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THE INFLUENCE OF HIGH-PERFORMANCE WORK SYSTEMS AND
INTANGIBLE STRATEGIC RESOURCES ON THE ENTREPRENEURIAL
ORIENTATION-FIRM PERFORMANCE RELATIONSHIP

By

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A Dissertation

Submitted to the Faculty of the
College of Business of the University of Louisville
in Partial Fulfillment of the Requirements
for the Degree of

Doctor of Philosophy in Entrepreneurship

Department of Entrepreneurship
University of Louisville
Louisville, Kentucky

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A Dissertation Approved on

July 30, 2018

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Dr. James O. Fiet, Dissertation Director

Dr. Cara Cashon

Dr. Robert Garrett

Dr. Bruce Kemelgor

DEDICATION

This dissertation is dedicated to my family.

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I thank Dr. Fiet, Chair of my dissertation committee who motivated me to pursue and shape my research ideas that culminated in my dissertation. My committee members, Dr. Cashon, Dr. Garrett and Dr. Kemelgor encouraged me and provided me with invaluable feedback that enriched my learning. My interactions with my dissertation committee enabled me to crystallize my thoughts. I am grateful to my dissertation chair and committee members for always being there for me when I needed their support and encouragement during the dissertation.

ABSTRACT

THE INFLUENCE OF HIGH-PERFORMANCE WORK SYSTEMS AND INTANGIBLE STRATEGIC RESOURCES ON THE ENTREPRENEURIAL ORIENTATION-FIRM PERFORMANCE RELATIONSHIP

Shankar Naskar

July 30, 2018

The entrepreneurship literature indicates that entrepreneurially oriented firms perform better and grow faster than firms that are conservatively oriented. Firms with an entrepreneurial orientation (EO) jointly exhibit risk-taking, innovative and proactive behaviors. The EO-firm performance relationship is a well-established one. However, scholars have bemoaned the lack of focus on internal organizational factors that may influence or affect the nature of the relationship. My dissertation uses the framework of the resource-based theory of the firm to argue that the influence of EO on performance is contingent on the resources and the internal organizing context (organizing capability) of a firm. The resource-based theory of the firm emphasizes that firms need to possess valuable, rare and imperfectly imitable resources and internally organize themselves to exploit these resources. Intangible strategic resources (ISR) are the know-how, skills, and intellectual property, patents, brands and informal social networks in a firm. High-performance work systems (HPWS) consist of strategic business practices that focus on leveraging human capital and transforming and executing a firm's strategy. HPWS enable a firm to exploit its ISR.

My dissertation uses the resource-based theory of the firm to argue that resource possession (denoted by ISR) and resource exploitation (denoted by HPWS) are both intrinsically important to entrepreneurial actions (denoted by EO) taken by a firm to realize superior firm performance.

My dissertation employs a mix of contingent and configurational models to analyze the influence of varying levels and combinations of EO-ISR and HPWS on firm performance. In doing so, it generates an understanding of the critical boundary conditions that affect the magnitude and nature of the EO-firm performance relationship. It also serves as a new test of the resource-based theory of the firm.

My research provides specific guidance on the resource configurations under which firms' entrepreneurial postures and actions are expected to yield the greatest benefit. My dissertation contributes to the cross-disciplinary evidence-based research in entrepreneurship by extending the resource-based theory of the firm and linking EO, a key entrepreneurship concept, with the fields of strategy and human resource management.

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CHAPTER 1

INTRODUCTION

Executive Summary

Entrepreneurial Orientation (EO) is the consistent display of observable strategic actions by a firm characterized by innovation, risk-taking, and proactiveness (Anderson & Eshima, 2013). In the realm of entrepreneurship research, the EO-firm performance linkage has been one of the most widely studied relationships (Kollmann & Stockman, 2012). Two influential meta-analysis studies confirmed that there was a significant moderate correlation between EO and firm performance. (Rauch, Wiklund, Lumpkin & Friese, 2009; Saeed, Yousafzai & Engelen, 2014).

As scholars delved into the dynamics of the EO-firm performance relationship there was an increasing trend to study the relationship in a contingency framework (Lumpkin & Dess, 1996; Covin & Slevin, 1991). The theoretical justification for studying the internal context of a firm as a factor influencing the EO-firm performance relationship was validated by the considerable variation in the magnitude of the EO-firm performance relationship across studies.

In my dissertation, I leverage the framework of the resource-based theory of the firm to study the influence of two theoretically relevant yet unexplored firm specific boundary conditions on the relationship.

My research question is - What is the influence of a firm's internal resources (represented by intangible strategic resources) and internal organizing context or capability (represented by high-performance work systems) on the entrepreneurial orientation - firm performance relationship?

The consideration of intangible strategic resources (ISR) as an internal resource and high performance work systems (HPWS) as an internal capability influencing the EO-firm performance relationship is driven by the fact that the manifestation of EO requires consumption of resources (Covin & Slevin, 1991) and is dependent on the internal resources and capabilities possessed by a firm (Wiklund & Shepherd, 2003).

ISR is the know-how, skills, intellectual property, patents, brands and informal social networks (Hall, 1992; Itami, 1987) that play a key role in a firm's strategic decision making (Anderson & Eshima, 2013).

HPWS is a strategic business practice that focuses on leveraging human capital and transforming business strategy and plays a key role in firm performance (Hayton, 2005; Collis & Montgomery, 1998).

ISR represents an internal resource possessed by a firm and HPWS represents an internal capability or organizing context that enables a firm to exploit its resources. The importance of resources and capabilities has been emphasized in prior EO research (Miller, 2011; Covin & Slevin, 1991; Anderson & Eshima, 2013).

My dissertation emphasizes the importance of both, resource possession and resource exploitation as the boundary conditions influencing the EO-firm performance relationship (Barney, 2001; Penrose, 1959; Prahalad & Hamel, 1990; Amit & Schoemaker, 1993; Schulze, 1994). The importance of resources and capabilities as a source of competitive advantage and in forming the core competence and identity of a firm has been well documented in strategic management research (Prahalad & Hamel, 1990; Grant, 1991; Barney, 2001; Chandler & Hanks, 1994).

Mahoney & Pandian (1992) noted that a firm could achieve rents not because of

the resources it possesses but rather due to the distinctive competence it has in marshaling and exploiting these very resources. The organizing context or capability of a firm determines whether the competitive advantage possessed by a firm is unexploited, temporary or sustained (Barney, 2001; Barney & Hesterly, 2011). This may explain why firms with similar internal resources but differing capabilities have different firm level outcomes.

In my dissertation, I argue that a firm's ability to generate superior firm performance outcomes from its EO is influenced by its ISR (representing organizational resources) and HPWS (representing organizational context or capability).

The study of internal factors has implications for researchers, as it enables them to understand the factors that influence the EO-firm performance relationship. At the same time, it has implications for practicing managers who can predict the benefits of EO given the internal factors (resources and capabilities) specific to their firms.

In terms of the organization of my dissertation, in this chapter 1, I proceed with the background and literature review followed by chapter 2, theory and hypotheses development. Chapter 3 outlines the research design and methods and Chapter 4 presents the results of hypothesis testing along with an analysis of the results. In chapter 5 I conclude with a discussion on the interpretation of the findings and its theoretical and practical implications.

Background

Entrepreneurial Orientation

The concept of EO emerged in the 1980s and reflected a firm's embodiment of

the entrepreneurial perspective (Ma & Tan, 2006). Miller (1983) is credited with conceptualizing EO though he did not use the term in his initial writings. EO is a defining behavior of an entrepreneurial firm as evident in the demonstrated actions of the firm (Covin & Slevin, 1991). EO reflects a firm's inclination towards entrepreneurship and drives a firm to pursue entrepreneurial activities (Covin & Wales, 2011). EO is also conceptualized to exist only when a firm exhibits it consistently on an ongoing basis.

A firm was termed to be an entrepreneurial organization when it exhibited a definitive posture. A *posture* is demonstrated in the actions of a firm when certain behavioral patterns recur with consistency (Covin & Slevin, 1991). The *entrepreneurial posture* reflects the firm's strategic philosophy and is characterized by three-types of behaviors at the organizational level - risk-taking, innovativeness and proactiveness (Covin & Slevin, 1989). EO is a strategic posture and represents an orientation of a firm (Miller and Friesen, 1984; Miller 2011; Covin & Slevin, 1986, 1989). A strategic posture is a simultaneous exhibition of *innovativeness* (reflecting in new products, processes, business models pursued by a firm), *proactiveness* (entering new product markets and geographies and seeking market leadership) and *risk-taking* (willing to invest in projects with uncertain outcomes) by a firm (Anderson, Kreiser, Kuratko, Hornsby & Eshima, 2015).

Two other dimensions, autonomy, and competitive aggressiveness were also advocated and suggested as components of EO (Lumpkin & Dess, 1996). *Autonomy* is the ability of organizational players to act independently to realize the goals of a firm. Autonomy is based on the freedom and empowerment given to individuals and teams (Lumpkin & Dess, 1996). *Competitive aggressiveness* is the responsiveness of a firm to

take its competitors head on and the willingness to adopt unconventional approaches to competing within an industry. Most studies have chosen to include the three-dimensional model of EO consisting of innovativeness, risk taking and proactiveness and have not included competitive aggressiveness and autonomy in the calculation of EO (Rauch, Wiklund, Lumpkin & Friese, 2009).

Research has found that these three dimensions have high inter-correlations and they have been combined into a single factor of EO. My dissertation follows the same consistent practice of past EO researchers.

EO enables (1) a firm to undertake entrepreneurial activity (Wiklund, 1998) (2) organize itself for entrepreneurship (Wiklund & Shepherd, 2003) and (3) develop organizational policies that foster entrepreneurial decision-making (Rauch, Wiklund, Lumpkin & Friese, 2009).

Some researchers have viewed EO as a posture that guides a firm's strategy and its competitive positioning in the marketplace (Hughes & Morgan, 2007). Other researchers have positioned EO as a resource that is idiosyncratic to a firm and can provide it with a source of sustainable competitive advantage (Lee, Lee & Pennings, 2001; Li, Jiang, Pei & Jiang, 2017). EO is viewed as a firm-level construct as the actions of EO occur across a firm (Kiel, Maula & Syrigos, 2017; Covin & Lumpkin, 2011; Lumpkin & Dess, 1996). There has been some debate on whether EO is dispositional or behavioral, but the field has coalesced around the behavioral argument.

EO is the most widely accepted construct in strategic entrepreneurship research (Anderson, Kreiser, Kuratko, Hornsby & Eshima, 2015). Successful firms have attributed their superior performance to an EO (McGrath & MacMillan, 2000). EO gained

ascendancy in the entrepreneurship literature when scholars argued for a firm-behavior model of entrepreneurship (Covin & Slevin, 1991) and an integrative model of entrepreneurship applicable to firms (Lumpkin & Dess, 1996).

EO has received much attention, both theoretical and empirical and is one of the most widely published areas in entrepreneurship (Covin, Green & Slevin, 2006; Miller, Hartwick & Le Breton-Miller, 2004). Numerous studies have led to the wide acceptance of the concept of EO and its relevance in the domain of entrepreneurship research (Rauch, Wiklund, Lumpkin & Friese, 2009). EO research has risen dramatically since its emergence in the late 1980s. Rauch and colleagues (2009) noted that EO studies increased five-fold in the period 2000-2009 compared to the previous decade.

In the period 2010-2016 alone, a total of 95 articles were published in scholarly peer-reviewed academic journals that mentioned the term “entrepreneurial orientation” explicitly in the title of the paper (EBSCO Business Source Premier Database Search, May 2017). Today it forms the focus of one of the most prolific research streams in the field of entrepreneurship. The importance of EO is that it serves as a broad measure of entrepreneurship in organizations and has been used and validated in numerous studies.

Covin & Lumpkin (2011) mention that some scholars view EO as an annoying construct as it is phenomenon based instead of theory based. Hambrick (2007) also noted that scholars tend to eschew research that is not accurately explained with generally accepted theories of management. Critics of EO may also argue that it is not grounded in an academically approved theoretical perspective (Covin & Slevin, 2011). However, on closer examination of the conceptual origins of EO and prior research, four key observations can be presented to address these concerns.

The first observation is that EO has its theoretical roots in the behavioral model of entrepreneurship that states that a firm's actions make it entrepreneurial and that behavior is the most important and critical element in the entrepreneurial process (Covin & Slevin, 1991; 2011). The second observation is that there is a need to reframe the debate from *developing the theory of EO* to *connecting EO to theory* (Miller, 2011). In a seminal paper in which he revisited his 1983 paper, Miller (2011) argued that EO research, like the broad field of entrepreneurship research has been slow to embrace the theories of other disciplines. However when such efforts were made, they were very rewarding as they illuminated the theories and contributed to their further development. The third observation is that EO research has served as a test of these accepted theories of management. Some examples include - knowledge-based view (Wiklund & Shepherd, 2003), agency theory (Jones & Butler, 1992), resource-based theory (Dess, Lumpkin & Covin, 1997; Anderson & Eshima, 2013) and learning theory (Kreiser, 2011; Anderson, Covin & Slevin, 2009). The fourth observation is that leading scholars in entrepreneurship have identified specific theoretical lenses and developed propositions in EO research - these lenses include, dynamic capabilities (Teece, Pisano, & Shuen, 1997), dominant logic (Prahalad & Bettis, 1986), institutional theory (DiMaggio & Powell, 1983), network theory (Granovetter, 1973) and resource dependency theory (Salancik & Pfeffer, 1978).

Apart from these four observations, the influence and magnitude of EO research within the field of entrepreneurship research continues to increase and is significant. In an article that introduced the special issue of *Entrepreneurship Theory and Practice* (2011) on the topic of EO, the guest editors Covin & Lumpkin (2011) concluded that it was

evident from the pervasiveness of EO research in peer reviewed journals that the field of entrepreneurship was very much interested in the topic of EO in both, an *academic* and a *practical* sense.

As the concept of EO took root, it was hypothesized that EO would lead to better financial performance as well as improved performance on non-financial parameters (Lumpkin & Dess, 1996). Three decades of research in entrepreneurial orientation has led to the broad agreement that firms that act entrepreneurially are likely to perform better than firms that act conservatively (Rauch, Wiklund, Lumpkin & Frieze, 2009; Saeed, Yousafzai & Engelen, 2014). Researchers have studied various consequences of EO, but the most significant of them has been the influence of EO on improved firm performance.

The Entrepreneurial Orientation-Firm Performance Relationship

The initial conceptual arguments emphasized that a firm benefits from EO (Miller, 1983; Lumpkin & Dess, 1996). In environments characterized by heightened competition, business uncertainty, shrinking product life cycle and changing business models, firms that act in a proactive and innovate way while taking risks are expected to fare better than other firms (Rauch, Wiklund, Lumpkin & Frieze, 2009). A firm that could proactively anticipate the unmet and implicit needs of its customers and develop innovative products and services and undertake the risks in launching them would be at an advantage in the marketplace (Ireland, Hitt, & Simon, 2003). Firms with an EO would be more opportunistic and would be more willing to take risks in their product-markets and business models (Miller & Friesen, 1982). This further corroborated the dominant theoretical conceptualization of EO as beneficial to firm performance.

In a reflection on his 1983 paper, Miller (2011), one of the pioneers in the field of EO, mentioned that scholars did not heed the most important message of his 1983 paper - to study not just the determinants and consequences of entrepreneurship in firms (EO) but the organizational context in which EO manifested itself. The empirical results of his study indicated that the correlates of entrepreneurship and performance differed across specific types of firms (Miller, 1983). This strengthened the argument for considering organizational factors that influence the EO-firm performance relationship.

The need for a contingency framework was based on the recommendations of prior research to study the EO-firm performance relationship in an integrative model (Lumpkin & Dess, 1996). In a *contingency framework* a third variable is introduced to analyze a two-variable relationship. In my dissertation the two-variable relationship is EO-firm performance and the contingency variables are HPWS and ISR. The contingency framework is based on the premise that the introduction of a third variable provides a more precise understanding of the two-variable relationship (Rosenberg, 1968). The model of entrepreneurship as firm behavior also recommended contingency frameworks (Covin & Slevin, 1991). Both these streams of research were firmly grounded in the well-established theory of strategic management that emphasized the importance of relationships between internal, external variables and firm performance. The need for creating a contingency model was not driven by methodological considerations but rather by the theory of strategic management that advocated an alignment between internal and external variables for superior firm performance (Naman & Slevin, 1993; Covin & Slevin, 1989; Karagozoglu & Brown, 1988; Zahra & Covin, 1995).

The importance of contingency theory in the development of management sciences has been well documented (Burns & Stalker, 1961; Lawrence & Lorsch, 1967; Schoonhoven, 1981; Venkatraman, 1989).

The findings of two meta-analyses on the EO-firm performance relationship complemented each other (Rauch, Wiklund, Lumpkin & Frieze, 2009; Saeed, Yousafzai & Engelen, 2014). In the first meta-analysis conducted in 2009, Rauch and colleagues included 51 studies from 14 countries and in the second meta-analysis conducted in 2014; Saeed and colleagues analyzed 177 studies from 41 countries. Both the meta-analyses reported a point estimate and arrived at similar positive effect-sizes for the EO-firm performance relationship (.268 for the 2014 meta-analysis and .242 for the 2009 meta-analysis). Both the positive effect-sizes are moderate (Cohen, 1977). The time frames and rigorous selection criterion for studies in both the meta-analyses along with their similar moderately large effect-size establish that firms are likely to benefit from EO as it results in improved performance. The concept of EO continued to gain a strong empirical foothold in the field of entrepreneurship research.

However, the magnitude of the effect varied across the studies. Some studies demonstrated a strong significant positive correlation (Hult, Snow, & Kandemir, 2003; Lee & Tsang, 2001; Wiklund & Shepherd, 2003) whereas others reported a lower significant positive correlation (Dimitratos, Lioukas, & Carter, 2004; Lumpkin & Dess, 2001; Zahra, 1991) and a few studies could not find a significant correlation (McDougall, Covin, Robinson and Herron, 1994; George, Wood, & Khan, 2001).

In both the meta-analysis studies a large amount of variance remained unexplained. For example in the 2014 meta-analysis, 10.2% of the variance in the EO-

firm performance relationship was explained by the control variables (firm size, industry, type of performance measure, scope of performance measure, study quality and publication bias) whereas 25% of the variance was explained by the national level factors (Saeed, Yousafzai & Engelen, 2014).

Rauch and colleagues (2009) in their meta-analysis study found considerable variation in the correlation between EO and firm performance, beyond that explained purely by sampling error. The meta-analyses noted that a majority of the studies assumed a direct-effects nature of the EO-firm performance relationship (Rauch, Wiklund, Lumpkin & Friese, 2009; Saeed, Yousafzai & Engelen, 2014). The mixed results further strengthened the argument that some relevant factors were still missing from the EO-firm performance discussion and could provide a richer understanding of the boundary conditions of the relationship.

The Importance of Internal Firm Context as a Boundary Condition

Researchers have introduced possible factors to explore the dynamics of the EO-firm performance relationship. The introduction of theoretically justifiable factors in the bivariate EO-firm performance relationship helps reduce the possibility of misleading inferences (Rosenberg, 1968). Two meta-analyses conducted on the EO-performance relationship found that the majority of the contextual variables used were firm size, firm age, nature of industry, strategy type, and culture. Size influenced the EO-firm performance relationship, and the influence was strongest in micro-enterprises with less than 50 employees with a corrected correlation of .345. (Rauch, Wiklund, Lumpkin & Frese, 2009). The characteristics and nature of industry also influenced the EO-firm

performance relationship, and the corrected correlation was .396 (high tech industries) and .231 (other non-high tech industries). The difference between high tech and non-high tech firms indicated that firms in high-tech businesses benefit more from EO than those in non-high-tech businesses. The use of the country as a factor yielded no significant results suggesting that the magnitude of the EO-firm performance relationship was consistent across country context (Rauch, Wiklund, Lumpkin & Frese, 2009). Regarding national cultural context, the EO-firm performance relationship is found to be significant and stronger for cultures with low *uncertainty avoidance* (a cultures tolerance for ambiguity and uncertainty) and low *power distances* (a cultures acceptance of unequal power distribution). The results are also significant and stronger for firms in the developing nations as compared to those in developed nations (Saeed, Yousafzai & Engelen, 2014). The nature of the EO-firm performance relationship changed in hostile and dynamic industry environments (Covin & Slevin, 1989) and was influenced by the founding team's intra and extra-industry social capital (Stam & Elfring, 2008).

Though Lumpkin and Dess (1996) and Miller (1983) highlighted the need to study internal organizational factors on the EO-firm performance relationship it has till date remained relatively fragmented and unexplored. The importance of internal organizational factors was driven by the fact that a firm was in a better position to manage these resources proactively. These organizational factors being internal to the firm are relatively more manageable than environmental factors that are external to the firm (Covin, Green & Slevin, 2006). Prior EO research focused unduly on non-manageable attributes that were beyond the control of a firm. Hence the research had limited practical significance and implications for owners and managers.

The Resource-Based Theory of the Firm

When we consider the role of internal firm-specific factors as boundary conditions of the EO-firm performance relationship, the rubric of the resource-based theory of the firm is a relevant one to consider. This is because the importance of firm-level internal assets, resources, and capabilities of a firm is highlighted in resource-based theory (Barney, 1986, 1991, 2001). This is in contrast to the theories of competitive advantage that seek to emphasize the role of external product markets and industry structure, as well as the environment. In the resource-based theory of the firm, internal firm resources can provide a sustained competitive advantage when they fulfill four conditions. They are (1) valuable in terms of their capacity to exploit opportunities and neutralize threats (2) rare in terms of their presence among competing firms (3) costly to imitate and substitute by competitors and (4) organized to exploit their advantages (Barney, 2001). The resource-based theory of the firm emphasized (1) the idiosyncratic attributes of a firm's competitive position and (2) linked internal firm resources directly to firm performance.

The initial debate on the resource-based theory of the firm highlighted the excessive focus and attention given to resource possession and resource characteristics that provided a sustainable competitive advantage. The resource-based theory of the firm it seemed did not provide a sufficient explanation of the conversion process from resource possession to creating products and services that provided a firm with a sustainable competitive advantage in the market. This led to an intense discussion on resource exploitation among strategy scholars. Firms may realize economic returns or

rents from their resources not because they simply possess them but because they possess the distinctive competency of leveraging and exploiting these resources for sustained competitive advantage (Mahoney & Pandian, 1992). The need to leverage and manage these resources was reflected by other scholars (Peteraf, 1993; Henderson & Cockburn, 1994). They argued that resources by themselves do not create competitive advantage. They must be organized to do so. A firm was in a position to earn above normal rents when they possessed the capacity to set up and replicate routines and relationships to allocate, coordinate, configure and deploy the resources for the benefit of a firm (Nelson, 1995). The importance of resource exploitation in combination with the possession of valuable, rare and imperfectly imitable resources of the firm for sustained competitive advantage was emphasized.

Barney identified certain organizational components such as structure; control systems and compensation policies that could have an influence on resource exploitation (Barney & Wright, 1986; Barney & Mackey, 2005). The organization of a firm and policies and practices intrinsic to a firm was seen to be central to resource exploitation and the realization of sustained competitive advantage. The organization of a firm was thus a firm level orientation and provided the context that summarized the updated arguments of the resource-based theory of the firm. In this way, the resource-based theory of the firm incorporated both, the characteristics of the internal resources possessed by the firm and the capacity of the firm to exploit these internal resources.

A firm could achieve sustainable competitive advantage only when it was also organized to exploit its valuable, rare and imperfectly imitable internal resources. The policies and practices of a firm that enable it to exploit its internal resources are also

called as complementary capabilities or resources. This is because these capabilities alone are insufficient for a firm to realize sustained competitive advantage but when they are combined with the other valuable, rare and imperfectly imitable resources of a firm, they confer sustained competitive advantage. In fact, without an appropriate and relevant organization, firms that are richly endowed with valuable, rare and imperfectly imitable resources can be at a competitive disadvantage (Barney & Hesterly, 2011).

