R&D   _____

FPP14: Emphasis on being the first company in the industry to develop and introduce radically new technologies   _____

FPP15: Emphasis on pioneering the creation of new process technologies   _____

FPP16: Emphasis on imitating other companies' process technologies   _____

FPP17: Emphasis on being the first in the industry to develop innovative management systems   _____

FPP18: Emphasis on being the first in the industry to introduce new business concepts and practices   _____

FPP19: Emphasis on changing the organizational structure in significant ways to promote innovation   _____

FPP20: Emphasis on introducing innovative human resource programs to spur creativity and innovation   _____

SECTION III - Firm Employment Information – Part A

Instructions: Please select the approximate turnover percentage for each year in each category. If unknown please select "Unknown". Also, please estimate the level of confidence that you have in your response from 0% to 100%.

Voluntary Turnover (turnover initiated by employee)   *Confidence in Response*

FEI1: Voluntary Turnover % in 2004: _____

FEI2: Voluntary Turnover % in 2005: _____   _____

FEI3: Voluntary Turnover % in 2006: _____   _____

FEI4: Projected Vol. Turnover % in 2007: _____   _____

Involuntary Turnover (turnover initiated by the organization)   *Confidence in Response*

FEI19: Involuntary Turnover % in 2004: _____

FEI10: Involuntary Turnover % in 2005: _____   _____

FEI11: Involuntary Turnover % in 2006: _____   _____

FEI12: Projected Invol. Turnover % in 2007: _____   _____

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Firm Employment Information – Part B

Instructions: Please indicate the proportion of your employees covered by the listed practice for the years 2005 through 2006.

% of Employees Covered

FEI17. Structured interviews to hire new employees _____

FEI18. One or more employment tests administered prior to hiring (e.g., skills tests, aptitude tests, cognitive ability tests, etc.) _____

FEI19. Intensive/extensive training in company-specific skills (i.e., task or firm-specific training: _____

FEI20. Intensive/extensive training in generic skills (e.g. problem-solving, communication skills, etc. _____

FEI21. Training effectiveness is evaluated (e.g., either via employee reactions, learning measures, or on the job performance effects): _____

FEI22. Performance appraisal/feedback is given on a routine basis: _____

FEI23. Promotions are primarily based upon performance or merit: _____

FEI24. Evaluations of job performance or merit are used in making compensation decisions (e.g., salary, bonuses, benefits, etc.): _____

FEI25. Employees share in the financial ownership of the firm via stock options or other means: _____

FEI26. Compensation partially contingent on *group* performance (gainsharing, profit sharing, team-based, etc.) _____

FEI27. Employees are provided relevant operating performance _____

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FEI28. Employees are provided relevant financial performance information _____

FEI29. Employees are provided relevant strategic information
(e.g., strategic mission, goals, tactics, competitor performance, etc.) _____

FEI30. Employees hold non-entry level jobs as a result of internal promotion
(as opposed to hiring from outside): _____

FEI31. Employees are given the option of telecommuting: _____

FEI32. Employees have flexibility in the hours they work: _____

FEI33. Have job security. Employment with the firm is almost guaranteed: _____

FEI34. In terms of total remuneration (pay and benefits) for employees, what is your organization's position relative to the market? Assume the market is at 50th percentile and indicate your position relative to this. For example, a response of "40" indicates that you are at the 40th percentile – 10% below the market: _____ %

FEI35. What percentage of pay for employees is contingent upon individual, team, or firm performance? _____

FEI36. Percent of non-managerial employees involved in self-managed teams: _____

FEI37. Percent of non-managerial employees involved in programs designed to elicit participation, and employee input (e.g., quality circles, problem solving or similar groups): _____

FEI38. Approximately how many hours of training do employees receive on an annual basis? _____

FEI39. Does your organization utilize professional employment organizations (PEO) or other outsourcing arrangements for any of your HR activities?

(Y/N) _____

FEI40. If yes, please circle the functions which are performed by an outside source:

HR Planning/Forecasting   Selection   Training & Development   Performance Appraisal   Pay/Rewards Allocation Decisions   Payroll Administration

Employee Benefits

Instructions: Please list the approximate percentage of employees who have access to the following benefits

Employee %

FEI41. Health insurance plan _____

FEI42. Retirement plan (401k, pension, etc.) _____

FEI43. Tuition reimbursement _____

FEI44. Paid vacation _____

FEI45. Paid sick days _____

FEI46. Alternative work schedules (flex-time, telecommuting, etc.) _____

SECTION IV - Strategic Focus – Part A

Instructions. Please rate the importance of each of the following competitive attributes to the firm's strategic focus on a scale of 1 to 5 relative to the firm's industry rivals.

