1-1-2014

Essays On The Role Of Competitor-Specific Human Capital On Initial Public Offerings (ipos) Performance

Tapan Seth
Wayne State University,

ESSAYS ON THE ROLE OF COMPETITOR-SPECIFIC HUMAN CAPITAL ON INITIAL PUBLIC OFFERINGS (IPOs) PERFORMANCE

by

TAPAN SETH

DISSERTATION

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

2014

MAJOR: BUSINESS ADMINISTRATION

Approved by:

_____

Co-Advisor Date

_____

Co-Advisor Date

_____

_____

_____

DEDICATION

To Mom and Dad.

ACKNOWLEDGEMENTS

First, I would like to take the opportunity to express my thanks to my advisor Dr. Amanuel Tekleab for believing in my work and giving me the intellectual freedom to find my path through the wilderness. He has been a huge support to me not only during the dissertation process, but also, in fueling my curiosity right from the start of the doctoral program. I truly appreciate his readiness to accommodate me during my impromptu stops at his office to discuss my thoughts and ideas. His advice and faith in my abilities have helped me overcome moments of frustration and despair. I am also deeply indebted to Dr. Jaegul Lee, my co-advisor, who has been a great source of inspiration and invaluable in the development of this work. Jaegul's seminar triggered my interest in entrepreneurship research, and his guidance and support have contributed tremendously to my development as a researcher. His constructive feedback and supportive comments have sustained me through the trials of this work. Additionally, I am extremely appreciative of both Amanuel and Jaegul, for the valuable lessons, the timeliness and the depth of their comments for the dissertation. Without your support and guidance this research would have never been possible.

I would also like to thank my committee members Dr. Scott Julian, Dr. David Merolla, and Dr. Xun (Brian) Wu for their valuable comments and support during the dissertation process. Their comments were helpful in making me think deeply about the theoretical and empirical issues which contributed to the development of this study. To Dr. Margaret Williams, thank you for your support and mentoring in every way throughout the doctoral program. To Dr. Atilla Yaprak, thank you for your constant encouragement and inspiration.

A special thanks to my fellow PhD students, Agnes, Ayse, Matt, Chenguang, and Norkeith for being my comrades in arms. Thank you for your support and friendship. You made the PhD more enjoyable and fun!

Finally, I would like to thank my family and friends who have supported me throughout this journey and constantly encouraged me to follow my dreams.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter One: Transferability of Human Capital: The Role of Competitor-Specific and Competitor-Related Human Capital on IPO Performance

This study draws on research on human capital, organizational learning, and competitive dynamics to explore the role knowledge spillovers through labor mobility to young entrepreneurial firms. Employing a multi-year panel data of new IPOs between the periods of 1995-2010 from the U.S. semiconductor industry, the results of this study show that the prevalence of competitor-specific and competitor-related knowledge in the TMT teams of IPO firms leads to higher market valuations of the IPO firm. Additionally, the results show that the degree of transferability of such human capital is contingent upon the characteristics of employment of the TMT member who possesses the competitor relevant knowledge and the organizational complexity of the source firm where such knowledge was acquired.

Introduction

Within the framework of strategic factor markets (Barney, 1986) and resource-based view (RBV) (Barney, 1991), it is assumed that all firms have similar access to the information about the competitive environment; however, heterogeneity exists in terms of information internal to an organization. Thus, it is argued that by focusing on internal analysis to access information and resources that are internal to the organization, the firm can obtain superior insights into the value of strategies that it can implement by leveraging those valuable, rare, inimitable, and non-substitutable (VRIN) resources (Barney, 1986; Barney, 1991).

On the other hand, research in competitive dynamics indicates that it is not just the possession of VRIN resources but also their relative deployment value vis-à-vis the resources

possessed by the competitor that enables firms to effectively compete against their competitor (Chen, 1996). This stream of research stresses the importance of product-market overlap as a prerequisite to the study of rivalry (Markman et al., 2009). Thus, competitive actions and responses of firms' in relation to each other are determined by, the degree of *market commonality* and *resource similarity*, and are asymmetrical due in part, to different levels of awareness, motivation, and capability (AMC) (Markman et al., 2009). The AMC framework argues that a competitor will not be able to respond to an action unless it is aware of the action, motivated to react, and possesses the capability to respond (Chen, 1996). Thus, from the perspective of competitive dynamics, information that is internal to the organization (resources and strategies that can be derived from them) needs to be supplemented with information about specific competitors in designing strategies that would lead to sustainable competitive advantage with regard to the competitor.

One way in which firms can obtain information regarding a specific competitor is by hiring talent from the competing firm (Dosi, 1988; Kim, 1998). As economies have become increasingly knowledge-based, human assets have systematically been recognized as an organization's key competency and source of competitive advantage (Conner & Prahalad, 1996; Grant, 1996, Zingales, 2000). On the other hand, as knowledge is considered to be a key factor of production, the relative power of employees' vis-à-vis the organization has increased (Drucker, 1993), which has contributed to an overall trend of increasing employee mobility. Consequently, the process and consequences of knowledge transfer in the context of employee mobility has emerged as a major issue in the study of organizations (Sturman, Walsh, & Cheramie, 2008; Aime, Johnson, Ridge, & Hill, 2010; Campbell, Ganco, Frnco, & Agarwal, 2012; Campbell, Coff, & Kryscynski, 2012). Research in this sphere indicates a general

agreement that employee mobility can result in loss of competitive advantage for the source firm by enabling the transfer of essential knowledge to the recipient firms.

Within the area of technology-based entrepreneurship, individuals are considered to be the primary driving force of technological innovation, which in turn acts as an essential driver of entrepreneurial activity (Drucker, 1985). Therefore, researchers have long been interested in the link between human capital of individuals and outcomes of technological-based entrepreneurship. Human capital theory generally posits that more and better quality human capital leads to greater performance and indeed research has shown the importance of knowledge and experience in the development, growth, and success of new technology-based ventures. Recently, entrepreneurship scholars have shifted their attention towards team-level as the focus of study primarily due to the recognition that high potential, high growth firms are typically established and developed by entrepreneurial (TMT) teams, not individuals (Beckman, 2006; Shrader & Siegel, 2007).

As knowledge transfer can occur through employee mobility to new high technology ventures and entrepreneurial teams typically form such ventures, it becomes essential to consider the impact of employee mobility within the group (TMT) context. A fundamental premise of upper echelon theory is that top management teams matter for organizational performance. A plethora of research in management and strategy literature has shown that TMTs affect firm performance through the strategies they formulate and implement (Hambrick & Mason, 1984; Finkelstein & Hambrick, 1996). Closely related to this stream of research, human capital theory argues that individuals or teams possessing superior level of human capital are better suited to accomplish relevant tasks and are therefore associated with superior firm performance. Human capital of top managers is considered to be function of their experiences, training, and

background (Hambrick & Mason, 1984). Thus, knowledge and capabilities of top managers can act as VRIN resources that can potentially lead to competitive advantage (Barney, 1991).

While prior research has considered the impact of employee mobility, majority of this research stream has focused on the individual level or on the special case of spin-outs where teams of employees leave to start new ventures. However, it is also quite likely that a new venture is established by an entrepreneurial team composed of individuals from different parent (source) firms from the focal or related industries. A progeny of multiple parents can potentially tap into the diverse knowledge of the TMT members to position itself efficiently within the industry and can potentially compete with any or none of the parent firms. Entrepreneurship literature has also emphasized the importance of human capital of the entrepreneurial team in the success of new ventures (Unger, Rauch, Frese, & Rosenbuch, 2011). Human capital of the entrepreneurial team has been linked to the discovery and creation of entrepreneurial opportunities (Marvel, 2013); opportunity exploitation (Dimov, 2010); new knowledge accumulation (Bradley, McMullen, Artz, & Simiyu, 2012); and acquisition of financial and non-financial resources through venture capital (Zacharakis & Meyer, 2000).

Additionally, while research has explored the ramifications of employee mobility in the competitive context (e.g. Pazzaglia et al, 2012; Campbell et al., 2012), this research has primarily focused on the impact of such movement and resulting knowledge transfer on the performance of the source firm. Using a sample of soccer teams derived from the English Premier League, Pazzaglia et al, (2012) show that employee mobility positively impacts the performance of the transferred individual and hinders the relative performance of the source firm. Other research has shown that only executive level firm-specific human capital tends to be transferable (Sturman et al., 2008). Thus, the turnover of employees can create a situation where the organization not only

lose their competitive advantage but also enable competition through knowledge spillovers (Agarwal, Echambadi, Franco, & Sarkar, 2004). A substantial body of literature has examined the competitive impact of these knowledge spillovers on the source firm (Agarwal, Ganco, & Ziedonis, 2009; Hellman, 2007, Philips, 2002). However, less is known regarding the competitive ramifications of the transfer of these human assets for the performance of entrepreneurial startups.

In this paper I argue that the TMT member's human capital that is competitor-specific (CS) or competitor-related (CR) can be a valuable resource to the IPO firm that the young entrepreneurial firm can utilize to effectively compete against its competitors. Within the context of entrepreneurial firm, the human capital embedded within the TMT would constitute the key driver of awareness about competition, motivation to attack the competitor, and an essential component of entrepreneurial firms' capabilities to mount an attack (Shrader & Siegel, 2007). Furthermore, I identify some contingencies that would affect the CS/CR-IPO performance relationship: complexity of the source firm from which CS/CR is derived and the employment characteristics of the carrier of CS/CR at the source firm. This contingency perspective is driven by the human capital and organizational learning literature that argues that development and application of knowledge depends on the interplay between the individuals and their environment (March & Olsen, 1976).

I am able to make several contributions from this study. Firstly, I integrate competitive dynamics and human capital literature. I draw from competitive dynamics literature the insight of identifying competitor-specific advantage. I extend that by adding the human capital element and highlight the importance of competitor-specific or competitor-relevant human capital of top managers. Secondly, I add to the debate surrounding the transferability of firm-specific human

capital by showing that in the context of IPOs it is indeed valuable and can be transferred. While some recent research (e.g. Pazzaglia et al, 2012; Sturman et al, 2008) has explored the issue of transferability, we know little about the individual and organizational contextual drivers that influence the transferability of firm-specific human capital. By looking at the individual and organizational contextual drivers, which influence the transferability of firm-specific human capital, I also add to the literature on new member additions in entrepreneurial teams. In addition, results indicate that while prior executive level experiences of TMT members at competitors of the IPO firm are valued more by investors, the presence of individuals with non-executive experiences at competitor firms also enhances firm performance at IPO. Finally, I contribute to the literature of IPO in general. While most of IPO research on stock pricing focuses the signals the IPO firm provides through their TMTs, the impact of the information about competitors of the IPO firm has not been explored. The human capital embedded in the TMT of the entrepreneurial firm that is competitor-specific or competitor-related can provide valuable signals to investors by indicating the ability to compete effectively with its rivals.

In the following sections, I briefly describe relevant literature and develop hypotheses. Next, I describe the data, variables, and statistical models used for analysis. Finally, I present research findings and conclude with a discussion of the implications of the study.

Theory and Hypotheses:

Prior research has made a distinction amongst the types of human capital and it is generally regarded to be of two types: generic and specific human capital (Becker, 1975; Florin & Schullze, 2000). The generic human capital of TMT member represents knowledge and skills that generate value for any firm that can make use of them (Bailey & Helfat, 2003). This type of human capital refers to general managerial approaches to work and includes processes such as

motivating the staff or planning budgets and therefore can be of value in any industry. While the generic human capital described above is considered to be highly transferable, it does not necessarily lead to provision of distinct and rare capabilities for the firm (Barney, 1991). On the other hand, specific human capital refers to the degree to which the knowledge of the individual is rare such that it can generate above average rents for the firm (Wang and Barney, 2006). Specific human capital is further distinguished into two types: industry-specific and firm-specific human capital. Industry-specific human capital refers to the knowledge derived by an individual from experiences within a specific industry and is considered to be transferable to other firms within the same industry. Firm-specific human capital, on the other hand, pertains to the knowledge and skills that are valuable only within a specific firm. Thus, it is generally considered that firm-specific human capital tends to be applicable only within the context in which it is generated and cannot be easily transferred to other contexts (Shepherd & Wiklund, 2009).

Recent research suggests that not all types of human capital lead to the creation of competitive advantage. The meta-analysis by Crook, Todd, Combs, Woehr, and Ketchen (2011) shows that the link between human capital and performance tends to be stronger when human capital is firm-specific rather than general. While the general contention in human capital research to date has been that as the specificity of human capital increases, its transferability decreases (Harris & Helfat, 1997; Wang & Barney, 2006), some research suggests that there might be components of firm-specific human capital that are transferable and may be valued by other firms in certain contexts (Castanisa & Helfat, 2001; Pazzaglia et al., 2012). Thus, recent research argues against the characterization of human capital as being purely generic or firm-

specific. Instead, human capital is looked to be upon a continuum ranging from purely generic to purely firm-specific (Castanisa & Helfat, 2001; Sturman et al., 2008).

Research has shown that both general and specific human capital have a positive effect on business outcomes such as growth and failure, though effect sizes were higher for specific-human capital as compared to general human capital (Unger et al., 2011). Using data on employee mobility and wages, Gathmann and Schonberg (2006) show that that task-specific human capital is partially transferable in the labor market and this transferability is reflected in the individuals wage growth. According to Doving (2004), the concept of firm-specificity of human capital has primarily been based on technology-related firm-specificity (task specificity). The logic underling this line of thinking has been that as firms possess unique technologies, employees need to develop firm-specific skills in order to efficiently utilize the underlying technology (Doving, 2004). In this sense, task-specificity relates closely to the notion of *know-how* or the operational knowledge of executing a particular task or narrow range of tasks in a particular organization (Kim, 1993; Lundvall & Johnson, 1994). Nevertheless, certain components of individuals' task-related *know-how* developed in their prior employment context can be transferred to the IPO firm provided that there is some contextual overlap and complementary assets are present within the IPO firm to absorb and exploit the knowledge (Teece, 1981; Teece, 1986).

Additionally, other researchers have argued for the existence of a class of firm-specific human capital that are not connected to a single task, but might be broadly applicable to a variety of different tasks (Defillippi & Arthur, 1994, Nordhaug & Gronhaug, 1994; Doving, 2004). These include knowledge of organizational culture, communication channels and informal networks, political dynamics within the organization, and knowledge of firm's strategy and goals

(Defillippi & Arthur, 1994; Lamb & Sutherland, 2010). Such knowledge is considered highly tacit to the individual and is more closely related to the concepts of *know-why, know-who,* and *know-what* dimensions of knowledge (Kim, 1993; Ludvall & Johnson, 1994). Furthermore, these dimensions of individual knowledge are attributed to the development of "soft-skills" such as emotional intelligence and maturity, opportunity identification, context management and ability (Lamb & Sutherland, 2010). This conceptual learning contributes to the formation of new frameworks in the mental model of individuals, and in turn, can lead to opportunities for radical improvement (Kim, 1998). As the above mentioned elements of knowledge are considered mainly tacit to the individual, they can potentially transfer to the IPO firm through employee mobility.

As individuals move between firms, their firm-specific human capital can be valuable to the recipient firm; however, the replication and transfer of relevant knowledge and experience in entrepreneurial startups occurs within the context of the entrepreneurial team (Shrader & Siegel, 2007). As the firm grows, new members are added to the entrepreneurial team primarily to fill resource gaps (Forbes, Borchert, Zellmer, & Sapienza, 2006). The choice to add a member is important because it materially alters the available human capital and potentially changes the culture and direction of the new venture (Forbes et al., 2006). Furthermore, at the time of IPO the entrepreneurial team tends to resemble top management teams (TMTs) of established firms (Shrader & Siegel, 2007). In the case of IPOs, due to their strategic importance and visibility, top managers' human capital is particularly relevant to the evaluation of the future success of the firm (Floring, Lubatkin, and Schulze, 2003). With regards to impact of TMTs on IPO performance, recent studies have considered TMT's human capital to be a function of industry experience (Floring et al., 2003; Cohen & Dean, 2005), start-up experience (Floring et al., 2003;

Steffens, Terjesen, & Davidson, 2012), educational background (Chemmanur & Paeglis, 2005; Cohen & Dean, 2005; Kroll, Walters, & Le, 2007; Lester, Certo, Daily, Dalton, & Canella, 2006), and prior TMT experience (Chemmanur & Paeglis, 2005; Lester et al., 2006). Thus, prior research on IPOs has predominantly considered role of generic human capital (education, start-up experience, TMT experience) and industry-specific experience that tend to be highly transferable, in determining IPO performance. While generic human capital of the TMT plays important role, it is likely that parts of TMT member's firm-specific knowledge gained in prior employment also influences IPO performance. In addition, as such firm-specific knowledge of the TMT members can be even more valuable in the competitive context (Chen, 1996; Campbell et al., 2012; Pazzaglia et al, 2012); it becomes important to explore the role played by such knowledge of current competitors in shaping IPO performance.

TMT member's Competitor-Specific and Competitor-Related Human Capital:

Research in competitive dynamics argues that a firm must account for the possibility of retaliation from its competitors in the strategy development process. Therefore, the extent and quality of firm's knowledge of itself and its competitors play an integral role in competitive dynamics (Barnett, 1997). Competitor knowledge create information asymmetry between firms and firms with more competitive information are able to utilize their knowledge in several ways, including pitching their strengths against the competitors weaknesses, internalizing competitor's strengths by imitations, or nullifying a competitor's strength by introducing novel and differentiated products into the market. Knowledge about the competitor is also strategically important as this knowledge provides the diagnostic framework in which a firm can benchmark its position in comparison to the competitor. While the TMT's general human capital is an integral part of the firm's value creation process, the specific human capital represented by TMT

member's relevant experience at a particular competitor as embodied by the degree of competitor-specific or competitor-related human capital of these top managers can provide important signal to the stock market that the IPO firm is well-positioned to deal with its competitors. Competitors pose important threats to young entrepreneurial firms primarily because they tend to possess significantly more resources that can be deployed to aggressively compete against the smaller firm.

Competitor-specific (CS) human capital accrues from the top managers experiences with the competitor thereby giving them in-depth understanding of competitors capabilities, risks, and inner workings (Arthurs, Busenitz, Hoskisson, & Johnson, 2009). When the TMT includes individuals who had previously worked at current competitors of the firm, the organization can access highly firm-specific information such as knowledge of specific production processes and long-term strategic plans of the competitor. According to Stone (2002), an employees' competitor specific knowledge can include the knowledge of business plans, upcoming projects, past projects, and market knowledge, all of which can be extremely valuable to the IPO firm. Thus, competitor-specific human capital entails a comprehensive understanding of the culture, structure, processes, norms, and procedures that are utilized/implemented at the competitor's organization.

On the other hand, competitor-related (CR) human capital accrues from the top managers' experiences with firms that have prevailed against those competitors identified by the IPO firm. Consider, for example, two incumbent firms A and B, where firm A was outperforming firm B, and firm B is the current competitor of the IPO firm. If the TMT of the IPO firm includes individuals who were employed at firm A during the period firm A was outperforming firm B, then those top managers can also bring in strategic knowledge that is

competitor-related and can help the IPO firm identify the weaknesses of firm B and gain advantages over firm B. This type of knowledge would include detailed understanding of action reaction sequence of past competitive interaction between A and B, and firm-specific human capital developed during the top manager's tenure at firm A. Thus, for example, knowledge of marketing strategies deployed at firm A that were utilized to out maneuver B, and knowledge of R&D strategies that were able to keep pace/or exceed B's rate of new product introduction, can be directly utilized by the IPO firm in their strategic decision making process.

In addition, another manner in which competitor-specific and competitor-related knowledge of the TMT member could be valuable to the IPO firm would be the understanding of what does not work. This "negative knowledge", entails knowledge gained through research and experience discovering dead ends, pitfalls, and faulty process that fail to produce valued business outcomes (Stone, 2002). As the development of new products can be risky and extremely time consuming process, it becomes important for young entrepreneurial firms to allocate recourses appropriately and select a suitable strategy. Thus, this "negative" knowledge becomes a valuable and rare resource as it can prevent the IPO firm from taking approaches to product development or introduction that are known not to work.[1]

[1] It is possible that non-compete/non-disclosure agreements play a role in inhibiting the transfer of knowledge. However, research indicates that laws governing such agreements vary by states and even where such laws exist and are enforced the ability of non-compete agreements to prevent employee mobility and subsequent knowledge transfer has dwindled (Ingram, 2002; Fleming & Marx, 2006). Additionally, research indicates that the highly firm-specific knowledge even if not purposely used, can be a substantial value to the competitors of the firm (Koh, 1999). Therefore, while possibilities of legal protection exist, the firm's ability to protect highly firm-specific human capital embedded in its employees tends to be limited and such knowledge can in fact spillover to competitors.

Hypothesis 1a: *The level of competitor-specific human capital possessed by the TMT of the IPO firm is positively related to IPO performance.*

Hypothesis 1b: *The level of competitor-related human capital possessed by the TMT of the IPO firm is positively related to IPO performance.*

Moderators of CS-CR Human Capital and IPO Performance Relationships

In considering the transferability of human capital to other contexts, it is essential to consider the components of knowledge at the individual level. Past research has characterized these components in terms of *know-how* which refers to individuals' acquisition of a particular skill, i.e. the physical ability to produce some action; *know-why* which encompasses the "ability to articulate a conceptual understanding of experience"; *know-what* which entails knowledge about facts; and, *know-who* which refers to information about who knows what, and who knows what to do (Kim, 1993; Lundvall & Johnson, 1994). The development of these four types of knowledge tends to occur in different ways and through different channels (Jensen, Johnson, Lorenz, & Lundvall, 2007). According to Jensen et al., (2007) important aspects of individuals' *know-how* and *know-why* are primarily developed through formal education and training, whereas the development of *know-who* and *know-what* are more rooted in practical experience. While individual learning can occur across any of the above-mentioned knowledge types, research in individual learning has also shown that individuals' tend to have limited capacity, and they primarily rely on mental models to process information about the world. These 'mental models' not only provide the context in which individuals view and interpret new information, but are also in turn shaped by individual experiences. Thus, an individual's human capital is not a static concept; it constantly evolves as human beings make decisions and take actions through

the interactions between the information derived from the environment and interpreted based on their mental models.

From above it follows that during employment at a particular firm, growth in an individual's knowledge base can occur across any or all of the four dimensions of knowledge. The degree to which each type of knowledge is developed would in turn depend upon the interplay between the individual and the environment within which they are embedded (March & Olsen, 1976). Thus, as heterogeneity exists across firms (Barney, 1991) and an individuals' human capital is shaped by their experiences/environment, variations would exist in the degree and type of CS-CR human capital. Thus, individuals on the TMT of the IPO firm who possess CS-CR human capital would differ in the level, scope, and type of firm-specific skill acquired at the competitor or competitor related firm based on the characteristics of their employment and complexity of the source firm from which the CS-CR human capital is derived.

Characteristics of Employment at Source Firm

Moderating Role of Organizational Tenure at the Source Firm. Human capital embodies an individual's productive competencies that result from natural ability, education, training, and experience (Becker, 1975). Resolving problems specific to an organization involves a high degree of tacit knowledge about the firms systems, structures, members, and procedures, and tacit skills about handling people and traversing organizational politics. This knowledge and related abilities are best learned through familiarity with a particular organization (Nakayama & Sutcliffe, 2001; Schenk, Vitalari, & Davis, 1998; Stinchcombe & Heimer, 1988). Human capital literature also suggests that the compensation of an individual is positively associated with organizational tenure as tenure reflects the human capital accrued during employment at the organization (Parent, 2002; Topel, 1991). This gain in compensation is attributed to the

individuals' share of investments in firm-specific skills (Parent, 2002). Thus, it is generally regarded that a long organizational tenure is associated with a high degree of firm-specific knowledge (Gupta 1984), and individuals raise the value of their firm-specific human capital through on-the-job experience over time, subsequently enhancing their productivity to their firms.

Research on top management teams show that managers' preexisting knowledge systems and repertoire of skills are derived from prior professional experiences (Hambrick & Fukutomi, 1991; Kor, 2003), which help explain and predict managerial inclinations, strategic choices, biases, and accomplishments (Finkelstein & Hambrick, 1996). The degree to which a manager's mental models are shaped by their experiences at the competitor or competitor-related firm would be function of their tenure at the source firm. The relationship between CS-CR knowledge of TMT and IPO performance will be stronger when such teams are composed of individuals' with longer (as opposed to shorter) tenures at the source firms. Such strong relationship between CS and CR human capital on IPO performance is expected in longer tenure because the higher level of firm-specific skills acquired as a result of longer tenure gives TMT members the ability to transfer or replicate relevant knowledge of organizational routines, norms, and procedures learnt at the competitor to the context of the IPO firm. This in turn, would allow the young entrepreneurial firm to adapt superior routines of the incumbent firm thereby enabling it to reach competitive parity with the competitor (Wezel, Cattani, & Pennings, 2006). Longer tenure at the source firms would also be associated with higher degree of intra and inter-firm network embeddedness of the TMT member at the source firm (Shen & Cannella 2002a, b), which in turn gives such individuals a higher probability of being cognizant of source firm's configuration of intellectual (and other) resources (Cao, Maruping, & Takeuchi, 2006). Thus, compared to

individuals with shorter tenures, those with longer tenures would be more apt at identifying key strengths and weaknesses of the source firm. The new venture can use this information to identify and position itself in market niches where its primary competitors lack competitive advantage. Such knowledge can complement the existing knowledge investments of the IPO firm and such resource bundling, can lead to the generation of idiosyncratic combinations (Sirmon, Hitt, & Ireland, 2007). This, in turn, can be leveraged by the new venture to increase its likelihood of creating competitive advantage (Holcomb, Holmes, & Connelly, 2009; Peteraf & Reed, 2007). Based on this, I propose the following hypotheses:

Hypothesis 2a: *Average tenure of the TMT members at the source firm where CS human capital was acquired positively moderates the relationship between the level of CS human capital possessed by the TMT and IPO performance.*

Hypothesis 2b: *Average tenure of the TMT members at the source firm where CR human capital was acquired positively moderates the relationship between the level of CR human capital possessed by the TMT and IPO performance.*

Moderating Role of Position Held at the Source Firm. According to March and Olsen (1976) model of organizational learning, individuals take action based on their mental models and these actions lead to organizational action which in turn, produce an environmental response. The learning cycle is completed when the environmental response reshapes individuals' mental model (March & Olsen, 1976). Thus, central to an individual's ability to learn within an organization is the capability of taking an action. The type of actions that an individual can take within an organization is the function of their position in the firm hierarchy (Pfeffer, 1981; Englundh, 2008). As individuals are bound by their position in the organization, it greatly influences the kind of information they can access (Shirvastava, 2007). The quantity and the

quality of information an individual possesses within an organization is also contingent upon the tasks they perform (Carley, 2002). Thus, individuals can learn from experience, but what they learn and its applicability in future situations is affected by their position in the organization and the tasks they do. Changes in the individual's position alter what is learned and the applicability of experience (Coopey, 1995). Past research has also shown that position in the organizational hierarchy determines the transferability and hence the value of firm-specific human capital (Sturman et al., 2008).

When the entrepreneurial team is composed of individuals with experiences (CS & CR) at higher levels of the organizational hierarchy of the source firm, they are more likely to gain and transfer a holistic understanding of the source firm to the new venture. As one moves up in the corporate hierarchy, they tend to gain a broader view of the firm and hence their knowledge tends to have a cumulative aspect. Consider for example, a manager of a product development division versus a knowledge worker in the marketing department of that division. Between the two, the manager would develop a more holistic knowledge of the technology commercialization process, i.e. how a concept moves to a prototype, how the prototype is developed, and eventually how the final product is marketed. The former would possess knowledge that can be more valuable for the young entrepreneurial firm, as this holistic knowledge can be applied towards developing the right structure and controls that facilitate and support growth. The presence of such individuals can send also positive signals to the investment community that IPO firm possesses the human capital necessary to manage growth (Cohen & Dean, 2005; Lester et al., 2006).