Intangible Strategic Resources and High-Performance Work Systems as Factors

Prior research has not focused (1) on how EO is impacted by organizational factors, processes, contexts, and configurations (Miller, 2011) and (2) how these organizational variables can be used to study organizational level outcomes like firm performance. In the entrepreneurship literature, EO is presented as a resource-consuming strategic posture (Covin and Slevin, 1991). EO reflects a firm's organizational strategy and entrepreneurial action (Bhuian, Menguc & Bell, 2005; Lumpkin & Dess, 2001). The posturing of EO is contingent on the strategic resources that a firm possesses and the organizing context within a firm that provides it with a resource exploitation capability (Covin & Slevin, 1991). Thus both, resource possession and resource exploitation capability are intrinsically important to the discussion of the entrepreneurial actions taken by a firm to realize superior firm performance. In the current dissertation, *intangible strategic resources* (ISR) representing the resource endowment of a firm and *high-performance work system* (HPWS) representing the internal organizing context or capability of a firm are analyzed in terms of their influence on the EO-firm performance relationship.

The proponents of the resource-based theory of the firm make a distinction between resources and capabilities. *Resources* may be tangible or intangible and are used as an input in the production or delivery of a service by a firm to its customers. *Capabilities* or *competences* are defined as the accumulated knowledge and organizational processes that enable the coordination and utilization of the resources within a firm (Penrose, 1959; Prahalad & Hamel, 1990; Amit & Schoemaker, 1993; Schulze, 1994). In my dissertation, ISR is a resource and HPWS can be viewed as an internal organizing context of a firm or as a capability of a firm (Hitt, Ireland & Hoskisson, 2003). Resources and capabilities together provide the core competence to a firm and form its identity (Prahalad & Hamel, 1990; Grant, 1991). Together they form the basis and justification for the sustainable competitive advantage of the firm (Barney, 2001; Chandler & Hanks, 1994).

HPWS is defined as a bundle of unique human resource management (HRM) practices that motivate employees and affect their ability to perform on the job (Huselid, 1995). HPWS has been studied as causal variables in predicting firm performance (Takeuchi, Lepak, Wang, & Takeuchi, 2007; Boselie, Dietz, & Boon, 2005; Wright, Gardner, Moynihan & Allen, 2005). Some elements of HPWS have also been used in prior entrepreneurship research (Kroon, Vorde & Timmers, 2013; Messersmith & Wales, 2013). HPWS plays two key roles. HPWS attracts-motivates-retains people resources (skills) within a firm and aligns them to its strategic intent (Huselid, 1995; Way, 2002). HPWS provides the organizational capability or context for leveraging ISR (assets) that influences firms to act more entrepreneurially (Hayton, 2003; Hornsby, Naffzinger, Kuratko and Montagno, 1993; Zahra, Kuratko & Jennings, 1999).

ISR is the know-how, skills, intellectual property, patents, brands and informal social networks (Hall, 1992; Itami, 1987) that play a key role in a firm's strategic decision making (Anderson & Eshima, 2013). *ISR* is based on the resource-based theory of a firm (Barney, 1991). Scholars have identified and emphasized the need to analyze the role of *ISR* on the EO-firm performance relationship (Thornhill & Amit, 2003; Wiklund & Shepherd, 2003). Past research has emphasized the contingent role of *ISR* for achieving competitive advantage and for the study of EO within firms (Newbert, 2007; Wiklund & Shepherd, 2003; Miller & Shamsie, 1996).

Research has demonstrated that the resource base of a firm and its organizational capabilities impacts EO (Anderson & Eshima, 2011; Engelen, Gupta, Strenger, & Brettel, 2013). The surplus or scarcity of *ISR* within a firm directly impacts the number of entrepreneurial opportunities that are pursued or exploited by a firm (Anderson & Eshima, 2013). HPWS can also be viewed as a firm-specific competence or capability in the framework of the resource-based theory of the firm. This is consistent with the arguments of the resource-based theory of the firm (Barney, 1991; Makadok, 2001). In this way, HPWS and *ISR* are both intrinsic and relevant to the EO-firm performance relationship.

Research Question

Again, my research question is - What is the influence of a firm's internal resources (represented by intangible strategic resources) and internal organizing context or capability (represented by high-performance work systems) on the entrepreneurial orientation - firm performance relationship?

A figurative illustration of my research question is given below

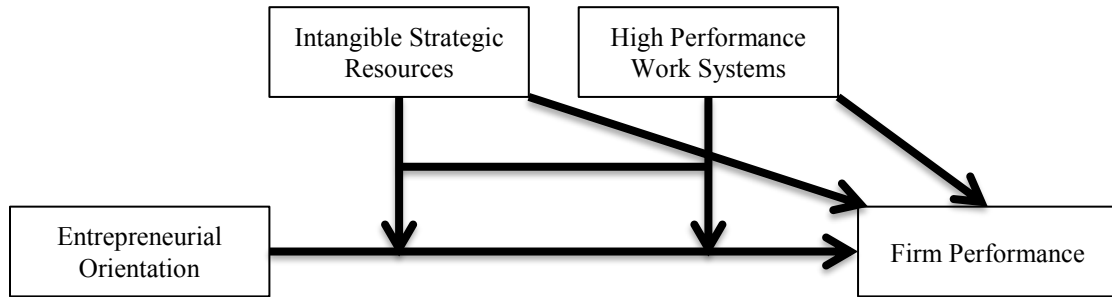


Figure 1: Research Question Illustration

I study the influence of these variables by assessing (1) the direct influence of single variables - EO, HPWS and ISR on firm performance (2) the contextual influence of two variables interacting with each other - EO and ISR; EO & HPWS, on firm performance and (3) the influence of three variables interacting with each other, EO, HPWS & ISR, on firm performance. I test my hypotheses using a sample of 263 unique US based-headquartered firms. I use constructs that are based on theory and validated in prior research and use hierarchical linear regression as a statistical technique for testing my hypotheses.

Significance of my dissertation

My dissertation will enable a firm to predict its performance given specific configurations of intangible strategic resources, entrepreneurial orientation, and high-performance work systems. Most studies have used contextual models that analyzed two-variable interactions between EO and an internal firm characteristic or EO and an external environment characteristic (Wiklund & Shepherd, 2005). The results of my dissertation will thus inform the boundary conditions and configurations under which the

EO-firm performance relationship will hold or will generate the most beneficial firm performance. My dissertation can also be viewed as a test of the theory of the resource-based view of the firm and will inform the field on the internal boundary conditions that influence the EO-firm performance relationship. My dissertation seeks to make a contribution to the generation of knowledge specifically addressing the EO-firm performance relationship.

Literature Review

Entrepreneurial Orientation (EO)

The concept of EO evolved from the seminal work by Mintzberg (1973) on strategic decision-making. Mintzberg characterized entrepreneurial strategy formulation as a managerial orientation or disposition that involved exploring opportunities in uncertain environments. From the concept of managerial disposition, Khandwalla (1976) developed the concept of entrepreneurial management style. He referred to the entrepreneurial management style as a bold and aggressive risk taking approach and contrasted that with a cautious and stable approach. This marked the emergence of the EO concept from the literature on managerial disposition, entrepreneurial decision-making and management style. EO was also described as a collection of characteristics that typified the entrepreneurial firm (Miller & Friesen, 1982).

The concept of Entrepreneurial Orientation (EO) has been studied in entrepreneurship and strategy research since 1980. Though Miller initially did not use the term entrepreneurial orientation, he indirectly indicated that the entrepreneurially minded firm would exhibit three characteristics of innovativeness, risk taking and proactiveness,

thereby setting the agenda for the development of the EO construct (Covin & Wales, 2012).

Three and a half decades of research in entrepreneurial orientation has led to the broad agreement that firms that act entrepreneurially are more likely to perform better than firms that do not act entrepreneurially (Rauch, Wiklund, Lumpkin & Frieze, 2009).

EO indicates a firm's willingness to undertake entrepreneurial activity (Wiklund, 1998), the ways by which a firm is organized for entrepreneurship (Wiklund & Shepherd, 2003) and organizational policies by which a firm can take entrepreneurial decisions (Rauch, Wiklund, Lumpkin & Frieze, 2009).

It plays an important role in the pursuit of entrepreneurial activities by a firm (Covin & Wales, 2011). EO is linked to a firm's strategy and molds the attitudes and actions of individuals within a firm (Covin & Slevin, 1991).

In this dissertation I hypothesize that the relationship between EO and firm performance is dependent on the level of two other moderating variables - HPWS and ISR. The resource-based theory of the firm is used as the organizing framework to analyze the hypothesized relationships.

The Resource-Based Theory of the Firm: Internal Resource Context

The importance of internal resources in developing a competitive position for a firm was first outlined by Edith Penrose in her seminal classic (1959). Many years later Rubin (1973) conceptualized firms as bundles of resources. Leveraging the writings of Penrose (1959) and Rubin (1973), Wernerfelt (1984) developed the argument that resources and products were synonymous. Wernerfelt argued that it was more beneficial

to view firms as resources than as products, which led him to coin the term, resource based view.

Barney (1991) is credited with the formalization of the resource-based view into a testable framework that is known as the resource-based theory of the firm. Barney incorporated the arguments made by Dierickx and Cool (1989) that for assets to be strategic they needed to be non-tradable, non-imitable and non-substitutable and addressed the shortcomings of the strategic factor markets (Barney, 1986). Barney made two important assumptions about resources, that formed the bedrock of the resource-based theory of the firm (1) they are distributed heterogeneously among firms and (2) they are not perfectly transferrable or mobile. Through these assumptions, Barney put forward the argument that differences in the resource endowments of firms persist over time and provide an opportunity for firms to have a competitive advantage. Barney pivoted the resource-based theory of the firm on (1) the idiosyncratic attributes of a firm's competitive position and (2) linked internal firm resources directly to firm performance.

A resource was termed *valuable* when it increased revenues or decreased costs; otherwise it was classified as a common resource that would not generate competitive advantage. With the emphasis on *rarity*, a valuable resource had the potential to generate a competitive advantage only when other firms did not possess it. Barney also argued that a resource that was valuable and rare would lead to competitive advantage only if other competing firms could not obtain them. In other words a resource would be imperfectly imitable by competing firms. A resource could be *imperfectly imitable* if (1) it was based on *unique historical conditions* (2) the relationship of a resource and a firm's competitive

advantage was *causally ambiguous* or imperfectly understood by competitors and (3) a resource generating a firm's competitive advantage was *socially complex*. The fourth condition was the *non-substitutability* of a firm's resource bundle with other resource bundles that were strategically equivalent to it, by its competitors. The resource bundle could confer competitive advantage if competitors could not use different sets of resource bundles with different strategies to achieve the same position of competitive advantage.

Barney (1991) initially classified firm resources into three categories (1) physical capital resources (Williamson, 1975) (2) human capital resources (Becker, 1964) and (3) organizational capital resources (Tomer, 1987). *Physical capital resources* included a firm's plant, offices, locations, raw material, *human capital resources* included the employees in a firm and *organizational capital resources* included a firm's practices and systems, reporting structure, planning, controlling and coordination mechanisms and the relationship among functional groups and a firm and its environment. For each of these resources to be strategic it would have to be valuable, rare, costly to imitate and imperfectly substitutable by any other combination of resource bundle and business strategy.

The Resource-Based Theory of the Firm: Internal Organizational Capability

The initial debate on the resource-based theory of the firm highlighted the undue focus and attention given to resource possession and resource characteristics that provided a sustainable competitive advantage Priem and Butler (2001). There was a continuous stream of strategy research that focused on resource exploitation. The theme of dynamic capability also reflected the reasoning of earlier scholars on resource

exploitation through organizational routines (Nelson and Winter, 1982).

Dynamic capabilities are idiosyncratic capabilities that exploited the resources that otherwise had no real value (Teece, Pisano and Shuen, 1997). *Dynamic capabilities* are defined as organizational and strategic routines that are integral to creating resource configurations (Eisenhardt and Martin, 2000).

Newbert (2007) provides a list of the multiple resource exploitation approaches that were argued during that period, such as *core competency* (Fiol, 1991; Prahalad and Hamel, 1990; Reed and DeFillipi, 1990), *organizational capabilities* (Russo and Fouts, 1997), *combinative capabilities* (Kogut and Zander, 1992), *transformation based competencies* (Lado, Boyd and Wright, 1992), *core capabilities* (Leonard-Barton, 1992) and *capabilities* (Amit and Schoemaker, 1993).

The updated resource-based theory of the firm mentions four criteria for sustained competitive advantage: resources have to be (1) valuable (2) rare (3) costly to imitate and imperfectly substitutable and (4) *a firm has to be organized to exploit these resources* (Barney, 2001; Barney and Wright, 1998). Thus resource possession and resource exploitation are both essential parts of the discourse of the resource-based theory of the firm.

Intangible Strategic Resources (ISR)

The important role of intangible resources or “invisible resources’ in the strategic management process has a long history (Hall, 1992; Itami and Roehl, 1987). Itami and Roehl (1987) emphasized that the management of these invisible resources was a central aspect of strategy and the key element of a firm’s journey to achieve competitive

advantage. The enrichment or degradation of intangible resources has a major influence on the core competencies of a firm and subsequently on its sustained competitive advantage and economic performance.

Newbert's (2007) review of the empirical literature also indicated that scholars had begun to emphasize a firm's intangible strategic resources, dynamic and otherwise (valuable-rare-inimitable capabilities) to be more important than the static tangible resources of a firm in determining its competitive advantage and leading to superior performance. Newbert (2007) suggested that there should be a greater empirical focus on theoretical extensions of the resource-based theory of the firm that relate to the role of non-static resources (intangible strategic resources).

Intangible strategic resources are classified as assets and skills that are owned by the company and include intellectual property rights (trademarks, patents, copyrights and registered designs), contracts, trade secrets, company and product-service reputation, internal and external networks, databases, know-how of employees, suppliers, distributors and the culture of a firm. Inherent in this classification is that some of the assets such as intellectual property rights, contracts, trade secrets, databases and reputation (to a certain extent) have a greater degree of ownership or belongingness whereas internal and external networks, know-how of employees, suppliers, distributors and the culture of a firm are elements that have a lesser degree of ownership and belongingness in a firm and potentially they can "walk away" when a firm is acquired (Hall, 1992). Intangible resources provide the feedstock or underlying input to a firm that enables it to compete advantageously in the product market. Intangible strategic resources for the purpose of this dissertation include the interactions and routines that take place

within the organization and that take place with the external stakeholders like suppliers, customers and distributors. The importance of intangible strategic resources arises from the fact that employees with their know how control a firm level allocation of tangible resources and the combination of tangible resources that lead to products and services that are offered by a firm to its customers (Fahy, 2002; Hall, 1989). These networks of internal and external personal relationships have a high degree of tacit knowledge and become so strongly embedded in a firm that they become socially complex and due to inherent causal ambiguity become very costly to imitate (Collis, 1994).

Consistent with the logic of the resource-based theory of the firm this dissertation focuses on the intangible strategic resources and seeks to deepen our understanding of the role played by them in firm performance. Intangible resources are costly to imitate and copy and provide a distinct advantage to firms (Thornhill and Amit, 2003). The inclusion of intangible resources in the discussion is attributed to their relative strategic importance in evaluating the contextual factors governing the EO-firm performance relationship and also in generating a sustainable competitive advantage. The resource-based theory of the firm proponents argued that resources are determinants of firm performance and the focus should shift from external environmental model of analysis to the internal resource analysis (Barney, 1991; Schulze, 1992; Bates & Flynn, 1995). These intangible resources are strategic when they enable a firm to achieve sustained competitive advantage (Hall, 1992; Newbert, 2007).

High Performance Work Systems (HPWS)

The concept of High-Performance Work System (HPWS) emerged from human

resource management (HRM) literature. It is important to clarify that *human resource practices* and *human resources* are two distinct concepts. *Human resources* consist of the people (human capital) that are employed by a firm whereas *human resource practices* are a set of activities or a system that enables the management of people and resources within a firm to achieve the goals of the organization (Wright, McMahan & Williams, 1994).

Human resource management practices were internal to a firm and did not gain importance in the strategic management theories that had a predominant external environment focus (Porter, 1980; 1985). The resource-based theory of the firm on the other hand emphasized the internal resources of a firm and was firm-focused rather than being industry-focused and provided the theoretical basis for the inclusion of HRM and its role as a source of sustained competitive advantage (Wright, McMahan & Williams, 1994). It was Barney's (1991) comment that organization action and theories could provide inputs regarding the exploitation of firm specific resources that furthered the debate into the role of HRM in strategic management.

Penrose (1959) argued that each internal resource provided a firm with its unique character. *Distinctive competence* is defined as a set of rules, decisions and routines used by the top management (Penrose, 1959; Mahoney & Pandian, 1992). Consistent with this definition, HPWS (set of HRM practices) can be termed as a distinctive competency as they enable a firm to make better use of its other resource bases (Mahoney and Pandian, 1992). In the resource-based theory of the firm human resource practices are embedded in an organization and are also termed *complementary capabilities or resources*, as they alone do not provide a source of sustained competitive advantage. However when they

are combined with other resources they create sustained competitive advantage (Barney & Hesterly, 2011).

HPWS are *socially complex* and emerge from *unique historical conditions* of a firm (path-dependent). They are also *causally ambiguous* as the linkage with a firm's source of competitive advantage is not easy to infer or conclude by competitors. The importance of HRM practices in exploiting firm level resources was emphasized since 1990s (Wright, Smart & McMahan, 1995).

The value of individual HR practices was not challenged by the resource-based theory of the firm but their ability to generate a sustained competitive advantage for a firm was challenged and hotly debated by scholars who focused on the need to create a synergistic effect from bundles of HR practices. This was due to the inter-dependent nature of each individual HR practice. The benefit of viewing a bundle of HR practices instead of a single individual HR practice began to gain traction in the field (Becker & Gerhart, 1996; Barney & Wright, 1998; Gerhart, Trevor, & Graham, 1996; Lado & Wilson, 1994; Wright & Snell, 1992; Wright, McMahan & McWilliams, 1994).

The term HPWS was coined by Huselid (1995) and later theorists developed the bundles argument, that unique combinations of bundles of HR practices were integral to the concept of HPWS (Appelbaum, 2000). *HPWS* has not been clearly defined in HRM literature but it is meant to describe a set of employment practices that motivate employees and that affect the ability of employees to perform on the job (Huselid, 1995; Patel, Messersmith & Lepak, 2013). HPWS creates internal alignment of employee skills and abilities with the requirements of a job and is aimed at improving the contribution of individuals through their job. *HPWS* is the organizational resource that orchestrates the

combination, configuration of the physical capital, human capital and other internal assets to align them with the strategy of a firm. HPWS components include compensation and incentive policy, performance appraisal, job security, recruitment, induction, training and development, decision-making empowerment, job clarity, mobility and career planning. In this way HPWS is linked to firm performance by focusing on the end outcome of organizational goals.

Research has also supported the role of these bundles of HR practices and their influence on financial performance and competitive advantage (Delaney & Huselid, 1996; Welbourne & Andrews, 1996; Delery & Doty, 1996; Huselid, 1994; MacDuffie, 1995; Youndt, Snell, Dean, & Lepak, 1996).

A noteworthy study offered evidence that a unique set of HR practices was related to firm performance (Huselid, 1995). The study used accounting measures of firm performance. Another significant finding was that a one standard deviation change in HR systems could have an effect of 10-20% on the market value of a firm (Huselid & Becker, 2000). The study was based on four national surveys and on observations of more than 2000 firms.

My dissertation argues that HPWS play a key role in the resource exploitation process that is central to a firm's superior performance. HPWS may also influence the strength and direction of the EO-firm performance relationship.

CHAPTER 2

THEORY AND HYPOTHESIS

Research Model

My dissertation connects EO to the resource-based theory of the firm. It builds on a set of assertions about the nature of the EO-firm performance relationship and the logic postulated in the resource-based theory of the firm about the relationships between the variables of interest.

All good theory is driven by logic (Wacker, 2004) and my dissertation intends to describe the changes in EO that affect firm performance. The research model also specifies two theoretically relevant moderating factors, ISR and HPWS that may influence the EO-firm performance relationship.

To that extent my dissertation contributes to the extension and application of the resource-based theory of the firm to the field of entrepreneurship. My dissertation validates the key assumptions of the resource-based theory of the firm as applied to the EO-firm performance relationship.

My dissertation seeks to explain how, why and when the EO-firm performance is impacted through the ISR and HPWS using the rubric of the resource-based theory of the firm. It is on this rationale that this dissertation makes a contribution to the resource-based theory of the firm and to the understanding of the boundary conditions affecting the EO-firm performance relationship.

The configuration school of thought suggests that firms perform better when they are configured for performance. These scholars argue that firms must (1) match their set of internal resource priorities and practices to their strategy (2) strike a balance between individual priorities and practices and (3) avoid gaps associated with taking extreme positions on individual priorities and practices (Miller & Le-Breton Miller, 2005; 2006).

Due to the inherent downside associated with firms that exhibit EO in terms of risk-taking and allocation of resources, it is important not just to understand the nature of the effect (positive or negative, as gauged from the results of the null hypothesis of zero effect) on firm performance but also to delve into the magnitude (size) of the effect (Rauch, Wiklund, Lumpkin & Frieze, 2009). The early research on EO-firm performance primarily focused on the nature of the effect and not on the magnitude of the effect. EO entails risk-taking action for a firm and only when the effect size was substantially large could firms be motivated to look beyond the downside associated with resource allocation to the benefits from having an EO posture (Wiklund, 2006).

There are six hypotheses in my dissertation. Hypothesis 1, 2 and 3 focus on the influence of EO, HPWS and ISR, respectively, on firm performance. Hypothesis 4 and 5 focus on the influence of ISR and HPWS, respectively, on the EO-firm performance relationship. Hypothesis 6 focuses on the influence of EO, HPWS and ISR on firm performance.

Hypothesis 1: The Influence of EO on Firm Performance

Prior research has indicated that EO is important for firm growth and survival (Lumpkin and Dess, 2001; Wiklund & Shepherd, 2005; Zahra & Garvis, 2000). In fact

EO has also been regarded as an organizational resource (Hunt and Morgan, 1996) and can be a source of differentiation and competitive positioning (Hunt and Morgan, 1996; Shane & Venkataraman, 2000). Researchers have also mentioned that firms that have high levels of EO may be better positioned than low-level-EO-firms in discovering and exploiting market opportunities (Lee, Lee, & Pennings, 2001; Wiklund & Shepherd, 2003). Firms with high EO are willing to innovate, take risks and be more proactive than their competitors. Due to EO these firms are able to beat their competitors and exploit opportunities (Miller, 1983; Naman & Slevin, 1993; Covin & Slevin, 1989; Knight, 1997; Zahra 1993).

Prior empirical research has validated that each of the three dimensions can have a positive influence on the performance of a firm. Innovative companies are likely to generate superior financial performance (Brown & Eisenhardt, 1998). Proactive firms enjoy first-mover advantages and skim markets much before competition (Zahra and Covin, 1995). Risk taking has been shown to be profitable in the long run for firms though it may entail significant variation in performance in the short run (March, 1991; McGrath, 2001). EO has been projected as a uni-dimensional construct. Firms with EO are assumed to exhibit all three characteristics in tandem. The need to continuously seek out new opportunities in the knowledge society (as compared to the industrial society) has meant that EO can have a performance enhancing influence on firms.

The influence of EO on firm performance is based on viewing EO as a source of competitive advantage within the framework of the resource-based theory of the firm. The resource-based theory of the firm is based on the rationale that firms that control valuable-rare-inimitable-not easily substitutable resources and are organized to exploit

these resources can achieve superior performance and competitive advantage (Barney, 1991; Newbert, 2007).

Prior EO research has suggested that firms with greater EO are able to utilize their knowledge-based resources more effectively (Wiklund & Shepherd, 2003). EO enables firms to structure and bundle their resource portfolios in ways that generate a sustainable competitive advantage for them (Ireland, Hitt & Simon, 2003). In another study, entrepreneurial strategy enabled a firm to modify and coordinate its marketing knowledge more fully (Bhujan, Menguc & Bell, 2005). In terms of exploration and exploitation, firms with high EO are more likely to engage in activities of exploration than exploitation (Wiklund & Shepherd, 2011).

Because performance can be improved by a competitive advantage and because EO has been positioned in research as generating a competitive advantage for a firm, it can therefore be argued that EO can enable firms to compete successfully and realize superior performance. This leads to the first hypothesis.