Scale Points

1 = Much less important focus to us than to our competitors
2 = Somewhat less important focus to us than to our competitors
3 = The same focus as our competitors
4 = Somewhat more important focus to us than to our competitors
5 = Much more important focus to us than to our competitors.

SF1: Offering lower prices: _____

SF2: Offering superior customer service: _____

SF3: Offering high quality products/services: _____

SF4: Focusing intensely on the firm's marketing efforts: _____

SF5: Responding quickly to market demand: _____

SF6: Offering specialty products: _____

SF7: Offering a convenient location: _____

SF8: Making capital investments in new equipment and machinery: _____

SF9: Offering distinctive goods or services: _____

SF10: Offering customers more choices: _____

SF11: Offering contemporary products: _____

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SF12: Utilizing new technology: _____

SF13: Developing new technology: _____

SF14: Building strong brand identification: _____

SF15: Increasing the level of operating efficiency: _____

Strategic Focus – Part B

Instructions: Please answer each question to reflect the current values of your top management team.

SF17: In general, the top managers of my firm favor…

A strong emphasis on the marketing of tried and true products or services

A strong emphasis on R&D, technological leadership, and innovation

1…………2…………3…………4…………5…………6…………7

SF18: How many new lines of products or services has your firm marketed in the past 5 years?

No new lines of products or services

Very many new lines of products or services

1…………2…………3…………4…………5…………6…………7

Changes in product or service lines have been mostly of a minor nature

Changes in product or service lines have usually been quite dramatic

1…………2…………3…………4…………5…………6…………7

SF19: In dealing with its competitors, my firm …

Typically responds to actions which competitors initiate

Typically initiates actions which competitors then respond to

1…………2…………3…………4…………5…………6…………7

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Is very seldom the first business to introduce new products/services, administrative techniques, operating technologies, etc.

1.........2.........3.........4.........5.........6.........7

Is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.

Typically seeks to avoid competitive clashes, preferring a 'live-and-let-live' posture

1.........2.........3.........4.........5.........6.........7

Typically adopts a very competitive 'undo-the-competitors' posture

SF20: In general, the top managers of my firm have…

A strong proclivity for low-risk projects(with normal and certain rates of return)

1.........2.........3.........4.........5.........6.........7

A strong proclivity for high-risk projects (with chances of very high returns)

SF21: In general, the top managers of my firm believe that…

Owing to the nature of the environment, it is best to explore it gradually via incremental behavior

1.........2.........3.........4.........5.........6.........7

Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives

SF22: When confronted with decision-making situations involving uncertainty, my firm…

Typically adopts a cautious, 'wait-and-see' posture in order to minimize the probability of making costly mistakes

Typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities

SECTION V - Employee Information

Instructions: Please indicate the extent to which you agree with the following items below on a scale of 1 to 5 (**1= strongly disagree; 5=strongly agree**)

Strongly Disagree   1   2   3   4   5   Strongly Agree

EI1. Our employees are highly skilled _____

EI2. Our employees are creative and bright _____

EI3. Our employees develop new ideas and knowledge _____

EI4. Our employees are skilled at collaborating with each other to diagnose and solve problems _____

EI5. Our employees share information and learn from one another _____

EI6. Our employees interact and exchange ideas with people from different areas of the company _____

EI7. Our employees partner with customers, suppliers, alliance partners, etc., to develop solutions _____

EI8. Our employees apply knowledge from one area of the company to problems and opportunities that arise in another _____

SECTION VI - Management Philosophy

Instructions: Please indicate the extent to which you agree with the following items regarding the management philosophy of the firm's leaders
(1= strongly disagree; 5= strongly agree)

MP1. Employees should share in the financial success of the company _____

MP2. Employees should be kept informed about all business matters _____

MP3. There should be fair and equitable treatment of all employees _____

MP4. Feedback should be sought from all employees _____

MP5. The skills and competencies of all employees should be systematically developed _____

MP6. Employees, individually or in teams, should have
      control over their own work _____

MP7. Organizations should provide long-term security for all employees _____

MP8. There should be a high level of trust between management and employees _____

MP9. It is important that employees and owners/managers share similar views of the company's future _____

SECTION VII - Firm Performance Information

Instructions: Please circle the one category that best represents your firm's financial information for both 2005 and 2006, as well as your projections for 2007. If not available please select "NA", if unknown please select "UK"