Compared to individuals at lower position, individuals with higher level experiences at the source firm are also more likely to have gained exposure to developing and implementing

strategies at the business unit or the firm level, including the firms' cooperative strategy (Prahalad & Bettis 1986). This knowledge can be used by the entrepreneurial team to cultivate a broader set of strategic choices for the young firm and develop appropriate control mechanisms that make the implementation of chosen strategy more efficient. In addition, as organizational decision makers play a crucial role in the formation of new strategic alliances (Gulati & Gargiulo 1999), entrepreneurial team member's prior exposure to such knowledge (by the virtue of their former position at the source firm) can be a valuable resource for the firm. Such knowledge could include information pertaining to quality of potential alliance partners, control mechanisms to prevent loss of core technology through accidental knowledge spillovers to partners, and internal mechanisms required to best facilitate knowledge flows from partner firms. Thus, when the competitor and competitor-related experiences of the TMT members are derived at higher positions (as opposed to at lower positions) in the organizational hierarchy, they would also be more likely to possess the capabilities to replicate complementary assets (e.g. strategic alliance, distribution channel) within the IPO firm which strengthens the transfer of CS and CR human capital to the IPO firm. Based on the above, I propose the following hypotheses:

Hypothesis 3a: *Average position of the TMT members at the source firm where CS human capital was acquired positively moderates the relationship between the level of CS human capital possessed by the TMT and IPO performance.*

Hypothesis 3b: *Average position of the TMT members at the source firm where CR human capital was acquired positively moderates the relationship between the level of CR human capital possessed by the TMT and IPO performance.*

Organizational Complexity of Source Firm. Research in organizational theory holds that the structures, systems, and processes of a firm should be interdependent and must be

mutually supportive of the firm's strategy (Nadler and Tushman, 1997; Siggelkow, 2011). Therefore, inter-firm heterogeneity exists in the manner in which firms are organized which in turn leads to varying levels of complexity within the organization. According to Wang and Tunzelmann (2000), complexity in organizations can be assessed in terms of the dimensions of depth and breadth. Complexity in depth refers to the novelty and sophistication of a subject, whereas complexity in breadth refers to the range of areas that has to be investigated to develop a particular subject. As firms grow and expand their operation by adding to their product portfolio, it tends to give rise to complexity in breath as it increases the degree of coactions across functions required to manage and develop various product lines. On the other hand, as technology develops it enhances the degree of scientific knowledge and sophistication required to develop and produce new and novel products, thereby enhancing complexity in depth (Carbonell & Rodriguez, 2006). According to RBV, a firm's resources determine the set of strategic choices available to the firm (Penrose, 1959; Wernerfelt, 1984). The constraints to firm's ability to diversify stem from its capabilities (Wernerfelt & Montgomery, 1988), and expanding costs of coordinating activities that are associated with increasing organizational complexity brought about as a result of diversification (Duncan, 1972). Additionally, the development in breath (diversification) generally conflicts with the development of depth (specialization). This occurs due to the tension between firm-specific competencies and resource allocation priorities within the firm (Wang & Tunzelmann, 2000).

From above it follows that a firm's resources and capabilities determine its scope, which in turn determines the structure implemented by the organization. The structure of the organization in turn lays out the design for how the organization searches for new knowledge, influences the manner in which information is acquired, and set the tone for the type of actions

an organization can undertake (Cohen, 1991). Thus, learning in organizations is embedded within the structure of the organization (Owen, 2001). Structural and procedural arrangements within the organization become the foundation of individual learning and consequently shape how organizations learn (Goh, 2003). The previous two components of TMT member's CS-CR human capital (tenure and position) pertain to the individual aspect of firm-specific capital. The structure of the organization on the other hand relates more to the internal environment of the organization (albeit the competing firm) in which learning occurs. As the environment plays an integral role in individual learning, competitor-specific and competitor-related human capital of the TMT member would exhibit variations depending on the manner in which their previous employing firm is organized, i.e. the internal organizational complexity in which the knowledge was acquired. In this paper I consider two sources of variation in firm structure: product-market diversity (breath) and the type of learning emphasized in the source firm (depth).

Moderating Role of Product Market Diversity of Source Firm. As firm-level product market diversity (and consequently complexity in breath) increases, organizations typically tend to decentralize or divisionalize their structure and promote autonomy and cooperation, in order to better facilitate the flow of information and decision-making throughout the organization (Carpenter & Fredrickson, 2001; Jensen & Meckling, 1992; Keats & Hitt, 1988). For incumbent firms, decentralization is a way to handle increasing size, operational diversity, geographic dispersion, and heightened turbulence (Benito, Lunnan, & Tomassen, 2011). Under these conditions, organizations rather than being reactive seek to develop anticipatory response capabilities (Malhotra, 2002). Consequently, organizations tend to rely more heavily on individual workers to be effective anticipators of the cycle time of knowledge in the external environment, the creators of new knowledge, and have the ability to take actions based on new

knowledge (Kim, 2005). This in turn promotes higher level of learning both at the individual and the organizational level (Barling, Kelloway, & Iverson, 2003).

Bounded rationality of individuals limits their ability to handle complexity (March & Simon, 1958). Additionally, as the intra-organizational complexity in breath increases, the amount of nodes in the organizational structure that coordinate/process information and take actions based on that information also increase. Thus, restrictions are placed on the type and variety of actions an individual can take within the organization and consequently, individuals would tend to be increasingly specialized. This specialization would enhance task-specificity of jobs within the organization and consequently reduce the transferability of firm-specific human capital acquired by the individual during their tenure at the organization to the extent that such skills are highly task-specific. However, prior research has shown that certain components of even highly task-specific human capital could still be transferred to the recipient firm provided it has the capabilities to exploit the incoming knowledge (Teece, 1981; Teece, 1986; Doving, 2004).

From above it follows that human capital developed within a complex organization may be somewhat limited in its ability to transfer to the IPO firm, and the degree of transferability would be contingent upon the level of task-specialization within the source firm and the knowledge utilization capabilities of the IPO firm. However, a complex environment would also enhance additional aspects of human capital that can be potentially transferred to the IPO firm. As organizations delegate decision-rights, at the individual level, this translates into the ability to take more/diverse actions, which in turn would result in higher levels of learning both at the individual and organizational level. Additionally, it also enhances the individual's ability to deal with and make decisions under increasing organizational complexity. This occurs because

individuals in complex organizations are exposed to dealing with ambiguity. Within complex organizations basic uncertainty surrounding causal relationship between actions and results tends to be high (Lippman & Rumelt, 1982; Reed & DeFillippi, 1990) due to the prevalence of goal, strategic, relational, and structural complexity. Thus, individuals employed in complex diversified firms are likely to be attuned to dealing with and absorbing various forms of complexities that arise within the intra and inter-organizational environment.

As the product market diversity of the source firm increases the intra-organizational complexity, individuals embedded within such environments are more likely to encounter breaks/contradictions in their mental models (Ghoshal, 1987; Zellmer-Bruhn & Gibson, 2006). These contradictions (break between what is known and what is observed in practice) push individuals to expand their understanding of paradoxical processes which enhance learning as individuals try to make sense of opposites and their interplay (Rothenberg, 1979; Argyris, 1993).This process enhances an individual's capacity for paradoxical thinking, and improves reflective judgment (sense-making) required for continuous learning in a complex environment (Schwandt, 2005). Encountering and resolving contradictions in the intra-organizational environment through an action-reaction process enables individuals to internalize the knowledge gained from an experience that can be applied towards future activities (Kim, 2005). This tacit knowledge of the individual forms the basis of taking appropriate actions in response to the training situation and is comprised of a mixture of social norms, values, prejudices, experience, sources of knowledge, and relates closely to 'private ways of knowing' (Argyris & Schon, 1996; Carr, 1989).

Overall, operating within a diversified organization influences two aspects of individuals' human capital: a task-specific component based on organizational needs, and an individual

specific tacit component based on actions taken and reactions experienced within the intra-organizational environment. While the task-specific component would be limited in its transferability to the extent such knowledge is specialized to the source firm needs, the tacit component gained at such firms would represent a broader breath of knowledge. When individuals from complex organizations move to TMT of the new venture this tacit component that is rooted in experience is likely to transfer with the individual to the IPO firm. Such knowledge could include, competency in managing different markets and products; exposure to/knowledge of how different technologies are implemented (combined) in the firm's product offering, behavioral repertoires of routines enacted at the source firm; and how to create scale/scope efficiencies within the organization. In addition, such individuals would be more attuned to taking actions in ambiguous and complex situations that can be a valuable trait in the TMT of young firms in high-technology turbulent environment. From above, it could be argued that the CS or CR human capital from a source firm would only translate to benefit the recipient firm when the source firm is diverse in its product market than when it is limited in its product markets. Therefore, I propose,

Hypothesis 4a: *Product market diversity of the source firms from which CS human capital is derived positively moderates the relationship between the level of CS human capital possessed by the TMT and IPO performance.*

Hypothesis 4b: *Product market diversity of the source firms from which CR human capital is derived positively moderates the relationship between the level of CR human capital possessed by the TMT and IPO performance.*

Moderating Role of Type of Learning Emphasized at the Source Firm. Firms generally expand their knowledge diversity in order to reduce the risks of innovation

development (Wade & Gravill, 2003); to integrate internal resources and structure to improve cross-fertilization and synergy (Garcia-Vega, 2006); and to access increased technological opportunities (Nelson, 1959). How a firm searches for knowledge constitutes an essential precursor to the level of knowledge diversity it achieves (Cohen & Levinthal, 1990; Helfat, 1997). According to Argyris (1996), the diversity of firm's R&D efforts (exploitation vs. exploration) impacts the structure of the organization. Firms that tend to focus on knowledge exploration are likely to have fewer divisions or follow a centralized R&D process (Arora, Belenzon, & Rios, 2014; Miller, Fern, & Cardinal, 2007). On the other hand, the exploitation of knowledge is best achieved through splitting the organization into various divisions to focus R&D efforts on specific product or geographic market (Arora, Belenzon, & Rios, 2013; Miller, Fern, & Cardinal, 2007). Exploration generates discovery of new opportunities and, at the same time, the potential for exploitation. Thus, successful exploration also creates resources required to exploit newly discovered opportunities (Rothaermel & Deeds, 2004). While it is generally regarded that sustained firm performance requires that firms maintain a balance between knowledge exploration and exploitation, in practice, firms find it hard to achieve that balance. This occurs because these processes require fundamentally different organizational structures and managerial incentives in order to promote one or the other within the organization (Shleifer & Vishny, 1997).

Past research has conceptualized exploitative learning as adaptive learning and know how, whereas, explorative learning has been conceptualized as generative learning (Slater & Narver, 1995). Generally, exploitation is associated with optimization of exiting processes and exploration refers to creating new processes or innovation (March, 1991). Under exploitative or adaptive learning, actors are primarily concerned with their actions. Small changes are made to

specific practices or behaviors, based on what has or has not worked in the past. This involves doing things better without necessarily examining or challenging underlying beliefs and assumptions. The goal is improvements and fixes that often take the form of procedures or rules (Slater & Narver, 1995). The exploitative innovations that result from this form of learning would sustain or marginally enhance the profitability of the firm. However, in the long run this "local search" for knowledge based on the same core technology would reduce the knowledge diversity of the firm (Rosenkapf & Nerkar, 2001). Thus, individuals working for firms that tend to focus more on exploitation of existing knowledge are likely to enhance their know-how capabilities and develop operational knowledge that is likely to be applicable to the execution of a particular task (or set of tasks) supporting exploitative capabilities within a specific product division of the firm. While such task-specificity of knowledge enhances the local search process, it hinders creativity due to excessive focus on familiar components and processes (Stuart & Podolny, 1996, Ahuja & Lampert, 2001). Over time, due to path dependency the cognitive maps of individuals become increasingly focused on specific-technology (March, 1991; Leonard-Barton, 1992), thereby, inhibiting the transfer of human capital to the IPO firm. In addition, successful exploitation also requires the prevalence of strong intra and inter-organizational networks that allow employees to obtain redundant but in-depth information about specific knowledge domains (Coleman, 1988; Barker & Obstfeld, 1999). Complementary assets such as distribution channels and intricate partnerships with other firms that support the exploitation of knowledge would be difficult to replicate within the young IPO firm thereby further inhibiting the transferability of knowledge.

On the other hand, under explorative or generative learning, assumptions underlying current views are questioned and hypotheses about behaviors are tested publically (Slater &

Narver, 1995). Exploratory learning is best facilitated by organic structures that support interdependent interactions, mutual respect, social acceptance of errors, and memberships in communities of practice (Kang & Snell, 2009). This process results in double-loop learning that enables increased effectiveness in decision-making, better acceptance of failures and mistakes (risk taking propensity), and consequently organizational innovation. The double loop learning instigated by explorative search for knowledge would enhance the individual's know-why or conceptual/tacit capabilities, which would be more likely to be transferable to the IPO firm. The exploratory technological innovation derived from this form of learning would involve novel methods or materials that are derived either from a completely different knowledge base or from a recombination of parts of the firms' established knowledge base with a new stream of knowledge (Freeman & Soete, 1997). Knowledge gained through exploration generally evolves in non-linear fashion where the unknown or the unexpected is valued (Barnes & Edge, 1982). This branching of knowledge streams enhances the ability of individuals to move beyond the local search for knowledge, thereby expanding the depth and breadth of individuals' human capital (Garud & Ahlston, 1997). Thus, individuals embedded in firms where exploratory learning is emphasized are able to articulate deeper meaning of their experiences and are able to adjust them to other circumstances (Argyris & Schon, 1996). Operating within an organic structure that facilitates the exploration of knowledge also shifts the cognitive frame of such individuals from disciplined to creative problem solving (Kang & Snell, 2009), which can be beneficial to the development of novel innovations at the IPO firm. In addition, such individuals are likely to exhibit greater degree of familiarity with the minimal control structure of the young entrepreneurial firm, which can enhance the rate of diffusion of tacit knowledge to the recipient firm. This can enable the new firm to leverage the human capital of the TMT members'

possessing CS-CR human capital rapidly, incorporate the knowledge into its products and processes, and signal to the investment community that is well positioned to deal with competitors. Accordingly, knowledge derived from an exploration oriented source firm can enable the young entrepreneurial firm to raise higher levels of financial resources at IPO. In other words, while explorative learning enhances the effects of CS and CR on IPO performance, exploitative learning diminishes the effects of CS and CR on IPO performance. Thus, I propose the following hypotheses:

Hypothesis 5a: *Source firm learning emphasis moderates the relationship between level of CS human capital of TMT and IPO performance, such that the relationship will be positive when TMT members are from source firms emphasizing exploration learning, but it will be negative when the members are from source firms emphasizing exploitation learning.*

Hypothesis 5b: *Source firm learning emphasis moderates the relationship between level of CR human capital of TMT and IPO performance, such that the relationship will be positive when TMT members are from source firms emphasizing exploration learning, but it will be negative when the members are from source firms emphasizing exploitation learning.*

Methodology

Data and Sample

In order to test my hypotheses, I compiled a data set consisting of a sample of firms from the U.S. semiconductor industry who experienced an IPO during the period running from January 1995 until December 2010. I used the SDC New Issues Database to identify the newly IPO firms and collected related information such as the proceeds from IPO, the underwriters, and venture capitalists involved. The final sample included 121 unique IPOs from the semiconductor industry in the study period. As the focus of the study is on incumbents who competed against

those new IPO firms, I collected the S-1 documents from the SEC website using the EDGAR Database of the newly IPO firms, where the IPO firm's competitors are identified in the section of 'Risk Factors'. I manually collected the names of competitors from the S-1 documents. At the end of the process, I identified 467 incumbents that were identified as competitors by the IPO firm. I then, collected information pertaining to past experiences of the TMT members of the IPO firms and matched this information with the information about the competitors of the IPO firm to measure competitor-specific (CS) and competitor-related (CR) human capital. Following this I obtained the information pertaining to competitors by utilizing the COMPUSTAT database and patent data available through the Kauffman Foundation. Other relevant information relating to the IPO firm was gathered from the S-1 documents and by utilizing data available through the SDC New Issues database.

Dependent Variable

IPO Performance. Following Gulati and Higgins (2003) I constructed the measure of IPO success based on four different financial measures. First, I obtained the net proceeds (proceeds – fees) raised through the IPO from SDC New Issues Database. Second, I calculated pre-money market valuation of IPO firms in my dataset. Following Gulati and Higgins (2003) this measure was calculated as:

$$V^* = (p_u q_t - p_u q_i),$$

where p_u is the final subscription price as obtained from the SDC New Issues Database, q_t measures the number of shares outstanding, and q_i is the number of shares offered in IPO. V* therefore captures the market valuation of the IPO firm just preceding the first day of trading (Gulati & Higgins, 2003). Finally, I calculated the IPO firm's 90-day and 180-day market valuation after the IPO to estimate the early success of firm's offering (Gulati & Higgins, 2003).

This was measured using the same formula as above but substituting the post-IPO price at 90 days and 180 days out respectively for pu in the formula. As these four financial measures are highly correlated with each other (Cronbach's alpha > 0.92), I standardized these measures. Thus, my dependent variable measures market valuation of the IPO firm 1-day prior to IPO, 90 and 180-days after the IPO and the proceeds raised at the IPO.

Independent Variables

Competitor-specific and Competitor-related Human Capital. I collected the S-1 documents from the SEC website using the EDGAR Database of the newly IPO firms, where the IPO firm's competitors are identified in the section of 'Risk Factors' to measure CS and CR. I measured the competitor-specific (CS) human capital by identifying TMT members who previously worked for competitors of the IPO firms using the biographical information provided in the IPO prospectus.

To measure the competitor-related (CR) human capital, I first calculated 3-year moving average ROA for all firms in the industry for the period 1985-2010 and rank ordered them for every year. I then matched biographical information on TMT member provided in the IPO prospectus, to check if the TMT member had experience working for a firm that was outperforming the competitor. For example, if the IPO firm listed firm 'A' as one of its primary competitors and the TMT member of the IPO firm had prior experiences at firm 'B' that was outperforming firm 'A' during their tenure at firm B, then it was recorded as a competitor-related experience. The final measures were constructed by dividing the number of TMT members who possessed CS-CR knowledge by the total size of the TMT of the IPO firm. Thus, this variable captures the proportion of TMT that possesses CS-CR human capital.

Tenure at Source Firm. This variable measures the average number of years the TMT members with competitor-specific and competitor-related experiences had worked at the source firm prior to joining the IPO firm.

Position at Source Firm. I constructed this measure using a dummy variable that takes the value =1 if the TMT members possessing CS or CR human capital held executive level positions at the source firm. The final measure was constructed by summing the values for TMT members possessing CS or CR human capital and dividing that by the size of the TMT. Therefore, **t**his variable captures the average position held by the TMT members with CS or CR experiences at the source firm prior to joining the IPO firm.

Product-market Diversity. Following Nayyar (1993), I measured the product-market diversity variable as follows;

$$PD = \sum P_i \ln (1/P_i),$$

where, Pi is the share of the ith business in the total sales of a firm, and T is the total number of businesses of a firm.

Learning Emphasis of the Source Firm. I used patent citations to capture intra-organizational learning at the source firm from where the CS-CR human capital of the TMT member was derived. Patent data has been widely used in prior research as an indicator of organizational knowledge search activity (Katila, 2000, Rosenkopf & Nerkar, 2001; Schildt, Maula, & Keil, 2005). I first selected all patents filed by the source firm over a 10-year window inclusive of the tenure of the TMT member. I then calculated firm's learning emphasis in a particular year by first summing the self-citation count for each patent filed in a particular year and then dividing it by the total number of citations for each year. The final measure was

constructed by averaging firm's learning emphasis over the 10-year period. Therefore, this variable captures the degree to which a firm exploits existing bases of knowledge (self-citations) versus exploring knowledge from outside the firms' knowledge base. As this is a proportional measure, and firms can only chose between exploitation and exploration, higher values of one (exploitation) indicate relatively lower emphasis on the other (exploration).

Control Variables

IPO Age. According to Clark (2002), firm's age at the time of an IPO is considered a measure of maturity. Investors would have higher level of confidence on mature IPO firms regarding their performances and growth opportunities. I measured the age of the IPO firm as the difference between the date of incorporation and the S-1 filing date of the IPO firm.

Venture Capital, Underwriters, and Corporate Parenting. Past research has shown that reputation factors would also affect the performance of IPO firms (Hsu, Reed, & Rocholl, 2010). Venture capital backing and reputations of leading underwriters are considered to reduce some of the information asymmetry associated with the pricing of IPOs (Chalk and Peavey, 1998). I used dummy variable, a value of 1 if the IPO firm had venture backing and 0 if not. In line with previous research (Hsu, et al., 2010), I used the Carter and Manster underwriter ranking (ranging from 1 to 10) as a measure of the reputation of the IPO firm's underwriter. Finally, to control for the corporate parenting activities of spin-off firms, I included a dummy variable which equaled 1 if the IPO firm had spun-off from an existing incumbent firm.

CEO Duality. Past research has indicated that while duality is useful under certain contexts (e.g. crisis situation); it is generally considered to have negative consequences for firm performance (Finkelstein and D'Aveni, 1994). In order to rule out any potential agency issues, I

controlled for CEO duality through a dummy variable that takes the value =1 if the CEO of the IPO firm is also the Chairman of the Board.

CEO Founder Status. Prior research has shown that founders might impact the survival and performance of new ventures (Nelson, 2003). In addition, founder CEOs tend to hold more power compared to non-founder CEOs and can therefore have a greater impact on the performance of the IPO firm (Dowell, Schackell, & Stuart, 2011). I accounted for CEO's founder status using a dummy variable that takes the value =1 if CEO was also the founder of the IPO firm.

Technological Diversity. I controlled for the technological diversity of the source firm as prior research has shown that firms exhibiting high levels of technological diversity are more likely to exhibit knowledge exploration tendencies (Miller et al., 2007). To measure the level of "technological diversity" of a firm, I used the Herfindahl index of diversification (Berry, 1975), which is derived from the Herfindahl-Hirschman Index (HHI). The Herfindahl index of technological diversification can be expressed as follows:

$$D = 1 - HHI = 1 - \Sigma i \, Pi^2,$$

where, Pi denotes the proportion in a firm of patents in technical field i. The index equals zero when a firm researches only in a single technology and it is close to one when the firm spreads its research activity over a broad technological knowledge base (Quintana-Garcia & Benavides-Velasco, 2011). Patents are assigned to a number of technology codes. I employed these codes to identify the nature of the technological diversity of a firm. I followed the three-digit USPTO's classification, which distinguishes over 400 technological classes.

Team-specific Experience. This variable captures the average number of years the TMT members with competitor-specific and competitor-related experiences had worked at the focal company at the time of the IPO.

TMT Functional Heterogeneity. I obtained information pertaining to the functional background of TMT members from the S-1 prospectus document. Following past research, I used marketing, distribution, sales, research and development, production, engineering, finance and accounting, law, or general as classifications of functional background as categories for functional heterogeneity (Carpenter & Fredrickson, 2001). I then calculated the degree of heterogeneity using the Adjusted-Blau's (1977) Index (Harrison & Klien, 2007; Biemann & Kearney, 2010):

$$FH = 1 - \sum (N_i (N_i-1)/N (N-1)$$

where, N_i is the absolute frequency of group members in the *i*th category and *N* is the total number of group members. The higher the resulting score, the greater the TMT's functional heterogeneity.

Source Firm Size. As large firms might exhibit higher levels of product diversity, and knowledge derived from larger firms might have certain positive signaling effects (prestige) on the proceeds raised by the IPO firm at IPO, I controlled for firm size by using natural log of number of employees.

IPO Firm Size. As IPOs by large firms are generally associated with a positive evaluation of the firm's growth opportunities by investors, I controlled for the size of the IPO firm by using natural log of number of employees.

Estimation Procedure

In order to test my hypothesis I performed a pooled OLS estimation regression. I used the White test statistic to check the homoscedasticity assumption and found the presence of heteroskedasticity (White, 1980). As I utilized a pooled time-series approach, there exists a possibility that repeated observations may create correlated error terms. Indeed, the likelihood-ratio test revealed the presence of autocorrelation. In order to control for the presence of heteroskedasticity and autocorrelation I used robust-cluster estimator of the standard errors in my regressions. This estimator is a variant of the Huber-White robust estimator, which provides correct standard errors in the presence of heteroskedasticity and autocorrelation (Stata-Corp, 1999).

To improve the robustness of empirical research, I also ran panel random effects model. As the dataset has a panel structure over the four time periods with repeated values on the independent variables that do not change over time and as I am interested in capturing differences across the IPO firms, employing panel regressions with firm random effects model seem appropriate. The Lagrange multiplier test (Breusch & Pagan, 1980) for the random-effects model suggests that the random-effects model is more suitable than the pooled regression model. As the results using the random-effects specification were similar to those obtained utilizing pooled OLS, and the Lagrange multiplier test rendered random-effects specification more suitable, I present the results of the random-effects model. Furthermore, as the hypotheses advanced in this study involve interaction terms, I mean-centered all the independent and control variables to reduce the potential problem of multicollinearity. The variables in the interaction terms were mean-centered prior to computing the respective cross products.

Results

Table 1 a & b display descriptive statistics and correlations for the variables used in the analysis. To assess the threat of multicollinearity, I calculated the variance inflation factors (VIF) for each coefficient. The maximum estimated VIF for all direct effects and interaction terms was 2.45, which is well below the recommended ceiling of 10 (Cohen, Cohen, West, & Aiken, 2003). The results of collinearity diagnostics indicate that multicollinearity was not a problem in the statistical analysis. The standardized beta coefficients for random effects regression results with cluster robust standard errors are presented in Table 2 a & b.

[Insert Table 1 a&b & Table 2 a&b about here]

In Table 2, Model 1 presents the results of the regression with the control variables, and serves as a baseline model. Amongst the control variables, being venture-backed ($\beta = 0.034$, $p < 0.05$), having prestigious underwriters ($\beta = 0.04$, $p < 0.10$) and CEO-duality ($\beta = 0.051$, $p < 0.10$) had significant positive effects on IPO performance. In Model 2, I added CS and CR variables to the baseline model. In Hypothesis 1a, I argued that entrepreneurial teams' level of competitor-specific human capital would be positively related to the performance of the new venture at IPO. As shown in Model 2 of Table 2, this hypothesis is supported ($\beta = 0.170$, $p < 0.001$). In hypothesis 1b, I posited that competitor-related experiences of the TMT members of the IPO firm would also enhance the performance of the young entrepreneurial firm at IPO. The results support this hypothesis (Model 2, $\beta = 0.193$, $p < 0.001$)

In Model 3, I added the moderating variables into the regression model. Amongst these only the learning emphasis of the parent firm from where CS-CR human capital is derived had a significant ($p < 0.001$) negative ($\beta = -0.165$) impact on the performance of the IPO firm. In Model 4 (Table 2) I added the interaction terms between CS/CR human capital and average tenure of

the TMT members at the source firms. In hypothesis 2a, I postulated that the tenure of the TMT member at the source firm would be associated with the degree of source firm-specific human capital acquired by the TMT member and therefore influence the impact of CS human capital on IPO performance. Results indicate that tenure at the source firm positively ($\beta = 0.035$, $p < 0.005$) moderates the relationship between CS-HC and IPO performance. Figure 1(a) plots the interaction between CS human capital and average tenure of the TMT members at the source firm. As figure 1(a) illustrates, the relationship between CS human capital and IPO performance is stronger when TMT members possessing such human capital have longer tenures at the source firm. Additionally, in hypothesis 2b I argued that TMT member's tenure at the source firm would positively moderate the relationship between CR human capital and IPO performance. As can be seen in Model 3 (Table 2), this hypothesis was not supported.