Hypothesis 1: EO has a positive influence on firm performance

Hypothesis 2: The Influence of HPWS on Firm Performance

The relationship between HPWS and organizational performance was outlined to be of prime importance in strategic HRM research (Becker & Huselid, 1998; Becker & Huselid, 1998). HPWS rose in prominence in the resource-based theory of the firm because it represented the resource exploitation role that was advocated by strategy scholars as a response to the undue focus on resource possession (Barney, 1986; Newbert, 2007).

Prior research has claimed that implementing HPWS leads to improved employee level outcomes and financial performance (Combs, Liu, Hall & Ketchen, 2006; Appelbaum, Bailey, Berg & Kalleberg, 2000). There is however a gulf between research and practice. Firms have been relatively slow to adopt HPWS given the obvious benefits that have been emphasized in the literature (Kauhanen, 2009; Way, 2002). This is more pronounced in small and medium sized firms (Mayson & Barrett, 2006). This hypothesis builds on this tension in the field with respect to the role of HPWS in engendering firm performance.

It is commonly misunderstood that the HPWS concept is applicable only to large and established firms that have HR functions and departments. However, HPWS in the context of my dissertation is applicable to all firms whether small or large. Small firms may not have formal HR departments or HPWS but still possess an HR context that is informal and tacit. Hence the term HPWS is applicable to all firms, small or large that may or not have well-structured HPWS. It can also be argued that the reluctance or inability of firms to adopt these HPWS practices validates the theoretical argument of the resource-based theory of the firm that HPWS may be costly to copy and imitate by other firms. Hence HPWS may provide a source of competitive advantage to a firm by providing a unique organizing context to orchestrate the various tangible and intangible resources of a firm to create and deliver products and services that are competitive. HPWS represents a capability of a firm. It is an investment made by a firm in organizing itself in a manner to reap the benefits of economic performance (Wright, Dunford & Snell, 2006).

The hypothesis also builds on the human resource literature. It is based on the

premise that firms do not perform by themselves but leverage HR practices and systems to generate a response from their employees. These actions lead to the achievement of HR, operational and financial performance (Jackson, Schuler, & Rivero, 1989; Becker & Huselid, 1998). The importance of HR practices for larger firms was highlighted in two meta-analyses on HR-firm performance research (Subramony, 2009; Combs, Liu, Hall & Ketchen, 2006). In a meta-analysis of 56 research studies comprising 18,521 firms HR practices were positively related with SME firm performance and the correlation was 0.228 (Rauch & Hatak, 2016). This indicates that there is still a large amount of variance in the relationship that is yet to be explained.

For this dissertation, the focus is on HPWS, which is a system comprised of bundles of HR practices and the role that this organizational resource has on firm performance. It does not take a passive view of the human capital within a firm but rather focuses on the role of HPWS in leveraging resources in a more active manner in predicting firm performance. The importance of HPWS has theoretical underpinnings in research on organizational routines (Nelson & Winter, 1982). Dynamic capabilities are idiosyncratic capabilities that exploit the resources that otherwise have no real value (Teece, Pisano & Shuen, 1997). Dynamic capabilities are defined as organizational and strategic routines that are integral to creating resource configurations (Eisenhardt & Martin, 2000).

There are conflicting views about the role of HPWS resulting in firm performance. One set of theorists argue that it is more applicable for a firm that has limited tangible assets as HPWS may enable it to create value (Rauch, Frese & Utsch, 2005; Hayton, 2003; Chandler & McEvoy, 2000) whereas another set of theorists argue

that HPWS is not relevant as it constraints decision making, consumes precious resources and leads to increasing levels of organizational complexity (Ciaverella, 2003; Patel & Cardon, 2010). HPWS research is clearly divided.

Extending the resource-based theory of the firm, I argue that HPWS arises from socially complex, path dependent and causally ambiguous conditions that are unique to a firm and may thus be valuable, rare, and costly to imitate and substitute. HPWS is a distinctive competence or capability that can enable a firm to combine and reconfigure knowledge resources and assets in ways to deliver competitive advantage.

The influence of separate bundles of HR practices on organizational outcome has also been well documented (Subramony, 2009). Researchers have focused on three separate bundles of HR practices – skill enhancing, motivation enhancing and empowerment enhancing practices. *Skill enhancing HR practices* increase the capabilities of firms and increase the knowledge and skills of employees to deliver results (Schmitt, 2014; Subramony, 2009). *Motivation enhancing HR practices* direct employee action and align it with the goals of the organization and lead to the achievement of its objectives (Zhou, Hong & Liu, 2013; Jiang, Lepak, Han, Hong, Kim & Winkler, 2012; Schmelter, Mauer, Borsh & Brettel, 2010). *Empowerment enhancing HR practices* lead to discretionary actions related to beneficial performance as in creative problem solving and development of processes (Alge, Ballinger, Tangirala & Oakley, 2006; Kirkman, Rosen, Tesluk & Gibson, 2004; Jiang, Lepak, Han, Hong, Kim & Winkler, 2012). In a meta-analysis, all these bundles of practices were positively related to firm performance (Rauch and Hatak, 2016). Thus a synergistic effect of a bundle of HR practices reflected in the HPWS is expected to have a positive influence on firm performance. This leads us

to the hypothesis.

Hypothesis 2: HPWS has a positive influence on firm performance

Hypothesis 3: The Influence of ISR on Firm Performance

The role and importance of intangible strategic resources has been well documented in the resource-based theory of the firm (Anderson & Eshima, 2013; Newbert, 2007; Barney, 2001). One major distinguishing factor between tangible and intangible strategic resources is in their flexibility (Chatterjee & Wernefelt, 1991). Tangible strategic resources can be modified and imitated but intangible strategic resources may be costly to imitate and change (Carmeli, 2001). The rise of the service sector served to highlight the role of knowledge and information and the importance of intangible strategic resources. Intangible strategic resources due to their tacit and inimitable nature are deemed to possess greater managerial importance (Godfrey & Hill, 1995). Intangible strategic resources are therefore in a better position to provide a source of competitive advantage to a firm.

ISR are more valuable to a firm as they are inherently more costly to imitate and substitute and have elements of social complexity, path-dependency and casual ambiguity associated with them (Barney, 2001). In the resource-based theory of the firm the focus on internal resources was given central importance as strategy was focused on generating *Ricardian rents* - the returns that accrued to a firm over and above the real cost of the resources, rather than on monopoly rents – the returns that accrued due to market power (Grant, 1991). Tangible resources are primarily financial and physical assets whereas ISR comprises intellectual, organizational and reputational assets (Hall, 1992; Barney, 1991,

Roberts & Dowling, 2002) and skills that include organizational capabilities (Hall, 1992, Amit & Schoemaker, 1993; Day, 1994).

Prior research has been consistent on what constitutes tangible resources, however it offers relatively little guidance on the classification of intangible resources. Some scholars have suggested a variety of typologies to classify resources in a firm.

In a seminal paper Hall (1992) offered an approach to classify intangible resources and that has been accepted in management research (Galbreath, 2005; Anderson & Eshima, 2013). Hall (1992, 1993) suggested that intangible resources are either assets or skills. *Assets* were classified as things that are owned by a firm and had distinctive property rights associated with them. Assets include *intellectual property rights* consisting of patents, trade secrets, copyright, designs and trademarks. They are termed as assets that are legally defendable and have a characteristic of belonging to a firm. Contracts, rights, licenses, agreements, leases, information technology (software and databases) on the other hand are also termed as assets though they are not termed as intellectual property. Brand equity of the company and its products and services are also classified as assets though they do not have property rights associated with them like a patent or trademark would have. This is because a firm can take recourse to legal defamation and protect its image.

Intangible resources that are classified as skills or competencies or capabilities are the know how of employees, distributors and suppliers, the culture of the organization and the networks of internal and external personal relationships. Hall (1992) definition of *intangible strategic resource* as encompassing assets and capabilities has been utilized in

this dissertation. This definition reflects the thinking in the organizational capability stream of strategy research (Snow and Hambrick, 1980).

Know-how of employees, distributors, suppliers, advisers and organizational culture are termed as *skills* by Hall (1992) and along with internal and external networks of personal relationships can also be viewed as a form of intangible organizational capability. The knowhow, culture and networks provide a firm with the ability to integrate functional capabilities within a firm, coordinate with suppliers and distributors and collectively learn from customer experiences (Hamel & Prahalad, 1990; Grant, 1991). The more the know-how, networks and culture are embedded in a firm the lesser is the mobility of individual human capital skills. This is because networks, knowhow and culture are viewed as organizational level asset rather than as an individual employee asset.

The relevance of ISR in providing a competitive advantage to a firm leads us to the hypothesis predicting that firms with a higher endowment of ISR will be at a competitive advantage compared to a firm with a lower endowment of ISR. This will reflect in superior firm performance for firms with greater levels of ISR. This is consistent with the thinking of the resource-based theory of the firm.

Hypothesis 3: ISR has a positive influence on performance

Hypothesis 4: The Influence of ISR on EO-Firm Performance

The resource-based theory of the firm makes the argument for studying firms in terms of their internal resources rather than in terms of external product markets (Barney, 1991; Wernerfelt, 1984). Scholars have argued that firms possess heterogeneous resource

bases and these strategic resources provide a source of competitive differentiation and advantage to firms (Prahalad and Hamel, 1990; Amit & Schoemaker, 1993). The resource-based theory of the firm builds on the concept of Ricardian rents and argues that these economic rents accrue consistently to those firms that possess resources that are limited in supply (Petaraf, 1993). Resources have also been termed as the very essence of a firm's competitive advantage as they are central to how they are exploited by a firm for achieving superior performance (Aaker, 1989; Collis & Montgomery, 1998). The resource-based theory of the firm achieved primacy amongst strategy management theories as it converged the two concepts of resource endowment and resource characteristics that enabled resource asymmetries to persist in the industry for certain firms (Fahy, 2002). Firm performance is thus dependent on the resources that each firm possesses and can exploit (Barney, 1995; Grant, 1991; Reed & DeFillippi, 1990).

The resource-based theory of the firm does not give similar importance to all firm-level resources, tangible assets are more fixed and more transparent as compared to intangible resources and despite possessing some characteristic of imperfect mobility, these tangible resources are relatively easy to duplicate (Grant, 1991; Barney, 1991). Intangible resources are costly to duplicate. They serve as examples of resource stocks that accumulate over long periods of time and are costly to imitate or substitute. Intangible resources are characterized by time compression diseconomies, inter-connectedness and causal ambiguity (Dierickx & Cool, 1989). Intangible resources are not limited to patents, copyrights, registered designs, and trademarks but also include the know-how of employees, distributors, customers and suppliers and networks of internal and external relationships, corporate and product reputation and the culture of a firm

(Hall, 1992).

The importance of intangible strategic resources can be gauged from the comparative valuation of publicly listed companies in terms of market valuation and balance sheet valuations. The value of intangible resources in the US was already \$3.6 trillion in early 2000s and had a 10-20% share in US output (Corrado, Sichel & Hulten, 2009). Intangible assets account for one-third of all corporate assets for US firms (Nakamura, 2003). When R&D expenditure and intangible resources are taken into account, the total assets for US firms increases by 57% (Hulten & Hao, 2008). The contribution of intangible resources to a firm's market value was shown to be significant (Hall, Jaffe & Trajtenberg, 2005; Sandner & Block, 2011).

The relative importance of intangible resources as compared to tangible resources has been well documented but has not seen much empirical analysis (Newbert, 2007; Anderson & Eshima, 2013). EO is a strategic posture and action that consumes firm resources (Covin & Slevin, 1991) and it can be argued based on the framework of the resource-based theory of the firm that the intangible resource constraints in a firm in conjunction with the strategic posture of a firm may influence the entrepreneurial actions of a firm that lead to superior firm performance and competitive advantage.

Intangible strategic resources constitute an important boundary condition of the influence of EO on firm performance. Some scholars have suggested that intangible resources are more important for small and medium enterprises (Thornhill & Amit, 2003). This is based on the rationale that smaller firms may face more tangible resource constraints. This dissertation argues that the absolute value of intangible resources is not important but the intangible resource base that it possesses as compared to its industry

rivals is more important. A small firm may have a disproportionately high ratio of intangible resources to tangible resources but that in itself may not generate competitive advantage for a firm unless the intangible resource base is valuable compared to its rivals. Similarly, a large firm may have a disproportionately low ratio of intangible resources to tangible resources but that may not necessarily mean that a firm has realized a competitive disadvantage.

It is not in the absolute ratio of intangible to tangible resources but in the understanding of the quality (importance and relevancy) and quantity (resource availability) of those intangible resources that a firm will achieve superior organizational performance. Intangible resources become intangible strategic resources when they provide an advantage for a firm in terms of quantity and quality of the intangible resources as compared to its competitors (George, 2005, Nohria & Gulati, 1996, Wiklund & Shepherd, 2005).

The firms that possess high levels of intangible strategic resources are expected to demonstrate greater entrepreneurial action (Nohria & Gulati, 1996). Given a firm's entrepreneurial posture reflected in the EO, a firm that has a high level of intangible strategic resources will be able to pursue more entrepreneurial opportunities and initiatives and this is likely to result in improved firm performance.

It is the intangible strategic resource base that provides the feedstock for entrepreneurial postures to be exhibited and lead to beneficial firm level performance. EO firms are likely to utilize a significant quantum of relevant intangible strategic resources as they act in an entrepreneurial manner (reflecting risk taking, innovativeness and proactiveness) to pursue opportunities.

Thus, the pursuit of opportunities with an EO posture is likely to be affected by the intangible strategic resource profile of a firm in comparison to its competitors. The EO-firm performance relationship is predicted to be stronger for those firms that have higher levels of intangible strategic resources as compared to its rivals than for those firms that have lower levels of intangible strategic resources.

Hypothesis 4: EO is more positively related to firm performance among firms that possess higher levels of intangible strategic resources than among firms that possess lower levels of intangible strategic resources

Hypothesis 5: The Influence of HPWS on EO-Firm Performance

The importance of the organization of the firm in influencing performance from entrepreneurial strategies is a relatively recent phenomenon in EO research (Luo, Zhou & Liu, 2005; Markman & Gartner, 2002). In this dissertation, HPWS is taken as a proxy for internal organization of a firm or the capability of a firm in influencing the EO-firm performance relationship.

The research interest in HPWS is attributed to the synergistic influence it has on firm performance as compared to individual HR practices. Prior research has emphasized that these practices (also termed as high commitment human resource practices and high performance work practices) provide a firm with a source of sustained competitive advantage (Delery, 1998; Huselid, 1995). HPWS are most beneficial to a firm when the various sub-practices within it are horizontally aligned with each other and are vertically aligned with a firm's strategic intent. Empirical research has validated the positive influence of HPWS on performance outcomes such as productivity and turnover (Batt,

2002; Guthrie, 2001). In this dissertation, I use the resource-based theory of the firm to develop the theoretical rationale for the influence of HPWS on firm performance (Barney & Wright, 1998). Other theoretical frameworks have also been presented to explain the influence of these practices on firm performance - social exchange theory (Takeuchi, Lepak, Wang & Takeuchi, 2007) and the contingent frameworks perspective (Boselie, Dietz & Boon, 2005).

Though the popular view among researchers is that there is a positive effect of HPWS on organizational performance, there is a significant amount of research that suggests that HPWS may have negative consequences at the individual level for employees. For example, employees may face burnout from these practices (Kroon, van de Voorde & van Veldhoven, 2009). High level of adoption of HPWS may lead to a decrease in the feeling of belongingness, empowerment, task involvement and job satisfaction among individual employees and this may influence their commitment to a firm and their organization citizenship actions (Godard, 2001; 2004).

In a study in which HR practices were used as a means of social exchange in a firm, negative exchanges did not lead to a reduction in discretionary action among UK local government workers (Gould-Williams, 2007). HPWS were found to be wanting in terms of their influence on performance due to job strain that impacted individual employees (Ramsay, Scholarios & Harley, 2000). The negative effect of HPWS in employee environments characterized by a low degree of job control led to anxiety and role overload situations that highlighted the reality in firms as opposed to rhetoric in HPWS theory (Jensen, Patel & Messersmith, 2013).

HPWS may also influence individual employees negatively by creating work

stress, occupational strain and demotivation (Gould-Williams, 2007, 2003; Arthur, 1994; Jensen, Patel & Messersmith, 2013). This challenges the notion that HPWS has a positive influence on employees. The resource-based theory of the firm emphasizes that though firm organization may be a source of competitive advantage, at high levels of HPWS the strength of the EO-firm performance relationship may be reduced. The resource-based theory of the firm is consistent with this thinking about the deleterious effects of high levels of HPWS.

There is a distinct possibility that at very high levels, HPWS loses its unique distinctive competence for a firm as the hidden costs of this negative effect on individual employee performance begin to increase (Alvesson, 2009; Godard, 2004). With an increase in HPWS within a firm, there is a heightened focus on firm level performance and this leads to increased performance demands from individual employees and gives rise to a perception that more effort is required at the workplace (Kroon, van de Voorde & van Veldhoven, 2009). The more entrenched HPWS is within a firm the stronger is the nature of the psychological contract that is developed with the individual employee (Guest, 1998; Rousseau & Greller, 1994).

With high levels of HPWS every practice and component is well documented and this migrates HR from soft-HR to hard-HR where performance is the only thing that matters. In such an environment, the firm attempts to influence goal and organizational performance through the HPWS and this leads to a perception that a firm is controlling the employees and trying to get all employees to comply with the demands and needs of the job. Job compliance is thus no longer discretionary but rather is seen as a requirement and demand by a firm and this leads to anxiety and role overload and work strain (Evans

& Davis, 2005; Jensen, Patel & Messersmith, 2013).

Using the resource-based theory of the firm framework at low levels of HPWS it is seen as an ideal firm organization context that may strengthen the EO-firm performance relationship but with high levels of HPWS it is no longer seen as an ideal firm organization context and thus the effect of proactiveness, risk-taking and innovativeness that are the hallmarks of the strategic posturing of EO are decreased. This leads us to the hypothesis.

Hypothesis 5: EO is more negatively related to firm performance among firms that possess higher levels of HPWS than among firms that possess lower levels of HPWS

Hypothesis 6: The Influence of EO, HPWS and ISR on Firm Performance

In this hypothesis I study the three-variable interaction of EO, HPWS and ISR on firm performance. The study of three-variable interactions is also termed as a *configurational model* and the study of three-variable interaction effect is also termed the *configurational effect*. The need to study three-variable interactions is based on the results that indicate that the universal effect of EO on firm performance are mixed - the significance and size of the EO- performance effect are based on the exogenous or endogenous phenomena (Anderson & Eshima, 2013). Numerous studies have used the configurational model to consider the magnitude and significance of the effect of varying levels of the dependent variables on firm performance in EO research (Anderson & Eshima, 2013; Stam & Elfring, 2008; Wiklund & Shepherd, 2005). The ability of a firm to capture value from entrepreneurial postures has been shown to vary in different

organizational contexts (Sorensen & Stuart, 2000).

Configurational models in management science are based on the argument that different levels of firm performance are generated by different configurations of theoretically relevant variables representing resources, environments, processes and structures (Ketchen, Thomas & Snow, 1993; Meyer, Tsui & Hinings, 1993). In EO research configurational models provide more granular information than that available from a study of direct and contextual relationships (Lumpkin and Dess, 1996; Wiklund & Shepherd, 2005).

My configurational model hypothesizes that in a joint consideration of EO, ISR and HPWS, firms with high HPWS will not be fruitful in engaging in EO postures despite possessing high stocks of ISR. This is attributed to the core rigidities that set in with the establishment of HPWS in a firm and the conflict between various elements of the HPWS that require tradeoffs undermining firm performance. The consumption of precious internal resources of time, diversion of management attention in bridging functional divides and conflicts within a firm and the reduced speed of decision-making due to the typical bureaucracy generated by HPWS prevent the capture of value from entrepreneurial actions reflected by a firm's EO. The rationale that resource possession is a necessary but not a complete condition for firm performance is outlined in resource exploitation research. Resource possession in conjunction with resource exploitation enables EO postures to generate beneficial organizational performance.

Firms that have more entrenched HPWS may not be able to respond quickly or adapt speedily to exploit entrepreneurial opportunities. The resource-based theory of the firm would propose that higher levels of HPWS would result in superior firm

performance, however in an interaction with EO and ISR, firms with lower levels of HPWS may be in a better position to exploit entrepreneurial opportunities for enhanced firm performance. This is a departure from the current line of thinking in entrepreneurship and strategic management and this dissertation argues that too much of a good thing like HPWS may not be beneficial in exploiting ISR and providing the right avenue for entrepreneurial action. A firm with lower levels of HPWS may in a better position to exploit ISR along with an entrepreneurial posture for firm performance. The perspective that HPWS is an ideal organizing capability for resource exploitation is being put to the test in this dissertation.

As the levels of HPWS increase, more and more information about the nature of the policies and practices of the human resources are available to competitors. These practices can be copied and imitated to a large extent by rivals, but they may not provide a firm with the desired organizing context to leverage ISR. HPWS lose their rarity in the process. When all the elements of value-rarity-inimitability-substitutability-organization are not present, the resource-based theory of the firm states that firms may have some form of temporary competitive advantage, as they may not be able to sustain their competitive advantage. Extending this logic of the resource-based theory of the firm, firms that possess high levels of ISR may still be able to achieve some form of enhanced firm performance with high levels of HPWS but that would be less pronounced than those firms that have high levels of ISR and low levels of HPWS. Thus, I argue in this hypothesis that performance in firms with rich stocks of ISR will be softened and influenced by the high levels of HPWS that do not provide the ideal organizing capability or context for resource exploitation in conjunction with a firms EO stance. Also, firms

that possess low stocks of ISR and low levels of HPWS may still be in a position to reap some firm performance gains as the EO posture has a distinct effect on performance. This is attributed to the increased adaptability and flexibility that a firm possesses due to low levels of HPWS and the benefits of an EO posture that may influence firm performance. However even in these cases the performance will not be as strong as those firms that have rich stocks of ISR and low levels of HPWS.

Within the gambit of the configurational model presented, my dissertation predicts that the EO-firm performance relationship will be strongest in firms that have rich stocks of ISR and low levels of HPWS and will be followed by firms that possess rich stocks of ISR and high levels of HPWS. The EO-firm performance relationship will be relatively less strong in firms that have low stocks of ISR and high levels of HPWS and will be weakest in firms that have low stocks of ISR and low levels of HPWS. Thus ISR (resource) and HPWS (capability) are required to bring out the best in the EO-firm performance relationship. It leads to the configurational hypothesis.

Hypothesis 6: EO, HPWS and ISR interact in a manner on firm performance such that the relationship between EO and firm performance is strongest among firms that possess high levels of ISR and low levels of HPWS 6(a). The relationship is next strongest among firms that possess high levels of ISR and high levels of HPWS 6 (b). The relationship is next strongest among firms that possess low levels of ISR and high levels of HPWS 6 (c). The relationship is weakest among firms with low levels of ISR and low levels of HPWS 6 (d).

CHAPTER 3

RESEARCH DESIGN AND METHODS

Unit of Analysis

The primary constructs of interest in my dissertation are entrepreneurial orientation (EO), high performing work systems (HPWS), intangible strategic resources (ISR) and firm performance (FP). All these constructs along with the controls are measured at the firm level. The resource-based theory of the firm is a firm level theory and scholars have suggested that the best way of testing resource-based theory of the firm is to get into a firm and study a firm at the level of the resource and the context (Rouse & Daellenbach, 1999, 2002). However, even if firms would permit this internal assessment of resources and context by the researcher, the study would lead to primary data collected from a very small sample and it would likely be an expensive and time consuming process.

Prior research in the area of EO has used either publicly available sources of data or information that has been collected at a firm level from CEO's, founders or management team members (Covin, Green & Slevin, 2006; Anderson & Eshima, 2013; Wiklund & Shepherd, 2005). Consistent with that practice, firm level responses are collected from management team members for this dissertation.

Data Collection

The sampling design for my dissertation is non-probability stratified sampling with a reliance on available data. This is a trend that has been seen in published papers that have focused on determinants of firm performance (Short, Ketchen & Palmer, 2002). The services of a leading US headquartered and located market research agency were utilized to collect the data. A business panel representative of the universe of firms was used for the survey. The panel consisted of unique firms and all the firms were headquartered and located in the USA and the respondents were employees who were based in the USA. The selection criteria for the respondents in the business panel required them to be (1) employed full time (2) in the middle, senior or top management team (3) employed at their current firm for a minimum period of 5 years and (4) at least 35 years of age. The survey was administered online.