FP1. 2005 Total Assets

(a) <$200,000	(b) 200,001 to 400,000	(c) 400,001 to 600,000	(d) 600,001 to 800,000	(e) 800,001 to 1.0M
(f) 1.0M to 1.2M	(g) 1.2M to 1.4M	(h) 1.4M to 1.6M	(i) 1.6M to 1.8M	(j) 1.8M to 2M
(k) 2M to 2.2M	(l) 2.2M to 2.4M	(m) 2.4M to 2.6M	(n) 2.6M to 2.8M	(o) 2.8M to 3.0M
(p) 3.0M to 3.2M	(q) 3.2M to 3.4M	(r) 3.4M to 3.6M	(s) 3.6M to 3.8M	(t) 3.8M to 4.0M
(u) 4.0M to 4.2M	(v) 4.2M to 4.4M	(w) 4.4M to 4.6M	(x) 4.6M to 4.8M	(y) 4.8M to 5.0M
(z) >5M				

FP2. 2006 Total Assets

(a) <$200,000	(b) 200,001 to 400,000	(c) 400,001 to 600,000	(d) 600,001 to 800,000	(e) 800,001 to 1.0M
(f) 1.0M to 1.2M	(g) 1.2M to 1.4M	(h) 1.4M to 1.6M	(i) 1.6M to 1.8M	(j) 1.8M to 2M
(k) 2M to 2.2M	(l) 2.2M to 2.4M	(m) 2.4M to 2.6M	(n) 2.6M to 2.8M	(o) 2.8M to 3.0M
(p) 3.0M to 3.2M	(q) 3.2M to 3.4M	(r) 3.4M to 3.6M	(s) 3.6M to 3.8M	(t) 3.8M to 4.0M
(u) 4.0M to 4.2M	(v) 4.2M to 4.4M	(w) 4.4M to 4.6M	(x) 4.6M to 4.8M	(y) 4.8M to 5.0M
(z) >5M				

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FP3. Projected 2007 Total Assets

(a) <$200,000
(b) 200,001 to 400,000
(c) 400,001 to 600,000
(d) 600,001 to 800,000
(e) 800,001 to 1.0M

(f) 1.0M to 1.2M
(g) 1.2M to 1.4M
(h) 1.4M to 1.6M
(i) 1.6M to 1.8M
(j) 1.8M to 2M

(k) 2M to 2.2M
(l) 2.2M to 2.4M
(m) 2.4M to 2.6M
(n) 2.6M to 2.8M
(o) 2.8M to 3.0M

(p) 3.0M to 3.2M
(q) 3.2M to 3.4M
(r) 3.4M to 3.6M
(s) 3.6M to 3.8M
(t) 3.8M to 4.0M

(u) 4.0M to 4.2M
(v) 4.2M to 4.4M
(w) 4.4M to 4.6M
(x) 4.6M to 4.8M
(y) 4.8M to 5.0M

(z) >5M

FP4. 2005 Net Sales

(a) < $250,000
(b) 250,001 to 500,000
(c) 500,001 to 750,000
(d) 750,001 to 1M
(e) 1M to 1.25M

(f) 1.25M to 1.50M
(g) 1.50M to 1.75M
(h) 1.75M to 2M
(i) 2M to 2.25M
(j) 2.25M to 2.5M

(k) 2.5M to 2.75M
(l) 2.75M to 3M
(m) 3M to 3.25M
(n) 3.25M to 3.5M
(o) 3.5M to 3.75M

(p) 3.75M to 4M
(q) 4M to 4.25M
(r) 4.25M to 4.5M
(s) 4.5M to 4.75M
(t) 4.75M to 5.0M

(u) 5.0M to 5.25M
(v) 5.25M to 5.5M
(w) 5.5M to 5.75M
(x) 5.75M to 6.0M
(y) 6.0M to 6.25M

(z) >6.25M

FP5. 2006 Net Sales

(a) < $250,000
(b) 250,001 to 500,000
(c) 500,001 to 750,000
(d) 750,001 to 1M
(e) 1M to 1.25M

(f) 1.25M to 1.50M
(g) 1.50M to 1.75M
(h) 1.75M to 2M
(i) 2M to 2.25M
(j) 2.25M to 2.5M

(k) 2.5M to 2.75M   (l) 2.75M to 3M   (m) 3M to 3.25M   (n) 3.25M to 3.5M   (o) 3.5M to 3.75M

(p) 3.75M to 4M   (q) 4M to 4.25M   (r) 4.25M to 4.5M   (s) 4.5M to 4.75M   (t) 4.75M to 5.0M