[Insert Figure 1(a), 2(a), & 2(b) about here]

Further, I argued in hypothesis 3a that the position held by the TMT member at the source firm would positively moderate the effect of CS human capital on IPO performance. Consistent with my hypothesis, results indicate (Model 5, Table 2) that the interaction between CS human capital of TMT and PAC is positive and significant thereby lending support to hypothesis 3a. As can be seen in figure 2(a), the level of CS human capital of the TMT is positively and strongly associated with IPO performance when such human capital is derived through executive-level experiences. Conversely, when such human capital is acquired at a lower position in the organizational hierarchy its impact on IPO performance is weaker. In hypothesis 3b, I stated that the average position held by the TMT member at the competitor-related firm would positively moderate the effect of CR human capital on IPO performance. The results support this hypothesis (Model 5, β interaction = 0.065, $p < 0.1$). As figure 2(b) illustrates, the

relationship between the level of CR human capital of TMT and IPO performance is stronger when TMT members possessing such human capital held higher positions at the source firm.

[Insert Figure 3(a), 3(b) about here]

In Model 6 (Table 2) I added the interaction terms between CS/CR human capital and the product market diversity of the source firm. In hypothesis 4a and 4b, I argued that diversified firms would be more likely to exhibit complex structures and therefore the degree of learning and hence the human capital developed would be more valuable to the IPO firm. Consistent with hypothesis 4a, results indicate that source firm product diversity positively ($\beta = 0.088$, $p < 0.05$) moderates the relationship between CS human capital and IPO performance. Also, consistent with hypothesis 4b, the relationship between CR human capital and IPO performance is stronger ($\beta = 0.048$, $p < 0.05$) when such human capital is derived from diversified competitor-related firms. As can be seen in figures 3(a) & 3(b), product market diversity of the source firm strengthens the relationship between both CS and CR human capital on IPO performance.

[Insert Figure 4(a), 4(b) about here]

Finally, in hypothesis 5a and 5b, I stated that type of learning emphasized at the source firm would influence the relationship between the level of CS/CR human capital of TMT and IPO performance. Furthermore, I posited that the relationship between the level of CS or CR human capital of the TMT will be positive when TMT members are from source firms emphasizing exploration learning, but it will be negative when the members are from source firms emphasizing exploitation learning. The results in Table 2 (Model 7) show that source firms' learning emphasis moderated the relationship between CS and IPO performance ($\beta = -0.077$, $p < 0.05$). Figure 4(a) plots the interaction between TMT's level of CS human capital and learning emphasis of the source firm. As my measure for source firm's learning emphasis (LE)

reflects the degree to which one type of learning is emphasized over the other, high LE reflects exploitative learning emphasis and low LE represents explorative learning emphasis. As seen in figure 4(a), TMT's level of CS human capital is more positively associated with IPO performance, when such knowledge is derived from firms emphasizing explorative learning (low EL). These results provide partial support for Hypothesis 5a. Similarly, the relationship between CR and IPO performance was moderated by source firms' learning emphasis (β = -0.092, $p < 0.05$). As can be seen in figure 4(b) the relationship between TMT's level of CR human capital and IPO performance is weaker (but positive) when such human capital is derived from firms emphasizing knowledge exploitation and is stronger and positive when such human capital is derived from firms emphasizing knowledge exploration. Thus, hypothesis 5b was also partially supported.

Economic Implications

Table 3 presents the economic implications of key variables utilized in the analysis. The dependent variable used in my analysis captures the market valuation of the IPO firm. In my sample, a one standard deviation change in the dependent variable reflects a change in market valuation of about \$2.3 billion[2]. As can be seen in Table 3, one standard deviation increase in TMT's level of CS human capital (9%)[3] translates into approximately \$397.1 million increase in the market valuation of the IPO firm. On the other hand, one standard deviation increase in TMT's level of CR human capital (12%) enhances the market valuation of IPO firm by approximately \$450.9 million. This shows that comparatively, CR human capital of the TMT member commands higher value (13.5%) in the eyes of the investors.

[2] One standard deviation in IPO performance= \$2,336,367,184

[3] One standard deviation in CS=0.09. As the coefficient on CS is 0.17, this translates into \$397,182,421 (0.17 * \$2.3 billion) increase in market valuation of the IPO firm

[Insert Table 3 about here]

With regards to characteristics of employment of the TMT member at the source firm, results indicate that a one standard deviation increase in TMT member's tenure at the source firm (2.01 years) enhances the valuation impact of TMT's level of CS human capital on IPO performance by approximately $81.7 million. Similarly, when the position held by the TMT member at the source firm increases by one standard deviation (17%), it enhances the valuation impact of TMT's level of CS and CR human capital on IPO performance by $121.5 million and $ 151.86 million, respectively. This implies that the stock market values CR experiences of TMT members over CS experiences by about 25%.

With regards to the organizational complexity of the source firm, results show that a one standard deviation increase in the product diversity of the source firm enhances the valuation impact of TMT's level of CS human capital on IPO performance by approximately $205.6 million. The effect of one standard deviation increase in product diversity on CR-IPO performance relationship is almost one-half (approximately $112.15 million) the effect on CS-IPO performance relationship. Finally, source firm's learning emphasis also displays certain market valuation effects. Specifically, when source firm learning emphasis increases by one standard deviation (i.e. source firm displays more exploitative tendencies) the valuation effect of CS human capital on IPO performance is reduced by approximately $180 million. The negative valuation effect of source firm's exploitative learning emphasis on CR-IPO performance relationship is about 19.5% higher. Results show that a one standard deviation increase in source firm learning emphasis weakens the effect of CR human capital on IPO performance by ~ $215 million.

Discussion

Combining a competitive dynamic perspective with literature on human capital and IPOs, the present study examines pre-IPO human capital of the TMTs' effect on firm performance after IPO. Consistent with prior research results indicate that certain reputation effects are associated with the performance of IPO firms (Hsu et al., 2010). Venture capital backing and reputations of leading underwriters are considered to reduce some of the information asymmetry associated with the pricing of IPOs (Chalk & Peavey, 1998) and therefore, venture-backed IPO firms and those with prestigious underwriters outperform others. While past research examining the impact of CEO duality on IPO performance has been mixed (Mak & Rousch, 2000; Pollock, Fisher, & Wade, 2002), the results of my study indicate that CEO duality enhances the performance of the IPO firm. Its' possible that within the context of new ventures CEO duality signals higher degree of control which indicates that the IPO firm has the ability to take swift actions when needed while operating in a complex technological environment.

Research in entrepreneurial teams has examined the role of various team characteristics and processes on the performance of new ventures (Vanaelst, Clarysse, Wright, Lockett, Moray, & S'Jegers, 2006; Amason, Shrader, & Thompson, 2006; Ensley, Pearson, & Amason, 2002); however, little research has explored the mechanisms by which entrepreneurial teams can overcome resource advantages of their significant and more established competitors, especially in the context of IPO. Additionally, while some research has focused on the signals sent to the stock market through the characteristics of the TMT of the IPO firm, the information pertaining to specific experiences of the TMT members at key competitors of the IPO firm have not been considered. By drawing on the idea of dyad-specific competition from the literature in competitive dynamics (Chen, 1996; Markman et al., 2009), this study extends research on

entrepreneurial teams by showing that competitor-specific and competitor-related human capital of TMT members can be important drivers of IPO performance.

As the competitive pressure on the IPO firm mostly come from those competitors in the same product market niches, they pose important threats to young entrepreneurial firms as the competitive interactions can determine the survival and growth of the new venture. When the TMT of the IPO firm is composed of individuals' who possess firm-specific knowledge about the competitor, it signals to the stock market that the IPO firm is adequately positioned to deal with its primary competitors. CS and CR human capital acts as a valuable resource that the IPO firm can utilize to attain strategic advantage vis-à-vis its rivals. Findings of this research suggest that such experiences are indeed accounted for in the market valuation of such firms, and IPO firms who exhibit such characteristics tend to outperform other IPOs within the same industry. This is a novel approach to the IPO research because the IPO event has widespread and profound impact, not only on the IPO firm itself but also on those competitors of the IPO firm and beyond (Hsu, et al., 2010).

The value of the transferred firm-specific human capital on the IPO firm performance can be influenced by the characteristics of employment of the TMT member at the source firm and the complexity of the environment within which the development of human capital occurs. Past research in economics has suggested that longer organizational tenure is associated with a higher degree of firm-specific knowledge embedded within the individual (Gupta, 1984). Such individuals can be considered to be better resource allocators and decision makers, albeit within the source firms' unique context (Kor & Mahoney, 2005). However, consistent with recent research that suggests tenure is also associated with higher degree of transferability of

knowledge to the recipient firm, certain components of firm-specific knowledge can transfer to the IPO firm through employee mobility (Gathmann & Schonberg, 2006; Campbell et al., 2012).

In addition to organizational tenure, I also considered the effect of the position held by the TMT member possessing CS or CR human capital at the source firm. Results show that prior executive level experience of TMT member at the source firm is associated with enhanced effects of CS-CR human capital on the performance of the IPO firm. Thus, consistent with prior research, executive-level experiences of TMT members can indeed be valuable to recipient firms (Sturman et al., 2008). However, unlike Sturman et al., (2008), the finding regarding the impact of CS-CR human capital on the performance of the new venture suggests that at least within the competitive context, even non-executive level experiences of TMT members can have a significant impact on IPO performance. This result is important because most prior research has focused on consequences of employee mobility at the executive level (Amie et al., 2010; Campbell et al., 2012) and movement of employee groups (Phillips, 2002; Wezel et al., 2006). The results of this study indicate that in the context of new ventures, knowledge transfer can occur through the movement of employees at lower levels of organizational hierarchy; although, the performance effects of such transfer tend to be higher when such individuals have experiences at higher levels in the source firm's organizational hierarchy.

Finally, as the mental models of individuals can be understood only by examining the socio-cultural processes within which those mental models are created (Leont'ev 1974; Vygotsky, 1987), and such socio-cultural processes within which individual learning occurs are dictated by structure of the organization (Goh, 2003), I consider the inter-firm heterogeneity in these socio-cultural processes which determine learning at the individual level. In this regard, this study identifies two contextual factors that determine the transferability of firm-specific

human capital developed at the source firm: product diversification and the manner in which the organization searches for knowledge. Results indicate that when the carriers of CS or CR human capital come from diversified firms, the relationship between CS or CR human capital and IPO performance tends to be stronger. It is generally regarded that knowledge derived from large diversified firms would tend to be highly firm-specific and therefore, limited in its transferability to other contexts, due to the prevalence of specialization within job functions. However, based on the finding of this study, I argue that high product diversity increases the scope of the firm and the level of intra-organizational complexity; thereby, it enhances the development of high-order tacit learning at the individual level. This tacit knowledge embedded within the individual augments the transferability of CS-CR human capital possessed by the TMT member of the IPO firm.

In addition to product diversity, complexity in the intra-organizational environment is also driven by the manner in which the organization searches for new knowledge. Results indicate that the source firm's learning emphasis affects the relationship between both the TMT level of CS and CR human capital and IPO performance. Additionally, results show that TMT's level of CS and CR human capital is more positively related to IPO performance when such knowledge is derived from firms emphasizing explorative learning. Conversely, TMT's level of CS and CR human capital has a weaker impact on IPO performance when such knowledge is derived from firms that accentuate exploitative learning. Thus, compared to firms that emphasize knowledge exploitation, the structural and procedural arrangements within the organization that support the exploration of knowledge are likely to induce generative learning at the individual level (Slater & Narver, 1995). By encouraging distant searches for new knowledge, such arrangements within the organization enhance both the depth and breadth of an individuals'

human capital. When individuals from firms following exploration of knowledge move to the IPO firm, they are able to apply and adjust their knowledge base to the circumstances of the new venture. Learning within complex organizations that emphasize knowledge exploration can lead to the development of certain forms of firm-specific human capital that are not necessarily task-specific. Such knowledge could include not only an intricate knowledge about various norms and procedures of the competitor but also, the capability to work in ambiguous and uncertain environments, appetite for risk-taking, ability to work in cross-functional teams, and a more holistic understanding of knowledge development and commercialization processes which can be valuable resources for the success of the IPO firm. On the other hand, source firm's emphasis on knowledge exploitation has an overall negative effect on the performance of the IPO firm. However, as indicated in figures 4(a) & 4(b), the presence of individuals possessing CS or CR knowledge helps the firm to attenuate some of this negative effect.

Theoretical and Practical Implications

The results of this study have certain theoretical and practical implications. First, by integrating the idea of dyad-specific competition with literature on human capital, the study extends our understanding of the role of individuals in indentifying competitor-specific advantage. Unlike prior research that focuses primarily on the movement of executive-level key employees or entire groups of employees, the results of this study show that such characteristics are not a precondition for knowledge spillovers to other firms. Secondly, with regards to entrepreneurial teams, results show that incorporating individuals with competitor relevant experiences can enhance the valuation achieved by new ventures at the time of IPO. Interestingly, compared to CS human capital, increases in TMT's level of CR human capital results in higher increases in valuation attained by the IPO firm. This indicates that a firm can

also acquire valuable information regarding its competitors by hiring talent from firms that outperform such competitors. This can be beneficial for the new venture because CR talent acquisition might go unnoticed by the specific competitor of the IPO firm. This lag in information can enable the new firm to not only better position itself in the market, but also prevent any untimely competitive attacks by the more established competitor.

Additionally, by incorporating individual and organizational level contextual drivers that influence the acquisition of firm-specific human capital, this study extends our understanding of circumstances under which such knowledge becomes more transferable to recipient organizations. Here the results show that tenure at the specific competitor (CS) and position held at both CS and CR firms enhances the transferability of human capital to the IPO firm. Here too higher position held at CR firm has superior valuation effects on the IPO firm. Thus, the stock market places higher value on managerial experience at firms that were outperforming the current competitors of the IPO firm. As such firms were outperforming the competitor of the IPO firm; it is likely that such individuals bring knowledge of superior routines into the new venture which in turn is reflected in the market valuation of the firm.

The results regarding the organizational environment in which competitor relevant knowledge is acquired correspond more closely to what one would expect in the context of dyad-specific competition. Here the knowledge acquired in the context of specific competitor shows higher valuation effects compared to that derived in competitor-related firms. Thus, knowledge acquired in complex competitor firm is considered more applicable to performance of the IPO firm. This makes sense because compared to CR knowledge, TMT member's possessing CS knowledge are likely to be more cognizant of the resources and capabilities of the competitor. Similarly, while the transferability of both CS and CR human capital is weakened when such

knowledge is acquired from firms displaying exploitative tendencies, the effect size is higher for CR human capital. Again, it is possible that being embedded in the intra-organizational environment of the competitor enables the TMT member to replicate certain complementary assets required to exploit their CS human capital in the IPO context. While TMT member's possessing CR human capital can also do the same, it is likely that such assets are more distant to the context of the dyad (IPO firm and its competitor) which reduces its applicability in creating competitive advantage.

Limitations and Future Research:

There are several limitations of the study that affect the interpretation of the results. Firstly, the sample used for this study is industry and country specific (U.S. based semiconductor firms) and therefore the results might not generalize to other industries and countries. Future research should focus on ascertaining whether the pattern of interactions found in this study replicate across other industries and nations, and if not, what underlying characteristics (individual, firm, industry, and country level) drive the deviations. Secondly, my study uses stock market valuation as the measure of firm performance, in order to gauge the performance enhancing effects of CS-CR human capital. While this measure has been used in previous research, some authors argue that this measure may be confounded by portfolio rebalancing process of institutional investors around the time of the IPO. This process of substantial divestment in the holdings of incumbent firms stocks might be driving the overall positive shock observed on stock prices of IPO firms. Future research should figure out a way to control for these effects when exploring the drivers of IPO performance. Thirdly, while this study identifies individual and organizational level contextual factors that determine the transferability of knowledge and consequently the performance of the IPO firm, future research should explore the

internal characteristics of the entrepreneurial team and the IPO firm that might facilitate the transfer of knowledge. In addition, future research should also unravel the mechanisms through which the transfer of CS-CR human capital enhances the performance of the IPO firm. Finally, while recent research has indicated that IPOs within an industry can negatively affect the performance of incumbent firms within an industry (Hsu, et al., 2010), the results of this study highlight the importance of incorporating inter-firm heterogeneity in IPO firms when considering such effects. Thus, future research could examine whether IPO firm-specific heterogeneity in terms of CS-CR human capital of the TMT can explain incumbents' detrimental performance following an IPO by a competitor firm above and beyond those obtained through general characterization of competitive effects at the industry level.

Conclusion

It is widely regarded that knowledge embedded in individuals tends to be the key factor of production in today's entrepreneurial economies. As such economies are characterized by heightened mobility of workers, resources and opportunities can transfer to other firms through the process of inter-organizational employee mobility. Where such mobility results in the formation of a new competitor, the outcome is usually detrimental to the existence of the source firm. While the creation of the new venture is a multidimensional phenomenon (Lumpkin & Dass, 1996), entrepreneurial teams play a large role in their survival and success. By examining the individuals that constitute the entrepreneurial team and the circumstances that shape their mental models this study enhances our understanding of the development and subsequent transfer of human capital through employee mobility.

Table 1a: Descriptive Statistics and Pairwise Correlation Matrix

ID	Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9
1	IPO Performance	2.34[1]	0.85[1]	1.00								
2	Venture-Backed	0.66	0.47	0.01	1.00							
3	Spin-off	0.09	0.29	-0.07	-0.44	1.00						
4	Age	1.86	0.86	-0.07	0.12	-0.30	1.00					
5	Underwriter Ranking	2.10	0.20	0.02	0.16	0.11	0.01	1.00				
6	IPO Firm Size	5.98	1.41	-0.06	-0.22	0.10	-0.05	0.10	1.00			
7	CEO-Duality	0.36	0.48	0.11	0.06	-0.11	0.10	-0.05	-0.12	1.00		
8	CEO-Founder	0.54	0.50	-0.02	0.14	-0.05	0.05	-0.06	-0.01	0.20	1.00	
9	TMT Functional Diversity (TMTFD)	0.68	0.37	0.30	-0.12	-0.08	-0.08	-0.03	-0.12	-0.11	-0.08	1.00
10	TMT Team-specific Experience (TSE)	3.42	1.72	0.15	-0.13	0.10	-0.35	0.02	0.09	-0.10	-0.09	-0.01
11	Source Firm Size	7.63	1.12	-0.10	0.03	-0.05	-0.03	0.28	-0.06	-0.09	-0.08	0.27
12	Technological Diversity (TD)	0.67	0.20	0.09	0.06	-0.09	-0.10	-0.06	-0.14	-0.09	0.15	0.03
13	Tenure at Competitor (TAC)	5.22	2.01	0.15	-0.09	0.00	0.04	-0.01	0.05	-0.10	-0.01	-0.01
14	Position at Competitor (PAC)	0.57	0.17	0.20	-0.11	-0.03	-0.12	0.18	0.10	-0.13	-0.05	-0.01
15	Product Diversity (PD)	0.45	0.07	0.02	-0.18	0.25	-0.14	-0.04	-0.01	-0.01	0.02	-0.01
16	Learning Emphasis of Source Firm (LE)	0.62	0.17	-0.14	-0.05	-0.06	0.08	-0.15	0.02	-0.06	0.07	-0.08
17	Competitor-specific Human Capital (CS)	0.05	0.09	0.37	0.10	-0.03	0.07	0.13	-0.04	0.06	0.20	-0.01
18	Competitor-related Human Capital (CR)	0.06	0.12	0.26	-0.07	0.10	0.05	0.05	-0.06	0.13	-0.04	-0.02

[1]Amount in billions of dollars

Table 1b: Descriptive Statistics and Pairwise Correlation Matrix (Continued)

ID	Variable	10	11	12	13	14	15	16	17	18
10	TMT Team-specific Experience	1.00								
11	Source Firm Size	-0.08	1.00							
12	Technological Diversity	-0.07	0.03	1.00						
13	Tenure at Competitor	0.16	-0.12	0.10	1.00					
14	Position at Competitor	-0.23	0.01	0.13	-0.01	1.00				
15	Product Diversity	-0.05	0.04	0.00	-0.05	0.00	1.00			
16	Learning Emphasis of Source Firm	-0.21	-0.16	-0.18	-0.09	0.18	-0.10	1.00		
17	Competitor-specific-direct Human Capital	-0.08	-0.08	0.14	0.17	0.18	-0.13	0.16	1.00	
18	Competitor-specific-indirect Human Capital	-0.02	-0.08	-0.05	0.02	0.13	0.17	0.29	-0.10	1.00

Table 2a: Results of random effects regression

Dependent Variable: IPO Performance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Year	Included	Included	Included	Included	Included	Included	Included	Included
Venture-Backed	0.034**	0.033*	0.022	0.031	0.033	0.024	0.026	0.019
	(0.018)	(0.019)	(0.023)	(0.028)	(0.028)	(0.028)	(0.026)	(0.022)
Spin-off	-0.026	-0.067**	-0.058**	-0.058**	-0.049**	-0.047*	-0.062**	-0.062**
	(0.029)	(0.033)	(0.025)	(0.025)	(0.024)	(0.026)	(0.023)	(0.025)
Age	-0.024	-0.068*	-0.049*	-0.054**	-0.047**	-0.022	-0.049**	-0.019
	(0.032)	(0.035)	(0.025)	(0.025)	(0.024)	(0.024)	(0.024)	(0.023)
Underwriter Ranking	0.040*	0.029	0.025	0.028	0.030	0.027	0.025	0.032*
	(0.022)	(0.025)	(0.027)	(0.025)	(0.022)	(0.023)	(0.021)	(0.020)
IPO Firm Size	-0.025	0.003	-0.007	-0.004	-0.008	-0.013	-0.007	-0.003
	(0.026)	(0.027)	(0.024)	(0.024)	(0.023)	(0.023)	(0.023)	(0.018)
CEO-Duality	0.051*	0.022	0.037	0.023	0.026	0.028	0.017	-0.001
	(0.029)	(0.029)	(0.026)	(0.025)	(0.026)	(0.025)	(0.023)	(0.021)
CEO-Founder	-0.024	-0.028	-0.025	-0.021	-0.018	-0.012	-0.004	-0.006
	(0.036)	(0.031)	(0.023)	(0.022)	(0.021)	(0.020)	(0.019)	(0.019)
TMT Functional Diversity (TMTFD)	0.037	0.012	0.039**	0.016	0.009	0.001	0.028	0.015
	(0.033)	(0.026)	(0.029)	(0.028)	(0.028)	(0.027)	(0.028)	(0.023)
TMT Team-specific Experience (TSE)	0.032	0.022	0.039	0.024	0.035*	0.040*	0.022	0.009
	(0.029)	(0.021)	(0.019)	(0.018)	(0.018)	(0.021)	(0.020)	(0.016)
Source Firm Size	-0.022	-0.025	-0.003	0.002	-0.002	-0.023	-0.004	-0.021
	(0.034)	(0.033)	(0.024)	(0.023)	(0.023)	(0.023)	(0.023)	(0.020)
Technological Diversity (TD)	0.031	-0.011	0.001	-0.005	-0.002	-0.020	-0.004	-0.041*
	(0.044)	(0.031)	(0.028)	(0.028)	(0.026)	(0.025)	(0.023)	(0.021)
Competitor-specific Human Capital (CS)		0.170***	0.156***	0.120***	0.118***	0.120**	0.127***	0.048*
		(0.047)	(0.038)	(0.040)	(0.032)	(0.052)	(0.030)	(0.026)
Competitor-related Human Capital (CR)		0.193***	0.168***	0.155***	0.127**	0.133***	0.157***	0.069*
		(0.064)	(0.046)	(0.049)	(0.048)	(0.034)	(0.029)	(0.037)
Tenure at Competitor (TAC)			0.025	0.011	0.023	0.044*	0.007	0.027
			(0.025)	(0.024)	(0.025)	(0.027)	(0.023)	(0.023)
Position at Competitor (PAC)			0.027	0.027	0.035	0.032	0.024	0.031*
			(0.021)	(0.021)	(0.023)	(0.021)	(0.019)	(0.018)

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Table 2b: Results of random effects regression (Continued)

Dependent Variable: IPO Performance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Product Diversity (PD)			0.007	0.018	0.004	0.003	-0.007	0.039
			(0.030)	(0.030)	(0.028)	(0.032)	(0.029)	(0.026)
Learning Emphasis of Source Firm (LE)			-0.165***	-0.139***	-0.131***	-0.129***	-0.160***	-0.076**
			(0.033)	(0.036)	(0.031)	(0.034)	(0.022)	(0.026)
CS*TAC				0.035**				0.053**
				(0.012)				(0.020)
CR*TAC				0.013				0.025
				(0.030)				(0.024)
CS*PAC					0.052*			0.022*
					(0.029)			(0.012)
CR*PAC					0.065*			0.015
					(0.038)			(0.046)
CS*PD						0.088**		0.164**
						(0.045)		(0.041)
CR*PD						0.048***		0.075**
						(0.015)		(0.024)
CS*LE							-0.077**	-0.063**
							(0.036)	(0.036)
CR*LE							-0.092**	-0.074*
							(0.034)	(0.041)
No. of Observations	484	484	484	484	484	484	484	484
No. of Groups	121	121	121	121	121	121	121	121
R^2 Overall	0.283	0.325	0.527	0.542	0.547	0.572	0.587	0.645
χ_2	68.900***	88.600***	102.400***	148.900***	136.670***	164.780***	182.600***	194.600***

* p < 0.10; ** p < 0.05; *** p <0.01

Table 3: Economic Implications of Key Variables

Variable	Standardized Beta Coefficient	Impact of 1 Stdev. Change in the Variable on Market Valuation of IPO Firm
Competitor-specific Human Capital (CS)	0.170	$397,182,421.26
Competitor-related Human Capital (CR)	0.193	$450,918,866.49
Interactions		
Tenure at Competitor (TAC)	0.035	$81,772,851.44
CS		
Position at Competitor (PAC)		
CS	0.052	$121,491,093.56
CR	0.065	$151,863,866.95
Product Diversity (PD)		
CS	0.088	$205,600,312.18
CR	0.048	$112,145,624.83
Learning Emphasis of Source Firm (LE)		
CS	-0.077	-$179,900,273.16
CR	-0.092	-$214,945,780.92

Figure 1(a): Interaction between Competitor-Specific Human Capital and Tenure at the Competitor Firm

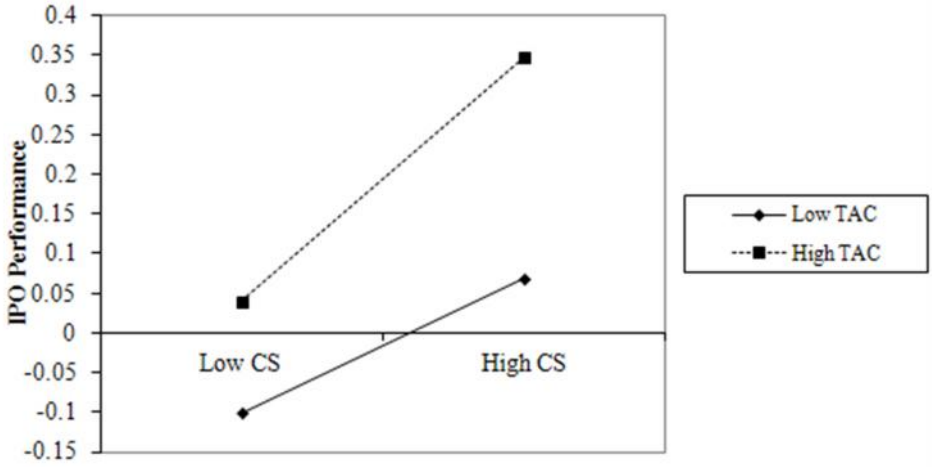


Figure 2(a): Interaction between Competitor-Specific Human Capital and Position at the Competitor Firm