With the intent to generate quality responses and ensure that respondents were attentive to the survey questions a number of checks were built into the survey. They included 4 attention checks in which respondents were explicitly asked to select only one specific option from the various options provided. There was a 9-minute duration screener for the overall survey and 4 survey questions required a forced minimum time spent requirement (based on the pilot conducted prior to the release of the research survey). There were also 3 questions related to the characteristics of the respondent's firm that were repeated to ensure consistency of response and 1 CAPTCHA question ensured that only human respondents were taking the online survey.

The online survey was distributed to 1451 unique firm employees from the representative business panel of the market research agency. The responses were received

within 98 hours. After screening the data using the checks and criteria built into the survey, 263 responses were retained for the analysis (18.2% selection rate).

Sample Size

Apart from the dependent variable there are 8 variables in my dissertation (3 independent variables and 5 control variables). With respect to the sample size, a simple rule of thumb proposed for calculating the required number of cases is given by the equation $N \geq 50 + 8m$ where m denotes the total number of independent variables in the study (Green, 1991). Some researchers advocate a larger number of cases and a ratio of 8:1 has been suggested (Tabachnick & Fidell, 2013). Using these criteria, the range of sample size required for my dissertation would range from 114 cases ($N \geq 50 + 8*(8)$) to 320 cases ($40*(8)$).

In my dissertation, the variables of interest (1) are reliable constructs and well accepted in entrepreneurship and management research (2) have a strong theoretical basis (3) are not expected to have significant measurement error and the dependent variable is not highly skewed, thereby justifying a smaller sample size (Tabachnick & Fidell, 2013).

Further, the sample sizes of EO studies included in the two EO meta-analyses by Rauch and colleagues (2009) and Saeed and colleagues (2014) range from 8 (Kemelgor, 2002) to 1671 (Kreiser, Marino & Weaver, 2002) and 25 (Fairoz, Hirobumi, & Tanaka, 2010) to 3,562 (Chow, 2006) respectively. The average number of cases for the 51 EO-firm performance studies in the Rauch and colleagues (2009) meta-analysis was 280. The average number of cases for the 177 EO-firm performance studies in the Saeed and colleagues (2014) meta-analysis was 266. The sample size of 263 cases is adequate for

the purpose of my dissertation.

Though EO meta-analysis studies have indicated that self-reported data is not a threat to the validity of the EO-firm performance relationship (Rauch, Wiklund, Lumpkin & Friese, 2009), recommended practices were followed to control for common method bias by stringently adhering to a pre-specified screening criteria, providing respondents anonymity, following a funneling procedure to move from general to specific questions, eliminating item ambiguity and reducing respondent apprehension by emphasizing that there are no right or wrong answers (Peterson, 2000; Podsakoff, MacKenzie, Lee & Podsakoff, 2003). Researchers have also noted that when the focus is on interactions, as is the case in my dissertation, common method variance if present is unlikely to lead to statistical interactions (Aitken & West, 1991).

Operationalization of Variables

Dependent Variable - Firm Performance (FP)

Prior research has indicated that firms have different performance goals and objectives. Performance is multi-dimensional in nature (Cameron, 1978; Wiklund and Shepherd, 2005). Some firms may choose short-term goals over long-term goals and vice versa (Zahra, 1991). For example, a firm may trade short-term profitability over long-term market share. Due to the inherent difficulty in evaluating all firms on the same performance metric or yardstick, it is not uncommon for researchers in the field of strategic management and entrepreneurship to use a variety of subjective measures of performance. The meta-analysis conducted by Rauch and colleagues (2009) classified studies on the basis of perceived and archival performance data and found that both the correlations between EO and perceived performance and EO and archival financial

performance were strongly positive. This indicates that EO-FP relationship is robust to differences in the measurement of performance. It can be inferred that self-reported performance data is not a threat to the validity of the EO-FP relationship.

FP in this dissertation is measured with an instrument developed by Gupta & Govindarajan, 1984 and validated in prior entrepreneurship research (Tang, Kreiser, Marino, & Weaver, 2010; Kollmann & Stockmann, 2014). Secondary performance data has been found to have less distortion from common-method and informant-bias (Stam & Elfring, 2008). A key feature of this instrument is that respondents select the performance criteria most relevant for them. The survey items of FP are provided in Annexure A. Two 5-point Likert scales (measuring degree of importance and degree of satisfaction) are used in operationalizing this variable. The ten performance criteria items are sales, sales growth, market share, growth in market share, net profit, cash flow, return on investment, customer satisfaction, competitive capacity and self-financed growth. The first 10-item scale (from 1, “not important” to 5, “extremely important”) is used to measure the degree of importance attached to each of the ten indicators of FP. This provides the weightage for each of the ten performance indicators. The second 10-item scale (from 1, “not at all satisfied” to 5, “extremely satisfied”) is used to gather information on the degree of satisfaction on each of the ten performance indicators enumerated in the first 10-item scale. The Likert scale score on the second scale (degree of satisfaction) for each of the ten performance indicators is then multiplied with the corresponding performance weightage from the first scale (degree of importance) to arrive at an overall weighted FP score for the particular indicator. The weighted performance score for all the ten indicators are summed to arrive at the overall weighted FP score ($M=3.460$, $SD=0.811$).

Higher scores indicate higher levels of FP.

Independent Variable - Entrepreneurial Orientation (EO)

In measuring EO, some researchers conceptualize EO as a uni-dimensional construct while other researchers conceptualize it as a multi-dimensional construct (Rauch, Wiklund, Lumpkin & Frese, 2009). Miller/Slevin & Covin, 1989 measure EO as a one-dimensional construct that has three sub-components, namely, innovativeness, risk taking, and proactiveness. Each of these three sub-components has three items. This is in contrast to the EO conceptualization by Lumpkin and Dess (1996) in which EO is positioned as a multi-dimensional construct. Lumpkin and Dess also expanded the three dimensions of EO by incorporating competitive aggressiveness and autonomy as two more dimensions of the EO construct. In terms of dimensionality, a large majority of EO research has been conducted with the original 9-item Miller/Slevin and Covin scale and findings validate the basis that all three dimensions of EO are a part of the same construct (Rauch, Wiklund, Lumpkin & Frese, 2009). The EO construct of Lumpkin and Dess is more “domain-focused” whereas the Miller/Slevin and Covin, 1989 construct of EO is more “phenomenon-focused”(Covin & Wales, 2012). In my dissertation the assumption is that changes in the overall EO construct are reflected in changes in all the nine indicators that form the construct. Hence for the purpose of my dissertation the nine-item reflective scale measuring the three sub-dimensions with a semantic differential scale is used. The survey items of the EO construct can be found in Annexure B. I assessed the suitability of the sample for factor analysis using four inputs, Kaiser-Meyer-Olkin’s measure of sampling adequacy, Bartlett’s test of sphericity, Field’s (2013) sampling

guideline and Maxwell's (2001) inter-item correlation recommendations. The Kaiser-Meyer-Olkin test value of 0.868 exceeded both, the threshold requirement of 0.50 and the ideal requirement of 0.70 (Kaiser, 1970, 1974) and indicated that the sample was adequate. The Bartlett's test of sphericity (1937) provides information on whether the correlation matrix is an identity matrix (the diagonal elements are 1 and off diagonal elements are 0). Bartlett's test was statistically significant (approximate chi square = 964.08, $p < 0.01$), indicating sufficient correlation between the items to proceed with the factor analysis. The probability associated with the Bartlett test was <0.001 , which is less than the level of significance. The inter-item correlations ranged from 0.275 to 0.658 and fulfilled the correlation range from about 0.3 to about 0.7 recommended by Maxwell (2001). This optimal range of correlations ensures that items that neither highly related nor highly unrelated. There is also broad agreement among researchers that sample size should be a function of number of items being analyzed. Field (2013) recommended that at least 10 times as many respondents as items. In my dissertation the sample size is 263, which is nearly 30 times the 9 items in the EO construct. The sample size of 263 for 9 items meant a ratio of nearly 30 per item. After fulfilling these requirements I decided to proceed with confirmatory factor analysis. The confirmatory factor analysis was conducted using principal components analysis using varimax rotation to evaluate factor loadings, internal consistency, composite reliability and uni-dimensionality of the construct. All the 9 items loaded on one factor and all had values in the range of 0.555 to 0.795 (average loading = 0.700) and an analysis of the scree plot also yielded one factor indicating that the nine items were measuring one-dimensional construct. The inter-item correlations of EO and the factor structure test of EO are presented in Table 1 and 2.

Table 1: Inter-Item Correlations of EO

Items	EO_INNO1	EO_INNO2	EO_INNO3	EO_PRO1	EO_PRO2	EO_PRO3	EO_RT1	EO_RT2	EO_RT3
EO_INNO1	1								
EO_INNO2	.275**	1							
EO_INNO3	.390**	.586**	1						
EO_PRO1	.290**	.369**	.305**	1					
EO_PRO2	.344**	.409**	.417**	.658**	1				
EO_PRO3	.312**	.326**	.370**	.376**	.442**	1			
EO_RT1	.340**	.364**	.484**	.421**	.470**	.494**	1		
EO_RT2	.317**	.371**	.416**	.379**	.402**	.551**	.578**	1	
EO_RT3	.389**	.411**	.368**	.505**	.555**	.551**	.514**	.648**	1

** Correlation is significant at the 0.01 level (2-tailed)

Table 2: Factor Structure Test of EO

Items	Factor 1
EO_INNO1	0.555
EO_INNO2	0.641
EO_INNO3	0.677
EO_PRO1	0.683
EO_PRO2	0.750
EO_PRO3	0.706
EO_RT1	0.746
EO_RT2	0.750
EO_RT3	0.795
Cronbach Alpha	0.867
Eigen Value	4.456
Percent Variance Explained	49.512

Extraction Method: Principal Component Analysis.

The high value of the loadings of the 9 items on 1 factor suggests that though the items focus on three aspects of EO namely, innovation, proactiveness and risk taking, each of them are related to each other and form one uni-dimensional construct. The coefficient of reliability, the Cronbach alpha was 0.867. There is some divergence among scholars on the acceptable limit for the Cronbach alpha, ranging from 0.60 (Nunnally, 1967) to 0.70 (Hair, Anderson, Tatham, & Black, 1998). The coefficient of reliability for EO met the standards. The Kaiser (1960) criterion was used to retain only those Eigen values that were greater than 1. The extracted factor had an Eigen value of 4.456 and accounted for a total variance of 49.51%. The scree plot also indicated a one-factor solution.

The individual scores on all the nine-items are summed and the composite mean score is used for the EO construct (Runyan, Dong & Swinney, 2012). A high score indicates that a firm is more entrepreneurially oriented and is more likely to reflect firm level risk taking, proactive and innovative behavior. Survey participants were directed to respond on the basis of their reflections over the past three years on each of the statements presented to them in the EO construct. This was required as EO is a predictor variable and preceded FP, the dependent variable. Consistent with prior research the mean scores on the items were used as an index of the firm's overall EO score ($M=3.801$, $SD=1.180$).

Independent Variable - Intangible Strategic Resources (ISR)

Intangible resources that provide a degree of competitive advantage to the firm in its chosen industry are termed as Intangible Strategic Resources (ISR). The measurement

instrument is based on the classification of intangible resources outlined by Hall (1992) and the VRIO framework advocated by Barney (1991). The framework suggested by Hall (1992) has been modified and used in prior research on intangible resources advantage (Anderson and Eshima, 2013). For the purpose of this dissertation the comprehensive definition of intangible resource includes assets and skills (Hall, 1992). Intangible assets have property rights and have a greater degree of direct ownership and belongingness associated with them. Examples include copyrights, patents, trademarks, designs, trade secrets, databases, rights, licenses, agreements, leases and contracts. Brand equity provides an intangible resource of reputation to a firm and is a strategic asset though it does not have property rights associated with it (Hall, 1992; Itami, 1987; Anderson & Eshima, 2013). Intangible skills include the internal and external networks of relationships, know-how of employees, suppliers and distributors and culture as reflected in the shared beliefs, assumptions, values, habit and customs in the firm. Intangible assets are relatively independent of people whereas intangible skills are more people dependent. Intangible skills unlike intangible assets do not have a high degree of belongingness and property rights associated with them and as in the case of know-how or networks can in fact walk away from the firm.

While operationalizing this variable it was important to combine two dimensions at the firm level, the strategic relevance of certain types of intangible resources in the operating industry of the firm and the competitive advantage that the firm realized by possessing any, some or all of these strategically relevant intangible resources.

Similar to the approach taken for measurement of FP, two 5-point Likert scales are used. The first 5-point Likert scale ranging from “not relevant” (=1), “moderately

relevant” (=3), to “extremely relevant” (=5)) is used to measure the degree of relevancy attached to each of the seven intangible strategic resources in achieving competitive advantage for a firm in an industry it competes in. The Annexure C has a list of the items of the ISR construct. The seven intangible strategic resources are (1) Copyrights, Patents, Trademarks, Designs and Trade Secrets (2) Contracts, Rights, Licenses, Agreements, and Leases (3) Networks - Internal and External Personal Relationships (4) Brand Equity - Corporate, Product and Service (5) Information Technology - Software and Databases (6) Know-How - Employees, Suppliers and Distributors and (7) Culture - Shared Beliefs, Assumptions, Values, Habits and Customs. This is based on Hall (1992) classification of intangible strategic resources. The second 5-point Likert scale (ranging from “significant disadvantage” (=1), “same as rivals” (=3), to “significant advantage” (=5)) is used to estimate the extent to which a firm enjoys a competitive advantage on each of these seven intangible strategic resources in comparison with its key rivals.

The Likert scale score on the second scale (competitive advantage enjoyed by the firm) for a particular ISR is then multiplied with the corresponding relevancy weightage from the first scale for that specific ISR to arrive at a weighted ISR score. Finally all the seven weighted ISR scores are summed to arrive at the final overall weighted ISR score that measures how a firm is positioned in terms of its ISR profile in comparison to its competitors.

High ISR scores indicate that a firm enjoys a competitive advantage on the strength of its ISR base and vice versa. The higher the ISR score the greater is the degree of competitive advantage conferred by ISR to the firm, in comparison with industry rivals. Participants are directed to respond on the basis of their observations over the past

three years on each of the statements presented to them in the survey. This is required as ISR is a predictor variable and precedes the dependent variable. The summed value of the product of the relevancy and competitive advantage items was used as an index of the firm's overall ISR score ($M=3.411$, $SD=0.687$).

Independent Variable - High-Performance Work Systems (HPWS)

There is now a broad consensus among research scholars that the synergistic influence of a bundle of HR practices (HPWS) is greater than individual HR practices (Combs, Liu, Hall & Ketchen, 2006; Jones, Kalmi & Kauhanen, 2010; Sels, De Winne, Maes, Delmotte, Faems & Forrier, 2006). However, there seems to be no clear agreement among scholars on the specific HR practices that should be included in the HPWS bundle (Boselie, Dietz, & Boon, 2005; Kroon, De Voorde & Timmers, 2013). A review of the literature indicates that the components of HPWS have varied from one research project to another (Boxall & Macky, 2009; Kroon, De Voorde & Timmers, 2013).

For the purpose of my dissertation the 27-item scale based on 8 domain areas that are deemed important for HPWS was used as a starting point (Sun, Aryee & Law, 2007; Bae & Lawler, 2000; Messersmith, Patel, Lepak & Gould-Williams, 2011). The 27-item of HPWS is enumerated in Annexure D. The 8 domain areas are participation, mobility, training, staffing, job description, appraisal, job security and incentives. Each of the 27 items was measured on a 7-point scale from 1, reflecting strong disagreement to 7, reflecting strong agreement.

The inconclusive debate among scholars on the HPWS measure led to the need to conduct exploratory factor analysis to identify the number and nature of the factors

underlying the HPWS measure. In order to identify the factor structure of the 27-item scale, the principal axis factoring with varimax rotation was used as it is ideal for exploratory factor analysis and focuses on the shared variance among the variables while permitting the unique variance to remain within the model during the factor extraction process (Osborne, 2014, Kaiser, 1960). The rotated factor matrix is analyzed and items-factors are retained. Confirmation factor analysis is used to test the factor structure from the exploratory factor analysis and evaluate model fit, reliability and validity. The appropriateness of this approach in developing an index based on a set of theoretically relevant HR practices derived from past research has been recommended and widely practiced in the field (Becker & Huselid, 1998; Messersmith, Patel, Lepak & Gould-Williams, 2011).

Before proceeding with the factor analysis, the adequacy of the sample for factor analysis was confirmed by the Kaiser-Meyer-Olkin test value of 0.922 that exceeded the ideal requirement of 0.70 (Kaiser, 1970, 1974). Further, the Bartlett's test (approximate chi square = 4803.165, $p < 0.01$) indicated that the items were sufficiently correlated to conduct factor analysis (Snedecor and Cochran, 1989). There was an average of 9.74 respondents for the 27 items and it was very close to the ideal recommendation of 10 responses per item (Field, 2013).

The exploratory factor analysis was conducted and resulted in a seven factor solution with Eigen values greater than 1 (Kaiser, 1960) and that were a part of the scree plot before it's sharp drop (Cattell, 1966). The total variance explained by the seven retained factors was 73.016%. However, the analysis of the rotated factor matrix indicated that out of the 5 items related to Mobility, one item did not load on its intended

construct, three items had significant cross loadings of greater than 0.30 on multiple factors and one item did not significantly load on any factor. Further, one item related to Appraisal had a similar and significant cross loading of more than 0.30 on three factors. Consistent with past practice in factor structure analysis, these 6 items were removed (Brown, Davidsson and Wiklund, 2001; Gorsuch, 1983). The exploratory factor analysis of the 21 retained items resulted in a clean six-factor solution with significant individual item loadings and the total variance explained increased to 77.389%. All the items loaded on their intended constructs but two constructs of appraisal and job description loaded together on one factor. The loading can be attributed to the relatedness of the constructs of Appraisal and Job Description. The three items of Job Description refer to the duties on the job whereas the two items of Appraisal refer to the expectations of the job. Both the constructs provide clarity about the job expectations (duties and expectations) and that may explain why they loaded on one factor. This factor is labeled Job Clarity based on the recommendations of prior research that suggests emphasis to be placed on items that had the largest values in the factor (Comrey & Lee, 1992). The alpha reliabilities of the six retained factors exceed the ideal requirement of 0.70 (Hair, Anderson, Tatham, & Black, 1998). The factors, item loadings, alpha reliabilities, Eigen values and percent variance explained are given in Table 3.

After identifying the six-factor solution of the HPWS variable through exploratory factor analysis, confirmatory factor analysis was conducted on the 21-items to test the factor structure. The analysis results in a six-factor solution and validates the factor structure and the item loadings from the exploratory factor analysis. The items loaded on their intended construct with no significant cross loadings. The Eigen values

for each of the six factors is greater than 1. Convergent and Discriminant validity was established for the constructs based on the Fornell Larcker criterion (Fornell & Larcker, 1981). The average variance explained (AVE) for each of the six factors is above the threshold 0.5 level. Apart from Cronbach alpha, the more stringent criteria of composite reliability (CR) indicated that values for each of the six factors were above the 0.7 levels indicating internal consistency. The parameter estimates are provided in Table 4.

Table 3: Factor Analysis of HPWS

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Training						
TRG1	0.831					
TRG2	0.781					
TRG3	0.781					
TRG4	0.759					
Clarity						
JOBCL1		0.791				
JOBCL2		0.730				
JOBCL3		0.624				
JOBCL4		0.601				
JOBCL5		0.569				
Participation						
PART1			0.760			
PART2			0.692			
PART3			0.661			
PART4			0.657			
Staffing						
STAFF1				0.794		
STAFF2				0.734		
STAFF3				0.675		
STAFF4				0.538		
Security						
SEC1					0.709	
SEC2					0.612	
Incentives						
INC1						0.777
INC2						0.608
Cronbach Alpha	0.911	0.894	0.86	0.907		
Interitem Correlation					0.609	0.618
Eigen Value	3.187	2.904	2.718	2.698	1.568	1.265
% Variance Explained	15.177	13.827	12.943	12.85	7.464	6.024

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 6 iterations.

Table 4: Factor Structure Test of HPWS

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Clarity						
JOBCL1	0.810					
JOBCL2	0.796					
JOBCL3	0.702					
JOBCL4	0.673					
JOBCL5	0.659					
Training						
TRG1		0.871				
TRG2		0.828				
TRG3		0.808				
TRG4		0.800				
Staffing						
STAFF1			0.802			
STAFF2			0.774			
STAFF3			0.765			
STAFF4			0.651			
Participation						
PART1				0.802		
PART2				0.786		
PART3				0.767		
PART4				0.673		
Security						
SEC1					0.841	
SEC2					0.762	
Incentives						
INC1						0.887
INC2						0.740
CR ¹	0.850	0.896	0.836	0.843	0.783	0.799
AVE ²	0.533	0.684	0.836	0.575	0.643	0.667

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

¹ Composite Reliability

² Average Variance Explained

To operationalize the HPWS measure for the study, the recommendation by prior researchers (Bae and Lawler, 2000; Batt, 2002; Patel, Messersmith and Lepak, 2013) was adopted. A mean index comprising the retained items was used to reflect a single measure of the level of HPWS of the firm. High scores on the measure are indicative of higher level of HR practices in the firm ($M=5.02$, $SD=1.02$).

Controls

To ensure correct model specification for my multiple regression model and select appropriate controls, I adopted three guidelines as a best practice approach for selecting control variables (1) I consider variables that are relevant in the field of EO, HPWS and resource-based theory of the firm (2) I include only the least number of variables required for me to address my research questions to ensure my model is sparse and interpretable (3) I specifically consider the controls used in past entrepreneurship research and are well accepted in the field. This approach improved the specification of my model. The survey items related to the control variables are presented in Annexure E.

My controls are standard variables that have been widely utilized by scholars in the field of EO. The controls also have grounding in the resource-based theory of the firm and include environment hostility, environmental dynamism, and access to financial capital, firm age and firm size.

Control Variable - Environmental Hostility (EH)

Environmental hostility is one of the most commonly and widely used controls in EO-performance research (Covin, Green & Slevin, 2006; Covin & Slevin, 1991; Saeed,

Yousafzai & Engelen, 2014). Scholars have noted that environmental hostility provides a distinctive conceptualization of the firms operating task environment (Rauch, Wiklund, Lumpkin, & Frese, 2009). The environmental hostility construct is based on prior research and has three items with pairs of opposite statements for each of the three items and a forced choice 7-point scale divides the statements (Khandwalla, 1976; Covin & Slevin, 1989).

The three items focus on the characteristics of the external environment in terms of threat to survival, availability of business opportunities and degree to which the competition can be manipulated and dominated.

I conducted confirmatory factor analysis with principal components analysis and varimax rotation to evaluate factor loadings, internal consistency, composite reliability and uni-dimensionality of the construct. All the 3 items loaded on one factor and all had values in the range of 0.685 to 0.850 (average loading = 0.778) and an analysis of the scree plot also yielded one factor indicating that the three items were measuring one-dimensional construct. The coefficient of reliability, the Cronbach alpha was 0.675 indicating inter-item consistency of the environmental hostility construct. Prior research has set an minimum acceptable limit of 0.60 for the Cronbach alpha (Nunnally, 1967). The extracted factor had an Eigen value of 1.827 and accounted for a total variance of 60.89%. The scree plot also indicated a one-factor solution.

Consistent with past practice, the mean score on the three-items is used as the environmental hostility index (Covin & Slevin, 1989). A higher index indicates a more hostile operating environment for a firm and lower score indicates a more favorable environment. (M=3.465, SD=1.114).

Control Variable - Environmental Dynamism (ED)

The findings of two meta-analyses of EO-firm performance studies emphasized that environmental dynamism moderated the EO-firm performance relationship and was seen as a valuable moderator of the relationship (Rauch, Wiklund, Lumpkin, & Frese, 2009; Saeed, Yousafzai & Engelen, 2014).

Environmental dynamism is measured using the items proposed by Miller (1987) that have been widely used in EO studies. The environmental dynamism construct has four items with pairs of opposite statements for each of the four items and a forced choice 7-point scale divides the statements. The four items focus on the growth opportunities, change in production/service technology, rate of innovation in products, processes, services and research and development activity in the respondents' industry.