(u) 5.0M to 5.25M   (v) 5.25M to 5.5M   (w) 5.5M to 5.75M   (x) 5.75M to 6.0M   (y) 6.0M to 6.25M

(z) >6.25M

FP6. Projected 2007 Net Sales

(a) < $250,000   (b) 250,001 to 500,000   (c) 500,001 to 750,000   (d) 750,001 to 1M   (e) 1M to 1.25M

(f) 1.25M to 1.50M   (g) 1.50M to 1.75M   (h) 1.75M to 2M   (i) 2M to 2.25M   (j) 2.25M to 2.5M

(k) 2.5M to 2.75M   (l) 2.75M to 3M   (m) 3M to 3.25M   (n) 3.25M to 3.5M   (o) 3.5M to 3.75M

(p) 3.75M to 4M   (q) 4M to 4.25M   (r) 4.25M to 4.5M   (s) 4.5M to 4.75M   (t) 4.75M to 5.0M

(u) 5.0M to 5.25M   (v) 5.25M to 5.5M   (w) 5.5M to 5.75M   (x) 5.75M to 6.0M   (y) 6.0M to 6.25M

(z) >6.25M

FP7. Return on Assets - 2005

(a) <-50%   (b) -49.9% to -45%   (c) -44.9% to -40%   (d) -39.9% to -35%   (e) -34.9% to -30%

(f) -29.9% to -25%   (g) -24.9% to -20%   (h) -19.9% to -15%   (i) -14.9% to -10%   (j) -9.9% to -5%

(k) -4.9% to 0%   (l) 0.1% to 5%   (m) 5.1% to 10%   (n) 10.1% to 15%   (o) 15.1% to 20%

(p) 20.1% to 25%   (q) 25.1% to 30%   (r) 30.1% to 35%   (s) 35.1% to 40%   (t) 40.1% to 45%

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(u) 45.1% to 50%   (v) > 50%

FP8. Return on Assets - 2006

(a) <-50%   (b) -49.9% to -45%   (c) -44.9% to -40%   (d) -39.9% to -35%   (e) -34.9% to -30%

(f) -29.9% to -25% (g) -24.9% to -20%   (h) -19.9% to -15%   (i) -14.9% to -10%   (j) -9.9% to -5%

(k) -4.9% to 0%   (l) 0.1% to 5%   (m) 5.1% to 10%   (n) 10.1% to 15%   (o) 15.1% to 20%

(p) 20.1% to 25%   (q) 25.1% to 30%   (r) 30.1% to 35%   (s) 35.1% to 40%   (t) 40.1% to 45%

(u) 45.1% to 50%   (v) > 50%

FP9. Projected Return on Assets – 2007

(a) <-50%   (b) -49.9% to -45%   (c) -44.9% to -40%   (d) -39.9% to -35%   (e) -34.9% to -30%

(f) -29.9% to -25% (g) -24.9% to -20%   (h) -19.9% to -15%   (i) -14.9% to -10%   (j) -9.9% to -5%

(k) -4.9% to 0%   (l) 0.1% to 5%   (m) 5.1% to 10%   (n) 10.1% to 15%   (o) 15.1% to 20%

(p) 20.1% to 25%   (q) 25.1% to 30%   (r) 30.1% to 35%   (s) 35.1% to 40%   (t) 40.1% to 45%

(u) 45.1% to 50%   (v) > 50%

FP10. Sales Growth – 2005 (from 2004)

(a) <-75%   (b) -74.9% to -70%   (c) -69.9% to -65%   (d) -64.9% to -60%   (e) -59.9% to -55%

(f) -54.9% to -50% (g) -49.9% to -45%   (h) -44.9% to -40%   (i) -39.9% to -35%   (j) -34.9% to -30%

(k) -29.9% to -25% (l) -24.9% to -20%   (m) -19.9% to -15%   (n) -14.9% to -10%   (o) -9.9% to -5%

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(p) -4.9% to 0.0%   (q) .1% to 5%   (r) 5.1% to 10%   (s) 10.1% to 15%   (t) 15.1% to 20%

(u) 20.1% to 25%   (v) 25.1% to 30%   (w) 30.1% to 35%   (x) 35.1% to 40%   (y) 40.1% to 45%

(z) 45.1% to 50%   (aa) 50.1% to 55%   (ab) 55.1% to 60%   (ac) >60.0%

FP11. Sales Growth – 2006 (from 2005)

(a) <-75%   (b) -74.9% to -70%   (c) -69.9% to -65%   (d) -64.9% to -60%   (e) -59.9% to -55%