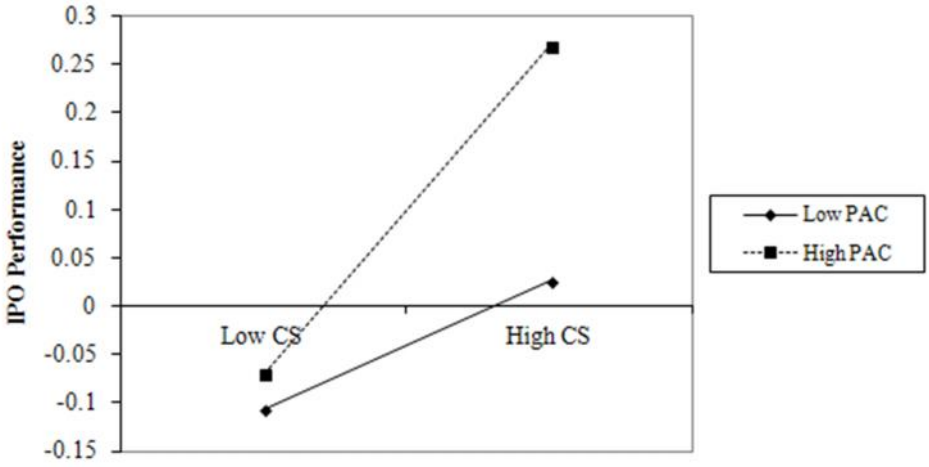


Figure 2(b): Interaction between Competitor-Related Human Capital and Position at the Competitor Firm

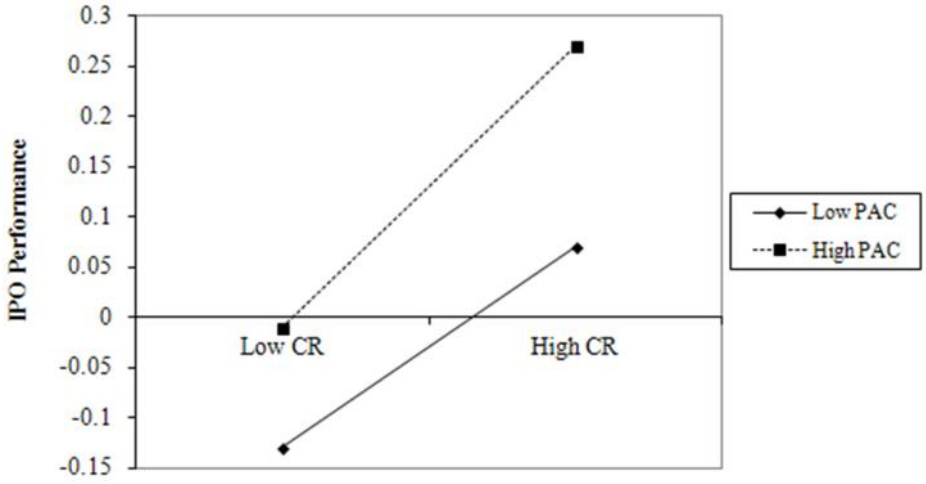


Figure 3(a): Interaction between Competitor-Specific Human Capital and Product Diversity of Source Firm

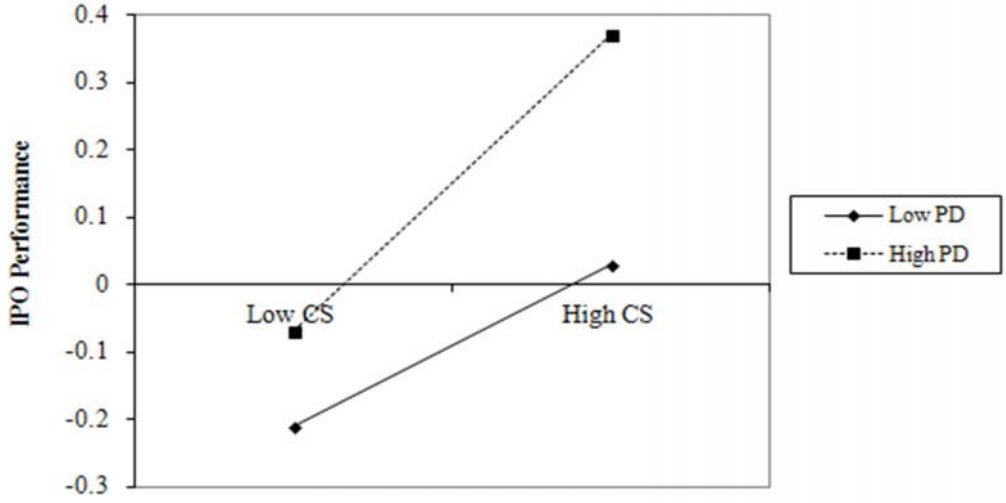


Figure 3(b): Interaction between Competitor-Related Human Capital and Product Diversity of Source Firm

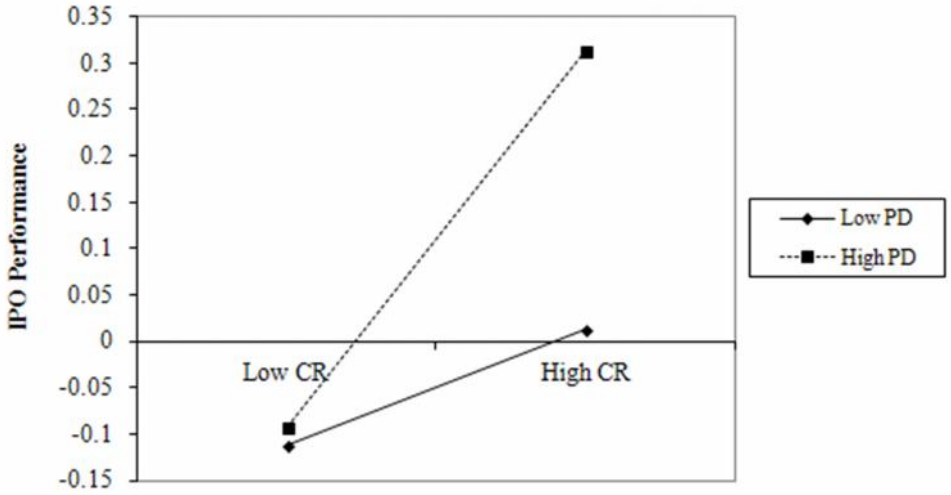


Figure 4(a): Interaction between Competitor- Specific Human Capital and Learning Emphasis of Source Firm

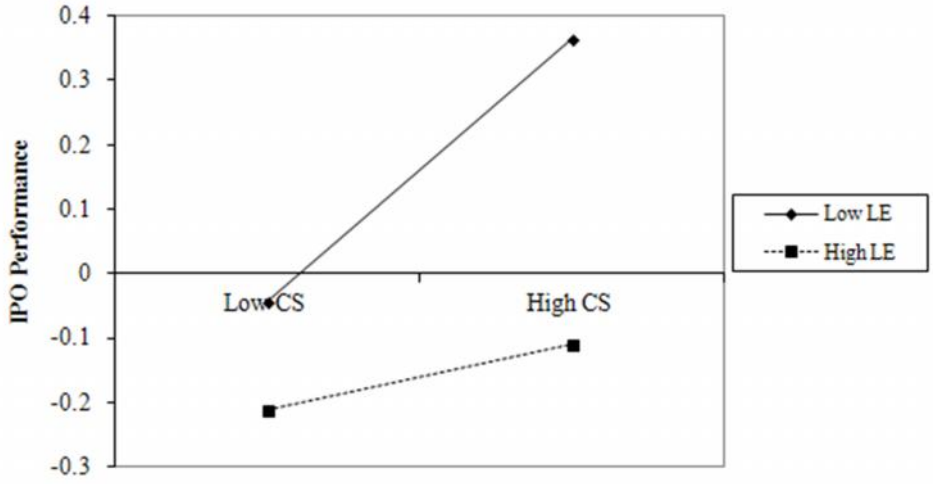
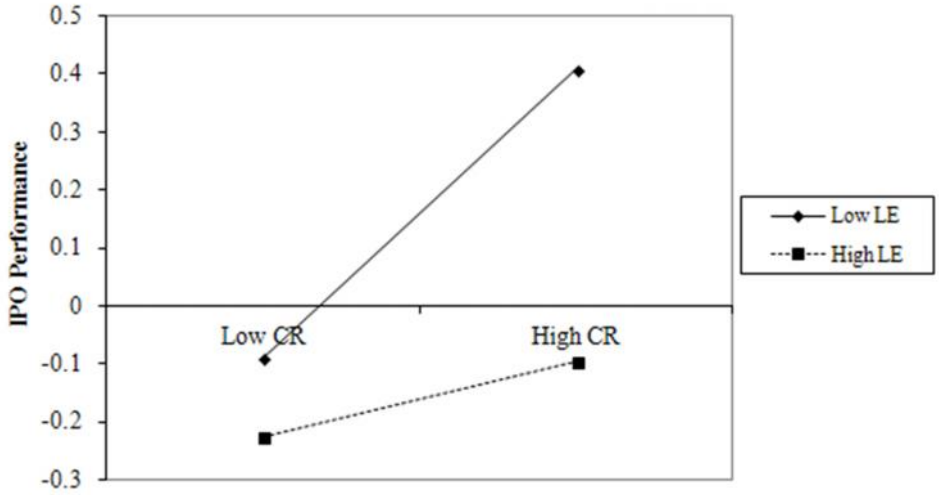


Figure 4(b): Interaction between Competitor-Related Human Capital and Learning Emphasis of Source Firm



Chapter Two: Competitor-Specific Human Capital and IPO Performance: Exploring the Role of Entrepreneurial Team's Intellectual Capital

This study draws on human capital, knowledge-based view, and competitive dynamics literature to explore the role of entrepreneurial team's intellectual capital in new ventures ability to apply competitor-specific human capital of its members. In particular, we argue that entrepreneurial team's intellectual capital is determined by their potential absorptive capacity, CEO's functional background, and shared team-specific experiences of the entrepreneurial team. By utilizing a multi-year panel of new IPO firms from the U.S. semiconductor industry between the periods of 1995-2010, the results of this study show that entrepreneurial team's intellectual capital plays a key role in determining their ability to disseminate and apply competitor-specific human capital. Moreover, the results show that potential absorptive capacity, CEO's functional background, and shared team-specific experiences of the entrepreneurial team moderate the relationship between CSD and CSI human capital and IPO performance.

Introduction

Resource based view of the firm propagates the creation of sustained competitive advantage by creating a unique value-generating strategy based on a combination of internal resources and capabilities of the firm (Barney, 1991; Kraaijenbrink, Spender, & Groen, 2010). The knowledge base view of the firm is an extension of the resource based view of the firm and considers knowledge as the most strategically important resource of the firm and argues that heterogeneity of knowledge bases and capabilities accounts for the performance differential between firms (Kale & Singh, 2007; Chakravarthy, McEvily, Doz, & Rau, 2003; Eisenhardt &

Santos, 2002; Grant, 1996). Recent research in this stream of research has emphasized that human capital has the potential to create sustained competitive advantage that drives above – average firm performance (Coff & Kryscynski, 2011; Shaw, Park, & Kim, 2013). This potential is particularly attributed to *specific* human capital, which pertains to the human capital of the employee that is tailored to a particular firm (Coff & Kryscynski, 2011; Crook et al., 2011; Nag & Gioia, 2012). This specific human capital has generally been considered to be immobile; however, recent research suggests that there are components of firm-specific human capital that are transferable and may be valued by other firms in certain contexts (Castanisa & Helfat, 2001; Sturman et al., 2008; Pazzaglia et al., 2012).

One context in which such specific human capital can be transferred is when employees move to competing firms (Sturman et al., 2008). Competitor-specific human capital pertains to the knowledge acquired by the individual through either direct working experience at competitor firms or through experiences at firms that were outperforming the current competitors of the focal firm (Stone, 2002; Sturman et al., 2008). As new ventures tend to have limited resources, the existence of competitor specific human capital in the entrepreneurial firms can have important implications for their performance (Stone, 2002; Arthurs, Busenitz, Hoskisson, & Johnson, 2009). Employees possessing competitor relevant knowledge represent a strategic asset that a firm can use to position itself appropriately against its competitors (Pazzaglia et al., 2012). However, as such knowledge is tacit to the individual, firms possessing such knowledge need to have effective and efficient internal coordination and integration capabilities to accomplish the necessary transformation of tacit knowledge to explicit, or at least facilitate individual's ability to share it with other members of the organization (Amit & Schoemaker, 1993).

Despite the attention given to inter-organizational knowledge flows through labor mobility and resulting performance implications (Phillips, 2002; Agarwal et al., 2004; Aime et al. 2010), less is known about factors in the intra-organizational environment of new ventures that influence their capability to leverage knowledge of its constituents. Under the knowledge-based view, such capabilities are viewed as an outcome of knowledge integration where the role of the firm is to integrate knowledge residing in individuals (Grant, 1996). In the context of new ventures, organizational knowledge and capabilities tends to be concentrated within the entrepreneurial teams (Huber, 1991). While various definitions of entrepreneurial teams exist, following Koltz et al. (2014), I define such teams to include individuals who are primarily accountable for the "*strategic decision making and ongoing operations of the new venture*."[4] Prior research has shown that such teams are heavily involved at various stages of the entrepreneurial process (Ensley et al., 2006); establish policies, procedures, and culture of the organization (Staw, 1991); and, the impact of their characteristics last beyond their tenure in the organization (Johnson, 2007). As entrepreneurial teams are integral to the success of new ventures (Shrader & Siegel, 2007), the new ventures' ability to absorb, disseminate, and apply knowledge would therefore, be contingent upon entrepreneurial teams' intellectual capital (Naphaiet & Ghosal, 1998; Subramaniam & Youndt, 2005). Consequently, using organizational learning and knowledge-based view literature, this paper addresses the following research question: What are the intra-organizational factors that affect the entrepreneurial team's ability to absorb, disseminate, and apply competitor-specific human capital?

[4] In the context of IPOs, some researchers also refer to such teams as the Top Management Teams (TMTs) or entrepreneurial TMTs (e.g. Ensley et al., 2006; Beckman & Burton, 2008). Henceforth, these terms are used interchangeably throughout the paper and are regarded as referring to entrepreneurial teams.

This study offers three main contributions to the strategy and entrepreneurship literatures. Firstly, it integrates competitive dynamics with the knowledge-based view literature. While considerable research has focused on entrepreneurial teams' human capital and new venture performance (Unger, Rauch, Frese, & Rosenbuch, 2011), not much is known about the context in which specific sources of knowledge influence new venture performance (Macpherson & Holt, 2007). The current study draws upon the theory of competitor-specific human capital from the competitive dynamics and human capital literature, and it extends it by unraveling conditions that affect entrepreneurial team's intellectual capital and their capability to assimilate and apply competitor-specific human capital. Secondly, this study contributes to research on entrepreneurial teams. The prevalence of competitor-specific human capital within the entrepreneurial team can potentially lead to the generation of new patterns of activity that can result in the creation of value creating opportunities; however, it requires the prevalence of opportunity recognition and execution capabilities within the team. Drawing on the research on organizational learning and the knowledge-based view, I show that such capabilities are a function of the entrepreneurial teams' potential absorptive capacity, CEO's functional background, and the shared team-specific experience of top managers. Finally, I add to research on IPOs in general. While, extensive research has focused on the relationship between the top management team (TMT) and leadership characteristics on new venture performance, such studies have largely considered the impact of each in isolation (e.g. Beckman & Burton, 2008; Franke, Gruber, Harhoff, & Henkel, 2006; Yang, Zimmerman, & Jiang, 2011). In this study, I argue that while entrepreneurial team's potential absorptive capacity affects its knowledge absorption and disseminating capabilities, their ability to do so is also affected by the functional background of the CEO. Whereas, TMT's absorptive capacity is essential for successfully

capturing and transferring competitor specific knowledge, the growth of the firm is equally dependent on the structural processes within the entrepreneurial team that are contingent on the managerial capabilities of the CEO, especially in the context of new ventures (Penrose, 1959; Goffee & Scase, 1995; Blatt, 2009). By considering the CEO and the entrepreneurial team to be mutually interdependent (Blatt, 2009), I show that while the team member's capabilities are an essential input in the growth of new ventures, the structural processes instigated by the CEO are equally important as they shape the quality of interaction within, and between the CEO and the team.

Theory and Hypotheses

Entrepreneurial Team Member's Competitor-Specific Knowledge and Competitive Advantage

Research in competitive rivalry states, that the probability of inter-firm rivalry is largely between a firm and its primary competitors (Chen, 1996). Consequently, implications of employee mobility to rival firms have drawn significant attention in recent research (Stone, 2002; Sturman et al., 2008; Pazzaglia et al., 2012). From a competitive rivalry context, individuals with competitor relevant tacit knowledge represent a strategic resource that the recipient firm can utilize to effectively position itself against its primary competitors (Chen, 1996; Sturman et al., 2008). In particular, recent research has shown that the prevalence to two particular forms of human capital: competitor-specific direct (CSD) and competitor-specific indirect (CSI)5, in the entrepreneurial team can result in superior performance of new ventures

[5] CSD and CSI human capital pertain to Competitor-Specific (CS) and Competitor-Related (CR) from Chapter 1, respectively.

(Seth et al., 2013). Thus, the specialized tacit knowledge held by the individuals forms the basis of competitive advantage.

Following Seth et al., (2013), I define competitor-specific-direct (CSD) human capital as knowledge obtained through entrepreneurial team members' working experiences with the rival firm; and, competitor-specific-indirect (CSI) human capital as knowledge obtained through member's experiences at firms that were outperforming the current competitors of the IPO firm. The possession of such strategic assets can enhance the performance of the new venture in several ways. The entrepreneurial team member's competitor relevant human capital enhances the firm's awareness about the internal capabilities of its competitors that boosts the firm's ability to respond or launch actions against its competitors. Such knowledge can reduce the time spent in information searches that can result in a faster decision making process (Mintzberg, Raisininghani, & Theoret, 1976; Baer, Dirks, & Nickerson, 2013). The enhanced information processing capability can be a rare and valuable resource that can be instrumental in planning and executing actions that are critical to survival and performance of the young entrepreneurial firms. Additionally, such enhanced information processing capability can also increase the likelihood of discovering niches that can be catered to within the industry.

The incorporation of individuals' who have worked at the rival firm can also enable the new venture to learn about external technologies through knowledge spillovers (Argote & Ingram, 2000). As CSD/CSI human capital can be a source of new organizational learning, it can help the firm recognize its dysfunctional routines and prevent the creation of strategic blind spots (Eisenhardt & Martin, 2000). Importantly, CDS/CSI human capital can enhance the value of entrepreneurial firms during the IPO process. Quality differences between entrepreneurial firms undertaking an IPO are difficult to discern, due to the prevalence of information asymmetry

between the owners/managers and the investment community. Under such conditions, market participants utilize signals as information that buyers and sellers use to fulfill information gaps (Spence, 2002). Thus, the entrepreneurial team's CSD and CSI human capital can send meaningful signals to investors (Fiss & Zajac, 2006) and increase the capability of IPO firm to acquire financial and non-financial assets.

Entrepreneurial Team's Intellectual Capital and New Ventures Knowledge Capability

While individual's tacit knowledge is transferable between firms (Grant, 1996; Agarwal et al., 2004), recipient organizations must also consider how to exploit knowledge held by hired experts in the TMT team, so it can be applied and ultimately lead to competitive advantage (Jackson, Chuang, Harden, Jiang, & Joseph, 2006). The knowledge-based view states that know-how, skills, and practical knowledge are integrated within firms to form capabilities with a level of efficiency not possible through market mechanisms (Grant, 1996). Consequently, the knowledge-based view explains the role of firms in the procurement, processing, storage, and application of knowledge (Nonaka & Takeuchi, 1995; Nerkar & Shane, 2003; Zucker, Darby, & Armstrong, 2002). With regards to knowledge application, research shows that organizational learning forms an integral part of the knowledge integration process (Argote & Miron-Spektor, 2011), which forms a precursor to organization's capability to apply knowledge.

Firms possessing proper learning mechanisms that enable the integration of disparate tacit knowledge held by individuals, can streamline various tasks, improve efficiency, and create new knowledge (Kale & Singh, 2007). Within the knowledge-based view literature, knowledge resources that a firm utilizes to obtain competitive advantage are often characterized as the organization's intellectual capital (Edvinsson & Malone, 1997; Naphaiet & Ghosal, 1998; Gupta

& Govindarajan, 2000; Subramaniam & Youndt, 2005). While various conceptualizations of intellectual capital exist, it is generally associated with three aspects: human, organizational or structural, and social capital (Edvinsson & Malone, 1997; Stewart, 1997; Subramaniam & Youndt, 2005). Collectively, these aspects of intellectual capital influence how knowledge is accumulated, distributed, and utilized within the organization (Gupta & Govindarajan, 2000). As entrepreneurial teams are the key agents in the development of new ventures (Oviatt & McDougall, 2005), their structural processes and knowledge capabilities would constitute a key element of the firm's intellectual capital.

Prior research has shown that characteristics of the entrepreneurial TMTs have a significant impact on the survival and growth of new ventures (Floring, Lubatkin, and Schulze, 2003; Shrader & Siegel, 2007). As such teams are the power core of new ventures, its existing capabilities and organizing principles (Kogut & Zander, 1992) that determine the application of knowledge, are contingent on the capabilities of the entrepreneurial team (Kroeger, 1974; Timmons, 1994). A related stream of research has also shown that the strategic leadership at the top, as exhibited by the CEO, and the composition and group processes exhibited by the TMT explains some of the variance across the performance of different firms (Chatterjee & Hambrick, 2007; Cannella et al., 2008). As existing capabilities and structure influence the creation of new knowledge, knowledge capabilities of the entrepreneurial team creates path-dependency in the firm growth and consequently, their impact on the firm is felt long after the departure of its constituents (Johnson, 2007). Equally, the generation of competitive advantage depends upon how firms' utilize knowledge (Grant, 1996); thus, carrying out processes that enable the integration of existing knowledge and the creation of new knowledge within the new venture depends greatly on the intellectual capital of the entrepreneurial team.

Entrepreneurial teams function as mediums for integrating disparate tacit and explicit specialized knowledge held by experts and such capability is associated with intangible skills such as the their human capital (Forbes, Borchert, Zellmer, & Sapienza, 2006; Steffens, Terjesen, & Davidson, 2012). In particular, the entrepreneurial team' absorptive capacity is an essential input in the assimilation of knowledge (Darr, Argote, & Epple, 1995; Zahra & George, 2002). Absorptive capacity is defined as the ability to recognize the value of external knowledge, assimilate it, and apply it to commercial ends (Cohen & Levinthal, 1990). Absorptive capacity of the team is associated with team member's awareness of the expertise pool available within the team and is also known to help teams improve constructive conflict and avoid interpretive ambiguity (Okhuysen & Eisenhardt, 2002). Moreover, knowledge transfer literature also highlights the role of absorptive capacity of the receiving firm as the most significant determinant of knowledge transfer (Gupta & Govindrajan 2000; Lane & Lubatkin, 1998).

The structural aspect of intellectual capital refers to organizational system, processes, and infrastructure that influence the flow of knowledge. Edvinsson and Malone (1997) viewed structural capital to be composed of a supportive and empowering infrastructure that motivates employees and facilitates the use of firm's human capital. Others have taken a broader view and consider structural capital to represent knowledge stored in firm's structure, patents, processes, and databases (Stewart, 1997; Youndt, Subramaniam, & Snell, 2004). Overall, structural capital of the new venture would influence the manner in which information is exchanged within the entrepreneurial team. Prior research has shown that in new ventures, CEO characteristics influence the structural process of the TMT (Ensley et al., 2003; Cruz, Gomez-Mejia, & Becerra, 2010). CEO characteristics influence new ventures intellectual capital by determining the structural processes of the entrepreneurial team, defining modes of information exchange, and

incentives for the TMT members. For example, firms operating in technological fields often operate in complex, dynamic and risky competitive conditions. Thus, structures emphasizing high levels of participation and interaction, and low levels of formalization foster high levels of information use and processing within and between groups (Thomas & McDaniels Jr., 1990).

Finally, the social aspect of intellectual capital consists of knowledge residing in groups or networks of people (Youndt et al., 2004). This relational based capital is embedded in not only the knowledge exchanges within the firm, but also pertains to a firm's external linkages such as those with its suppliers, alliance partners, and customers (Youndt et al., 2004). Importantly, social capital differs from other aspects of intellectual capital in that, unlike human and structural capital, social capital resides neither within the individual or an organization, but rather in the structure of relations between and among actors (Dean & Kretschmer, 2007). Thus, social capital pertains to the level of trust, reciprocity, and closeness of working relationships among the members of the entrepreneurial team (Kale, Singh, & Perlmutter, 2000). Additionally, building efficient knowledge integration capabilities requires the prevalence of common codes of communication and coordinated search procedures within the team (Grant, 1996). Thus, exchanging knowledge and participating in knowing activities requires the prevalence of social capital and common knowledge within the entrepreneurial team (Nahapiet &Ghosal, 1998), both of which require time to develop. Over time, members of the entrepreneurial team are able to convert their partial mental models about strategic issues into shared cognitive maps of the new ventures structure, interdependencies, and needed capabilities (Perry-Smith & Shalley, 2003). Subsequently, these shared mental models affect the variety of solutions considered, amount of resources dedicated to a particular project, and the steps made towards organizational change (Thomas & McDaniel, 1990; Nadkarni & Barr, 2008). Consequently, entrepreneurial team's

team-specific social capital as exemplified by their shared team-specific experience, would influence its ability to share and integrate aspects of knowledge that are not common between them (Grant, 1996; Campbell et al, 2012), as a way of achieving competitive advantage (Nag & Gioia, 2012).

From the above discussion it follows that the new ventures capabilities to absorb and apply competitor specific knowledge would depend largely on the intellectual capital possessed by the entrepreneurial team. In the following section, I explore how differences between entrepreneurial teams based on their (a) absorptive capacity, (b) characteristics of the CEO, and (c) team-specific social capital of the members affects the new ventures ability to utilize competitor specific human capital of the TMT member.

Moderators of CSD-CSI Human Capital and IPO Performance Relationships

Moderating Role of the Potential Absorptive Capacity of Entrepreneurial TMTs: Members in entrepreneurial teams are selected for the purpose of integrating their individually held knowledge into the group for either developing new knowledge or accomplishing a particular task (Forbes et al., 2006). Therefore, the development of new venture involves exchanges of considerable tacit knowledge through interactions among experts within the team. Thus, it is essential for the members of entrepreneurial teams to have not only the ability to share individually held knowledge but also, the ability to utilize the shared knowledge to collectively formulate concepts and solutions for issues pertinent to the new venture. Additionally, new ventures typically face a heuristic environment clouded by ambiguity, where the rapid decision making requirements require the members of the entrepreneurial team possess the capability to assimilate dissimilar knowledge and articulate a coherent solution (Ensley et al., 2006). Research shows that as the assimilation of tacit knowledge is largely an exploratory process, this ability of

the members of the entrepreneurial team to interrelate with the abilities of their peers pertains to its potential absorptive capacity (Van den Boach et al., 1999). Thus, following prior research, I consider two aspects of entrepreneurial teams that are related to their potential absorptive capacity: functional diversity and educational level (Smith, Collins, & Clark, 2005; Goll, Johnson, & Rasheed, 2007).

Functional background diversity refers to the distribution of work history across the different functional specializations within the team (Bunderson, 2003). The relationship between CSD/CSI knowledge of incoming TMT member and IPO performance will be stronger when entrepreneurial team exhibits higher levels of functional diversity because, such teams bring together heterogeneous sets of skills, perspectives, and knowledge that are less likely to be available in homogenous teams (Milliken, Bartel, & Kurtzberg, 2003). Functional diversity enhances the potential absorptive capacity of the entrepreneurial team; thus, strengthen its members' ability to assimilate ideas and concepts from outside their own domain (Williams & O'Reilly, 1998). The broader scope of task-relevant perspectives applied to the task can lead to creative new ways of formulating and conceptualizing new ideas. Indeed, functional heterogeneity has been shown to foster higher levels of creativity and innovation at the team level (Bantel & Jackson, 1989; Milliken et al., 2003). Functional heterogeneity also enhances cognitive conflict, which in turn, increases the likelihood of productive exchanges and in turn, yields greater attempts to combine information and knowledge in order to reduce conflict (Nemeth, 1995; Skilton & Dooley, 2010). This enhances the ability of the team to not only recognize opportunities (potentially identified in the process of utilizing the CSD/CSI human capital of the TMT member) but also imparts them with the ability to assess the value of new information to the organization (Cohen & Levinthal, 1990).