I conducted confirmatory factor analysis with principal components analysis and varimax rotation to evaluate factor loadings, internal consistency, composite reliability and uni-dimensionality of the construct. The results indicated that one item had a relatively low loading of 0.451 compared to the other item loadings of 0.673, 0.791 and 0.806. The ED measure and items are well established in entrepreneurship and strategy literature and all the items should have had loadings of 0.50. The AVE (average variance explained) of the four-item solution was 0.482 (below the threshold of 0.50) and the CR (composite reliability) was 0.781. Subsequently, the item with the low loading was removed and the confirmatory factor analysis was conducted on the remaining three items and the results indicated improved loadings (0.841, 0.818 and 0.668). The average loading increased from 0.68 in the four-item solution to 0.78 in the three-item solution.

The total variance accounted for also increased from 48.28 in the four-item solution to 60.75 in the three-item solution. The AVE (average variance explained) of the three-item solution was 0.608 (higher than the threshold of 0.50) and the CR (composite reliability) increased to 0.821. Further, the alpha reliability for the three-item solution was greater at 0.68 and met the minimum acceptable standard of 0.60 (Nunally, 1967) and the close to the stringent criteria of 0.70 (Hair, Anderson, Tatham, & Black, 1998). On the basis of these results and analysis the three-item solution was retained and the mean score on the three-items was used as the environmental dynamism index (Covin & Slevin, 1989). A higher index indicates a more dynamic operating environment for a firm (M=4.463, SD=0.967).

Control Variable - Firm Age (AGE)

The research in the EO-firm performance domain has demonstrated that younger organizations are more entrepreneurially oriented and the magnitude of the influence of EO on performance is greater for younger organizations than for larger organizations (Rauch, Wiklund, Lumpkin & Frese, 2009). Prior research also indicates that the practice of HPWS tends to increase with the age of a firm due to the time required for establishing learning and developing human resource practices and is associated with performance (Guthrie, 2001; Lubatkin, Simsek, Ling, & Veiga 2006). Firm age is used as one of the controls in my dissertation and is measured in terms of the number of years that a firm has been actively operating as a business (George, 2005; Anderson & Eshima, 2011). The non-logged mean was 44.66 years with a standard deviation of 25.90 (M=44.66, SD=25.90). Firm age is log transformed in order to normalize the variable before

including it in the research model. This is an accepted practice in EO research.

Control Variable - Firm Size (SIZE)

Prior research in EO indicates that with an increase in the size of the firm the magnitude of the influence of EO on firm performance decreases. The EO-firm performance relationship is stronger for smaller firms than for larger firms. This is based on the understanding that the EO posture is based on strategic decisions by the top management or founders and they are able to exert the posture in terms of risk taking, innovativeness and proactiveness with lesser constraints in smaller firms (Covin & Slevin, 1989). Smaller firms are more flexible and are better positioned to be opportunistic. For the purpose of my dissertation I use firm size as a control and measured by the number of employees in the firm. Firm size is a binary variable. Consistent with NAICS industry-wise classification, responses were coded as 0=small and medium enterprises and 1=large enterprises. For example, manufacturing firms are classified as small and medium enterprises when they have 500 employees or less and wholesale firms are classified as small and medium enterprises when they have 100 employees or less. Using the NAICS criteria, the sample of 263 firms comprised of 194 small and medium enterprises and 69 large enterprises.

Control Variable - Access to Financial Capital (AFC)

Prior EO-performance research has demonstrated the moderating role of financial capital on the EO-FP relationship (Wiklund & Shepherd, 2005). FP increases at a faster rate for those firms that have access to financial resources. The EO posture requires

access to financial resources as a firm takes on more risky innovative projects in a proactive manner (Green & Brown, 1997; Wiklund & Shepherd, 2005).

Access to financial capital is operationalized through a measure of respondents' level of satisfaction to their firm's access to this tangible resource. The measure was developed and validated in prior EO-performance research and has opposite statements on a 7-point scale from "insufficient and a great impediment for our development" to "fully satisfactory for the firm's development" (Wiklund & Shepherd, 2005). A higher score on this measure indicates greater access to financial capital that meets the firm's development and growth needs and vice versa ($M=5.064$, $SD=1.603$).

Configurational Models

There are six hypotheses in this dissertation and three of them are direct effects, two are two-variable interaction effects and one is a three-variable interaction effect.

Configurational effect research models have been recommended for EO-firm performance research (Wiklund & Shepherd, 2005; Stam & Elfring, 2008; Dess, Lumpkin and Covin, 1997; Lumpkin and Dess, 1996). They analyze three-variable interaction effects on a dependent variable. They are different from *contextual effect research models* that analyze two-variable interaction effects on a dependent variable and *direct effect research models* that analyze the effect of one variable on a dependent variable. Two-variable interactions provide insight on how HPWS and ISR influence or moderate the EO-FP relationship, but one can gain more comprehension of the complementarity among factors by the joint consideration of EO, ISR, and HPWS on FP.

Contingency theory is based on the fundamental premise that the level of one

variable affects the relationship between two other variables (Lawrence & Lorsch, 1967). Contingency relationships that stem from these models provide more accurate understanding and prevent misleading inferences from being drawn from bivariate relationships (Rauch, Wiklund, Lumpkin & Friese, 2009; Rosenberg, 1968).

The configurational model (three-variable interactions among EO-ISR-HPWS) also provides richer insights on the nature and size of varying levels of three independent variables and their influence on FP. Configurational approaches are more beneficial than direct (single variable) effect or contextual (two-variable) effects as they provide a prediction of FP for different combinations and levels of each of the three constructs (Wiklund & Shepherd, 2005; Meyer, Tsui, and Hinings, 1993; Ketchen, Thomas & Snow, 1993). In my dissertation the three constructs of interest are HPWS, ISR and EO and I measure their configurational impact on FP.

Statistical Testing Model – Hierarchical Linear Regression

My dissertation uses hierarchical linear regression analysis for evaluating the contextual and configurational models (Cohen, Cohen, West and Aiken, 2003). Hierarchical linear regression model has been proven to be a mathematically sound technique and computer simulations have also highlighted the robustness of the approach (Arnold, 1982; Cohen and Cohen, 1983; Stone and Hollenbeck, 1984). Moderated hierarchical linear regression model is used to separate the effects of the independent variables and evaluate their moderating role. Apart from the dependent variable, there are three types of independent variable regression terms in the research model. The direct effect (single variable) as demonstrated in three relationships (1) EO-FP (2) HPWS-FP

and (3) ISR-FP. The contingent effect (two-variable interactions) as demonstrated in three relationships (1) EOXHPWS-FP (2) EOXISR-FP and (3) ISRXHPWS-FP. The configurational effect (three-variable interaction) as demonstrated on the EOXHPWSXISR-FP relationship. This type of regression model is a consistent and well-established analytical technique for configurational designs in entrepreneurship research (Rauch, Wiklund & Lumpkin, 2009; Liu, Gao & Shanley, 2014; Wiklund & Shepherd, 2005; Anderson & Eshima, 2013). The goal of my dissertation is to understand the influence of configurations on FP and whether there is an improvement in the model fit. It should be noted that the contingent effect of ISRXHPWS-FP does not form a part of my dissertation and I do not hypothesize any influence of the ISRXHPWS interaction on FP. However the ISRXHPWS interaction term is required to be included in the hierarchical regression along with the other two-variable interactions, EOXHPWS and EOXISR.

The hierarchical regression technique is recommended when second and third order interactions (multiplicative terms) are present in regression analysis and there is a concern about the correlation between the independent variables (Bagozzi, 1984; Cohen, 1978; Cohen & Cohen, 1983). To address issues of multicollinearity I center the three focal constructs of interest (EO, ISR & HPWS) and then use the centered variables for calculating the two-variable (EOXISR, EOXHPWS, ISRXHPWS) and three-variable (EOXISRXHPWS) interaction terms. To test for multi-collinearity among the interaction terms, I calculate and evaluate the tolerance and variance inflation factors for each model and evaluate them against the threshold criteria (Hair, Anderson, Tatum and Black, 1998).

In hierarchical linear regression technique the direct effect of each of the independent variables on the dependent variable is analyzed and then sequentially each of the second order (two-variable) and third order (three-variable) interactions are introduced into the hierarchical analysis. The statistical significance of the model at each step of the hierarchical regression is evaluated with the incremental r-squared and F-test statistic. The interaction regression coefficients should also be statistically significant in order to interpret them. The configurational effect of the three-variable interaction is deemed to exist when the three way interaction term is statistically significant (Cohen & Cohen, 1983) and there is an improvement in the fit of the model as seen in the F-test for the incremental change in r-squared (Cohen, Cohen, West & Aiken, 2003). The effect of addition of higher order interactions on the total unexplained variance is thus evaluated (Wiklund & Shepherd, 2005). The magnitude of the two-variable and three-variable interaction regression coefficients are assessed jointly and not separately from the direct lower order (single variable) regression coefficients. As two-variable and three-variable interactions are difficult to interpret I plot the interaction as recommended by regression scholars (Cohen and Cohen, 1983). The complexity of evaluating three-variable interactions is thus addressed by visually demonstrating the effect of one level of a selected variable on different configurations of levels for the other variables (Wiklund and Shepherd, 2005; Anderson & Eshima, 2013).

CHAPTER 4

ANALYSIS AND RESULTS

Sample Characteristics

The final retained sample was 263 unique US firms. The sample characteristics in terms of respondent's rank of management, age, and industry and sales turnover are given in Table 5.

Table 5: Sample Characteristics (N=263 US Headquartered-Located Firms)

Characteristics	Number	Percentage
Rank of Management		
Top Management	90	34.2
Senior Management	66	25.1
Middle Management	107	40.7
Respondent's Age		
50 years and above	209	79.5
35.0 – 50.0 years	54	20.5
Industry		
Construction	18	6.8
Manufacturing	21	8.0
Retail	25	9.5
Technology, Telecom and Media	18	6.8
Banking and Financial Services	17	6.5
Healthcare	21	8.0
Services	119	45.2
Other	24	9.1
Sales		
≤ \$25 million	163	65.8
> \$25 million	90	34.2

Descriptive Statistics

The descriptive statistics of firm performance (FP), Entrepreneurial Orientation

(EO), High Performance Work Systems (HPWS) and Intangible Strategic Resources (ISR) are given in Table 6. If we consider the null hypothesis of normality, then the Skewness and Kurtosis are normally distributed. It is seen that the normality assumptions are met as the Skewness and Kurtosis values are within limits of $|S| < 1.96$ and $|K| < 1.96$.

Table 6: Descriptive Statistics - Variables

Variables	Mean	Standard Deviation	Variance Statistic	Skewness Statistic	Kurtosis Statistic
FP	3.460	0.811	0.658	-0.443	0.184
EO	3.801	1.180	1.393	0.146	-0.418
HPWS	5.025	1.020	1.041	-0.634	0.172
ISR	3.411	0.687	0.472	-0.352	1.668

The descriptive statistics of the control variables, environmental hostility (EH), environmental dynamism (ED), access to financial capital (AFC) and firm age (AGE) are presented in Table 7. Firm size (SIZE) is a categorical variable. The normality assumptions are met as the Skewness and Kurtosis values are within limits of $|S| < 1.96$ and $|K| < 1.96$.

Table 7: Descriptive Statistics - Controls

Variables	Mean	Standard Deviation	Variance Statistic	Skewness Statistic	Kurtosis Statistic
EH	3.465	1.114	1.241	0.393	0.161
ED	4.463	0.966	0.934	-0.128	0.875
AFC	5.064	1.603	2.572	-0.52	-0.564
AGE	44.669	35.902	1289.016	1.467	1.503
SIZE	NA	NA	NA	NA	NA

Consistent with past practice in the field, EO, ISR and HPWS are centered before calculating the interaction terms and AGE is natural log transformed.

Bivariate Correlations

The bivariate correlations (Table 8) indicate that there is a positive correlation between the five pairs of constructs of interest in the study (FP-EO, FP-ISR, FP-HPWS, EO-HPWS, EO-ISR). All the correlations are statistically significant ($p < .001$). The guidelines indicate that FP-HPWS, FP-ISR and EO-ISR correlations are large and the FP-EO, EO-HPWS correlations are moderate (Cohen, 1988). It is noted from the correlation table that FP-EO is less than the correlation of FP-HPWS and FP-ISR.

Coefficient of Determination

As suggested (Osborne, 2017), the Pearson r can be assessed as a variable effect size and Pearson r -squared can be interpreted as the variance shared between the two variables that are correlated. The percent variance shared gives a true indication of the effect size and puts the correlation discussion in the right perspective. The Table 9 reports the variance shared between the variables based on the correlation coefficient. It is evident that the shared variance of FP-HPWS and FP-ISR is 22.47% and 22.00% respectively and is more than the shared variance of FP-EO, which is 10.11%.

Though the co-efficient of determination (the Pearson r -squared) does not prove causality, it does indicate how differences in one variable can be explained by a difference in the other variable in the pair thereby indicating a better goodness of fit. The shared variance table indicates that HPWS and ISR have a better fitting model with FP than EO has with FP (the predictability and likelihood of data reflecting the correlation improves for a pair that has a higher coefficient of determination).

Table 8: Bivariate Correlations – Research Model

Variables	FP	EO	HPWS	ISR	EH	ED	AFC	AGE	SIZE
FP	1								
EO	.318**	1							
HPWS	.474**	.264**	1						
ISR	.469**	.428**	.346**	1					
EH	-.427**	-0.092	-.334**	-.223**	1				
ED	.374**	.470**	.393**	.352**	-.235**	1			
AFC	.546**	.265**	.395**	.245**	-.326**	.362**	1		
AGE ^a	-0.014	0.001	-.123*	0.111	-0.031	-0.039	-0.041	1	
SIZE ^b	0.014	.187**	-0.068	.183**	0.01	0.101	-0.024	.529**	1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

^aNon-natural log transformed variable; measured in years

^bBinary variable, 0= ≤500 employees, 1=>500 employees

Table 9: Shared Variance – Constructs of Interest

Variables	FP	EO	HPWS
EO	10.11%		
HPWS	22.47%	6.97%	
ISR	22.00%	18.32%	11.97%

Assumption Testing

The regression assumptions are based on the model specification, linearity, assessment criteria of measurement of variables, normality, homoscedasticity and independence of observations (Osborne, 2017). The linearity assumption states that the relationship between the dependent variable and the predictor variables is a linear one. To test for linearity, the scatterplots of ZRESID (standardized residuals) and ZPRED (standardized predicted value) are generated for each of the linear regressions and a visual analysis indicates that the residuals are randomly scattered around zero. As a second check for non-linearity, the Loess Curve is fitted on the ZRESID-ZPRED scatterplot and it was seen that the relationship is linear around zero.

The assumption of independence is fulfilled if the errors associated with the observations are not correlated with each other. Individual boxplots of the standardized residuals are evaluated - rank of management, industry, respondent age and sales are generated and the mean standardized residuals of each boxplot are around zero for each category of these variables. For example, the mean standardized residuals are around zero for each rank of management. The variability of the mean standardized residuals is low and homogeneous across the middle, senior and top level of management and it is inferred that the errors are independent across observations.

The research model is accurately specified on a strong theoretical foundation of the resource-based theory of the firm that has historically justified the important joint role of resource possession and resource exploitation in firm performance. Basing on the resource-based theory arguments, I use ISR and HPWS to represent resource possession and resource exploitation respectively, in the EO-FP debate. The model also includes the

relevant controls of EH, ED, AGE, SIZE and AFC as indicated in prior EO-FP research (Rauch et al., 2009). Further, the use of a representative business panel of a leading industry recognized market research agency, the use of well-accepted and validated constructs, stringent filter criteria and attention and time duration checks for retaining responses, ensured that concerns about the assessment criteria of measurement of variables was comprehensively addressed. To test for proper model specification the standardized residuals from the regression tests are saved and graphed with the independent variables and the graphs are flat and do not indicate a positive or negative relationship. The correlation coefficients and the shared variance among FP, HPWS, ISR and EO also indicate that the independent variables are correlated (1) to each other and (2) to the dependent variable, FP. The correlations in conjunction with the results of the regression tests that significantly and marginally statistically significantly predict the dependent variable, it is inferred that the research model is correctly specified.

The homoscedasticity assumption states the variances of the residuals are constant across the predicted values. The assumptions about the residuals were checked from the histogram of the residuals and the descriptive statistics, the mean of the distribution is close to 0 and the standard deviation is close to 1. The ZRESID- ZPRED plots of the linear regressions show no specific pattern and are centered on zero against levels of predicted values and there is very small differential of the variance. The variance is also distributed randomly and uniformly. The assumption of homoscedasticity is therefore satisfied for the purpose of the regression analysis.

To test for normality of residuals, the P-P plots and Q-Q plots are created and the points cluster around the horizontal line. There is some dispersion at the tail end in the Q-

Q plot for some regressions and that is attributed to the sensitivity of the Q-Q plot as compared to the P-P plot to tail distributions. Hence for the purposes of this dissertation the cleaned data met all the assumptions of OLS regression.

Collinearity Statistics

Multi-collinearity is not an assumption of regression but it may destabilize the coefficient estimates and the standard errors may get inflated. Multi-collinearity occurs when the predictors are highly related to each other. The correlation coefficient estimates in my dissertation model between the dependent variable, FP, and independent variables of interest, EO, ISR and HPWS are moderate in the range 0.264 to 0.474 and are not highly correlated. In line with research recommendations, multicollinearity diagnosis was applied to the regression using Tolerance and Variance Inflation Factor statistics. Low values of Tolerance give the indication that the particular predictor is redundant in the model. Using the criterion of the maximum Variance Inflation Factor (VIF) of 5 corresponding to a minimum Tolerance (TOL) of 0.20 (Rogerson, 2001, Hair, Anderson, Tatham, & Black, 1995), the Collinearity Diagnosis results in Table 10 are within the critical bounds. The minimum and maximum tolerance seen is 0.722 and 0.874 and the minimum and maximum VIF is 1.212 and 1.414 respectively.

To ensure that multicollinearity was not a concern, the first order variables were mean-centered before generating the two-variable and three-variable interaction terms. The TOL and VIF indicated no presence of multicollinearity. The regression results testing the direct effect of EO (Model 1), HPWS (Model 2) and ISR (Model 3) on FP are presented and interpreted.

Table 10: Collinearity Statistics Multiple Linear Regression

Variables	Model 1 ^a		Model 2 ^b		Model 3 ^c	
	Tolerance (TOL)	Variance Inflation Factor (VIF)	Tolerance (TOL)	Variance Inflation Factor (VIF)	Tolerance (TOL)	Variance Inflation Factor (VIF)
EH	0.874	1.144	0.825	1.212	0.861	1.161
ED	0.709	1.411	0.772	1.296	0.763	1.310
AFC	0.785	1.274	0.763	1.311	0.795	1.258
AGE	0.745	1.343	0.729	1.372	0.746	1.341
SIZE	0.722	1.386	0.747	1.338	0.740	1.352
EO	0.746	1.341				
HPWS			0.712	1.404		
ISR					0.814	1.229

Model 1^a: Dependent Variable: FP; Predictor Variable: EO

Model 2^b: Dependent Variable: FP; Predictor Variable: HPWS

Model 3^c: Dependent Variable: FP; Predictor Variable: ISR

Table 11: Model 1 Multiple Linear Regression Results^a

Variable	b	SE _b	β	t	p-value	95% CI LB	95% CI UB	sr Correlation	sr ² Variance
(Constant)	2.775	0.360		7.699	0.000	2.065	3.485		
EH	-0.190	0.037	-0.261	-5.115	0.000	-0.263	-0.117	-0.244	0.060
ED	0.080	0.048	0.096	1.688	0.093	-0.013	0.174	0.081	0.007
AFC	0.189	0.027	0.374	6.943	0.000	0.136	0.243	0.331	0.110
AGE	0.010	0.058	0.009	0.165	0.869	-0.104	0.123	0.008	0.000
SIZE	-0.036	0.103	-0.020	-0.351	0.726	-0.240	0.167	-0.017	0.000
EO	0.126	0.038	0.184	3.322	0.001	0.051	0.201	0.159	0.025

^aDependent Variable: FP

Table 12: Model 2 Multiple Linear Regression Results^b

Variable	b	SE _b	β	t	p-value	95% CI LB	95% CI UB	sr Correlation	sr ² Variance
(Constant)	2.548	0.348		7.328	0.000	1.863	3.233		
EH	-0.152	0.038	-0.209	-4.008	0.000	-0.227	-0.077	-0.190	0.036
ED	0.095	0.045	0.113	2.099	0.037	0.006	0.184	0.099	0.010
AFC	0.179	0.027	0.354	6.524	0.000	0.125	0.233	0.309	0.095
AGE	0.030	0.058	0.028	0.513	0.609	-0.084	0.143	0.024	0.001
SIZE	0.024	0.101	0.013	0.240	0.810	-0.174	0.223	0.011	0.000
HPWS	0.174	0.045	0.219	3.894	0.000	0.086	0.262	0.184	0.034

^bDependent Variable: FP**Table 13: Model 3 Multiple Linear Regression Results^c**

Variable	b	SE _b	β	t	p-value	95% CI LB	95% CI UB	sr Correlation	sr ² Variance
(Constant)	2.948	0.342		8.631	0.000	2.276	3.621		
EH	-0.160	0.036	-0.220	-4.493	0.000	-0.231	-0.090	-0.204	0.042
ED	0.066	0.044	0.079	1.514	0.131	-0.020	0.152	0.069	0.005
AFC	0.186	0.026	0.367	7.200	0.000	0.135	0.237	0.327	0.107
AGE	-0.046	0.055	-0.044	-0.833	0.406	-0.154	0.062	-0.038	0.001
SIZE	-0.034	0.097	-0.019	-0.351	0.726	-0.226	0.157	-0.016	0.000
ISR	0.368	0.060	0.312	6.187	0.000	0.251	0.486	0.281	0.079

^cDependent Variable: FP

Multiple Linear Regression Results

The first model tests hypothesis 1, FP is regressed on EO. The results in Table 11 indicate that EO is a statistically significant predictor of FP ($b = 0.126$, $SE_b = 0.038$, $\beta = 0.184$, $t = 3.322$, $p < .005$). The regression coefficient for EO is .126. So for every unit increase in EO, we expect a .126-point increase in the FP score and the regression coefficient is statistically significant as the p-value of 0.001 is less than 0.05. The model was statistically significant ($R^2 = 0.417$, $F(6, 256) = 30.489$, $p < .001$). The results indicate that hypothesis 1 is supported. The output provided 95% confidence intervals around the regression coefficient (0.051, 0.201). The coefficient of determination for multiple regression indicates that 41.17% of the variance in FP is explained by the set of independent variables including the construct of interest, EO. The unique relationship and the unique shared variance between change in EO and FP after controlling for other variables was 0.159 and 2.5% respectively.

The second model tests hypothesis 2, FP is regressed on HPWS. The results in Table 12 indicate that HPWS is a statistically significant predictor of FP ($b = 0.174$, $SE_b = 0.045$, $\beta = 0.219$, $t = 3.894$, $p < .001$). The regression coefficient for HPWS is .174. So for every unit increase in HPWS, we expect a .174-point increase in the FP score and the regression coefficient is statistically significant as the p-value of 0.000 is less than .05. The model was statistically significant ($R^2 = 0.426$, $F(6, 256) = 31.619$, $p < .001$). The results indicate that hypothesis 2 is supported. The output provided 95% confidence intervals around the regression coefficient (0.086, 0.262). The coefficient of determination for multiple regression indicates that 42.60% of the variance in FP is explained by the set of independent variables including the construct of interest, HPWS.

The unique relationship and the unique shared variance between change in HPWS and FP after controlling for other variables was 0.184 and 3.4% respectively.