(f) -54.9% to -50%   (g) -49.9% to -45%   (h) -44.9% to -40%   (i) -39.9% to -35%   (j) -34.9% to -30%

(k) -29.9% to -25%   (l) -24.9% to -20%   (m) -19.9% to -15%   (n) -14.9% to -10%   (o) -9.9% to -5%

(p) -4.9% to 0.0%   (q) .1% to 5%   (r) 5.1% to 10%   (s) 10.1% to 15%   (t) 15.1% to 20%

(u) 20.1% to 25%   (v) 25.1% to 30%   (w) 30.1% to 35%   (x) 35.1% to 40%   (y) 40.1% to 45%

(z) 45.1% to 50%   (aa) 50.1% to 55%   (ab) 55.1% to 60%   (ac) >60.0%

FP12. Projected Sales Growth – 2007 (from 2006)

(a) <-75%   (b) -74.9% to -70%   (c) -69.9% to -65%   (d) -64.9% to -60%   (e) -59.9% to -55%

(f) -54.9% to -50%   (g) -49.9% to -45%   (h) -44.9% to -40%   (i) -39.9% to -35%   (j) -34.9% to -30%

(k) -29.9% to -25%   (l) -24.9% to -20%   (m) -19.9% to -15%   (n) -14.9% to -10%   (o) -9.9% to -5%

(p) -4.9% to 0.0%   (q) .1% to 5%   (r) 5.1% to 10%   (s) 10.1% to 15%   (t) 15.1% to 20%

(u) 20.1% to 25%   (v) 25.1% to 30%   (w) 30.1% to 35%   (x) 35.1% to 40%   (y) 40.1% to 45%

(z) 45.1% to 50%   (aa) 50.1% to 55%   (ab) 55.1% to 60%   (ac) >60.0%

(z) 45.1% to 50%   (aa) 50.1% to 55%   (ab) 55.1% to 60%   (ac) >60.0%

FP13. 2005 Labor Costs as a Percentage of Annual Operating Expenses

(a) <8%   (b) 8.1% to 16%   (c) 16.1% to 24%   (d) 24.1% to 32%   (e) 32.1% to 40%

(f) 40.1% to 48%   (g) 48.1% to 56%   (h) 56.1% to 64%   (i) 64.1% to 72%   (j) >72%

FP14. 2006 Labor Costs as a Percentage of Annual Operating Expenses

(a) <8%   (b) 8.1% to 16%   (c) 16.1% to 24%   (d) 24.1% to 32%   (e) 32.1% to 40%

(f) 40.1% to 48%   (g) 48.1% to 56%   (h) 56.1% to 64%   (i) 64.1% to 72%   (j) >72%

FP15. Projected 2007 Labor Costs as a Percentage of Annual Operating Expenses

(a) <8%   (b) 8.1% to 16%   (c) 16.1% to 24%   (d) 24.1% to 32%   (e) 32.1% to 40%

(f) 40.1% to 48%   (g) 48.1% to 56%   (h) 56.1% to 64%   (i) 64.1% to 72%   (j) >72%

FP16. Please indicate the percentage of 2005 sales coming from the firm's three largest customers: _____

FP17. Please indicate the percentage of 2006 sales coming from the firm's three largest customers: _____

FP18. Please indicate the projected percentage of 2007 sales coming from the firm's three largest customers: _____

FP19. Please rate the following performance metrics to indicate the performance measure(s) that your firm considers to be the most important indicator of current firm success. Rate the factors by allocating **100 total points** with 0 indicating that the factor is not considered at all and 100 indicating that the factor is the only performance metric that we consider.

Return on Assets _____

Achieving IPO Status _____

Sales Growth _____

Market Share Growth _____

Being acquired or merged with another firm _____

Market visibility or "buzz" about the company in trade journals, etc. _____

Other (please list): _____

SECTION VIII - Individual Background Information

Instructions: Please answer the following questions regarding your own background.

IB1: Name: _____

IB2: Are you the (or one of the) founders of the firm? (Y/N): _____

IB3: Current Title: _____

IB4: Highest Level of Education Attained: _____

IB5: Academic Area of Degree(s) (major): _____

IB6: Please indicate your primary functional background area(s) (i.e, marketing, manufacturing, finance, sales, etc.) and the approximate number of years that you have spent working in each area:

    Functional Area #1: _____   Years in area: _____

    Functional Area #2: _____   Years in area: _____

IB7: Age: _____

IB8: Gender: _____

IB9: Years working for current company: _____

IB10: Years working in current industry: _____

IB11: Past industries that you have experience working in: _____