As functional diversity enhances the team's potential absorptive capacity, it increases the possibility that as an aggregate the team possesses sufficient background knowledge to understand the value embedded in its member's competitor-specific human capital (Bell, Villado, Lubasik, Belau, & Briggs, 2011). Additionally, research shows that members of a heterogeneous team provide access to a broader set of external networks (Ancona & Caldwell, 1992; Perry-Smith & Shalley, 2003), which enables the team to draw on a breadth of knowledge during the process of integrating competitor-specific human capital of its member. Therefore, compared to their homogenous counterparts, a heterogeneous team is more likely to explore the value of such knowledge at depth, derive more diverse alternatives, and reconcile diverse interpretations through constructive conflict (Milliken et al., 2003). As these processes enhance the team's capability to explore and develop novel ideas (Skilton & Dooley, 2010), I propose the following hypotheses:

Hypothesis 1a: *Functional diversity of the entrepreneurial team positively moderates the relationship between the level of CSD human capital possessed by the team and IPO performance such that the relationship will be positive and stronger when functional diversity is high than it is low.*

Hypothesis 1b: *Functional diversity of the entrepreneurial team positively moderates the relationship between the level of CSI human capital possessed by the team and IPO performance such that the relationship will be positive and stronger when functional diversity is high than it is low.*

The functional diversity of the entrepreneurial team affects its potential absorptive capacity by imparting the team with higher information processing capabilities (Smith et al., 2005). On the other hand, educational level of the team affects it through higher capacity to

absorb new knowledge, identify opportunities based on that knowledge, and the understanding to exploit those opportunities (Goll et al., 2007). Educational level of an individual is an indication of their skill and knowledge base, and is related to tolerance for ambiguity, capacity for information processing, and ability to identify and evaluate multiple alternatives (Hambrick and Mason, 1984). Consequently, highly educated and technically qualified teams would be more receptive to assimilating and transforming externally acquired knowledge; thereby, possessing a higher level of potential absorptive capacity (Minbaeva, Pedersen, Bjorkman, Fey, & Park, 2003; Vinding, 2000). For a new venture, a higher level of education provides entrepreneurial team the capacity to manage complex and high information-processing demands. Research has shown that members of teams exhibiting high educational levels are more likely to hold shared conceptualizations of each other's expertise (Minbaeva et al., 2003). This allows team members to recognize how the CSD/CSI knowledge of their peers' complements their own, behave as knowledge brokers and combine such knowledge with their own, thereby, making it more intelligible for the entire team. Consequently, such teams are more likely to assimilate the CSD/CSI human capital of its members that are relevant to the new venture; thereby, increasing the prospects of integrating and applying such knowledge. Based on this, I propose the following hypotheses

Hypothesis 2a: *Average education level of the entrepreneurial team positively moderates the relationship between the level of CSD human capital possessed by the team and IPO performance such that the relationship will be positive and stronger when functional diversity is high than it is low.*

Hypothesis 2b: Average education level of the entrepreneurial team positively moderates the relationship between the level of CSI human capital possessed by the team and IPO

performance such that the relationship will be positive and stronger when functional diversity is high than it is low.

Moderating Role of CEO Functional Background*:* Leaders play an integral role in defining the context in which workers create knowledge and can therefore, influence the level of learning and creativity in the organization. Past research has shown that the CEO tends to be the most powerful actor within an organization (Ling et al., 2008), and thus, influences all internal TMT processes of information exchange and integration (Hambrick, 1995). In a new venture context, the CEO is typically the founder/entrepreneur, and hence exercises even more powerful impact on the decision making process within the venture (Finkelstien, 1992; Burton et al., 2002). This occurs because CEOs who are also the founder of the firm derive their influence from two sources of formal power, i.e. positional and ownership power (Burton et al., 2002). As the mental model of the CEO is shaped by his or her individual experience, the CEO's task-relevant human capital would have implications for how the knowledge is utilized within a new venture. In the case of small organizations or start-up firms, founders and CEOs indeed shape their corporations according to their own preferences (Andrews & Welbourne, 2000; Eisenhardt & Schoonhoven, 1990; Eisenhardt & Bourgeois, 1988). As prior experience causes CEOs to perceive and interpret information in ways that suit and reinforce their functional training (Finkelstein & Hambrick 1996), CEO's experience with the goals, rewards, and methods of a particular functional area would shape the structural process of the entrepreneurial team.

Executives' background knowledge can be classified into two types: "output" or "throughput" functional background (Hambrick & Mason, 1984; Cho & Hambrick, 2006). Specifically, sales, marketing, and product R&D help to resolve uncertainty in a business unit's output environment (demand conditions); operations and process engineering help to resolve

uncertainty in a business unit's throughput environment (production processes) (Bunderson, 2003). The "output" functional background of the executive has been associated with a preference for new products, new markets, and new opportunities. On the other hand, a "throughput" background is associated with the need to maintain control and operational efficiency. Consequently, CEOs who have spent most of their careers in throughput functions are more likely to have a control orientation, whereas CEOs who have spent most of their careers in output functions are more likely to have an exploratory orientation (Barker & Mueller, 2002).

CEO's controlling orientation is associated with higher likelihood of engaging in monitoring of employees but low monitoring of the environment (Cho & Hambrick, 2006; Hall & Gingerich, 2009). When the entrepreneurial team is led by a CEO with a throughput functional background, the team is likely to exhibit lower levels of tolerance for ambiguity, is likely to be managed for the short term, and is more likely to exhibit centralized decision-making (Cho & Hambrick, 2006; Kwee, Van Den Bosch, & Volberda, 2011). The leadership literature shows that controlling orientation of the CEO shifts TMT's focus on in-role behaviors, which in turn negatively affects the team's innovative behavior (Pieterse, Knippenberg, Schippers, & Stam, 2010). These behaviors/effects of CEO's with throughput functional background create structural processes within the team that is not conducive to their learning ability (Ling et al, 2008). Thus, an entrepreneurial team lead by a CEO with throughput functional background is less likely to assimilate information provided by the team members' exhibiting CSD/CSI human capital. This would reduce the likelihood of the integration of such knowledge with the entrepreneurial firm's existing knowledge stock and, therefore, hinder the ability of the firm to introduce new and novel innovations into the marketplace.

On the other hand, CEOs with output functional background are more likely to exhibit exploratory orientation (Jain & Tabak, 2008). Exploratory orientation is associated with higher levels of risk-taking behavior and tolerance for risk/ambiguity. CEOs with output functional experiences tend to be comfortable in multifaceted, uncertain, and information-rich environments. Therefore, they are likely to manage for the long term; to design decentralized and organic organizations; to promote autonomy; and to engage in high monitoring of the environment (Cho & Hambrick, 2006). Indeed, the characteristics of CEOs with output functional experiences have been shown to create organizational processes and systems that are beneficial for its learning and innovation capabilities (Hornsby et al. 2002, Kuratko et al. 2004, Zahra et al. 1999). Consequently, CEOs with output functional background are more likely to instigate structural processes within the entrepreneurial team that is more conducive to cross-functional pooling and integration of complex information and set the reward structures that promote innovation and creativity (Barker & Mueller, 2002). Such structural processes that promote and innovation and creativity are particularly well-suited in the context of young entrepreneurial firms, which typically deal with uncertain and ambiguous environments. Based on this, I propose the following hypotheses

Hypothesis 3a: *CEO's functional background moderates the relationship between level of CSD human capital of entrepreneurial team and IPO performance, such that the relationship will be positive and stronger when such teams are led by CEO's with output functional background that those led by CEO's with throughout functional background.*

Hypothesis 3b: CEO's functional background moderates the relationship between level of CSI human capital of entrepreneurial team and IPO performance, such that the relationship

will be positive and stronger when such teams are led by CEO's with output functional background that those led by CEO's with throughout functional background.

Moderating Role of Shared Team-Specific Experience of the Entrepreneurial Teams:

The CSD/CSI knowledge available within the new venture gets absorbed within the context of the entrepreneurial team, and its utilization requires teamwork. According to Penrose (1959) teamwork develops when individuals gain experience working together as a team. Shared team-specific experience therefore, pertains to the overlap of team tenure of members and represents their common historical experiences (Barkema & Shvyrkov, 2007). Prior research has shown that the nature of relationships between members of entrepreneurial teams is crucial for the growth of new ventures (Ensley et al., 2003; Kor, 2003). Social ties amongst the members of the entrepreneurial team enhance processes such as the degree of behavioral integration and reduce the prevalence of conflict that can inhibit the growth potential of new ventures (Hukman, Staats, & Upton, 2009; Wiklund, Patzelt, & Shepherd, 2009). Thus, entrepreneurial team's capability to learn from and apply the CSD/CSI human capital is influenced by member's ability to coordinate with their peers and understand their capabilities (Huckman et al., 2009).

Under conditions where the shared team-specific experience is low, the entrepreneurial team members lack familiarity and experience with one another, and the team can suffer from lack of coordination and willingness to engage in a relationship with each other (Reagans, Argote, & Brooks, 2005). Members of such teams lack understanding of team norms and procedures as well as the skills and knowledge possessed by their peers. This lack of familiarity with each other can hinder the transfer of tacit knowledge (CSD/CSI human capital) within the team (Wiklund et al., 2009), and can therefore, curtail the degree of learning that occurs within the entrepreneurial team. As the team works together, initiates and implements strategies

together, individuals within the team gain detailed knowledge of the skills, limitations, mental models, and habits of their fellow team members. Thus, the shared team-specific experience facilitates the generation of team-specific mental models that store knowledge about peers and their behavior (Cannon-Bowers & Salas, 2001). Such team-specific mental model developed through enhanced shared team-specific experience would lead to higher levels of communication and information sharing, development of decision making routines, and development of transactive memory system within the team essential for effective information processing (Smith-Jentsch, Kraiger, Cannon-Bowers, & Salas, 2009). As close ties within the entrepreneurial team form an essential precursor to the knowledge transfer process (Hayton & Zahara, 2005), teams with higher levels of shared team-specific experience are more apt at interpreting the meaning of, and distributing new information (Brown & Duguid, 1991; Weick, 1995) and are therefore, more capable at assimilating competitor-specific knowledge.

Hypothesis 4a: *Shared team-specific experience of the entrepreneurial team positively moderates the relationship between the level of CSD human capital possessed by the team and IPO performance such that the relationship will be positive and stronger when shared team-specific experience is high than it is low.*

Hypothesis 4b: *Shared team-specific experience of the entrepreneurial team positively moderates the relationship between the level of CSI human capital possessed by the team and IPO performance such that the relationship will be positive and stronger when shared team-specific experience is high than it is low.*

Methodology

Data and Sample

To test my hypotheses, I constructed a longitudinal dataset of firms that did an IPO in the U.S. semiconductor industry spanning from January 1995 to December 2010. I utilized the SDC New Issues Database to identify firms that conducted an IPO during the period of the study. Additional information pertaining to key variables such as underwriters and venture capital, and the proceeds raised through the IPO were also obtained through the SDC Database. Once the firms in the sample were identified, I obtained corresponding S-1 filing documents from the SEC website using the EDGAR Database. By utilizing information from the 'Risk Factors' section of the S-1 document, I compiled a list of 467 firms that were identified as competitors of the IPO firms in my dataset. Following this, information concerning the past experiences of the TMT member was obtained through the S-1 document and matched with information about the competitors of the IPO firm to identify CSD & CSI experiences of TMT members. Finally, other pertinent information regarding the competitors of the IPO firm was obtained through the COMPUSTAT database and patent data available through the Kauffman Foundation. The final dataset represents 121 unique IPOs from the U.S. semiconductor industry in the study period.

Dependent Variable

IPO Performance. Following prior research my measure of IPO performance was based on four different financial measures (Gulati & Higgins, 2003). The first measure captures the net proceeds (proceeds-fees) raised by the new venture at IPO. This information was obtained through the SDC New Issues Database. My second measure captures the pre-money market valuation of the firms in my dataset. Following Gulati and Higgins (2003) this measure was calculated as:

$$V^* = (p_u q_t - p_u q_i),$$

where p_u is the final subscription price as obtained from the SDC New Issues Database, q_t measures the number of shares outstanding, and q_i is the number of shares offered in IPO. Therefore, V* represents the valuation of the new venture one day before the IPO (Gulati & Higgins, 2003). The third and fourth measures of performance are based upon the 90-day and 180-day market valuation of the new venture after the IPO. These final measures capture the early success of the firm's stock market performance following the IPO (Gulati & Higgins, 2003). The early performance of the IPO firm was captured by substituting the stock price 90 days and 180 days out respectively for p_u in the formula above. As these measures were highly correlated with each other (Cronbach's alpha > 0.92), they were standardized prior to model estimation.

Independent Variables

Competitor-specific direct and indirect Human Capital. Information pertaining to past experiences of the members of the entrepreneurial team was obtained through the S-1 filing documents. This information was matched with the list of competitors of the IPO firm (Risk factors section of the S-1 document) to identify the prevalence of competitor-specific direct and competitor-specific indirect human capital within the entrepreneurial team. Following prior research I measured CSD human capital by ascertaining team members who had prior work experience at the competitors of the IPO firm (Seth et al., 2013). In order to measure CSI I created a rank ordered list of all firms in the U.S. semiconductor industry (1985-2010) based on 3-year moving average of firm's return on assets (ROA). This list was matched with the biographical information on the TMT member to identify prior work experiences with firms that were outperforming the current competitors of the IPO firm in order to capture the prevalence of

CSI human capital (Seth et al., 2013). These measures were aggregated to the team level in order to capture the proportion of the entrepreneurial team that holds CSD-CSI human capital.

TMT Functional Diversity. Information pertaining to the functional background of TMT members was obtained from the S-1 prospectus document. Following past research I used marketing, distribution, sales, research and development, production, engineering, finance and accounting, law, or general as classifications of functional background (Carpenter & Fredrickson, 2001). The degree of heterogeneity was then calculated using the Adjusted-Blau's (1977) Index (Harrison & Klien, 2007).

TMT Educational Level. Information on the educational background of the TMT member was obtained from the S-1 prospectus. Following Goll, Johnson, & Rasheed (2006), educational level was coded as follows: 1 = high school; 2 = some college; 3 = Bachelor's degree; 4 = some graduate school; 5 = Master's degree; 6 = JD or LLB; 7 = LLM; 8 = Doctorate. The mean TMT education level was then computed by summing the score and dividing it by TMT size.

CEO Background. Dummy variable that takes a value =1 if the primary functional background of the CEO of the IPO firm belonged to sales, marketing, or product R&D (i.e. output functional background) and a value=0 otherwise. (Bunderson, 2003).

Shared Team-specific Experience: This variable captures the weighted average number of years the entrepreneurial team members had worked at the focal company at the time of the IPO.

Control Variables

To control for possible confounding factors that affect the level of IPO performance, I controlled for the following variables. IPO Age was operationalized as the logarithm of the number of years between firm formation and IPO. IPO Firm Size was operationalized as the logarithm of the number of employees at the IPO firm. I also controlled for Venture Capital Backing (Clark & Peavey, 1998), Underwriter Ranking, and Corporate Parenting Activities (spin-off) (Hsu, Reed, & Rocholl, 2010), as these factors have been shown to influence IPO performance. In order to rule out any potential agency issues I controlled for CEO Duality (Finkelstein & D'Aveni, 1994) and CEO Founder Status as founders as CEO have been shown to affect performance and survival of new ventures (Nelson, 2003). Additionally, I also controlled for the following characteristics of the source firms from where CSD and CSI experiences of the entrepreneurial team members were derived. I controlled for Source Firm Size as experiences of top managers at large incumbent firms' has certain positive signaling effects (Floring et al., 2003). Technological Diversity of the source firm was operationalized using Herfindahl Index of diversification (Berry, 1975). Following Nayyar (1993), Product-market Diversity was operationalized as follows; $PD = \sum Pi \ln (1/Pi)$, where, Pi is the share of the ith business in the total sales of a firm, and T is the total number of businesses of a firm. Learning Emphasis of the source firm captures its orientation towards knowledge exploration or exploitation. This variable was operationalized by first summing the self-citation count for each patent filed in a particular year and then dividing it by the total number of citations for each year (Rosenkopf & Nerkar, 2001; Schildt, Maula, & Keil, 2005). Finally, in order to account for characteristics of entrepreneurial team members' familiarity with the source firm, I controlled for their experiences at competitors. Position at Competitor takes the value of 1 if the TMT members possessing CSD

or CSI human capital held executive level positions at the source firm (Sturman et al., 2008). Tenure at Competitor was operationalized as the average number of years the TMT members with CSD/CSI experiences had worked at the source firms before joining the IPO firm.

Estimation Procedure

The data is structured as a balanced panel over the four time periods of IPO performance and has repeated values of the independent variables that do not change over time. As I am interested in capturing the difference in performance across the firms in my sample, running panel regressions with firm random effects seemed appropriate. Due to the pooled time-series nature of the data, I checked for the prevalence of heteroskedasticity and autocorrelation. The White (1980) test revealed the presence of heteroskedasticity, whereas the likelihood-ratio test indicated the presence of autocorrelation in my data. In order to control for the presence of heteroskedasticity and autocorrelation, I used robust-cluster estimator of the standard errors in my regressions. This estimator is a variant of the Huber-White robust estimator, and affords correct standard errors in the existence of heteroskedasticity and autocorrelation (Stata-Corp, 1999). The variables in the interaction terms were mean-centered prior to computing the respective cross products. Additionally, for consistency, we also mean-centered all other independent and control variables.

Results

Table 4 a & b display descriptive statistics and correlations for the variables used in the analysis. The standardized beta coefficients for random effects regression results with cluster robust standard errors are presented in Table 5. Consistent with prior research (Aime et al., 2013; Sturman et al. 2008; Pazzaglia et al., 2012), Model 1 of Table 2 shows that the coefficients of CSD and CSI are positive and significant ($\beta = 0.44$, $p < 0.001$ and $\beta = 0.46$, $p < 0.001$;

respectively). Thus, in line with prior research, results show that CSD and CSI human capital can be valuable to firms especially in a competitive context.

In Hypothesis 1a, I postulated that functional diversity of the TMT would positively moderate the impact of CSD human capital on IPO performance. I tested this hypothesis by examining the interaction term between CSD human capital and functional diversity. The interaction term is positive and significant ($\beta = 0.10$, $p < 0.05$; model 2). In support of hypothesis 1a, figure 5(a) plots the interaction between CSD human capital and IPO performance. As can be seen in the figure the relationship between CSD and IPO performance is stronger when entrepreneurial teams exhibit higher levels of functional diversity. Additionally, figure 5(b) plots the marginal effect of CSD human capital on IPO performance across the range of values of functional diversity in my sample. As can be seen in the figure, the slope of the interaction is positive and both the upper and lower bounds for the 95% confidence interval are above the zero line until functional diversity attains a value of 1.98 standard deviations (0.21) below the mean. Collectively, these results support hypothesis 1a. Hypothesis 1b proposed that TMT functional diversity would positively moderate the relationship between CSI human capital and IPO performance. The coefficient of interaction term between CSI human capital and TMT functional diversity was not significant ($\beta = 0.01$, $p > 0.10$; model 2), thus, failing to support hypothesis 1b.

[Insert Table 4 a & b, 5 & Figure 1 a&b about here]

In hypothesis 2a, I predicted that the educational level of the TMT would positively moderate the effect of CSD on IPO performance. Consistent with this hypothesis, the interaction term between CSD human capital of TMT and educational level is positive and significant ($\beta = 0.14$, $p < 0.10$; model 3). Similarly, hypothesis 2b proposed that the educational level of the TMT would positively moderate the effect of CSI on IPO performance. Consistent with the

hypothesis, the interaction term between CSI human capital of TMT and educational level is positive and significant ($\beta = 0.18$, $p < 0.001$; model 3). Figure 6(a) and 6(c) plot the interaction between CSD and CSI human capital respectively, and IPO performance. As can be seen from these figures, CSD and CSI human capital are more positively related to IPO performance when entrepreneurial teams are highly educated. Furthermore, figures 6(b) and 6(d) plot the marginal effect of CSD and CSI human capital respectively, on IPO performance across the range of values of educational level of the TMT in my sample. As can be seen in the figures, higher educational level of the entrepreneurial team enhances the marginal effect of CSD and CSI human capital on IPO performance. Furthermore, the upper and lower bounds of the 95% confidence interval indicate that the interaction effect remains significant until educational level falls 0.86 standard deviations (~ 16 years of schooling) below the mean for CSD and 0.66 (~ 17 years of schooling) standard deviations below the mean for CSI human capital.

[Insert Figure 6(a), 6(b), 6(c) & 6(d) about here]

Hypotheses 3a and 3b argued that the CEO's output functional background would positively moderate the relationship between CSD human capital and IPO performance as well as that between CSI human capital and IPO performance, respectively. Consistent with the hypotheses, results in Model 4, Table 5 show CEO's output functional background positively moderates the relationship between CSD ($\beta = 0.37$, $p < 0.001$) and CSI ($\beta = 0.32$, $p < 0.001$) human capital and IPO performance. As can be seen in figures 7(a) & 7(c), CEO's output functional background strengthens the relationship between both CSD and CSI human capital and IPO performance. Furthermore, figures 7(b) and 7(d) show that the marginal effect of CSD & CSI human capital on IPO performance is higher when IPO firms are led by CEOs with output functional backgrounds compared to those led by CEOs with throughput functional experiences.

[Insert Figure 7(a), 7(b), 7(c) & 7(d) about here]

Finally, hypotheses 4a and 4b stated that shared team-specific experiences of the entrepreneurial team would influence the relationship between the level of CSD and CSI human capital of TMT and IPO performance. The results in Table 5 (Model 5) show that TMT's shared team-specific experience significantly moderated the relationship between CSD ($\beta = 0.21$, $p < 0.05$) and CSI ($\beta = 0.16$, $p < 0.05$) and IPO performance. As figures 8(a) and 8(c) illustrate, the relationship between the level of CSD and CSI human capital respectively, and IPO performance is stronger when entrepreneurial teams possess higher levels of shared team-specific experiences. Additionally, as shown in figures 8(b) and 8(d) the CSD and CSI human capital have stronger effects on IPO performance when entrepreneurial teams have high degree of shared-team experience. Finally, the upper and lower bounds of the 95% confidence interval indicate that the interaction effect remains significant until educational level falls 0.72 standard deviations (2.2 years) below the mean for CSD and 1.22 (1.3 years) standard deviations below the mean for CSI human capital.

[Insert Figure 8(a), 8(b), 8(c) & 8(d) about here]

Discussion

Under the knowledge-based view, firm behaves as a mechanism for accumulation and distribution of knowledge. (Subramaniam & Youndt, 2005). Additionally, firms' ability to effectively create new knowledge and employ existing knowledge to solve problems, make decisions, and take actions, forms the basis of achieving competitive advantage (Carlsson, 2003; Spender, 2003). On the other hand, it is also widely regarded that in the modern economy, tacit knowledge held by individuals within a firm is crucial to knowledge creation and learning (Drucker, 1988; Wenger, 2004). Drawing on the idea of dyad-specific competition (Chen, 1996),

more recent research has explored the impact of the movement of employees to direct competitors of the firm (Sturman et al., 2008; Pazzaglia et al., 2012). Research in this sphere contends that such movement can be a source of competitive advantage for the recipient firms (Seth et al., 2013). Consistent with this line of research, results of this study confirm the notion that CSD and CSI human capital of the entrepreneurial team can enhance the new ventures IPO performance.

While CSD and CSI knowledge of the entrepreneurial team can enable competitive advantage, the development of the new venture is a creative effort that involves the expertise, insights, and skills of the entire TMT. Thus, the development of new venture necessitates the integration of specialized knowledge held by the members of the TMT, to jointly develop solutions. In this study, overall, I find support for my contention that the potential absorptive capacity of the TMT is an essential antecedent of member's ability to interrelate with the know-how of the individuals that possess CSD/CSI human capital. The successful development of the new venture depends on the entrepreneurial team's ability to take an innovative idea beyond the nascent state. Thus, the growth requires the team's ability to draw on several interdependent bases of knowledge through effective teamwork, which results from interactions among specialists within a team (Okhuysen & Eisenhardt, 2002). As this process involves considerable tacit knowledge, coordinated application of CSD/CSI human capital to new venture development is more feasible when entrepreneurial teams are composed of highly educated and functionally diverse individuals. TMT functional diversity leads team members to access, explore, and use dissimilar information from interrelated knowledge areas connected with a specific task. This exposure to different alternatives, approaches, and ideas can trigger a generation of divergent and novel solutions through the incorporation of CSD/CSI human capital within the entrepreneurial

team. On the other hand, higher educational level of the entrepreneurial team ensures that team member's possess basic understanding of the knowledge domains of other individual's within the team. Such understanding enhances team's understanding of how CSD/CSI knowledge complements other know-how available within the team and reduces interpretative uncertainty that may arise due to dissimilarities in the principal areas of team members. By ensuring that the entrepreneurial team has the capacity to interpret CSD/CSI knowledge, higher educational level increases the prospects of assimilating such knowledge during the development of new venture.

Results of this study also show that CEO's functional background, which shapes the firm's culture, values, and potential strategic direction (Koyuncu, et al., 2010) influences entrepreneurial team's ability to capitalize on the CSD/CSI human capital of its members CEOs of new ventures influence the structural processes of the TMT and act as integrators who bring together diverse knowledge domains to build competencies of the entrepreneurial firm (Koyuncu, et al., 2010). By determining the modes of exchange within the team and determining reward structures for the members of the team, CEO's influence how CSD/CSI knowledge is utilized within the IPO firm. In this regard, results show that CEOs exhibiting an output functional background are more likely exhibit an external orientation and instigate structural processes that are conducive to tackle the heuristic and information rich environment of high technology new ventures. As such CEO's indicate strong preference for innovation and preferences for market expansion (Gupta & Govindarajan, 2000), they are more likely to encourage processes such as risk-taking, place less emphasis on control, and manage for the long run (Cho & Hambrick, 2006). As such processes enhance the learning capabilities of the entrepreneurial team; it increases the prospect of developing innovative products through the integration of CSD/CSI human capital within the new venture. On the other hand, CEO's with

throughput backgrounds, being efficiency oriented, are less likely to be comfortable with the ambiguous context of new venture development. Additionally, their controlling orientation can influence them to instigate structural processes that are not conducive to cross-functional pooling of ideas. Subsequently, such processes can hinder the integration of specialized CSD/CSI human capital, thereby, hindering the performance of the new venture at IPO.

Further, this study provides evidence that high levels of shared team-specific experience of the entrepreneurial team increases the likelihood that individuals in the team develop more constructive relationships with each other. This process in turn, enhances their willingness to build on each other's perspectives, ideas, and knowledge, during the new venture development process. Longer experiences with each other lead to the development of high degree of social capital with the entrepreneurial TMT, thereby lowering the costs of sharing and ultimately assimilating complex tacit knowledge (Hansen, 2002). By enhancing accessibility to individual's possessing CSD/CSI human capital, higher shared team-specific experience, enhances the likelihood of integrating such knowledge, and subsequently enhance CSD/CSI – IPO performance relationship.