The third model tests hypothesis 3, FP is regressed on ISR. The results of the regression in Table 13 indicate that ISR is a statistically significant predictor of FP ($b = 0.368$, $SE_b = 0.060$, $\beta = 0.312$, $t = 6.187$, $p < .001$). The regression coefficient for ISR is .368. So for every unit increase in ISR, we expect a .368-point increase in the FP score and the regression coefficient is statistically significant as the p-value of 0.000 is less than .05. The model was statistically significant ($R^2 = 0.471$, $F(6, 256) = 37.952$, $p < .001$). The results indicate that hypothesis 3 is supported. The output provided 95% confidence intervals around the regression coefficient (0.251, 0.484). The coefficient of determination for multiple regression indicates that 47.10% of the variance in FP is explained by the set of independent variables including the construct of interest, ISR. The unique relationship and the unique shared variance between change in HPWS and FP after controlling for other variables was 0.281 and 7.9% respectively.

The regression results of hypothesis 1, 2 and 3 indicate that EO, HPWS and ISR are all statistically significant predictors of FP. Each of them has a positive impact on FP and the regression coefficient is highest for ISR, followed by HPWS and finally by EO.

In order to compare the magnitude and the impact of the direct effect of EO, HPWS and ISR and the unique relationship and unique shared variance that each of these variables has with FP, I run a multiple regression in Model 4 in which I include all the three independent variables of interest together to parse out their unique effect on FP. This is done with the intention to have a more granular understanding of the contribution of each of these variables. The regression results are presented in Table 14.

Table 14: Model 4 Multiple Linear Regression Results^d

Variable	b	SE _b	β	t	p-value	95% CI LB	95% CI UB	sr Correlation	sr ² Variance
(Constant)	3.046	0.343		8.884	0.000	2.371	3.721		
EH	-0.146	0.036	-0.200	-4.041	0.000	-0.217	-0.075	-0.181	0.033
ED	0.022	0.046	0.027	0.485	0.628	-0.068	0.113	0.022	0.000
AFC	0.167	0.026	0.330	6.385	0.000	0.116	0.219	0.286	0.082
AGE	-0.004	0.056	-0.003	-0.063	0.950	-0.113	0.106	-0.003	0.000
SIZE	-0.058	0.097	-0.032	-0.596	0.551	-0.250	0.134	-0.027	0.001
EO	0.067	0.037	0.097	1.804	0.072	-0.006	0.140	0.081	0.007
HPWS	0.104	0.044	0.131	2.366	0.019	0.018	0.191	0.106	0.011
ISR	0.297	0.063	0.252	4.702	0.000	0.173	0.422	0.211	0.045

^dDependent Variable: FP**Table 15: Collinearity Statistics – Model 4 Multiple Regression**

Variables	Model 4 ^d	
	TOL	VIF
EH	0.819	1.221
ED	0.673	1.487
AFC	0.751	1.332
AGE	0.699	1.43
SIZE	0.719	1.391
EO	0.69	1.45
HPWS	0.654	1.528
ISR	0.701	1.426

Model 4^d: Dependent Variable: FP

In the fourth model FP is regressed on EO, ISR and HPWS. The results of the regression in Table 14 (with the collinearity diagnosis results in Table 15), indicate that EO is a marginally statistically significant predictor of FP ($b = 0.067$, $SE_b = 0.037$, $\beta = 0.097$, $t = 1.802$, $p < .1$), HPWS is a statistically significant predictor of FP ($b = 0.104$, $SE_b = 0.044$, $\beta = 0.131$, $t = 2.366$, $p < .05$) and ISR is a statistically significant predictor of FP ($b = 0.297$, $SE_b = 0.063$, $\beta = 0.252$, $t = 4.702$, $p < .001$). It is evident from the results that ISR has the largest regression coefficient and is statistically significant at a lower alpha level. EO is not only a marginally statistically predictor but has a low regression coefficient whereas HPWS is statistically significant with a low regression coefficient that is higher than the regression coefficient of EO.

The direct-effects in the joint consideration of the independent variables on FP can be gauged from the interpretation of the regression coefficient. In the case of EO, for every one-unit increase in EO we expect a small .067-point increase in the FP score (which dropped from 0.126-unit increase in Model 1). For every one-unit increase in HPWS we now expect a 0.104-unit increase in the FP score (which reduced from 0.174-unit increase in Model 2). In the case of ISR, for every one-unit increase in ISR we expect a large .297-point increase in the FP score (which also dropped from 0.368-unit increase in Model 3).

If we compare the regression coefficients, significance levels, unique relationship and shared variances of EO, HPWS and ISR in Models 1, 2, 3 and 4 with FP, we infer that there may be an interaction effect that may enable us to understand the changes in these parameters from the direct effects models (Models 1, 2 and 3) with the joint consideration model (Model 4).

Table 16: Hierarchical Linear Regression Model Results⁺

Variable	Model 5 ^e		Model 6 ^f		Model 7 ^g		Model 8 ^h	
	b	SE _b	b	SE _b	b	SE _b	b	SE _b
(Constant)	2.490****	0.357	2.775****	0.360	3.100****	0.344	3.118****	0.343
EH	-0.187****	0.038	-0.19****	0.037	-0.150****	0.036	-0.144****	0.036
ED	0.139***	0.045	0.08*	0.048	0.020	0.046	0.017	0.046
AFC	0.203****	0.027	0.189****	0.027	0.163****	0.026	0.158****	0.026
AGE	-0.011	0.058	0.010	0.058	-0.009	0.056	-0.007	0.055
SIZE	0.027	0.104	-0.036	0.103	-0.069	0.097	-0.061	0.097
EO			0.126***	0.038	0.069*	0.037	0.086**	0.038
HPWS					0.098**	0.046	0.112**	0.046
ISR					0.283****	0.063	0.306****	0.064
EOXISR					0.087*	0.045	0.098**	0.046
EOXHPWS					-0.062*	0.036	-0.066*	0.036
ISRXHPWS					0.016	0.059	0.003	0.059
EOXISRXHPWS							-0.057*	0.032
R ²	0.392****		0.417****		0.501****		0.507****	
Adjusted R ²	0.380		0.403		0.479		0.483	
Change in R ²	0.392****		0.025***		0.084****		0.006*	

*p<0.1, **p<0.05, ***p<0.01, ****p<.001

^e Predictors: (Constant), SIZE, EH, ED, AFC, AGE

^f Predictors: (Constant), SIZE, EH, ED, AFC, AGE, EO

^g Predictors: (Constant), SIZE, EH, ED, AFC, AGE, EO, EOXHPWS, EOXISR, ISR, ISRXHPWS, HPWS

^h Predictors: (Constant), SIZE, EH, ED, AFC, AGE, EO, EOXHPWS, EOXISR, ISR, ISRXHPWS, HPWS, EOXISRXHPWS

⁺Dependent Variable: FP

Table 17: Collinearity Statistics Hierarchical Linear Regression Model⁺

Variable	Model 5 ^e		Model 6 ^f		Model 7 ^g		Model 8 ^h	
	Tolerance (TOL)	Variance Inflation Factor (VIF)	Tolerance (TOL)	Variance Inflation Factor (VIF)	Tolerance (TOL)	Variance Inflation Factor (VIF)	Tolerance (TOL)	Variance Inflation Factor (VIF)
EH	0.874	1.144	0.874	1.144	0.816	1.225	0.809	1.236
ED	0.824	1.214	0.709	1.411	0.657	1.523	0.656	1.525
AFC	0.804	1.243	0.785	1.274	0.746	1.341	0.735	1.361
AGE	0.754	1.327	0.745	1.343	0.695	1.439	0.694	1.440
SIZE	0.747	1.338	0.722	1.386	0.717	1.396	0.715	1.399
EO			0.746	1.341	0.679	1.472	0.640	1.564
HPWS					0.599	1.670	0.583	1.715
ISR					0.692	1.444	0.666	1.502
EOXISR					0.685	1.460	0.672	1.488
EOXHPWS					0.725	1.379	0.722	1.384
ISRXHPWS					0.632	1.582	0.623	1.606
EOXISRXHPWS							0.750	1.333

^e Predictors: (Constant), SIZE, EH, ED, AFC, AGE^f Predictors: (Constant), SIZE, EH, ED, AFC, AGE, EO^g Predictors: (Constant), SIZE, EH, ED, AFC, AGE, EO, EOXHPWS, EOXISR, ISR, ISRXHPWS, HPWS^h Predictors: (Constant), SIZE, EH, ED, AFC, AGE, EO, EOXHPWS, EOXISR, ISR, ISRXHPWS, HPWS, EOXISRXHPWS⁺Dependent Variable: FP

Table 18: Semi-Partial Correlations and Unique Shared Variance Hierarchical Linear Regression Model⁺

Variable	Model 5 ^e		Model 6 ^f		Model 7 ^g		Model 8 ^h	
	sr Correlation	sr ² Variance	sr Correlation	sr ² Variance	sr Correlation	sr ² Variance	sr Correlation	sr ² Variance
EH	-0.241	0.058	-0.244	0.060	-0.186	0.035	-0.177	0.031
ED	0.151	0.023	0.081	0.007	0.019	0.000	0.016	0.000
AFC	0.360	0.130	0.331	0.110	0.279	0.078	0.267	0.071
AGE	-0.009	0.000	0.008	0.000	-0.007	0.000	-0.006	0.000
SIZE	0.013	0.000	-0.017	0.000	-0.032	0.001	-0.028	0.001
EO			0.159	0.025	0.083	0.007	0.100	0.010
HPWS					0.096	0.009	0.107	0.011
ISR					0.200	0.040	0.211	0.045
EOXISR					0.086	0.007	0.096	0.009
EOXHPWS					-0.077	0.006	-0.082	0.007
ISRXHPWS					0.012	0.000	0.002	0.000
EOXISRXHPWS							-0.079	0.006

^e Predictors: (Constant), SIZE, EH, ED, AFC, AGE^f Predictors: (Constant), SIZE, EH, ED, AFC, AGE, EO^g Predictors: (Constant), SIZE, EH, ED, AFC, AGE, EO, EOXHPWS, EOXISR, ISR, ISRXHPWS, HPWS^h Predictors: (Constant), SIZE, EH, ED, AFC, AGE, EO, EOXHPWS, EOXISR, ISR, ISRXHPWS, HPWS, EOXISRXHPWS⁺Dependent Variable: FP

Hierarchical Linear Regression Results

The regression results of hypothesis 1, 2 and 3 point to the interactions between the variables and lead us to the hypothesis 4, 5 and 6 that tests the effect of the interactions of EOXISR, EOXHPWS & EOXHPWSXISR. The results and related analysis are presented in Table 16, 17 and 18. The hierarchical linear regression is built over four stages, models 5 through 8. In Model 5 I incorporated the control variables (EH, ED, AFC, AGE and SIZE). Subsequently in Model 6, I inserted the direct-effect of EO, followed by the direct-effect and two-variable interaction effects of HPWS and ISR in Model 7. Finally in Model 8 I inserted the three-variable interaction effect of HPWS, ISR and EO. This is consistent with the arguments in my dissertation and the statistical approach in developing configurational models through hierarchical linear regression technique. My intent is to study the effect of HPWS and ISR beyond that of EO on FP. That explains why EO is added before adding HPWS and ISR. The hierarchical linear regression results are given in Table 16 and the collinearity diagnosis results are in Table 17 followed by the correlations and variance analysis in Table 18.

The five control variables in Model 5 together explain 39.2% of the variation in FP, the dependent variable and the model is statistically significant ($p < .001$). In Model 6 with the introduction of the main-effect of EO, a mere additional 2.5% of the variance in the FP is explained and the result is statistically significant ($p < .05$). This result is surprising because the effect of EO in predicting firm performance has received broad agreement in the entrepreneurship research community with average effect size in the range of 0.20 (Rauch, et. al., 2009). In Model 7, the variables HPWS and ISR are introduced along with their interaction effects. The additional variance explained by the

direct-effects of HPWS and ISR and the second order interactions is 8.4% and the model is statistically significant ($p < 0.001$). In Model 8, the three-variable interaction term is marginally statistically significant ($p < 0.1$) but the additional variance explained in the FP is only 0.62%. The two-variable interactions (EOXHPWS and EOXISR) and three-variable interactions (EOXISRHPWS) are all marginally statistically significant ($p < 0.1$).

The regression results of Model 7 are used to test hypothesis 4 and 5 whereas the results of Model 8 are used to test hypothesis 6. The results of Model 7 indicate that the EOXISR interaction is a marginally statistically significant predictor of FP ($b = 0.087$, $SE_b = 0.045$, $\beta = 0.103$, $t = 1.919$, $p < .01$). This indicates that the effect of EO on FP depends on the level of ISR, as ISR is a moderator for the purpose of my dissertation. However, the result could also be interpreted as stating that the effect of ISR on FP depends on the level of EO. The positive interaction effect of EOXISR means that the more positive ISR is, the more will be the positive effect of EO on FP. Therefore hypothesis 4 is partly supported as the EOXISR interaction coefficient has a p-value of 0.056 ($p < 0.1$). The relationship between EO and FP is stronger for firms with higher levels of ISR and weaker for firms with lower levels of ISR. The results of Model 7 also indicate that the EOXHPWS interaction is a marginally statistically significant predictor of FP ($b = -0.062$, $SE_b = 0.036$, $\beta = -0.090$, $t = -1.725$, $p < .01$). This indicates that the effect of EO on FP depends on the level of HPWS, as HPWS is a moderator for the purpose of my dissertation. However, the result could also be interpreted as stating that the effect of HPWS on FP depends on the level of EO. The negative interaction effect of EOXISR means that the more positive HPWS is, the more negative will be the effect of

EO on FP. Therefore hypothesis 5 is partly supported as the EOXHPWS interaction coefficient has a p-value of 0.086 ($p < 0.1$). Elaborating on the results, we can infer that as firms have more developed HPWS the lesser is the effect of EO on FP. The hypothesis 5 results are consistent with the arguments about the negative effects of HPWS on the EO-FP relationship. The relationship between EO and FP is stronger for firms with lower levels of HPWS and weaker for firms with higher levels of HPWS.

Model 8 tests the configurational hypothesis 6. This is consistent with one of the goals of my dissertation – to test for the ideal configuration of EO, ISR and HPWS that influences the dependent variable, FP. To test for the three-variable interaction (EOXISRXHPWS) on FP, all the two-variable interactions (EOXISR, EOXHPWS), the direct effects (EO, ISR, HPWS) and the control effects (ED, EH, AFC, AGE, SIZE) are considered jointly (Aiken & West, 1991). To establish a three-variable interaction effect (configurational model) two conditions must be met (1) the three-variable interaction regression coefficient should be statistically significant and (2) the change in R squared for the regression model including the three-variable interaction term should be statistically significant and there should be significant improvement in the fit of the three-variable interaction regression model (Cohen et. al, 2003). The regression results of the configurational analysis (Model 8) indicate that the three-variable interaction is marginally statistically significant ($p < 0.1$) and the change in R squared is marginally statistically significant ($p < 0.1$).

The results of Model 8 indicate that the EOXISRXHPWS interaction is marginally statistically significant predictor of FP ($b = -0.057$, $SE_b = 0.032$, $\beta = -0.092$, $t = -1.785$, $p < 0.1$). This indicates that the three-variable interaction of EOXISRXHPWS

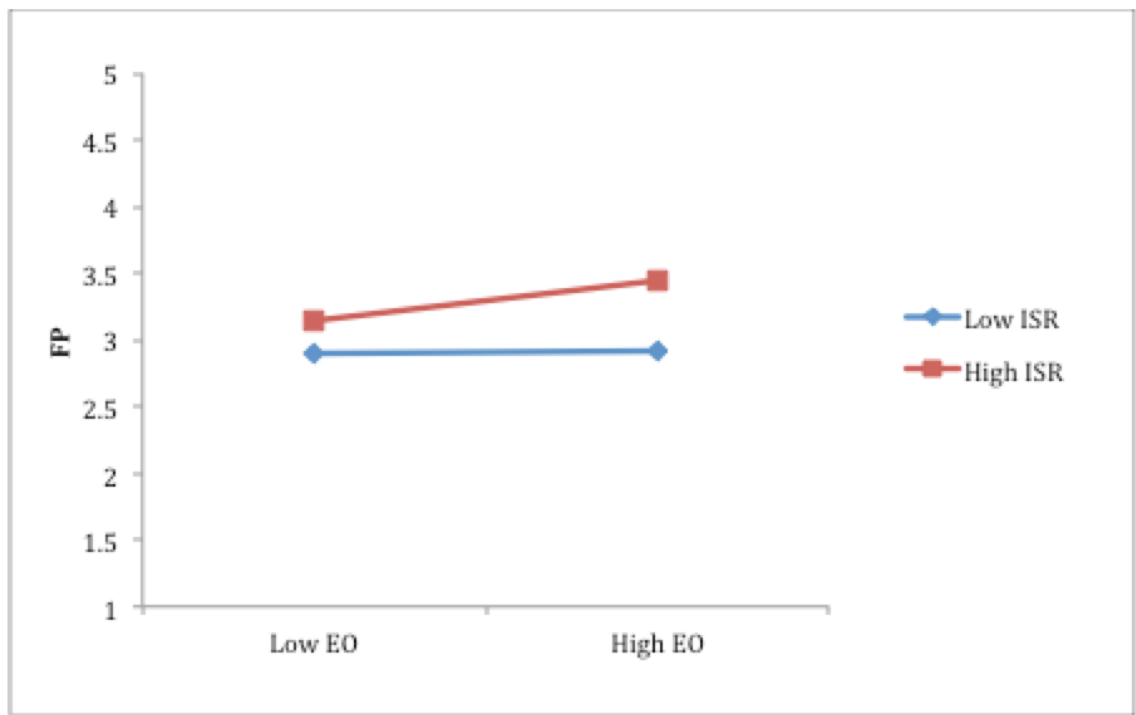
on FP is a marginally statistically significant predictor. The negative direction of the interaction effect of EOXISRHPWS indicates the overall impact of the interaction on the dependent variable, FP. It can be concluded that the three-variable interaction predicted in hypothesis 6 is marginally statistically significant with the EOXISRHPWS interaction coefficient having a p-value of 0.076 ($p < 0.1$). The model was statistically significant ($R^2 = 0.507$, $F(12, 250) = 21.408$, $p < .001$). The results indicate that hypothesis 6 is partly supported. The output provided 95% confidence intervals around the regression coefficient (-0.120, 0.006). The coefficient of determination for multiple regression indicates that 50.70% of the variance in FP is explained by the configurational model that includes all the two-variable and three-variable interaction terms. The change in R squared value is 0.006 ($p < 0.1$). When we triangulate the results of Model 8 with that of Model 6 and 7 we infer that the negative value of EOXISRHPWS is due to the presence of the HPWS variable in the three-variable interaction as the EOXISR coefficient is positive and the EOXHPWS coefficient is negative.

Prior researchers have emphasized that interaction coefficients cannot be interpreted solely by considering their interaction coefficients in isolation. It is important to incorporate the other lower order interactions, direct effects and control effects and then select the variables of interest and plotting them. Consistent with past practice in the field of entrepreneurship research, three graphs are plotted based on the results of the hierarchical multiple regression models. Figure 2 - Interaction of EOXISR on FP, Figure 3 - Interaction of EOXHPWS on FP and Figure 4 - Interaction of EOXISRHPWS on FP.

The interaction of EOISR and EOXHPWS was plotted based on the regression results of Model 7 and interaction of EOISR \times HPWS was plotted on the regression results of Model 8.

Interaction Plot Interpretations

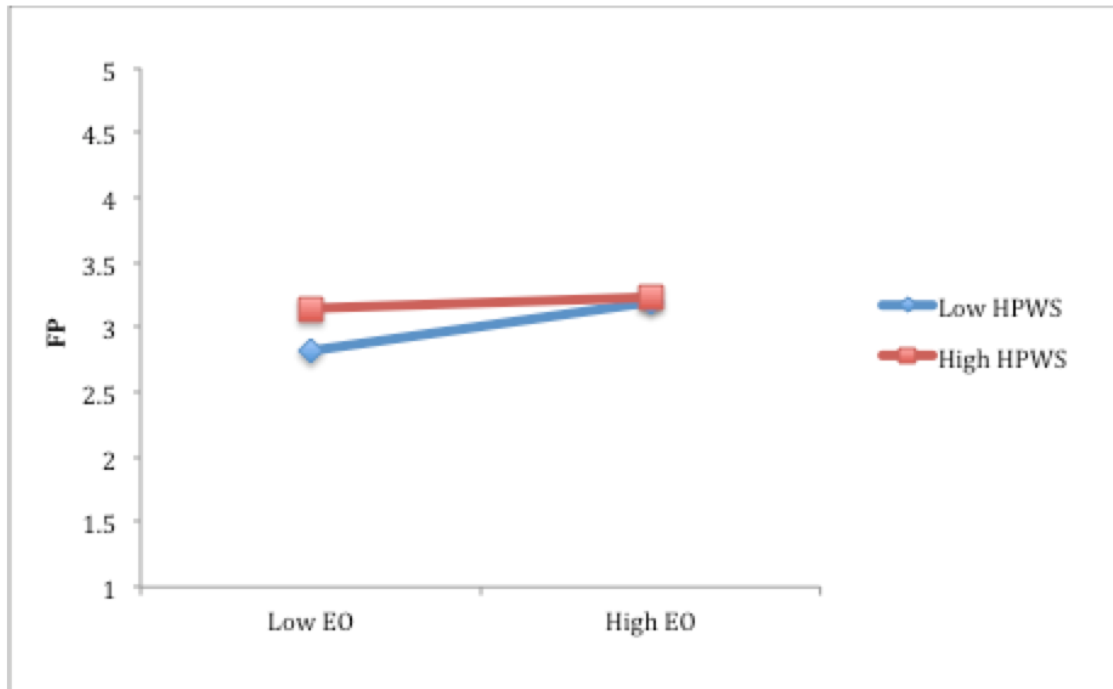
Figure 2: Interaction Plot of EO and ISR on FP



The Figure 2 plots the interaction effect of EOISR on FP and clearly indicates that firms that possess high levels of ISR generate superior FP. A comparison of the two slopes for low ISR and high ISR and the regression results suggests that the slopes are also materially different and marginally statistically significant. The slope of low ISR is relatively flat for low and high levels of EO. There is no material change in FP across firms that have low levels of ISR as the levels of EO increases. It is apparent that if a firm has low levels of ISR then even it has a high level of EO it does not improve FP. The

importance of possessing ISR (hypothesis 4) is thus validated by the regression tests and interaction plots ($p < 0.1$). In other words, the impact on FP and the gains in FP for firms with similar levels of EO will be more for firms that have higher levels of ISR than for firms that have lower levels of ISR. A comparison of the end points of the high ISR and low ISR conditions for low EO firms indicate that FP is predicted to be higher for high ISR firms than low ISR firms. Similarly a comparison of the end points of the high ISR and low ISR conditions for high EO firms indicate that FP is predicted to be higher for high ISR firms than low ISR firms. Thus the benefit for firms with high ISR is sustained for firms with low and high levels of EO. The comparison of the slopes of low ISR and high ISR also suggests that the magnitude of difference in firm performance is larger for firms that have high levels of ISR than those firms that have low levels of ISR. Prior entrepreneurship research has highlighted the importance of intangible resources and the role of EO but the interaction effect of EOISR analyzed in this dissertation leads us to conclude that the relative importance of ISR is higher than that of EO in predicting FP (the relatively flat line for low ISR and the upward sloping line for high ISR). Figure 2 and the regression results thus partly support hypothesis 4 and the positive direction of the interaction effect.