Theoretical and Practical Contributions

This study makes three primary contributions to the literature. Firstly, by conceptualizing such capability of the new venture to be a function of the entrepreneurial teams' intellectual capital, this study draws attention to intangible assets as a key determinant of business competitiveness of new ventures. As the development of new ventures requires a recombination of a variety of tacit knowledge possessed by the members of the entrepreneurial team, their intellectual capital plays an integral role in their ability to generate value from intangible resources. By incorporating research from knowledge-based view and organizational learning

perspectives, this study shows that intellectual capital of the entrepreneurial team constitutes a key driver of new ventures capability to exploit competitor-specific knowledge, thereby, establishing a link between these perspectives and research in competitive rivalry. Secondly, this study unravels some compositional attributes of such teams that enhance their ability to assimilate and exploit competitor specific knowledge of its constituents. These results add to our understanding of entrepreneurial teams and the context in which intangible assets (CSD/CSI) influence the performance of an entrepreneurial firm. My results show that the extent to which members can integrate competitor-specific knowledge towards the development of the new venture is contingent on key elements of their intellectual capital such as their potential absorptive capacity, CEO's functional background, and the quality of relationships amongst the members of the entrepreneurial team. Finally, by considering both the design and managerial ecosystem of the entrepreneurial team, this study draws attention to interdependencies between the leader and the team. The compositional aspects and common historical experiences of the entrepreneurial team forms an essential precursor to the teams' capability to create value by accumulating the range of knowledge embedded within its constituents. However, by setting up the context in which such value creation occurs, CEOs also influence the knowledge creation in new ventures by determining the mode and incentives for information exchange within the entrepreneurial team.

Limitations and Directions for Future Research

Limitations of this study are as follows. Firstly, the sample utilized in this study was derived from a single industry based in the United States. The focused nature of the sample implies that the results presented in this study might not generalize to other industries or countries. More research is required to ascertain if the results found in this study can be

replicated in other industries across different countries. For instance, structural processes instigated within the entrepreneurial team might differ between hi-tech and non-hi-tech industries (innovation versus efficiency driven). Secondly, while this study identifies aspects of the entrepreneurial teams intellectual capital that influences their capability to integrate knowledge, future research may explore internal processes through which such capital enhances the performance of the new venture. A more micro level analysis of the mechanisms affected by the interaction of various elements of the entrepreneurial team's intellectual capital can enhance our understanding of process through which it affects new venture performance. For example, the interaction between team diversity and CEO functional background may induce a particular type of conflict within the entrepreneurial team. Furthermore, the prevalence of different types of conflict (task versus relational) might vary based upon the degree of shared team-specific experience of the entrepreneurial team. Such a fine grade analysis can enhance our understanding of various combinations of entrepreneurial team's intellectual capital and enable better comparison of performance differential between new ventures. Finally, this study uses stock market data to gauge the performance of the new venture at IPO. While stock data is commonly used as a measure of IPO performance, some researchers have argued that such data might be confounded by portfolio rebalancing effects around the time of the IPO. Future research that can control for such effects will also contribute to the literature.

Conclusion

While competitive rivalry tends to be dyadic and is influenced by firm-specific characteristics of both the IPO firm and its primary competitors, and movement of employees to rival firms can lead to competitive advantage for the recipient organizations, little research has explored the factors in the intra-organizational environment of the new venture that enhance its

ability to capitalize on competitor-specific knowledge. By considering such capability to be a function of entrepreneurial teams' intellectual capital, it draws attention to the intra-organizational factors of the new venture that affect its competency in benefiting from specialized knowledge of its constituents.

Table 4a: Descriptive Statistics and Pairwise Correlation Matrix

ID	Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9
1	IPO Performance	2.34[1]	0.85[1]	1.00								
2	Venture-Backed	0.66	0.47	0.01	1.00							
3	Spin-off	0.09	0.29	-0.07	-0.44	1.00						
4	IPO Firm Age	1.86	0.86	-0.07	0.12	-0.30	1.00					
5	Underwriter Ranking	2.10	0.20	0.02	0.16	0.11	0.01	1.00				
6	IPO Firm Size	5.98	1.41	-0.06	-0.22	0.10	-0.05	0.10	1.00			
7	Patent Stock	0.00	1.00	0.28	-0.14	0.22	0.06	0.04	0.02	1.00		
8	CEO-Duality	0.36	0.48	0.11	0.06	-0.11	0.10	-0.05	-0.12	-0.06	1.00	
9	CEO-Founder	0.54	0.50	-0.02	0.14	-0.05	0.05	-0.06	-0.01	-0.19	0.20	1.00
10	Source Firm Size	7.63	1.12	-0.10	0.03	-0.05	-0.03	0.28	-0.06	0.03	-0.09	-0.08
11	Technological Diversity	0.67	0.20	0.09	0.06	-0.09	-0.10	-0.06	-0.14	-0.14	-0.09	0.15
12	Product Diversity	0.45	0.07	0.02	-0.18	0.25	-0.14	-0.04	-0.01	-0.07	-0.01	0.02
13	Tenure at Competitor	5.22	2.01	0.15	-0.09	0.00	0.04	-0.01	0.05	0.06	-0.10	-0.01
14	Position at Competitor	0.57	0.17	0.20	-0.11	-0.03	-0.12	0.18	0.10	0.18	-0.13	-0.05
15	Learning Emphasis of Source Firm	0.62	0.17	-0.14	-0.05	-0.06	0.08	-0.15	0.02	-0.06	0.06	0.07
16	Competitor-specific direct (CSD)	0.05	0.09	0.37	0.10	-0.03	0.07	0.13	-0.04	0.21	0.06	0.20
17	Competitor-related indirect (CSI)	0.06	0.12	0.26	-0.07	0.10	0.05	0.05	-0.06	0.16	0.13	-0.04
18	TMT Functional Diversity (FD)	0.59	0.19	0.30	-0.12	-0.08	-0.08	-0.02	0.09	0.09	0.00	-0.08
19	TMT Mean Education Level (EDU)	4.76	1.98	-0.01	0.04	-0.04	-0.06	-0.15	0.02	-0.10	0.01	0.21
20	CEO Background (CB)	1.74	0.44	-0.59	0.06	0.05	0.06	0.10	0.03	-0.27	-0.12	0.10
21	TMT Team-specific Experience (TSE)	3.42	1.72	0.15	-0.13	0.10	-0.35	0.02	0.09	0.04	-0.10	-0.09

[1]Amount in billions of dollars

Table 4b: Descriptive Statistics and Pairwise Correlation Matrix

ID	Variable	10	11	12	13	14	15	16	17	18	19	20	21
10	Source Firm Size	1.00											
11	Technological Diversity	0.03	1.00										
12	Product Diversity	0.04	0.00	1.00									
13	Tenure at Competitor	-0.12	0.10	-0.05	1.00								
14	Position at Competitor	0.01	0.13	0.00	-0.01	1.00							
15	Learning Emphasis of Source Firm	-0.08	-0.03	-0.04	-0.09	0.18	1.00						
16	Competitor-specific direct (CSD)	-0.08	0.14	-0.13	0.17	0.18	0.28	1.00					
17	Competitor-related indirect (CSI)	-0.08	-0.05	0.17	0.02	0.13	0.28	-0.10	1.00				
18	TMT Functional Diversity (FD)	-0.04	-0.06	0.04	0.00	0.00	0.00	0.06	0.00	1.00			
19	TMT Mean Education Level (EDU)	-0.09	-0.02	-0.03	-0.01	-0.08	0.09	-0.05	-0.02	-0.05	1.00		
20	CEO Background (CB)	0.11	0.04	0.05	-0.05	-0.18	-0.04	-0.15	-0.16	-0.50	-0.05	1.00	
21	TMT Team-specific Experience (TSE)	0.08	0.07	0.05	-0.16	0.23	0.21	0.08	0.02	0.08	0.08	-0.10	1.00

Table 5. Results of random effects regression with IPO performance as dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Year (dummy)	Yes	Yes	Yes	Yes	Yes	Yes
Venture-Backed	-0.08	-0.12*	-0.09	-0.09	-0.08	-0.13*
Spin-off	-0.37**	-0.36**	-0.32**	-0.34**	-0.33**	-0.32**
IPO Firm Age	-0.07*	-0.04	-0.06	-0.07*	-0.07**	-0.05
Underwriter Ranking	0.13***	0.10**	0.12**	0.10**	0.11***	0.10***
IPO Firm Size	-0.04	-0.03	-0.02	-0.03	-0.03	-0.02
Patent Stock	0.03	0	0.01	-0.01	0.03	0.01
CEO-Duality	-0.04	-0.1	-0.08	-0.07	-0.07	-0.09
CEO-Founder	-0.08**	-0.05	-0.04	-0.06	-0.01	-0.04
Source Firm Size	-0.05	-0.06*	-0.09**	-0.06**	-0.07**	-0.05*
Technological Diversity	0.06*	0.02	0.03	0.01	0.06	0.03
Product Diversity	-0.02	-0.08**	-0.06*	-0.06	-0.05	-0.08**
Tenure at Competitor	0	-0.03	0.01	-0.01	0	-0.01
Position at Competitor	-0.05	-0.05	-0.07	-0.05	-0.04	-0.05
Learning Emphasis of Source Firm	-0.27***	-0.27***	-0.20**	-0.16**	-0.21***	-0.15**
Competitor-specific direct (CSD)	0.38***	0.34**	0.29***	0.57***	0.28***	0.31**
Competitor-related indirect (CSI)	0.35***	0.35***	0.24***	0.48***	0.31***	0.26**
TMT Functional Diversity (FD)	0.11*	0.12*	0.09	0.11*	0.10*	0.05
TMT Mean Education Level (EDU)	0.17**	0.15**	0.19***	0.13**	0.15**	0.15**
CEO Background (CB)	0.84***	0.82***	0.72***	0.88***	0.83***	0.86***
TMT Team-specific Experience (TSE)	0.09**	0.08**	0.08**	0.06**	0.22***	0.07*
CSD*FD		0.10**				0.09**
CSI*FD		0.01				0.01
CSD*EDU			0.14*			0.09
CSI*EDU			0.18***			0.23*
CSD*CB				0.37***		-0.18
CSI*CB				0.32***		-0.11
CSD*TSE					0.21**	0.17*
CSI*TSE					0.16**	0.08**
No. of Observations	484	484	484	484	484	484
No. of Groups	121	121	121	121	121	121
R^2 Overall	0.62	0.68	0.64	0.66	0.66	0.68
χ^2	240.68***	570.92***	321.11***	500.25***	485.90***	817.88***

* p < 0.10; ** p < 0.05; *** p <0.01

Figure 5(a): Interaction between Competitor-Specific-Direct Human Capital and TMT Functional Diversity

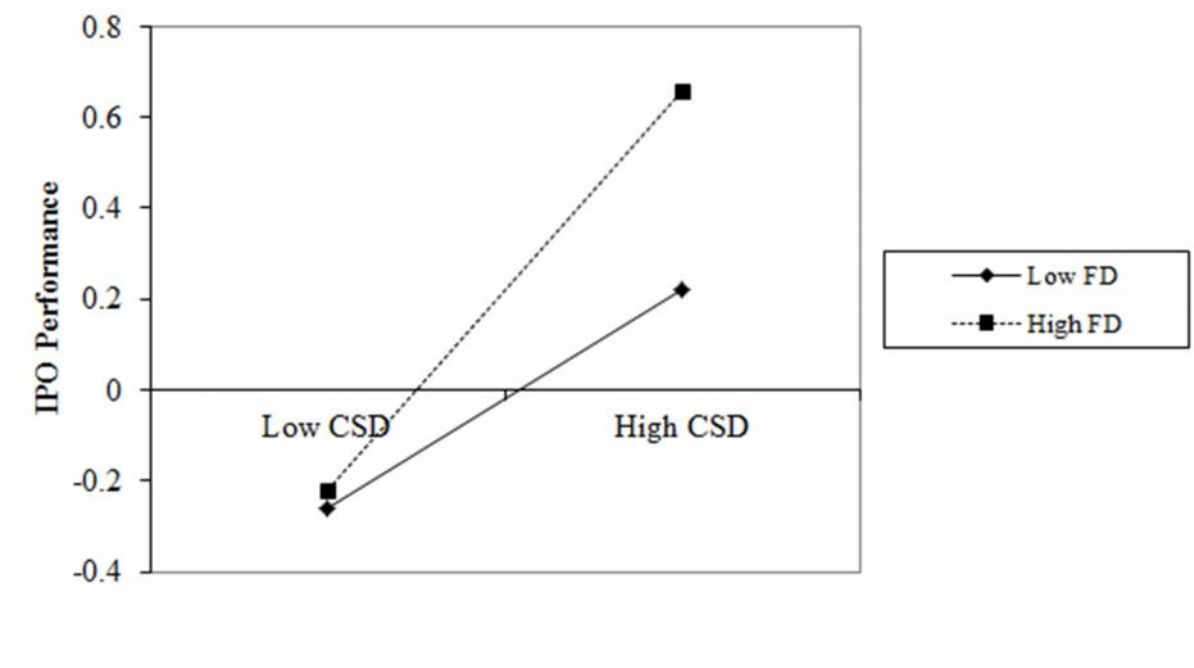


Figure 5(b): Marginal Impact of Competitor-Specific-Direct Human Capital on IPO Performance at Varying Levels of TMT Functional Diversity

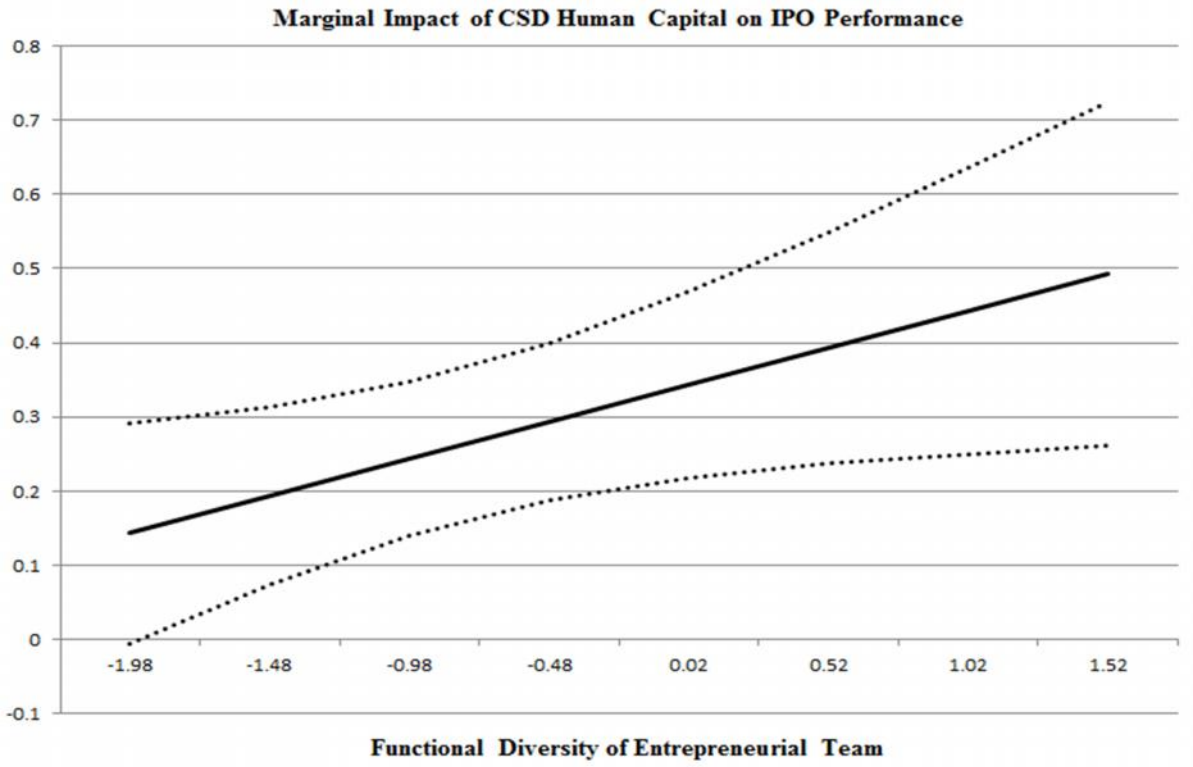


Figure 6(a): Interaction between Competitor-Specific-Direct Human Capital and TMT Educational Level

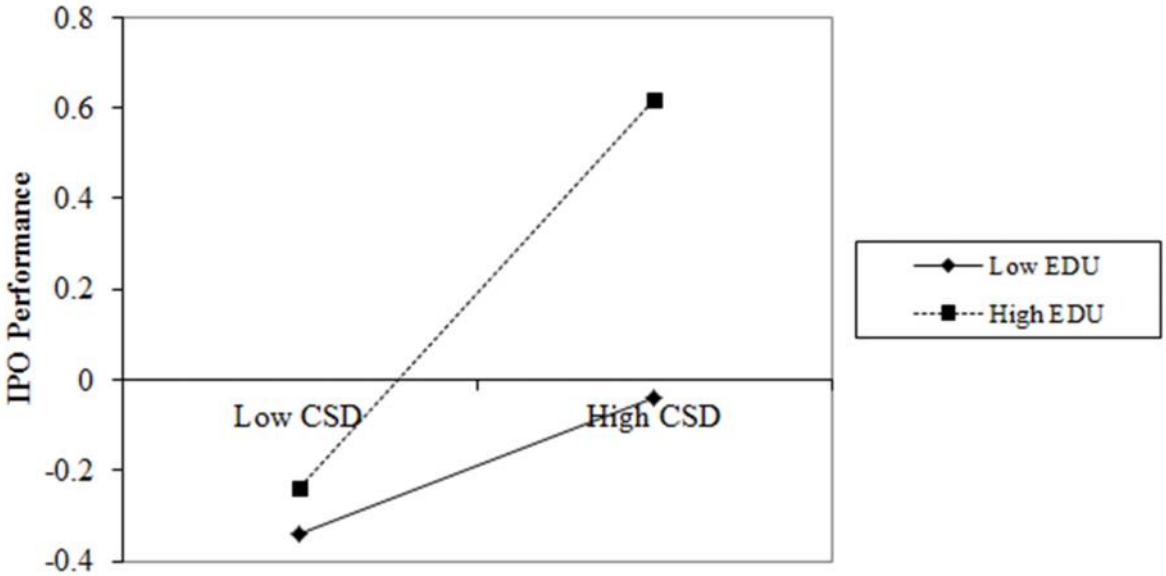


Figure 6(b): Marginal Impact of Competitor-Specific-Direct Human Capital on IPO Performance at Varying Levels of TMT Educational Level

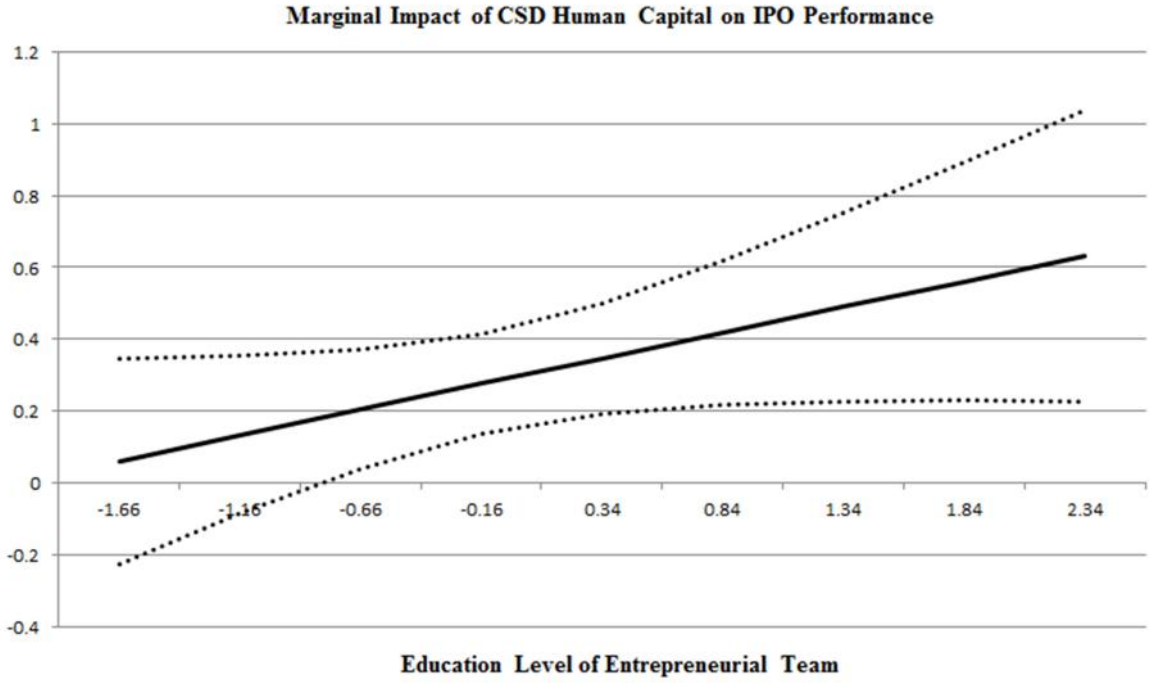


Figure 6(c): Interaction between Competitor-Specific-Indirect Human Capital and TMT Educational Level

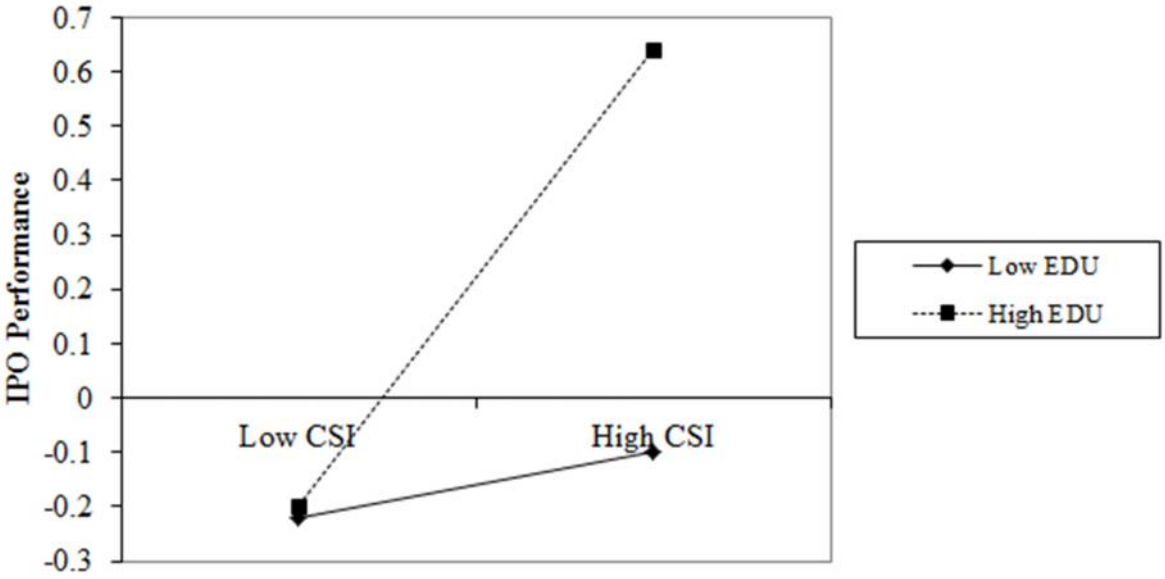


Figure 6(d): Marginal Impact of Competitor-Specific-Indirect Human Capital on IPO Performance at Varying Levels of TMT Educational Level

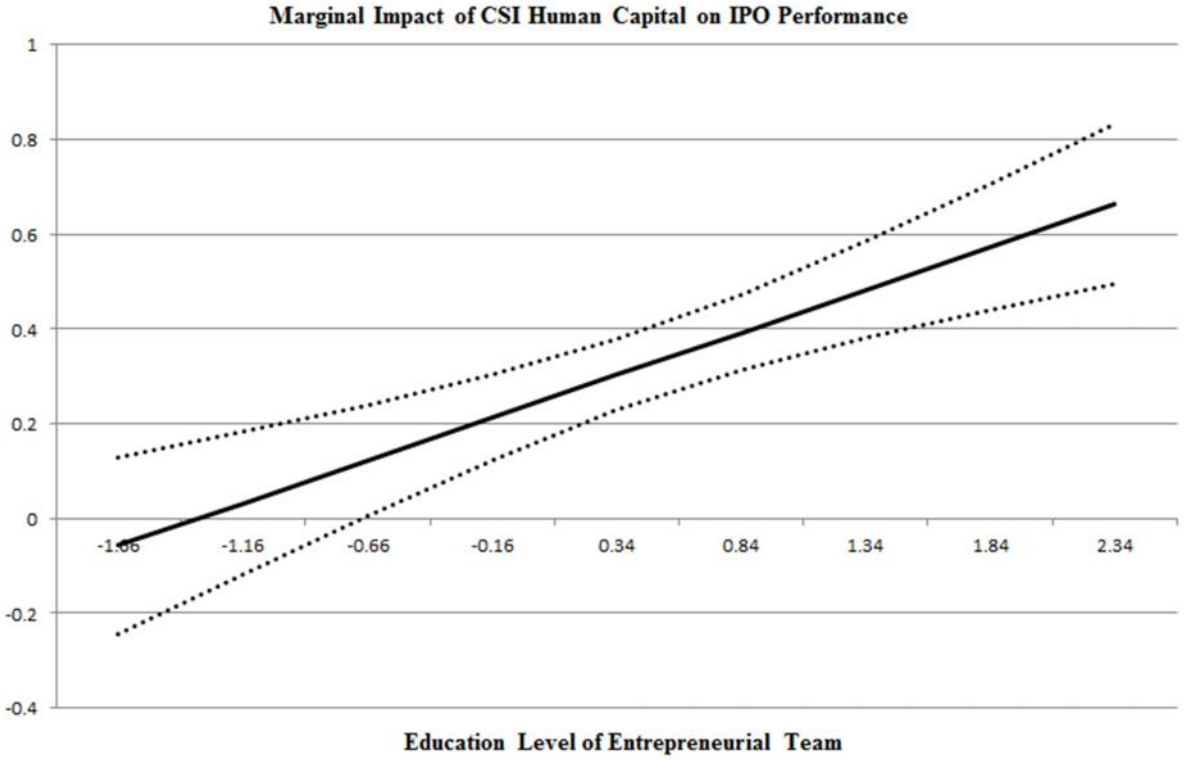


Figure 7(a): Interaction between Competitor-Specific-Direct Human Capital and CEO Background

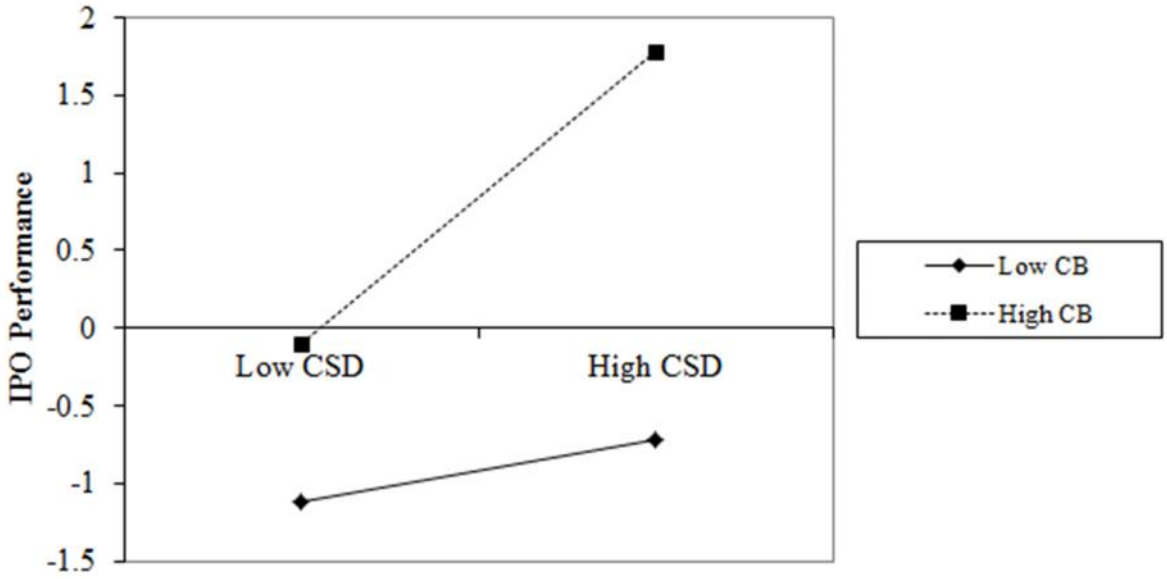


Figure 7(b): Marginal Impact of Competitor-Specific-Direct Human Capital on IPO Performance at Varying Levels of CEO Background

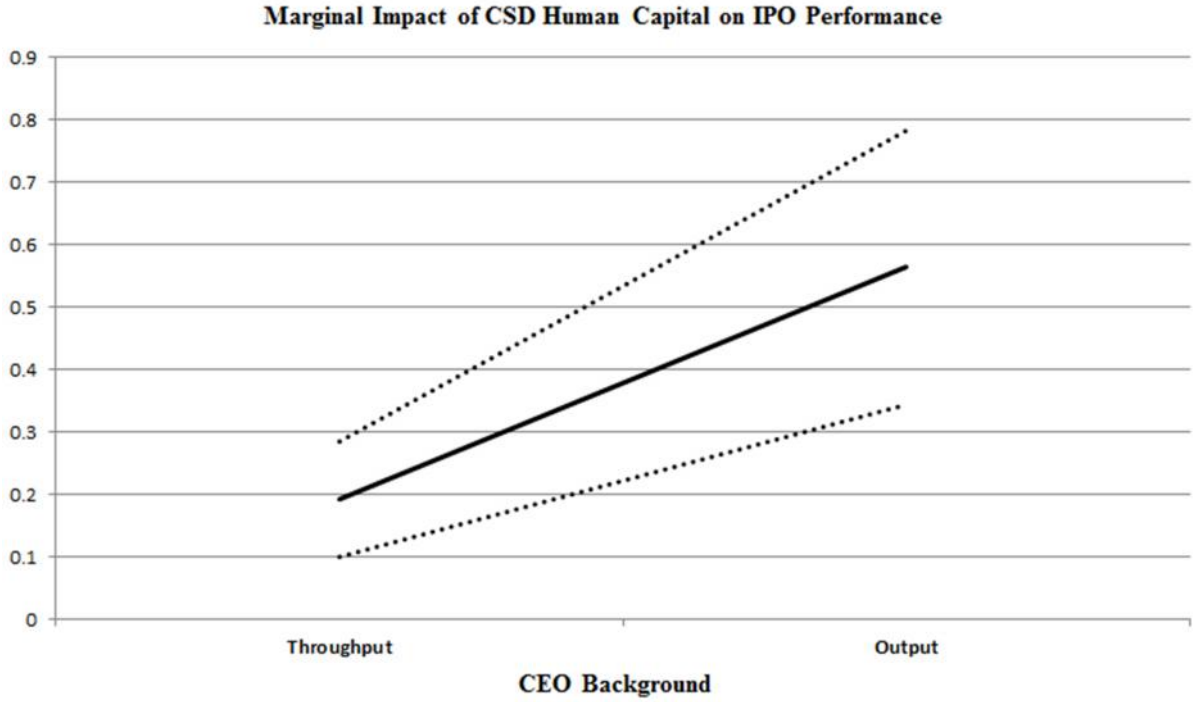


Figure 7(c): Interaction between Competitor-Specific-Indirect Human Capital and CEO Background

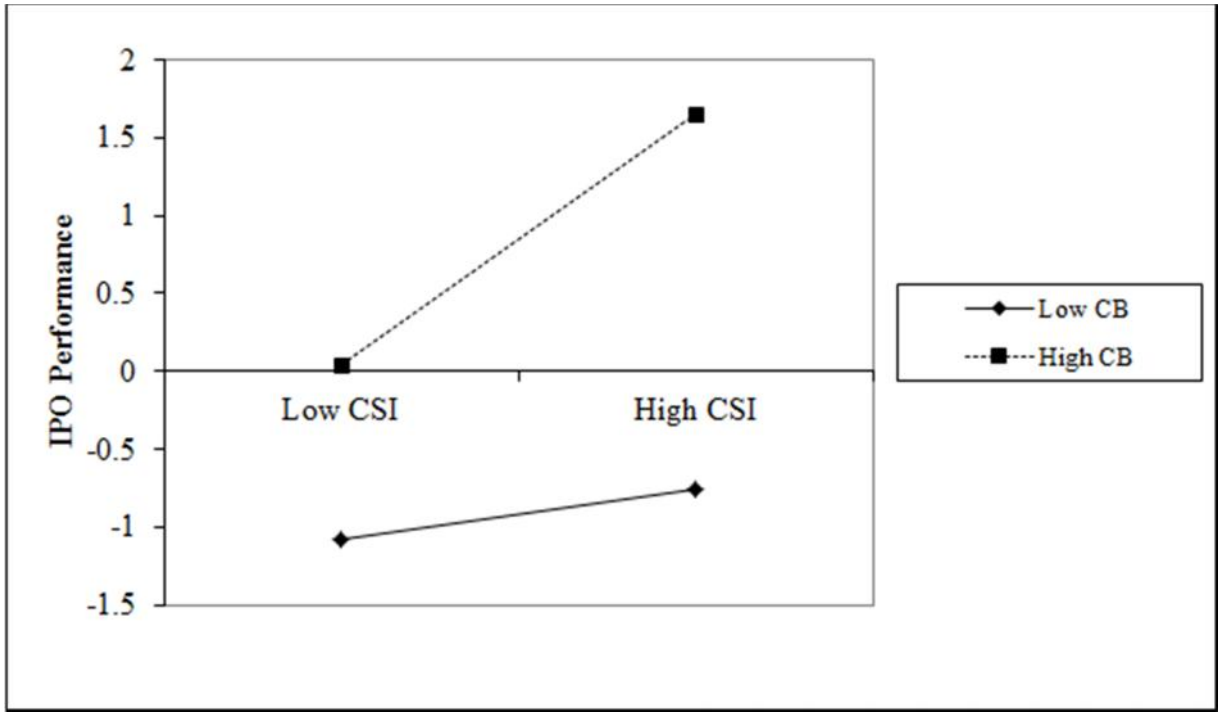

2
1.5
1
0.5
0
-0.5
-1
-1.5
IPO Performance
Low CSI
High CSI
Low CB
High CB

Figure 7(d): Marginal Impact of Competitor-Specific-Indirect Human Capital on IPO Performance at Varying Levels of CEO Background

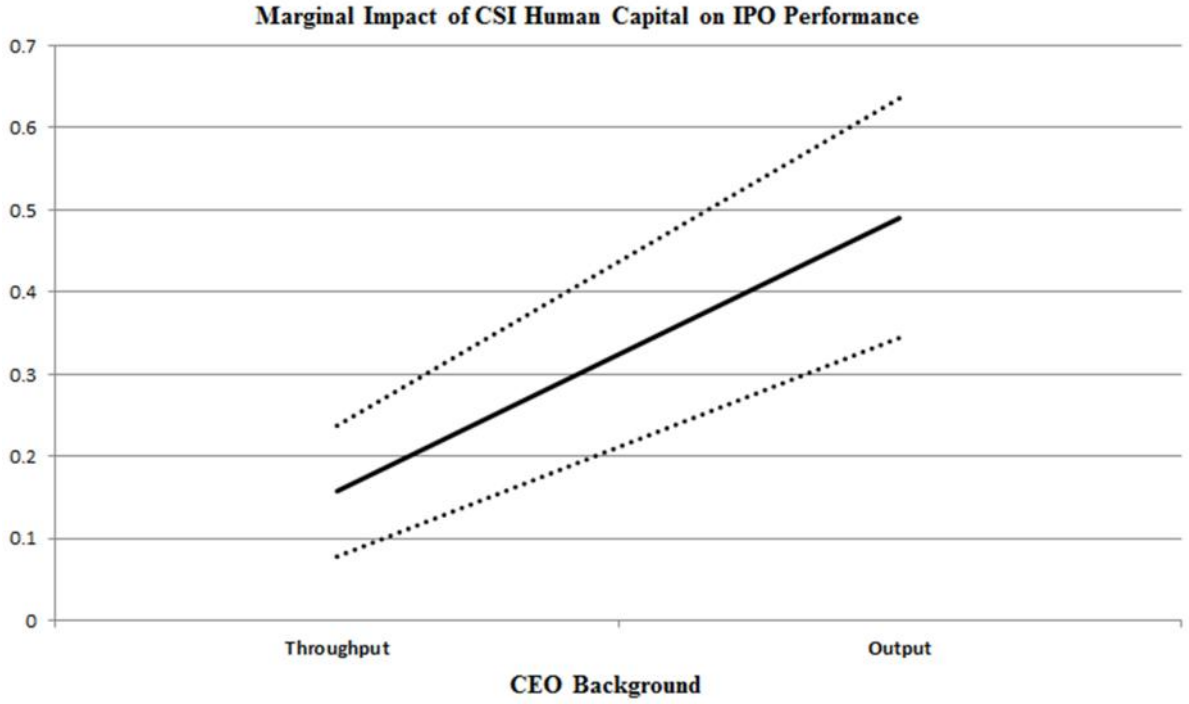


Figure 8(a): Interaction between Competitor-Specific-Direct Human Capital and Shared Team-Specific Experience

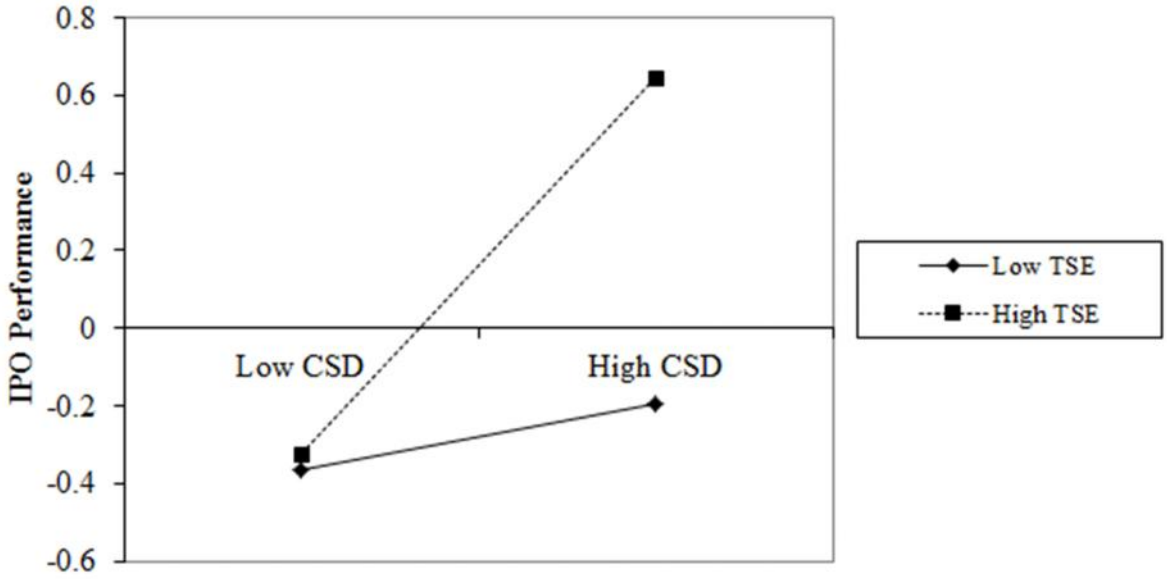


Figure 8(b): Marginal Impact of Competitor-Specific-Direct Human Capital on IPO Performance at Varying Levels of Shared Team-Specific Experience

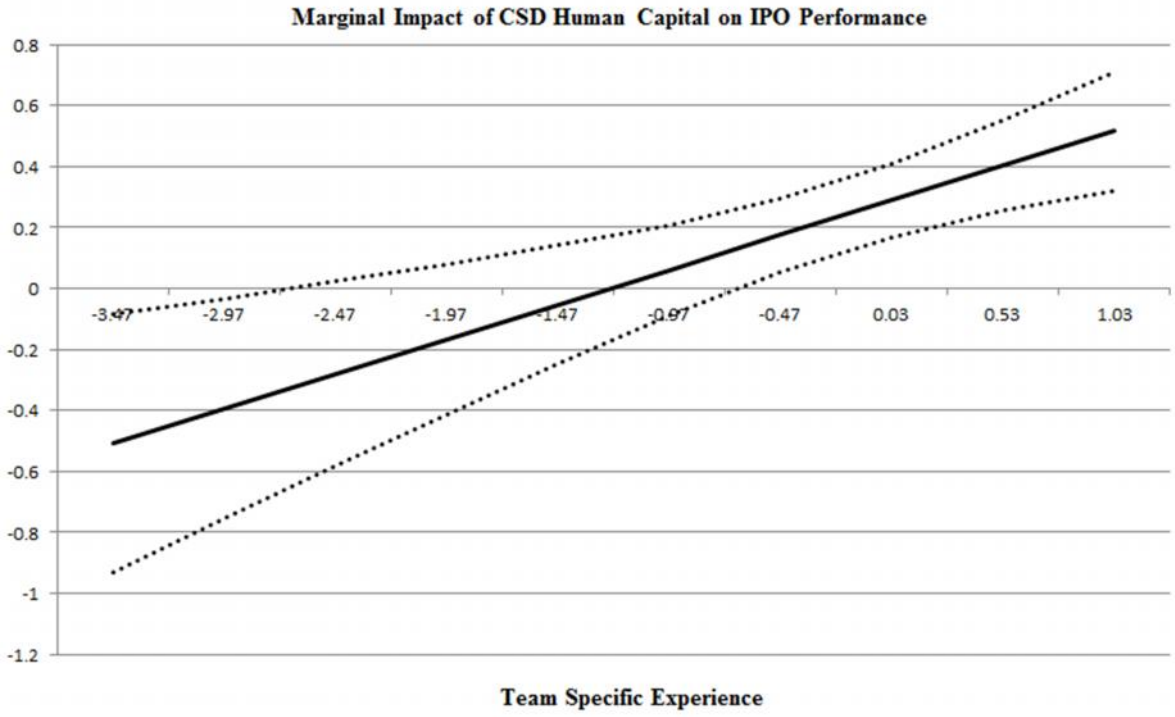


Figure 8(c): Interaction between Competitor-Specific-Indirect Human Capital and Shared Team-Specific Experience

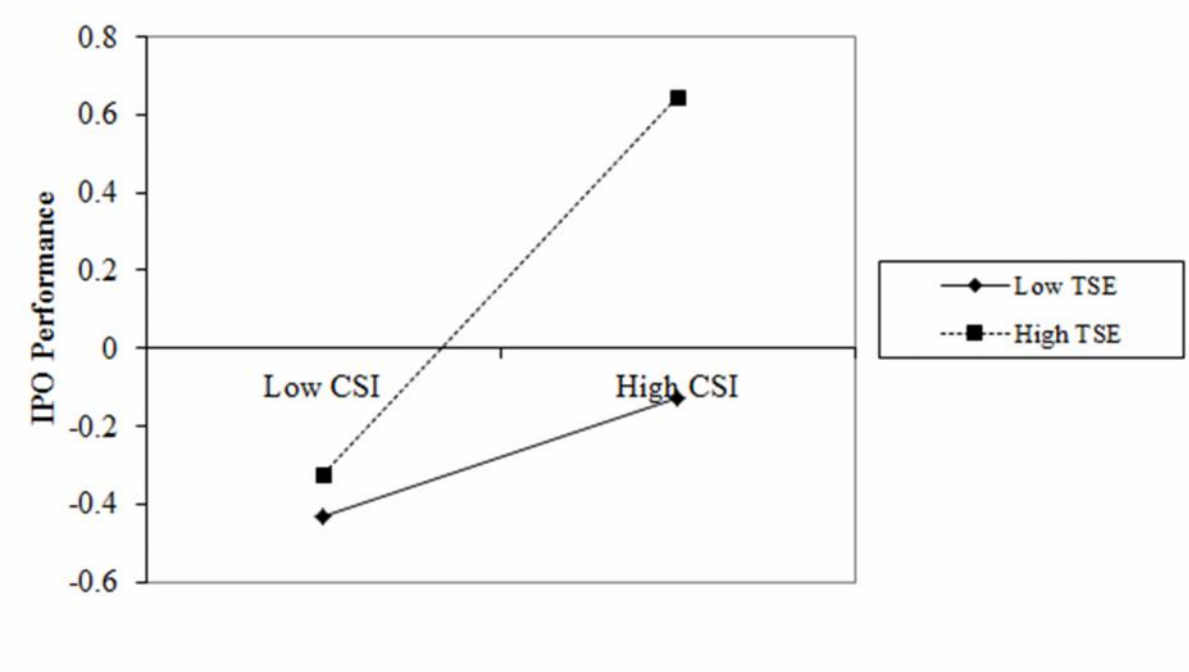
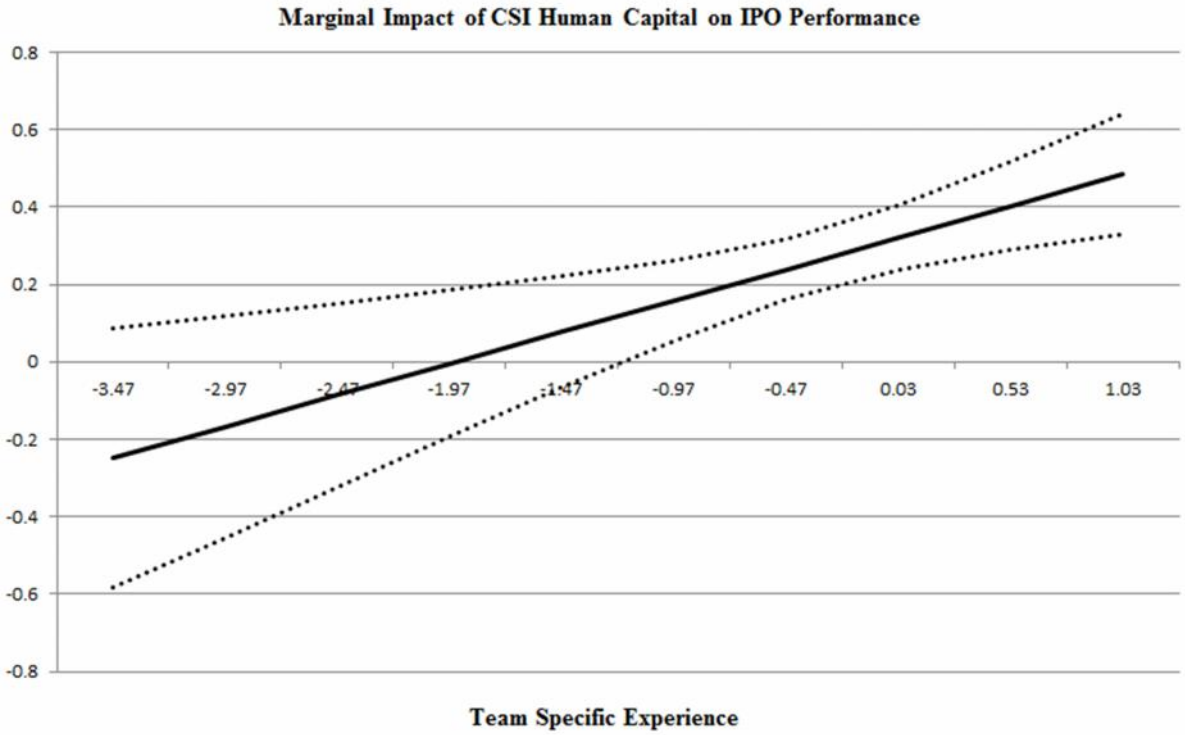


Figure 8(d): Marginal Impact of Competitor-Specific-Indirect Human Capital on IPO Performance at Varying Levels of Shared Team-Specific Experience



REFERENCES

1) Agarwal, R., Echambadi, R., Franco, A. M., & Sarkar, M. B. (2004). Knowledge transfer through inheritance: Spin-out generation, development, and survival. *Academy of Management Journal*, 47(4), 501-522.

2) Agarwal, R., Ganco, M., & Ziedonis, R. H. (2009). Reputations for toughness in patent enforcement: implications for knowledge spillovers via inventor mobility. *Strategic Management Journal*, 30(13), 1349-1374.

3) Ahuja, G., & Morris Lampert, C. (2001). Entrepreneurship in the large corporation: A longitudinal study of how established firms create breakthrough inventions. *Strategic Management Journal*, 22(67), 521-543.

4) Aime, F., Johnson, S., Ridge, J. W., & Hill, A. D. (2010). The routine may be stable but the advantage is not: Competitive implications of key employee mobility. *Strategic Management Journal*, 31(1), 75-87.

5) Amit, R., & Schoemaker, P. J. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(1), 33-46.

6) Amason, A. C., Shrader, R. C., & Tompson, G. H. (2006). Newness and novelty: relating top management team composition to new venture performance. *Journal of Business Venturing*, 21(1), 125-148.

7) Ancona, D.G., and Caldwell, D.F. (1992). Demography and design—Predictors of new product team performance. *Organization Science*, 3(3) 321–341.

8) Andrews, A. O., & Welbourne, T. M. (2000). The people/performance balance in IPO firms: the effect of the chief executive officer's financial orientation. *Entrepreneurship Theory and Practice*, *25*(1), 93-106.

9) Argote, L., & Ingram, P. (2000). Knowledge transfer: A basis for competitive advantage in firms. *Organizational Behavior and Human Decision Processes*, 82(1), 150-169.

10) Argote, L., & Miron-Spektor, E. (2011). Organizational learning: From experience to knowledge. *Organization Science*, *22*(5), 1123-1137.

11) Argyris, C. (1993). *Knowledge for action: A guide to overcoming barriers to organizational change*. Jossey-Bass Inc., Publishers, 350 Sansome Street, San Francisco, CA 94104.

12) Argyris, N. (1996). Capabilities, technological diversification and divisionalization. *Strategic Management Journal*, 17(5), 395-410.

13) Argyris, C. & Schon, D. (1996): *Organizational Learning II. Theory, Method, and Practice*, Reading; Addison-Wesley.

14) Arora, A., Belenzon, S., & Rios, L. A. (2014). Make, buy, organize: The interplay between research, external knowledge, and firm structure. *Strategic Management Journal*, *35*(3), 317-337.

15) Arthurs, J. D., Busenitz, L. W., Hoskisson, R. E., & Johnson, R. A. (2009). Firm-Specific Human Capital and Governance in IPO Firms: Addressing Agency and Resource Dependence Concerns. *Entrepreneurship Theory and Practice*, 33(4), 845-865.

16) Baer, M., Dirks, K. T., & Nickerson, J. A. (2013). Microfoundations of strategic problem formulation. *Strategic Management Journal*, 34(2), 197-214.

17) Bailey, E. E., & Helfat, C. E. (2003). External management succession, human capital, and firm performance: an integrative analysis. *Managerial and Decision Economics*, 24(4), 347-369.

18) Barker, W. E., & Obstfeld, D. (1999). Social capital by design: Structures, strategies, and institutional context. InR. TAJ Leenders & SM Gabbay (Eds.), Corporatesocial capital and liability: 88-105.

19) Bantel, K. A., & Jackson, S. E. (1989). Top management and innovations in banking: does the composition of the top team make a difference? *Strategic Management Journal*, 10(1), 107-124.

20) Barkema, H. G., & Shvyrkov, O. (2007). Does top management team diversity promote or hamper foreign expansion? *Strategic Management Journal*, *28*(7), 663-680.

21) Barker III, V. L., & Mueller, G. C. (2002). CEO characteristics and firm R&D spending. *Management Science*, *48*(6), 782-801.

22) Barling, J., Kelloway, E. K., & Iverson, R. D. (2003). High-quality work, job satisfaction, and occupational injuries. *Journal of Applied Psychology*, 88(2), 276.

23) Barnett, W.P. 1997. "The dynamics of competitive intensity." *Administrative Science Quarterly*, 42, 128-160.

24) Barnes, B. & Edge, D., (1982). "The interaction of science and technology," In B. Barnes & D. Edge (Eds.), *Science in context: Readings in the sociology of science*: 147-154. Cambridge, MA: MIT Press.

25) Barney, J. B. (1986). Strategic factor markets: Expectations, luck, and business strategy. *Management Science*, 32(10), 1231-1241.

26) Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.

27) Becker G. (1975). *Human Capital*. National Bureau of Research: New York.

28) Beckman, C. M. (2006). The influence of founding team company affiliations on firm behavior. *Academy of Management Journal*, 49(4), 741-758.

29) Beckman, C. M., & Burton, M. D. (2008). Founding the future: Path dependence in the evolution of top management teams from founding to IPO. *Organization Science*, *19*(1), 3-24.

30) Bell, S. T., Villado, A. J., Lukasik, M. A., Belau, L., & Briggs, A. L. (2011). Getting specific about demographic diversity variable and team performance relationships: A meta-analysis. *Journal of Management*, 37(3), 709-743.

31) Benito, G. R., Lunnan, R., & Tomassen, S. (2011). Distant encounters of the third kind: multinational companies locating divisional headquarters abroad. *Journal of Management Studies*, 48(2), 373-394.

32) Berry, C.H. (1975). *Corporate Growth and Diversification*, Princeton University Press, Princeton, NJ.

33) Breusch, T. S., & Pagan, A. R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. *The Review of Economic Studies*, 47(1), 239-253.

34) Biemann, T., & Kearney, E. (2010). Size does matter: How varying group sizes in a sample affect the most common measures of group diversity. *Organizational Research Methods*, 13(3), 582-599.

35) Blatt R (2009). Tough love: how communal schemas and contracting practices build relational capital in entrepreneurial teams. *Academy of Management Review*, 34: 533-551.

36) Bradley, S. W., McMullen, J. S., Artz, K., & Simiyu, E. M. (2012). Capital is not enough: Innovation in developing economies. *Journal of Management Studies*, 49 (4), 684-717.

37) Brown, J. S., & Duguid, P. (1991). Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation. *Organization Science*, *2*(1), 40-57.

38) Bunderson, J. S. (2003). Team member functional background and involvement in management teams: Direct effects and the moderating role of power centralization. *Academy of Management Journal*, 46(4), 458-474.

39) Burton, M. D., Sørensen, J. B., & Beckman, C. M. (2002). *Coming from good stock: Career histories and new venture formation* (Vol. 19, pp. 229-262). Emerald Group Publishing Limited.

40) Campbell, B. A., Ganco, M., Franco, A. M., & Agarwal, R. (2012). Who leaves, where to, and why worry? Employee mobility, entrepreneurship and effects on source firm performance. *Strategic Management Journal*, 33(1), 65-87.

41) Campbell, B. A., Coff, R., & Kryscynski, D. (2012). Rethinking sustained competitive advantage from human capital. *Academy of Management Review*, 37(3), 376-395.

42) Cannella, A. A., Park, J. H., & Lee, H. U. (2008). Top management team functional background diversity and firm performance: Examining the roles of team member colocation and environmental uncertainty. *Academy of Management Journal*, *51*(4), 768-784.

43) Cannon-Bowers, J. A., & Salas, E. (2001). Reflections on shared cognition. *Journal of Organizational Behavior*, *22*(2), 195-202.

44) Cao, Q., Maruping, L. M., & Takeuchi, R. (2006). Disentangling the effects of CEO turnover and succession on organizational capabilities: A social network perspective. *Organization Science*, 17(5), 563-576.

45) Carbonell, P., & Rodriguez, A. I. (2006). Designing teams for speedy product development: The moderating effect of technological complexity. *Journal of Business Research*, 59(2), 225-232.

46) Carley, K. M. 2002, *"Smart Agents and Organizations of the Future" The Handbook of New Media*. Edited by Leah Lievrouw & Sonia Livingstone, Ch. 12 pp. 206-220, Thousand Oaks, CA, Sage.

47) Carlsson, S. A. (2003). Knowledge managing and knowledge management systems in inter-organizational networks. *Knowledge and process management, 10*(3), 194-206.

48) Carpenter, M. A., & Fredrickson, J. W. (2001). Top management teams, global strategic posture, and the moderating role of uncertainty. *Academy of Management Journal*, 44(3), 533-545.

49) Carr, W. (Ed.). (1989). Quality in teaching: Arguments for a reflective profession. Routledge.