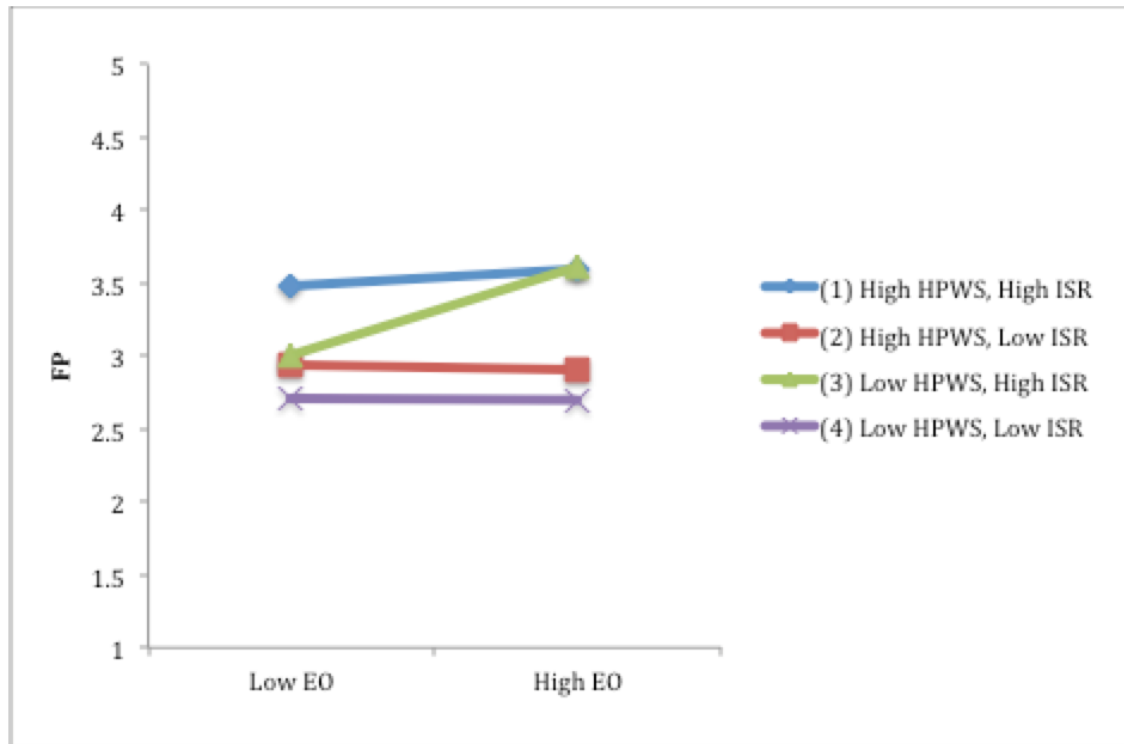
Figure 3: Interaction Plot of EO and HPWS on FP



The Figure 3 plots the interaction effect of EOXHPWS on FP. If we analyze the low HPWS line and its slope in the interaction plot it shows that firms that have low HPWS are able to generate superior FP if they possess high levels of EO as compared to firms that have low levels of FO. The line is upward sloping indicating the impact of EO in firms that have low HPWS. However when we analyze the high HPWS line and its slope we see that it is flat and there seems to be no material change in FP across firms as the levels of EO increases. The upward sloping line for firms with low HPWS is compared with the flat line for firms with high HPWS. The linear comparison of the slopes (low HPWS and high HPWS) suggests that the slopes are marginally statistically significantly different. The comparison also indicates that there is no material difference in FP for firms with high levels of EO as the levels of HPWS increases. Higher levels of

HPWS do not seem to translate to higher FP across firms with high levels of EO. In fact HPWS exerts a negative impact on FP as seen in the flat slope of the high HPWS condition and the upward rising slope of the low HPWS condition. The effect of EO on FP is dependent on the levels of HPWS validating the moderator hypothesis. The negative impact of HPWS is thus partly validated (Hypothesis 5) by the results ($p < 0.1$). If the upward sloping line depicted by the low HPWS condition would intersect the line relatively flat high HPWS condition then the effect would have further accentuated the negative interaction effect of EOXHPWS. The upward sloping low HPWS line and the relatively flat high HPWS line provides support for hypothesis 5. As hypothesized in my dissertation, high levels of HPWS may not support the firm in exploiting its resources and it also constrains the positive effect of high EO on FP. This is also supported and evident from the negative EOXHPWS interaction coefficient of regression. The upward slope of the low HPWS line also indicates its beneficial impact on FP with increasing levels of EO. The negative direction of the EOXHPWS interaction effect is also consistent with the arguments of hypothesis 5.

Figure 4: Interaction of EO, HPWS and ISR on FP



The results of the hierarchical multiple regression (Model 8) are plotted in Figure 4. As indicated in prior entrepreneurship research, two aspects are taken into account in conjunction while interpreting three-variable interaction plots (1) the impact of each configuration on the dependent variable (FP) and (2) the trajectory-direction of the slopes for each of the configurations between the low and high levels of the independent variable (EO). It is evident from the plot that my hypothesis (6a) predicting that the relationship between EO and FP is strongest for firms with lower levels of HPWS and higher levels of ISR is supported. The next strongest relationship between EO and FP was for firms with high levels of ISR and high levels of HPWS. This was consistent with hypothesis 6 (b). The plots of the configurational model show that the slope of one

particular condition representing low levels of HPWS and high levels of ISR is materially and significantly different from the remaining three sets of configurations. FP increases at the fastest rate for firms with high levels of ISR and low levels of HPWS as the levels of EO increases. This is the best configuration and supports Hypothesis 6 (a). At low levels of EO, FP is higher for firms with higher levels of ISR and higher levels of HPWS than for firms with higher levels of ISR and lower levels of HPWS, however as the levels of EO increases, the rate of increase in FP for firms with higher levels of ISR and lower levels of HPWS is much stronger than the rate of increase in FP for firms with higher levels of HPWS and higher levels of HPWS. Thus hypothesis 6 (a) and 6 (b) are both supported.

The slope of firms with higher levels of HPWS and lower levels of ISR is relatively flat and the very slight downward direction of the slope supports hypothesis 6 (c). The result is not surprising as it points to the possible negative interaction impact of higher levels of HPWS in firms with lower levels of ISR. The conclusion can be drawn that even when the levels of EO increases in firms with higher levels of HPWS and lower levels of ISR, there is no improvement in FP and the very slight downward direction of the slope indicates that there is a possibility of a slight drop in FP.

The plots show that the least beneficial configuration for firms is the one that has lower levels of ISR and lower levels of HPWS thus supporting the prediction of hypothesis 6 (d). The plot is relatively flat indicating that there is no improvement in performance for firms that have lower levels of ISR and lower levels of HPWS even with an increase in the levels of EO. The value of FP for low and high levels of EO is the lowest for the configuration of low levels of ISR and low levels of HPWS and supports

hypothesis 6 (d). A comparison of the slopes across the configurations indicates that there is no significant material difference between the slopes of two conditions represented by low ISR-low HPWS and low ISR-high HPWS, but the FP values are higher for the low ISR-high HPWS than for the low ISR-low HPWS for low and high levels of EO. This supports hypothesis 6 (c) and 6 (d).

To summarize, the plots partly support hypothesis 6 and the three-variable interaction effect represented by the EOISR_XHPWS regression coefficient is marginally statistically significant ($p < 0.1$) and the change in R squared with the introduction of the three-variable interaction effect is also marginally statistically significant ($p < 0.1$). The value of the R squared change (0.62%) and the value of the three-variable interaction coefficient (-0.057) is small.

Hypothesis 6 is partly supported (marginally statistically significant) with the most beneficial impact on FP exhibited by firms with a configuration of high levels of ISR and low levels of HPWS followed by firms with high levels of ISR and high levels of HPWS and then by firms with low levels of ISR and high levels of HPWS. Firms that have low levels of ISR and low levels of HPWS has the least impact on FP among all the four configurations.

The results are consistent with the hypothesis and theoretical framework of the resource-based view that entrepreneurially oriented firms deliver strongest performance in comparison with peers when they possess the right resources (ISR) and the right levels of resource exploitation capability (HPWS).

CHAPTER 5

DISCUSSION AND CONCLUSION

Discussion

Two meta-analysis studies on entrepreneurial orientation (EO) have confirmed the broad agreement in the field of entrepreneurship research that firms that act entrepreneurially are likely to perform better than firms that do not (Rauch, Wiklund, Lumpkin & Friese, 2009; Saeed, Yousafzai & Engelen, 2014). My dissertation addresses the call to study unexplored meaningful and relevant moderators, and contextual factors that may explain the considerable variation in the entrepreneurial orientation-firm performance relationship across peer-reviewed studies over the past three decades - a fact that was noted by both the meta-analysis studies of EO (Rauch, Wiklund, Lumpkin & Friese, 2009; Saeed, Yousafzai & Engelen, 2014).

My research question and research model also addresses the call by Miller (2011), that there was an urgent need to pivot the research discussion from the determinants and consequences of EO to the organizational context in which EO manifested itself.

My dissertation studies the impact of various configurations of entrepreneurial orientation (EO), intangible strategic resources (ISR) and high-performance work systems (HPWS) on Firm Performance (FP). In my dissertation, ISR represents the “resources possessed” by the firm and HPWS represents the “resource exploiting” capability within the firm and EO, represents the “entrepreneurial posture” of the firm. The importance of resource possession and resource exploitation as boundary conditions

influencing firm performance has already been well documented (Barney, 2001; Penrose, 1959; Prahalad & Hamel, 1990; Amit & Schoemaker, 1993; Schulze, 1994). A stream of researchers has also emphasized the importance of resource exploitation (internal organizing content) capability of a firm in leveraging and converting internal firm specific strategic resources in delivering superior firm performance outcomes (Mahoney & Pandian, 1992; Barney & Hesterly, 2011).

I used the resource-based theory of the firm as an organizing framework for developing the arguments as the fundamental principle of the resource-based theory of the firm emphasized firm level resource heterogeneity and differentiation as compared to the isomorphic view that emphasizes that firms in similar environments have similar configurations and strategic fit to compete successfully (Meyer, Tsui & Hinings, 1993; Miller, 1990, Zajac, Kraatz & Bresser, 2000). The resource-based theory of the firm posits that firms have different configurations of resource endowments and resource exploitation capabilities that may explain differences in their performance and their competitive advantage (Barney, 1991). The resource-based theory of the firm thus led to the understanding that there could be more than one resource configuration (unique to a particular firm due to elements of social complexity, path-dependency, and causal ambiguity) that could lead to competitive advantage within the same industry. This is a crucial premise underlying configurational research in entrepreneurship as applied to the EO-FP relationship.

I applied the configurational model to test my three-variable interaction (EOXISRHPWS) that different levels of EO, ISR, and HPWS lead to different FP outcomes. In doing so, my dissertation also furthers the interest in the configurational

research approach in the field of EO (Lumpkin & Dess, 1996; Dess, Lumpkin & Covin, 1997). The results of my dissertation indicate that levels of ISR and HPWS in the firm influence the nature of the EO-FP relationship. In doing so, it establishes two additional boundary conditions influencing the EO-FP relationship.

My dissertation tests six hypotheses. The first set of three hypotheses is the direct-effects (single variable influence) model - hypotheses 1, 2 and 3 focuses on the influence of EO, HPWS, and ISR, respectively, on FP. The second set of two hypotheses is the contextual effects (two variable interaction) model - hypothesis 4 and 5 focuses on the influence of ISR and HPWS, respectively, on the EO-FP relationship. The last hypothesis is the configurational effects (three variable influence) model - hypothesis 6 (a), (b), (c), (d) focuses on the impact of EO, HPWS, and ISR on firm performance.

The results of hypothesis 1 indicate that EO is a statistically significant predictor of FP. The direction of the effect is also positive as hypothesized. The results of hypothesis 2 suggest that HPWS is a statistically significant predictor of FP and has a positive influence. The regression tests of hypothesis 3 indicate that ISR is a statistically significant predictor of FP and has a positive impact on FP. The regression coefficients suggest that ISR followed by HPWS and EO exerts the most substantial influence. The unique relationship and the unique shared variance of each variable while controlling for other variables is also highest for ISR followed by HPWS and EO.

To compare the magnitude and impact of the direct effects of each of the three independent variables (EO, ISR, and HPWS), all the direct-effects are included and jointly tested in another multiple regression (model 4). The results indicate that the unique impact is statistically significant, positive and largest for ISR followed by HPWS.

However, the unique impact of EO is marginally statistically significant, and the positive impact of EO is the least of all the three independent variables. The comparison of the multiple regression results (model 4), including all the direct-effects with the individual direct effects regression results (hypotheses 1, 2 and 3) indicates the possibility of an interaction effect between the variables of interest in the dissertation (EO, ISR, and HPWS) that are subsequently tested in hypothesis 4, 5 and 6.

Hypothesis 4 tests the effect of the EOISR interaction on FP. The results indicate that the EOISR interaction has a positive impact and is a marginally statistically significant predictor of FP. Hypothesis 4 is thus partially supported and suggests that the EO-FP relationship depends on the levels of ISR in the firm. The relationship between EO and FP is stronger for firms with higher levels of ISR and weaker for firms with lower levels of ISR.

Hypothesis 5 tests the effect of the EOHPWS interaction on FP. The results indicate that the EOHPWS interaction has a negative influence and is a marginally statistically significant predictor of FP. Hypothesis 5 is thus partially supported and indicates that the EO-FP relationship depends on the levels of HPWS in the firm. The negative interaction effect of EOHPWS means that the more positive HPWS is, the more negative will be the effect of EO on FP. The relationship between EO and FP is stronger for firms with lower levels of HPWS and weaker for firms with higher levels of HPWS. If we compare the results of hypotheses 1 and 2 with hypothesis 5 we see that EO and HPWS, each has a positive direct-effects influence on FP but when we consider their interaction we find evidence that the influence is negative. This is consistent with the arguments in my dissertation.

Hypothesis 6 is tested in the configurational regression model that includes the direct-effects, the lower order two-variable interactions, and the three-variable interaction. The results indicate that the EOISRHPWS interaction coefficient is negative and marginally statistically significant. The change in R squared value is marginally statistically significant indicating that the inclusion of the three-variable interaction term is partly supported. As three-variable interaction coefficients cannot be evaluated in isolation, they are plotted and interpreted from the results of the hierarchical multiple regressions.

The interpretation of the four configurations (high ISR-high HPWS, high ISR-low HPWS, low ISR-high HPWS and low ISR-low HPWS) for low and high levels of EO is analyzed on the basis of the interaction plots. The analysis leads to the conclusion that the EO-FP relationship is strongest for firms with high levels of ISR and low levels of HPWS and next strongest for firms with high levels of ISR and low levels of HPWS. Thus hypothesis 6 (a) and 6 (b) are both supported. The slope for high levels of ISR and low levels of HPWS is the steepest and is materially different and significant than all the other three configurations. Thus with an increase in the levels of EO in the firm the rate of change in FP is strongest for firms with high levels of ISR and low levels of HPWS. This is the most significant and important finding of the dissertation that highlights the role of HPWS and can be evaluated along with the findings of the negative impact of the EOHPWS interaction (hypothesis 5). It also indicates that though ISR exerts a positive interaction effect with EO on FP (hypothesis 4), the exploitation of ISR and the effect of EO on FP is constrained by the level of HPWS in the firm. HPWS constrains the exploitation of ISR and the entrepreneurial postures reflected by EO, on FP.

Further interpretation of the interaction plots supports hypothesis 6 (c) and 6 (d). The slope of firms with higher levels of HPWS and lower levels of ISR is relatively flat, and its impact on FP is higher than the last configuration of low levels of ISR and low levels of HPWS. The relatively flat slopes of both the conditions (low ISR-high HPWS and low ISR-low HPWS) indicate that there is no improvement in FP with an increase in the levels of EO. Thus for firms with low levels of ISR there is no materially change in the impact on FP with low or high levels of effect of increasing levels of EO on FP and further, though the impact is her for high level of HPWS do not seem to influence FP. This is also an important result of my dissertation and confirms the arguments presented in hypothesis 6.

Contribution

The first contribution I make through my dissertation is to provide empirical support for both, resource possession (ISR) and resource exploitation (HPWS) as representing organization-specific factors that moderate the EO-FP relationship. By including the role of both, resources (ISR) and capabilities (HPWS) I leverage the resource-based theory of the firm that highlights the importance of resource possession and resource exploitation in conferring competitive advantage to firms (Barney, 2001; Penrose, 1959; Prahalad & Hamel, 1990; Grant, 1991; Amit & Schoemaker, 1993; Chandler & Hanks, 1994). The dependent variable in my dissertation is FP as firms that have a competitive advantage are also expected to generate increased levels of FP.

EO research has typically emphasized the universal positive impact EO has on FP, but I provide evidence that ISR and HPWS are important boundary conditions that

influence the impact of EO on FP and should be included in the discussion. For example, I find support that even when firms have high levels of EO, it may not be able to improve its performance with high levels of HPWS when it possesses low levels of ISR. I provide support that firms with higher levels of HPWS and higher levels of ISR may not perform as well as firms with lower levels of HPWS and higher levels of ISR. Further, there is no significant increase in FP for firms with lower levels of ISR with lower or higher levels of HPWS. The important role of ISR is thus emphasized. This confirms the arguments of the resource-based theorists that if a firm does not have strategic assets and skills (ISR) in the first place, then there are no assets to exploit for competitive advantage and resource-exploiting capabilities (HPWS) provides no utility or benefit to the firm. Thus my dissertation pivots the debate from a purely direct effects perspective of EO-FP to a contextual-configurational perspective of the EO-FP relationship by emphasizing the role-played by resource possession and resource exploitation capability. My dissertation links the field of entrepreneurship, strategic management, and human resource management using the framework of the resource-based theory of the firm. It leverages cross-disciplinary knowledge in other fields of management to develop a more granular understanding of the dynamics of EO and thus makes a valuable contribution to the field of entrepreneurship.

Secondly, I contribute by providing evidence about the role of organizational capabilities (organizing context or complementary capabilities) represented by HPWS. The resource-based theorists advocated the framework of VRIO (value-rarity-inimitability-organization) to explain the basis of competitive advantage for firms. I provide support for the arguments made by resource-based theorists that though the

resource context (ISR - represented by VRI) retains its important role, it is the role of the organizing context (HPWS-represented by O) that may determine FP outcomes, in conjunction with the entrepreneurial postures (EO) of the firm.

Thirdly, I provide specific guidance on the most advantageous configurations of entrepreneurial posture (represented by EO) - organizational assets and skills (represented by ISR) - organizational capabilities (represented by HPWS) that will provide the most beneficial outcomes for the firm (represented by FP). Firms are most likely to benefit from increasing levels of EO when they have high levels of ISR and low levels of HPWS, followed by high levels of ISR and high levels of HPWS. Firms that have lower levels of ISR and higher levels of HPWS come next in terms of generating suitable outcomes, and the least beneficial configuration is the one denoted by lower levels of ISR and lower levels of HPWS. This has implications for business leaders who may consider these boundary conditions as they decide to exhibit increased EO behaviors at the firm level (reflecting risk taking, proactiveness, and innovation). For example, a manager in a firm that has high levels of HPWS and low levels of ISR may realize that any increase in EO posture will not translate to superior FP. It may, therefore, choose to reduce the level of HPWS and increase its level of ISR to improve FP.

Fourthly, by using the concept of EO and the framework of the resource-based theory of the firm in organizing my key arguments, my dissertation can be viewed as (1) a test of the resource-based theory of the firm and (2) providing inputs on the limitations of the universal effect of EO. As indicated by Anderson & Eshima (2013), EO scholars have too often focused on identifying conditions and organizational contexts where EO has a beneficial universal impact. Not much thought has been given to conditions under

which increasing levels of EO may not yield a positive impact, no impact and worse, a negative impact. Using the configurational model in my dissertation, I provide inputs on the conditions under which increasing levels of EO may not improve performance outcomes for the firm. For example, in the two conditions of low ISR-low HPWS and low ISR-high HPWS, there is no materially significant improvement in performance with increasing levels of EO. In fact, a visual assessment of the direction of the slope for the low ISR-high HPWS line indicates that there is a possibility that increasing the levels of EO and HPWS beyond a point may impact a firm negatively. This can also be construed to mean that increasing levels of HPWS in firms that have low levels of ISR may negatively impact the performance of the firm with increasing levels of EO. In this way, the arguments and results in my dissertation provide inputs on the lower limit boundary conditions of ISR-HPWS under which more of EO may not lead to improved performance and may in fact lead to a decrease in performance. My results indicate the conditions and configurations under which simply increasing the levels of EO may not have the desired effect. My dissertation contributes by highlighting the limitations of the universal benefit of EO approach in the field of entrepreneurship.

The fifth contribution relates to the benefits realized from the practical application of the results by managers as they focus on designing-implementing optimum levels of HPWS given their levels of ISR-EO. Managers may choose to either influence HPWS or ISR or EO in their unique situation given the configurational impact it could have on their performance. Each firm may have its own unique constraints on its ability to influence each of these three critical variables and may, therefore, choose an option that addresses their performance needs in the most optimum manner. My results provide

inputs on why some firms given similar levels of EO may have differential levels of FP. Firms with low levels of HPWS and high levels of ISR exhibit the greatest gains from an increase in EO whereas the gains from EO for low ISR-high HPWS and low ISR-low HPWS firms are considerably flat and low. The guidance provided in my dissertation may not be as prescriptive as it is indicative, but may still be of value to firms as they mull over their configurational options in their quest for improved FP.

The sixth contribution made in my dissertation is in the operationalization of the variables. To operationalize the dependent variable, FP, rather than using single indicators, a multi-dimensional approach was used (Lumpkin & Dess, 1996; Gupta & Govindarajan, 1984). The benefit of this approach is in the well-accepted fact that performance is multi-dimensional and firms vary in terms of their performance horizon – whether it is short term or long term (Cameron, 1978; Wiklund and Shepherd, 2005; Zahra, 1991). For operationalizing ISR, I used the comprehensive definition that incorporates 7 types of intangible assets and skills and combined two dimensions of degree of strategic relevance and degree of competitive advantage enjoyed by the firm to arrive at a composite score (Hall, 1992). Finally, I used the appropriate factor analysis and factor structure test approach for operationalizing HPWS and utilized the comprehensive 27-item scale as an input for conducting factor analysis.

Finally, my dissertation follows the call made by numerous entrepreneurship scholars for cross-disciplinary research, by bridging the fields of entrepreneurship, strategic management, and human resource management, while building the core knowledge in EO and furthering the trend of evidence-based research in entrepreneurship.

Limitations and Future Research

The first two limitations are the cross-sectional nature of the data collected and the related concern about the causality of the relationships hypothesized in my dissertation. Though participants were directed to reflect and respond on the basis of their observations over the immediate past three years for each of the independent variables of interest, their responses could have been driven more by their immediate perception, and there could be memory decay in recalling past events. Apart from the cross-sectional data, there could be concerns about the causal relationships suggested - some scholars have argued that FP could be an antecedent to EO (Covin & Slevin, 1991; Anderson & Eshima, 2013). In the same vein, it is also possible that as firms establish HPWS, there could be a reverse impact of HPWS on EO. The concerns about causality can be addressed by longitudinal studies that can study the cause and effect relationships in a more informed manner. Another limitation is the issue of survivor bias as all the firms in the study are surviving firms.

Any concern about the representativeness of the business panel of firms resembling the universe of firms was addressed by the market research agency that confirmed that the business panel was meticulously designed taking into account its representativeness. Thus the results of my dissertation are generalizable. The model was specified correctly as the most relevant controls, as advised by prior EO scholars were used in my dissertation - age, size, and access to financial capital, environmental hostility and environmental dynamism.

The limitation arising from self-reported data did not pose a threat in EO research as the correlation between EO and perceived performance and EO and archived performance was found to be strongly positive (Rauch, Wiklund, Lumpkin & Frieze, 2009). Further, in the case of interactions, researchers have opined that common method variance is unlikely to impact the results (Aitken & West, 1991).

In my dissertation, I focused on the synergistic effect of HPWS as a bundle of HR practices. But it may not very easy for firms to apply my recommendations as I do not specifically mention which individual HR practice will provide the greatest benefit within the configurational model. There could be future research avenues on analyzing the effect of individual HR practices on the EO-firm performance relationship and in configurational models of EO. This logic extends to ISR also, as ISR for the purpose of my dissertation is a bundle of intangible assets and intangible skills, and my recommendations may be difficult to translate into practice as I do not identify which specific component of ISR will lead to the greatest benefit in the configurational model. On the other hand, it can be argued that firms may use the results from my dissertation in focusing on those elements of HPWS and ISR that they feel are most relevant from a strategic standpoint given their industry and unique resource and operating context. Nevertheless, delving into individual components of ISR and HPWS and their role in configurations may provide productive avenues of future research and enhance the practical utility of configurational models in EO-FP.

There could be a concern about the applicability of the results as the interactions were marginally statistically significant ($p < 0.1$) thereby indicating that the interaction hypotheses were partly supported. However, the trend and slopes of the interaction plots

and the results are encouraging considering the cross-sectional nature of the data collected and the complexity of interpreting three-variable interactions. If longer time periods and longitudinal data were collected and studies were limited to a certain industry then it could possibly provide additional research opportunities to test the interaction hypotheses and assess the statistical significance of the results.

Conclusion

With a sample of 263 US-based firms and using the rubric of the resource-based theory of the firm, my dissertation studies the contextual and configurational impact of resource possession (represented by intangible strategic resources - ISR) and resource exploitation (represented by high performance work systems - HPWS) on the entrepreneurial orientation (EO) - firm performance (FP) relationship. My results indicate all the three interactions are marginally statistically significant and the related hypotheses are partly supported. The relationship between EO and FP is positively influenced by the ISR possessed by the firm and is negatively influenced by the HPWS in the firm. My configurational hypothesis indicates a negative influence of the three-variable interaction of EOISRHPWS on FP. The most beneficial configuration for increasing levels of EO for improved FP is for firms with high levels of ISR and low levels of HPWS. Next strongest influence is exerted by the configuration of high levels of ISR and high levels of HPWS and is followed by the configuration of low levels of ISR and high levels of HPWS. The least beneficial configuration is the one for firms with low levels of ISR and low levels of HPWS. The regression coefficients and the interaction plots support all the directional effects of the three-variable interaction hypotheses. The analysis leads to the

conclusion that increasing levels of EO are not beneficial for firms (in terms of gains in FP) that possess low levels of ISR (irrespective of the level of HPWS) and is most beneficial for firms that possess high levels of ISR in conjunction with low levels of HPWS. For firms possessing high levels of ISR and high levels of HPWS, increasing levels of EO does improve FP but the rate of increase in FP is not as much as the configuration indicated by higher levels of ISR and lower levels of HPWS. My dissertation provides evidence that resource possession (ISR) and resource exploitation (HPWS) interact with entrepreneurial postures (EO) in predicting firm level outcomes (FP).

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performance. *Human Resource Management*, 52(2), 263-288.

Appendix A: Firm Performance (FP) Survey Items

Importance of Performance Criteria					
Please indicate the degree of importance your firm currently attaches to each of the following criteria					
Rating>	1	2	3	4	5
Criteria	Not Important	Of Little Importanc	Moderately Important	Very Important	Extremely Important
Sales					
Sales Growth					
Market Share					
Growth in Market Share					
Net Profit					
Cash Flow					
Return on Investment					
Customer Satisfaction					
Competitive Capacity					
Self-Financed Growth					
Satisfaction on Performance Criteria					
Please indicate the degree of satisfaction you currently have with your firm's performance on each of the following criteria					
Rating>	1	2	3	4	5
Criteria	Not at all Satisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied	Extremely Satisfied
Sales					
Sales Growth					
Market Share					
Growth in Market Share					
Net Profit					
Cash Flow					
Return on Investment					
Customer Satisfaction					
Competitive Capacity					
Self-Financed Growth					

Appendix B: Entrepreneurial Orientation (EO) Survey Items

Please select the number in the following scales that best describes your response to the statement. Select number “1” if the statement on the left hand side of the scale best describes your response to the item. Select number “7” if the statement on your right hand side of the scale best describes your response to the item. Select numbers “2” through “6” depending upon your best estimate of an intermediate position.		
1. Innovativeness		
In general, the top managers of my firm favor . . .		
A strong emphasis on the marketing of tried-and-true products or services	1 2 3 4 5 6 7	A strong emphasis on R&D, technological leadership, and innovations
How many new lines of products or services has your firm marketed in the past five years (or since its establishment)?		
No new lines of products or services	1 2 3 4 5 6 7	Very many new lines of products or services
Changes in product or service lines have been mostly of a minor nature	1 2 3 4 5 6 7	Changes in product or service lines have usually been quite dramatic
2. Proactiveness		
In dealing with its competitors, my firm . . .		
Typically responds to actions which competitors initiate	1 2 3 4 5 6 7	Typically initiates actions to which competitors then respond
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
3. Risk-Taking		
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)
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 cautious, incremental behavior	1 2 3 4 5 6 7	Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve a firm’s objectives
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	1 2 3 4 5 6 7	Typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential

decisions		opportunities
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Appendix C: Intangible Strategic Resources (ISR) Survey Items

Importance of Specific Types of Intangible Strategic Resources					
Please indicate the relevancy your firm attaches to each of the following specific types of resources in the industry it competes in					
Rating>	1	2	3	4	5
Intangible Strategic Resource	Not Relevant	Of Little Relevance	Moderately Relevant	Very Relevant	Extremely Relevant
Copyrights, Patents, Trademarks, Designs and Trade Secrets					
Contracts, Rights, Licenses, Agreements, and Leases					
Networks - Internal and External Personal Relationships					
Brand Equity - Corporate, Product and Service					
Information Technology - Software and Databases					
Know-How - Employees, Suppliers and Distributors					
Culture - Shared Beliefs, Assumptions, Values, Habits and Customs					
Competitive Advantage of Specific Types of Intangible Strategic Resources					
Please indicate whether your firm enjoys a competitive advantage on each of the following specific types of intangible strategic resources as compared to its key competitors					
Rating>	1	2	3	4	5
Intangible Strategic Resource	Significant Disadvantage	Slight Disadvantage	Same Advantage as Rivals	Slight Advantage	Significant Advantage
Copyrights, Patents, Trademarks, Designs and Trade Secrets					
Contracts, Rights, Licenses, Agreements, and Leases					
Networks - Internal and External Personal Relationships					
Brand Equity - Corporate, Product and Service					
Information Technology - Software and Databases					
Know-How - Employees, Suppliers and Distributors					
Culture - Shared Beliefs, Assumptions, Values, Habits and Customs					

Appendix D: High-Performance Work Systems (HPWS) Survey Items

Below are items that organizations may use in the management of their employees. For each item, indicate the extent of your agreement or disagreement as a description of the practices employed at ALL employee levels by your firm” (1, “strongly disagree,” to 7, “strongly agree”)	
1. Participation	Employees in our firm are often asked to participate in decisions.
	Employees are allowed to make decisions.
	Employees are provided the opportunity to suggest improvements in the way things are done.
	We keep open communications with employees.
2. Mobility	Employees have few opportunities for upward mobility.
	Employees do not have any future in this organization.
	Promotion in this organization is based on seniority.
	Employees have clear career paths in this organization.
	Employees who desire promotion have more than one potential position they could be promoted to.
3. Training	Extensive training programs are provided to employees.
	Employees will normally go through training programs every few years.
	There are formal training programs to teach new hires the skills they need to perform their job.
	Formal training programs are offered to employees in order to increase their promotability in this organization.
4. Staffing	Great effort is taken to select the right person.
	Long-term employee potential is emphasized.
	Considerable importance is placed on the staffing process.
	Very extensive efforts are made in selection.
5. Job Description	The duties in this job are clearly defined.
	This job has an up-to-date description.
	The job description for a position accurately describes all of the duties performed by individual employees.
6. Appraisal	Performance is more often measured with objective quantifiable results.
	Performance appraisals are based on objective quantifiable results.
	Employee appraisals emphasize long term and group-based achievement.
7. Job Security	Employees in this job can be expected to stay with this organization for as long as they wish.
	Job security is almost guaranteed to employees.
8. Incentive Reward	Individuals in this job receive bonuses based on the profit of the organization.
	Close tie or matching of pay to individual/group performance.

Appendix E: Control Variables Survey items

Control Variable	Measurement	
Age (AGE)	Number of years a firm is operating as a business	
Size (SIZE)	Small and medium enterprises (less than 500 employees) and large enterprises (500 or more employees)	
Access to Financial Capital (AFC)		
Please indicate your level of satisfaction with your firms access to financial capital		
Insufficient and a great impediment for our development	1 2 3 4 5 6 7	Fully satisfactory for a firms development and growth
Environment Hostility (EH)		
How would you characterize the external environment within which your firm operates?		
Very safe, little threat to the survival and well-being of my firm	1 2 3 4 5 6 7	Very risky, a false step can mean my firm's undoing
Rich in investment and marketing opportunities	1 2 3 4 5 6 7	Very stressful, exacting, hostile; very hard to keep afloat
An environment that my firm can control and manipulate to its own advantage, such as a dominant firm has in an industry with little competition and few hindrances	1 2 3 4 5 6 7	A dominating environment in which my firm's initiatives count for very little against the tremendous competitive, political, or technological forces
Environment Dynamism (ED)		
How would you characterize the growth opportunities in the environment?		
Have decreased dramatically	1 2 3 4 5 6 7	Have increased dramatically
How would you characterize the production / service technology in your principal industry?		
Has remained the same	1 2 3 4 5 6 7	Has changed very much
How would you characterize the rate of innovation of new operating processes and new products or services in your principal industry?		
Rate has fallen dramatically	1 2 3 4 5 6 7	Rate has dramatically increased
How would you characterize research and development activity in your principal industry?		
Has fallen off greatly	1 2 3 4 5 6 7	Has substantially increased

CURRICULUM VITA

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College of Business, University of Louisville
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EDUCATION

Ph.D., Entrepreneurship

University of Louisville, USA, 2018

Title: The Influence of High Performance Work Systems and Intangible Strategic Resources on the Entrepreneurial Orientation-Firm Performance Relationship

Chair: James O. Fiet, Director, PhD Program, University of Louisville

Committee Members: Cara H. Cashon, Robert P. Garrett, Bruce H. Kemelgor, University of Louisville

MBA, Strategy, Innovation, Technology, Operations, Organization Consulting

University of Utah, USA, 2007

P.G.D.M. (MBA equivalent), Corporate Finance and Services Marketing

Goa Institute of Management, India, 1999

MA, Sociology

University of Mumbai, India, 2012

MA, History

University of Mumbai, India, 2010

ENTREPRENEURIAL EXPERIENCE

Board Consultant, Organizational Strategy and Human Capital Performance, India 2010-2013

Consulted promoters and executive leadership of firms with annual sales turnover in the range of \$ 50-400 million. Implemented projects in operations strategy, performance management, organization design, human capital assessment and development and human resource alignment and process based organizations

TECHNOLOGY COMMERCIALIZATION & STRATEGY - EXPERIENCE

Senior Consultant, USTAR (Utah Science Technology & Research) Initiative, USA 2007-2008

Governor Huntsman's signature initiative for the State of Utah to develop technology clusters for profitable strategic innovation and commercialization

Reporting - Executive Director (CEO) of the USTAR Governing Authority

Responsibilities - Evaluated new and emerging technology commercialization initiatives, and economic impact programs. Worked with faculty, partners, students and community institutions to develop an entrepreneurial ecosystem and technology clusters for innovation

Emphasis - Portfolio strategy, cost benefit analysis, program design, resource allocation, organization development, research talent acquisition and project management

Industries - Biomedical devices, personalized medicine and alternative fuels

Senior Research Associate (Analyst), GOED (Governors Office of Economic Development) Nevada Project, USA 2011-2012

Governor Sandoval's flagship Knowledge Fund and Technology Commercialization Plan for developing the industry competitiveness for the State of Nevada

Reporting - Technology Commercialization External Expert-Consultant

Responsibilities - Analyzed and assisted the strategic mapping and tactical development of an action plan incorporating processes, structure, people and technologies, for a state-level technology commercialization intermediary. Developed intra and inter-institutional role clarity, strategic initiatives and metrics among all relevant public and private stakeholders including UNLV, UNR and DRI.

Senior Business Analyst, Office of Technology Ventures, University of Utah, USA 2006

Designed technology evaluation methodology & alliance and partnership model for university technology commercialization initiative

Project Leader, Lassonde Entrepreneur Institute, Salt Lake City, USA 2005-2007

Developed business models and business plans to secure funding for Enhanced Oil and Gas Recovery Initiatives and Emerging Fossil Fuel Technologies

Member, India Advisory Council, Salt Lake City, USA 2007-2008

Identified potential partners in India for commercializing US technologies and inventions in the areas of medical research, health information technologies and clinical research

**Consulting Associate, American Express Bank, Country Managers Office, India
1998**

Implemented Aspiration Based Strategic Planning Project for the corporate bank in India as recommended by senior management team from bank headquarter in New York, USA

MANAGEMENT CONSULTING AND MARKETING-SALES EXPERIENCE

Management Consulting Leader, CHR Global P Limited, India

Vice President (Profit Center Head), 2008-2010; General Manager (Profit Center Head), 2002-2005; Principal Consultant, 2000-2002; Manager, 1999-2000

B2P (Business to People) consulting firm with a focus on strategic HR processes, operations management, organization development and performance Management

Reporting - Deputy Managing Director

Responsibilities - Business generation, new product development, executing flagship and large consulting projects, designing consulting models, ensuring client engagement and satisfaction, managing board level relationships, monitoring internal profitability and developing effective service delivery models

Emphasis - Strategy implementation, performance management, process based organization structures, workforce productivity and organization change management

Industries - Financial services, manufacturing, life sciences, chemicals, engineering, media and diversified business conglomerates

**Marketing Manager, ALBA Group, South Asia, Mauritius, Far East, Africa & Gulf
1992-1997**

Diversified international business house with three lines of business

Financial Services - Created offshore fund & marketed it to high net worth clients

Global Trading - Developed international markets for Indian commodity goods

Portable Cabins - Coordinated marketing & administration of camp projects and portable housing complexes at various construction and oil exploration sites

**Manager - Projects Marketing, Geecy Engineering, India
1991-1992**

Chemical process equipment design and manufacturing company focused on the oil and gas sector. Identified, concluded & implemented successful JV partnership with a South Korean engineering firm

**Sales Executive, Antulay Travels, India
1989-1991**

Outbound travel services, manpower consulting and recruitment company. Secured manpower recruitment contract from a leading Kuwait based Conglomerate

SAMPLE - OPERATIONS-STRATEGY-HR CONSULTING ASSIGNMENTS

Performance Budgeting and Measurement System, Mortgage finance company. Scope - 1362 employees in 178 offices. Outcome – Created objective performance culture, increased profits & assets per employee and reduced attrition

Manpower Optimization Exercise, Residuary financial institution. Scope – 4891 employees in 237 offices. Outcome – Delayed organization; optimized manpower, created new roles & ensured transition to new organization structure through employee cooperative model

Product Development, Talent Acquisition & Compensation Strategy, Tobacco replacement research program. Outcome - Developed innovation processes, performance measurement criteria, reduced cycle time and attrition of R&D team

Succession Planning & Leadership Development, Intellectual property rights & patent litigation law firm. Outcome - Implemented competency assessment center & career and succession plans to increase value add, revenue and profitability per attorney

Business Process Redesign, 125-year-old NGO. Scope - 27 rural hospitals. Outcome - Migrated highly subsidized loss making hospitals in the new changing disease environment into profitable entities

Organization Restructuring & Process Driven Job Classification, Critical care hospital. Scope -17 specialties and 384 employees. Outcome – Eliminated process bottlenecks, increased surgery throughput, reduced overhead, improved process reliability & patient service levels

Cost Reduction Studies, Sugar company. Scope - 4 sugar mills with 32000 tons per day crushing capacity. Outcome - Increased raw material utilization, optimized manpower, increased inventory turnover and reduced overheads

Quality Management & Designing Innovation Processes, Surfactant company. Scope - 3 manufacturing units and 276 employees. Outcome - Designed process driven and quality focused organization, reduced defects, increased new product pipeline and reduced new product time to market cycle time

Board Capability Building Model, Central banking policy governing authority (equiv. to Federal Reserve, USA). Scope - 24 Largest Public Sector Banks in India. Aim – Board restructuring and governance processes, induction norms and evaluation of Independent Directors (recommended to Ministry of Finance, Government of India)

Supervisory Board Induction Process for Independent Directors, Integrated textile group. Outcome - Improved corporate governance and business performance standards and achieved alignment of strategic business goals-organization

TEACHING INTERESTS

Entrepreneurship, Creativity and Innovation, Strategic Management, Business Policy, Human Resources, Small Business Management, New Venture Marketing, Business Model Canvas, Managing and Leading in Organizations, Business Ethics-Governance

TEACHING CERTIFICATION

Graduate Teaching Academy Certificate, 2015-2016

Delphi Center for Teaching and Learning

School of Interdisciplinary and Graduate Studies, University of Louisville

TEACHING AND COURSE DEVELOPMENT EXPERIENCE

PhD Program Award of Excellence for Teaching, 2016

University of Louisville

Faculty, Instructor, BSBA and Entrepreneurship Minor Program

Entrepreneurship and Marketing Courses, 2015-2018

University of Louisville, USA

Instructed, designed syllabi, created new learning approaches and course materials

Fall 2017, Spring 2018, Special Topics in New Venture Marketing

Spring 2017, New Venture Marketing

Fall 2016, Entrepreneurial Creativity and Innovation

Spring 2016, New Venture Marketing

Fall 2015, Entrepreneurial Creativity and Innovation

Teaching Associate, BS, MBA & Executive MBA Programs

Management and Organization Behavior-Human Resources Courses, 2005-2007

University of Utah, USA

Developed new course, facilitated in-class activities, upgraded existing courses, graded coursework, provided feedback and conducted classes as required

Fall 2005, Business Ethics

Spring 2006, Managing and Leading in Organizations

Summer 2006, Ethics of Management

Fall 2006, Managing and Leading in Organizations

Spring 2007, Competitive Advantage through Human Resources

Spring 2007, Management of Ethics

EXECUTIVE TRAINING WORKSHOPS AND COUNSELING EXPERIENCE

Organizational Consultant & Executive Coach

CHR Global HR Services P Ltd., 1999-2005; 2008-2010

Board / Organizational Consultant, 2010-2013

Conducted operations, human resources and strategy, creativity in problem solving related workshops and retreats for senior and mid-level executives

Counseled client employees on managing change during large scale organizational transformational initiatives involving processes and technology

FELLOWSHIPS, HONORS, AWARDS AND RECOGNITIONS

University of Louisville, USA

Doctoral Dissertation Research Funding Award, 2017

Award of Excellence for Teaching, PhD Program, 2016

Doctoral Program Scholarship Award, 2013-2018

University of Utah, USA

Beta Gamma Sigma International Business Honors Society, 2007

David Eccles Fellow, MBA Program, 2005-2007

Edward & Dorothy Folland Scholar, MBA Program, 2005-2007

Business Case Competition Winner, David Eccles School of Business, 2005

Lassonde Entrepreneur Institute, USA

Pierre and Claudette McKay Lassonde Scholarship Recipient, 2006-2007

Industry and Corporate Recognitions

American Express Bank Outstanding Internship Performance, India, 1998

Reserve Bank of India Official Recognition, Board Capability-Governance Model, 2002

Consulting Intervention Impact Validation Certificates, Various, 1999-2013

RESEARCH INTERESTS AND EXPERIENCE

Entrepreneurship, Strategic Management, Human Resources Management and Creativity and Innovation

Qualitative Research - Project Associate, Entrepreneurship, 2013-2015

University of Louisville, USA

RESEARCH PUBLICATIONS

Fiet, J. O., Kerrick, S. A., Kosmidou, V., & Naskar, S. T. (2015). Specific knowledge as a key to launching successful new ventures. *Frontiers of Entrepreneurship Research*, 35(16), 3.

Fiet, J. O., Kerrick, S. A., Kosmidou, V., & Naskar, S. T. (2015). Do the venture ideas of repeat entrepreneurs change after their discovery?. *Frontiers of Entrepreneurship Research*, 35(16), 19.

MANUSCRIPTS UNDER REVIEW

Fiet, J. O., Kerrick, S. A., Kosmidou, V., & Naskar, S. T., Venture-specific knowledge and the micro advantages of repeatedly successful entrepreneurs, 2017
Under Review: *Journal of Small Business Management*

DISSERTATION

The Influence of High Performance Work Systems and Intangible Strategic Resources on the Entrepreneurial Orientation-Firm Performance Relationship

Prior research indicates that entrepreneurially oriented firms perform better and grow faster than firms that are conservatively oriented. Firms with an entrepreneurial orientation (EO) jointly exhibit risk-taking, innovative and proactive behaviors. The EO-firm performance relationship is well accepted but characterized by considerable variation across studies and an inadequate focus on internal firm specific factors, processes and contexts that may influence or affect the nature of the relationship.

My dissertation uses the framework of the resource-based theory of the firm to argue that the influence of EO on performance is contingent on the intangible strategic resources (ISR) and high-performance work system (HPWS) of a firm. ISR are the know-how, skills, and intellectual property, patents, brands and informal social networks in a firm. HPWS is defined as a bundle of unique firm-level human resource management (HRM) practices that focus on leveraging human capital and transforming and executing a firm's strategy. I use a sample of 263 US firms as a setting for my dissertation.

My results indicate that resource possession (represented by ISR) and resource exploitation (represented by HPWS) are both intrinsically important to entrepreneurial postures and actions (represented by EO) taken by a firm to realize superior firm performance.

WORKING PAPERS

“An empirical analysis of the effect of source and content of feedback on individual performance across the managerial hierarchy of a firm.”

Performance feedback is an intervention to improve learning and task performance in organizations. A natural experiment comprising 268 managers investigates the effect of source and content of feedback on managerial performance. The results indicate that external agent feedback is more impactful than internal agent feedback and developmental feedback is more impactful than evaluative feedback on managerial performance.

“The role of work stress and organizational identification in predicting entrepreneurial intention.”

New venture formation decisions are inherently unpredictable and unplanned; entrepreneurial intention models are used to analyze these decisions. A survey of 193 employee responses, using structural equation modeling technique, indicates that organizational identification reduces entrepreneurial intentions whereas work stress increases entrepreneurial intentions and both the correlates are statistically significant.

“The Mediating Role of HR Practices in an entrepreneurial firm.”

Firms that act entrepreneurially outperform firms that act conservatively. The interdependent nature of HR practices emphasizes the need to study the synergistic impact of HR practices as a source of competitive advantage. In a survey of 112 US firms, the results demonstrate that bundles of HR practices partially mediate the relationship between firm entrepreneurial orientation and competitive performance.

“How do social network characteristics impact first product launch performance for nascent firms in different technology environments?”

The first product launch confers organizational legitimacy, provides first mover advantage, generates trust with investors and builds market credibility for the new venture. This paper examines the role of entrepreneurs social network on the on-time first product launch performance and the moderating role of technology environment and degree of competition in the industry.

MBA's - DIRECTED INDEPENDENT STUDY AND ELECTIVES

M.B.A., University of Utah, USA, 2005-2007

Managerial Negotiations, Organizational Consulting, Managing and Leading Organizations, Ethics in Management, Global Workforce Management, Managerial Negotiations, Strategic Management, Innovation Consulting, Operations Strategy, Supply Chain Management and Operations Consulting

P.G.D.M (M.B.A. equivalent), Goa Institute of Management, India, 1997-1999
Organization Behavior, Human Resources Management, Organizational Change Management, Cross-Cultural Management, Business Ethics, Industrial Relations, Economic, Political and Social Environment of Business, Service Marketing, Structured Finance, Risk Management and Insurance

Ph.D. - ACADEMIC TRAINING

Ph.D., University of Louisville, USA, 2013-2018

Theory Related Seminars

Foundations of Entrepreneurship Research	James O. Fiet
Psychology of Entrepreneurship	Dean Shepherd
Sociological Foundations of Entrepreneurship	Howard Aldrich
Economic Theory of the Firm	Yong Chao
Theories of Opportunity and Discovery in Entrepreneurship	James O. Fiet
Strategic Perspectives of Entrepreneurship Research	Robert Garrett
Emerging Topics in Entrepreneurship Research	Pankaj Patel
Organization Behavior in Entrepreneurship	Ryan Quinn
Venture Capital Theories	James O. Fiet
Finance Theories	David Dubofsky
Marketing in Entrepreneurship - New Product Design	Robert Carter
Social Capital Networks	James O. Fiet

Methodology Related Seminars and Projects

New Quantitative Approaches to Entrepreneurship Research Design	Per Davidsson
Qualitative Statistical Analysis (NVivo Suite)	Research Project
Contemporary Topics in Entrepreneurship Research Design	Scott Shane
Entrepreneurship Research from Economic Perspective (STATA)	Simon Parker
Conjoint Analysis and Discrete Choice (SAS)	Robert Carter
Structural Equations Modeling (LISREL, AMOS)	George Higgins
Hierarchical Linear Modeling (HLM)	Jill Adelson
Multivariate Statistics (SPSS, AMOS)	Namok Choi
Research Methods	Manju Ahuja
Applied Multiple Regression (SPSS)	Jason Osborne
Advanced Statistics (SPSS)	Cara Cashon
Experimental Research Designs	Manju Ahuja

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