50) Castanias, R. P., & Helfat, C. E. 2001. The managerial rents model: Theory and empirical analysis. *Journal of Management*, 27: 661-678.

51) Chakravarthy, B., McEvily, S., Doz, Y., & Rau, D. 2003. Knowledge management and competitive advantage. The Blackwell handbook of organizational learning and knowledge management, 205-323.

52) Chalk, A. and Peavey, J. (1998) 'Understanding the Pricing of Initial Public Offerings', in A. Chen (ed.), Research in Finance, JAI Press, Greenwich, CT.

53) Chatterjee, A., & Hambrick, D. C. (2007). It's all about me: Narcissistic chief executive officers and their effects on company strategy and performance. *Administrative Science Quarterly, 52*(3), 351-386.

54) Chemmanur, T. J., & Paeglis, I. (2005). Management quality, certification, and initial public offerings. *Journal of Financial Economics*, 76(2), 331-368.

55) Chen, M. J. (1996). Competitor analysis and inter-firm rivalry: Toward a theoretical integration. *Academy of Management Review*, 21, 100-134.

56) Cho, T. S., & Hambrick, D. C. (2006). Attention as the mediator between top management team characteristics and strategic change: The case of airline deregulation. *Organization Science*, 17(4), 453-469.

57) Clark, A. & Peavey, J. (1998). Understanding the pricing of Initial Public Offerings, in A. Chen (ed.), *Research in Finance*, JAI Press, Greewnwich, CT.

58) Clark, D. T. (2002). A Study of the Relationship Between Firm Age at IPO and Aftermarket Stock Performance. *Financial Markets, Institutions & Instruments*, 11(4), 385-400.

59) Coleman, J. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94(Suppl.), S95–S120.

60) Conner K. R. & C. K. Prahalad (1996). A Resource-based Theory of the Firm: Knowledge versus Opportunism. *Organization Science*, 7(5), 477-501.

61) Crook, T. R., Todd, S. Y., Combs, J. G., Woehr, D. J., & Ketchen Jr, D. J. (2011). Does human capital matter? A meta-analysis of the relationship between human capital and firm performance. *Journal of Applied Psychology*, 96(3), 443.

62) Cruz, C. C., Gómez-Mejia, L. R., & Becerra, M. (2010). Perceptions of benevolence and the design of agency contracts: CEO-TMT relationships in family firms. *Academy of Management Journal*, *53*(1), 69-89.

63) Cohen, W., & Levinthal, D. (1990). Absorptive Capacity: A new Perspective on Learning and Innovation. *Administrative Science Quarterly*, 35, 128-152.

64) Cohen, M. D. (1991), Individual Learning and Organizational Routine: Emerging Connections *Organization Science*, 2, 135-139.

65) Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. Routledge.

66) Cohen, B. D., & Dean, T. J. (2005). Information asymmetry and investor valuation of IPOs: Top management team legitimacy as a capital market signal. *Strategic Management Journal*, 26(7), 683-690.

67) Coff, R., & Kryscynski, D. (2011). Invited editorial: drilling for micro-foundations of human capital–based competitive advantages. *Journal of Management*, 37(5), 1429-1443.

68) Coopey, J. (1995). The learning organization, power, politics and ideology introduction. *Management Learning*, 26(2), 193-213.

69) Darr, E.; Argote, L.; and Epple, D. (1995). The acquisition, transfer, and depreciation of knowledge in service organizations: Productivity in franchises. *Management Science,* 41, 1750–1762.

70) Dean, A., & Kretschmer, M. (2007). Can ideas be capital? Factors of production in the postindustrial economy: a review and critique. *Academy of Management Review*, *32*(2), 573-594.

71) DeFillippi, R. J., & Arthur, M. B. (1994). The boundaryless career: A competency-based perspective. *Journal of Organizational Behavior*, 15(4), 307-324.

72) Dimov, D. (2010). Nascent entrepreneurs and venture emergence: Opportunity confidence, human capital, and early planning. *Journal of Management Studies*, 47 (6), 1123-1153.

73) Dosi, G. (1988). Sources, procedures, and microeconomic effects of innovation. *Journal of Economic Literature*, 1120-1171.

74) Døving, E. (2004). Turnover, structure and firm specific learning in a large corporation.

75) Dowell, G. W., Shackell, M. B., & Stuart, N. V. (2011). Boards, CEOs, and surviving a financial crisis: Evidence from the internet shakeout. *Strategic Management Journal*, 32(10), 1025-1045.

76) Drucker, P. (1985). The discipline of innovation. *Harvard Business Review*, May-June, 67-72.

77) Drucker, P. F. (1988). The coming of the new organization.

78) Drucker, P. (1993). *Post-capitalist society*. Oxford: Butterworth-Hienemann.

79) Duncan, R. B. (1972). Characteristics of organizational environments and perceived environmental uncertainty. *Administrative Science Quarterly*, 17, 313-327.

80) Edvinsson, L., & Malone, M. S. (1997). Intellectual Capital: Realizing Your Company\'s True Value by Finding Its Hidden Brainpower.

81) Eisenhardt, K. M., & Bourgeois, L. J. (1988). Politics of strategic decision making in high-velocity environments: Toward a midrange theory. *Academy of Management Journal*, *31*(4), 737-770.

82) Eisenhardt, K. M., & Schoonhoven, C. B. (1990). Organizational growth: Linking founding team, strategy, environment, and growth among US semiconductor ventures, 1978-1988. *Administrative Science Quarterly*, 504-529.

83) Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: what are they? *Strategic Management Journal*, *21*(10-11), 1105-1121.

84) Eisenhardt, K. M., & Santos, F. M. (2002). Knowledge-based view: A new theory of strategy. Handbook of strategy and management, 139-164.

85) Ensley, M. D., Pearson, A. W., & Amason, A. C. (2002). Understanding the dynamics of new venture top management teams: cohesion, conflict, and new venture performance. *Journal of Business Venturing*, 17(4), 365-386.

86) Ensley, M. D., Pearson, A., & Pearce, C. L. (2003). Top management team process, shared leadership, and new venture performance: A theoretical model and research agenda. *Human Resource Management Review*, *13*(2), 329-346.

87) Ensley, M. D., Hmieleski, K. M., & Pearce, C. L. (2006). The importance of vertical and shared leadership within new venture top management teams: Implications for the performance of startups. *The Leadership Quarterly*, *17*(3), 217-231.

88) Finkelstein, S. (1992). Power in top management teams: Dimensions, measurement, and validation. *Academy of Management Journal*, *35*(3), 505-538.

89) Finkelstein, S., & D'aveni, R. A. (1994). CEO duality as a double-edged sword: How boards of directors balance entrenchment avoidance and unity of command. *Academy of Management Journal*, 37(5), 1079-1108.

90) Finkelstein, S., & Hambrick, D. C. (1996). *Strategic leadership: Top executives and their effects on organizations*. Minneapolis/St. Paul: West Educational Publishing.

91) Fiss, P. C., & Zajac, E. J. (2006). The symbolic management of strategic change: Sensegiving via framing and decoupling. *Academy of Management Journal*, *49*(6), 1173-1193.

92) Forbes, D. P., Borchert, P. S., Zellmer-Bruhn, M. E., & Sapienza, H. J. (2006). Entrepreneurial team formation: an exploration of new member addition. *Entrepreneurship Theory and Practice*, 30, 225-248.

93) Fleming, L., & Marx, M. (2006). Managing creativity in small worlds. *California Management Review*, 48(4), 6.

94) Florin, J., & W. Schultze (2000) "Social capital and fundability of high potential new ventures." Paper presented at the *Academy of Management Meetings*, Toronto, August.

95) Florin, J., Lubatkin, M., & Schulze, W. 2003. A social capital model of high-growth ventures. *Academy of Management Journal*, 46, 374-384.

96) Franke, N., Gruber, M., Harhoff, D., & Henkel, J. (2006). What you are is what you like—similarity biases in venture capitalists' evaluations of start-up teams. *Journal of Business Venturing*, *21*(6), 802-826.

97) Freeman, C., & Soete, L. L. (Eds.). (1997). *The economics of industrial innovation*. Psychology Press.

98) Garcia-Vega, M. (2006). Does technological diversification promote innovation? An empirical analysis for European firms. *Research Policy*, 35(2), 230-246.

99) Garud, R. & Ahlstrom, D. 1997. Technology assessment: A socio-cognitive perspective. *Journal of Engineering and Technology Management*, 14(1), 25-48.

100) Ghoshal, S. (1987). Global strategy: An organizing framework. *Strategic Management Journal*, 8(5), 425-440.

101) Goffee, R., & Scase, R. (1995). *Corporate realities: The dynamics of large and small organisations* (p. 124). London: Routledge.

102) Goh, S. C. (2003). Improving organizational learning capability: lessons from two case studies. *Learning Organization*, 10(4), 216-227.

103) Goll, I., Johnson, N. B., & Rasheed, A. A. (2007). Knowledge capability, strategic change, and firm performance: the moderating role of the environment. *Management Decision*, *45*(2), 161-179.

104) Grant R. M. (1996). Toward knowledge based theory of the firm. *Strategic Management Journal*. 17, 109-122.

105) Gulati, R., & Gargiulo, M. (1999). Where do inter-organizational networks come from? *American Journal of Sociology*, 104(5), 1439-1493.

106) Gulati, R., & Higgins, M. C. (2003). Which ties matter when? The contingent effects of interorganizational partnerships on IPO success. *Strategic Management Journal*, 24(2), 127-144.

107) Gupta, A. K. (1984). Contingency linkages between strategy and general manager characteristics: A conceptual examination. *Academy of Management Review*, 9: 399-412.

108) Gupta, A. K., & Govindarajan, V. (2000). Knowledge flows within multinational corporations. *Strategic Management Journal*, *21*(4), 473-496.

109) Hall, P. A. and Gingerich, D. W. (2009). 'Varieties of capitalism and institutional complementarities in the political economy: an empirical analysis'. *British Journal of Political Science*, 39, 449–82.

110) Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9, 193-206.

111) Hambrick, D. C., & Fukutomi, G. D. (1991). The seasons of a CEO's tenure. *Academy of Management Review*, 16(4), 719-742.

112) Hambrick, D. C. (1995). Fragmentation and the other problems CEOs have with their top management teams. *California Management Review,* 37(Spring), 110–27.

113) Hansen, H. (2002). Knowledge networks: Explaining effective knowledge sharing in multiunit companies. *Organization Science*, 13, 232–248.

114) Harris, D. & Helfat, C. 1997. Specificity of CEO human capital and compensation. *Strategic Management Journal*, 18, 895-920.

115) Harrison, D. A., & Klein, K. J. (2007). What's the difference? Diversity constructs as separation, variety, or disparity in organizations. *Academy of Management Review*, 32(4), 1199-1228.

116) Hayton, J. C., & Zahra, S. A. (2005). Venture team human capital and absorptive capacity in high technology new ventures. *International Journal of Technology Management*, *31*(3), 256-274.

117) Helfat, C. E. (1997). Know-How and Asset Complementarity and Dynamic Capability Accumulation: The Case of R&D, *Strategic Management Journal*, 18(5), 339–60.

118) Hellmann, T. (2007). When do employees become entrepreneurs? *Management Science,* 53(6), 919-933.

119) Hitt, M. A., Biermant, L., Shimizu, K., & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management Journal*, 44(1), 13-28.

120) Holcomb, T. R., Holmes, R. M., & Connelly, B. (2009). Making the most of what you have: Managerial ability as a source of resource value creation. *Strategic Management Journal*, 30, 457-485.

121) Hornsby, J. S., Kuratko, D. F., & Zahra, S. A. (2002). Middle managers' perception of the internal environment for corporate entrepreneurship: assessing a measurement scale. *Journal of business Venturing*, *17*(3), 253-273.

122) Hsu, H. C., Reed, A. V., & Rocholl, J. (2010). The new game in town: competitive effects of IPOs. *The Journal of Finance*, 65(2), 495-528.

123) Huber G. (1991). Organizational learning: the contributing processes and a review of the literatures. *Organization Science*, 2(1), 88-117.

124) Huckman, R. S., Staats, B. R., & Upton, D. M. (2009). Team familiarity, role experience, and performance: Evidence from Indian software services. *Management Science*, 55(1), 85-100.

125) Ingram, J. D. (2002). Covenants not to compete. *Akron Law Review*, 36, 49-79.

126) Jackson, S. E., Chuang, C., Harden, E. E., & Jiang, Y. (2006). Toward developing human resource management systems for knowledge-intensive teamwork. In: J. Martocchio (Ed.), Research in personnel and human resource management.

127) Jain, B. A., & Tabak, F. (2008). Factors influencing the choice between founder versus non-founder CEOs for IPO firms. *Journal of Business Venturing*, *23*(1), 21-45.

128) Jensen, M., & Meckling, W. (1992). Knowledge, control and organizational structure: Parts I and II. *Contract Economics*, 251-74.

129) Jensen, M. B., Johnson, B., Lorenz, E., & Lundvall, B. Å. (2007). Forms of knowledge and modes of innovation. *Research Policy*, 36(5), 680-693.

130) Johnson, V. (2007). What Is Organizational Imprinting? Cultural Entrepreneurship in the Founding of the Paris Opera1. *American Journal of Sociology*, *113*(1), 97-127.

131) Kale, P., Singh, H., & Perlmutter, H. (2000). Learning and protection of proprietary assets in strategic alliances: building relational capital.

132) Kale, P., & Singh, H. (2007). Building firm capabilities through learning: the role of the alliance learning process in alliance capability and firm level alliance success. *Strategic Management Journal*, 28(10), 981-1000.

133) Kang, S. C., & Snell, S. A. (2009). Intellectual capital architectures and ambidextrous learning: a framework for human resource management. *Journal of Management Studies*, 46(1), 65-92.

134) Katila, R. (2000). Innovation search determinants of new product introductions and their radicality: The case of industrial robotics. Unpublished doctoral dissertation. University of Texas at Austin.

135) Keats, B. W., & Hitt, M. A. (1988). A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance. *Academy of Management Journal*, 31(3), 570-598.

136) Kim, D. H. (1993). A framework and methodology for linking individual and organizational learning: Applications in TQM and product development (Doctoral dissertation, Massachusetts Institute of Technology).

137) Kim, D. H. (1998). The link between individual and organizational learning. *The Strategic Management of Intellectual Capital*, 41-62.

138) Kim, S. (2005). Individual-level factors and organizational performance in government organizations. *Journal of Public Administration Research and Theory*, 15, 245-261.

139) Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization science*, *3*(3), 383-397.

140) Koh, J. L. (1999). From hoops to hard drives: An accession law approach to the inevitable misappropriation of trade secrets. *American University Law Review*, 48, 271-358.

141) Klotz, A. C., Hmieleski, K. M., Bradley, B. H., & Busenitz, L. W. (2014). New Venture Teams A Review of the Literature and Roadmap for Future Research. *Journal of Management*, *40*(1), 226-255.

142) Kor YY. (2003). Experience-based top management team competence and sustained growth. *Organization Science*, 14(6), 707–719.

143) Kor, Y. Y., & Mahoney, J. T. (2005). How dynamics, management, and governance of resource deployments influence firm-level performance. *Strategic Management Journal*, 26(5), 489-496.

144) Koyuncu, B., Firfiray, S., Claes, B., and Hamori, M., (2010). CEOs with a functional background in operations: Reviewing their performance and prevalence in the top post. *Human Resource Management*, 49 (5), 869-882.

145) Kraaijenbrink, J., Spender, J. C., & Groen, A. J. (2010). The resource-based view: a review and assessment of its critiques. *Journal of Management*, 36: 349-372.

146) Kroeger, C.V. (1974), 'Managerial development in the small firm', *California Management Review*, 17(1), 41–7.

147) Kroll, M., Walters, B. A., & Le, S. A. (2007). The impact of board composition and top management team ownership structure on post-IPO performance in young entrepreneurial firms. *Academy of Management Journal*, 50(5), 1198-1216.

148) Kuratko, D. F., Ireland, R. D., & Hornsby, J. S. (2004). Corporate entrepreneurship behavior among managers: a review of theory research and practice. *Advances in Entrepreneurship, Firm Emergence and Growth*, *7*, 7-45.

149) Kwee, Z., Van Den Bosch, F. A., & Volberda, H. W. (2011). The influence of top management team's corporate governance orientation on strategic renewal trajectories: a longitudinal analysis of Royal Dutch Shell plc, 1907–2004. *Journal of Management Studies*, 48(5), 984-1014.

150) Lamb, M., & Sutherland, M. (2010). The components of career capital for knowledge workers in the global economy. *The International Journal of Human Resource Management*, 21(3), 295-312.

151) Lane, P. J., & Lubatkin, M. (1998). Relative absorptive capacity and inter-organizational learning. *Strategic Management Journal*, *19*(5), 461-477.

152) Leonard-Barton, D. (1992). Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*, 13(1), 111-125.

153) Leontyev, A. N. (1974). *Activity and consciousness*. Moscow: Personality.

154) Lester, R. H., Certo, S. T., Dalton, C. M., Dalton, D. R., & Cannella, A. A. (2006). Initial public offering investor valuations: An examination of top management team prestige and environmental uncertainty. *Journal of Small Business Management*, 44(1), 1-26.

155) Ling, Y. A. N., Simsek, Z., Lubatkin, M. H., & Veiga, J. F. (2008). Transformational leadership's role in promoting corporate entrepreneurship: Examining the CEO-TMT interface. *Academy of Management Journal*, *51*(3), 557-576.

156) Lippman, S. A., & Rumelt, R. P. (1982). Uncertain imitability: An analysis of inter-firm differences in efficiency under competition. *The Bell Journal of Economics*, 418-438.

157) Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135-172.

158) Lundvall, B. Ä., & Johnson, B. (1994). The learning economy. *Journal of Industry Studies*, 1(2), 23-42.

159) Macpherson, A., & Holt, R. (2007). Knowledge, learning and small firm growth: a systematic review of the evidence. *Research Policy*, *36*(2), 172-192.

160) Mak, Y. T., & Roush, M. L. (2000). Factors affecting the characteristics of boards of directors: an empirical study of New Zealand initial public offering firms. *Journal of Business Research*, 47(2), 147-159.

161) Malhotra, Y. (2002). Information ecology and knowledge management: toward knowledge ecology for hyperturbulent organizational environments.

162) March, J. G., & Simon, H. A. (1958). *Organizations*. New York: Wiley

163) March, J. G., & Olsen, J. P. (1976). Organizational Learning and the Ambiguity of the Past. *Ambiguity and Choice in Organizations*, 54-68.

164) March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71-87.

165) Markman, G. D., Gianiodis, P. T., & Buchholtz, A. K. (2009). Factor-market rivalry. *Academy of Management Review*, 34(3), 423-441.

166) Marvel, M. R. (2013). Human Capital and Search-Based Discovery: A Study of High-Tech Entrepreneurship. *Entrepreneurship Theory and Practice*, 37(2), 403-419.

167) Milliken, F. J., Bartel, C. A., & Kurtzberg, T. R. (2003). Diversity and creativity in work groups: A dynamic perspective on the affective and cognitive processes that link diversity and performance. *Group Creativity: Innovation Through Collaboration*, 32-62.

168) Miller, D. J., Fern, M. J., & Cardinal, L. B. (2007). The use of knowledge for technological innovation within diversified firms. *Academy of Management Journal*, 50(2), 307-325.

169) Minbaeva, D., Pedersen, T., Björkman, I., Fey, C. F., & Park, H. J. (2003). MNC knowledge transfer, subsidiary absorptive capacity, and HRM. *Journal of International Business Studies*, 34(6), 586-599.

170) Mintzberg, H., Raisinghani, D., & Theoret, A. (1976). The structure of'unstructured'decision processes. *Administrative Science Quarterly*, *21*(2).

171) Nadkarni, S., & Barr, P. S. (2008). Environmental context, managerial cognition, and strategic action: an integrated view. *Strategic Management Journal*, *29*(13), 1395-1427.

172) Nadler, D., & Tushman, M. (1997). *Competing by design: The power of organizational architecture*. Oxford University Press.

173) Nag, R., & Gioia, D. A. (2012). From common to uncommon knowledge: foundations of firm-specific use of knowledge as a resource. *Academy of Management Journal*, 55(2), 421-457.

174) Nakayama, M., & Sutcliffe, N. G. (2001, April). IT skills portfolio research in SIGCPR proceedings: analysis, synthesis and proposals. In Proceedings of the 2001 ACM SIGCPR conference on Computer personnel research (pp. 100-113). ACM.

175) Naphiet, J., & Ghoshal, S. 1998. Social capital, intellectual capital, and organizational advantage. *Academy of Management Review*, 23, 2: 242-266.

176) Nayyar, P. R. (1993). Stock market reactions to related diversification moves by service firms seeking benefits from information asymmetry and economies of scope. Strategic Management Journal, 14(8), 569-591.

177) Nelson, R. L. (1959). *Merger movements in American industry*, 1895-1956.NBER Books.

178) Nelson, T. (2003). The persistence of founder influence: Management, ownership, and performance effects at initial public offering. *Strategic Management Journal*, 24(8), 707-724.

179) Nemeth, C. J. (1995). Dissent as driving cognition, attitudes, and judgments. *Social Cognition*, *13*(3), 273-291.

180) Nerkar, A., & Shane, S. (2003). When do start-ups that exploit patented academic knowledge survive? *International Journal of Industrial Organization*, *21*(9), 1391-1410.

181) Nonaka, I., & Takeuchi, H. (1997). The knowledge-creating company.

182) Nordhaug, O., & Gronhaug, K. (1994). Competences as resources in firms. *International Journal of Human Resource Management*, 5(1), 89-106.

183) Okhuysen, G., and Eisenhardt, K. (2002). Integrating knowledge in groups: How formal interventions enable flexibility. *Organization Science,* 13(4) 370–386.

184) Oviatt, B. M., & McDougall, P. P. (2005). Defining international entrepreneurship and modeling the speed of internationalization. *Entrepreneurship Theory and Practice*, *29*(5), 537-554.

185) Owen, C. A. (2001). The role of organisational context in mediating workplace learning and performance. *Computers in Human Behavior*, 17(5), 597-614.

186) Parent, D. (2002). Matching, human capital, and the covariance structure of earnings. *Labor Economics*, 9(3), 375-404.

187) Pazzaglia, F., Flynn, S., & Sonpar, K. (2012). Performance implications of knowledge and competitive arousal in times of employee mobility: “The immutable law of the ex”. *Human Resource Management*, 51, 687-707.

188) Penrose, E.T. (1959). *The Theory of the Growth of the Firm*, New York: John Wiley.

189) Perry-Smith, J., and Shalley, C. (2003). The social side of creativity: A static and dynamic social network perspective. *Academy of Management Review,* 28(1) 89–106.

190) Pfeffer, J. (1981). *Power in organizations* (Vol. 33). Marshfield, MA: Pitman.

191) Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource-based tangle. *Managerial and Decision Economics*, 24(4), 309-323.

192) Peteraf, M. A., & Reed, R. 2007. Managerial discretion and internal alignment under regulatory constraints and change. *Strategic Management Journal*, 28, 1089-1112.

193) Phillips, D. J. (2002). A genealogical approach to organizational life chances: The parent-progeny transfer among Silicon Valley law firms, 1946–1996. *Administrative Science Quarterly*, *47*(3), 474-506.

194) Pieterse, A. N., Van Knippenberg, D., Schippers, M., & Stam, D. (2010). Transformational and transactional leadership and innovative behavior: The moderating role of psychological empowerment. *Journal of Organizational Behavior*, *31*(4), 609-623.

195) Pollock, T. G., Fisher, H. M. and Wade, J. B. (2002). 'The role of power and politics in the repricing of executive options'. *Academy of Management Journal*, 45, 1172–82.

196) Quintana-García, C., & Benavides-Velasco, C. A. (2011). Knowledge organization in R&D alliances: its impact on product innovation. *Technology Analysis & Strategic Management*, *23*(10), 1047-1061.

197) Reagans, R., Argote, L., & Brooks, D. (2005). Individual experience and experience working together: Predicting learning rates from knowing who knows what and knowing how to work together. *Management Science*, *51*(6), 869-881.

198) Reed, R., & DeFillippi, R. J. (1990). Causal ambiguity, barriers to imitation, and sustainable competitive advantage. *Academy of Management Review*, 15(1), 88-102.

199) Rosenkopf, L., & Nerkar, A. (2001). Beyond local search: boundary-spanning, exploration, and impact in the optical disk industry. *Strategic Management Journal*, 22(4), 287-306.

200) Rothaermel, F. T., & Deeds, D. L. (2004). Exploration and exploitation alliances in biotechnology: A system of new product development. *Strategic Management Journal*, 25(3), 201-221.

201) Rothenberg, A. (1979). *The emerging goddess: The creative process in art, science, and other fields*. Chicago: University of Chicago Press.

202) Schenk, K. D., Vitalari, N. P., & Davis, K. S. (1998). Differences between novice and expert systems analysts: What do we know and what do we do? *Journal of Management Information Systems*, 15(1), 9-50.

203) Schildt, H. A., Maula, M. V., & Keil, T. (2005). Explorative and exploitative learning from external corporate ventures. *Entrepreneurship Theory and Practice*, 29(4), 493-515.

204) Schwandt, T. A. (2005). A diagnostic reading of scientifically based research for education. *Educational Theory*, 55(3), 285-305.

205) Shaw, J. D., Park, T. Y., & Kim, E. (2013). A resource-based perspective on human capital losses, HRM investments, and organizational performance. *Strategic Management Journal*, 34(5), 572-589.

206) Shen, W., A. A. Cannella Jr. (2002a). Revisiting the performance consequences of CEO succession: The impacts of successor type, post succession senior executive turnover, and departing CEO tenure. *Academy of Management Journal*, 45, 717–733.

207) Shen, W., A. A. Cannella Jr. 2002b. Power dynamics within top management and their impacts on CEO dismissal followed by inside succession. *Academy of Management Journal*, 45, 1195–1206.

208) Shepherd, D., Wiklund, J., (2009). Are we comparing apples with apples or apples with oranges? Appropriateness of knowledge accumulation across growth studies. *Entrepreneurship Theory and Practice*, 33 (1), 105–123.

209) Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance*, 52(2), 737-783.

210) Shrader, R., & Siegel, D. S. (2007). Assessing the Relationship between Human Capital and Firm Performance: Evidence from Technology-Based New Ventures. *Entrepreneurship Theory and Practice*, 31, 893-908.

211) Siggelkow, N. (2011). Firms as systems of interdependent choices. *Journal of Management Studies*, 48(5), 1126-1140.

212) Sirmon, D. G., Hitt, M. A., & Ireland, R. D. (2007). Managing firm resources in dynamic environments to create value: Looking inside the black box. Academy of Management Review, 32: 273-292.

213) Skilton, P. F., & Dooley, K. J. (2010). The effects of repeat collaboration on creative abrasion. *Academy of Management Review,* 35(1), 118-134.

214) Slater, S. F., & Narver, J. C. (1995). Market orientation and the learning organization. *The Journal of Marketing*, 63-74.

215) Smith, K. G., Collins, C. J., & Clark, K. D. (2005). Existing knowledge, knowledge creation capability, and the rate of new product introduction in high-technology firms. *Academy of Management Journal*, *48*(2), 346-357.

216) Smith-Jentsch, K. A., Kraiger, K., Cannon-Bowers, J. A., & Salas, E. (2009). Do familiar teammates request and accept more backup? Transactive memory in air traffic control. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, *51*(2), 181-192.

217) Spence, M., (2002). Signaling in retrospect and the informational structure of markets. *American Economic Review,* 92 (3), 434–459

218) Spencer, J. W. (2003). Firms' knowledge-sharing strategies in the global innovation system: empirical evidence from the flat panel display industry. *Strategic Management Journal*, *24*(3), 217-233.

219) StataCorp. (1999).*Stata User's Guide*. Stata Corporation: College Station, TX; 256–260.

220) Staw, B. M. (1991). Dressing up like an organization: When psychological theories can explain organizational action. *Journal of Management*, *17*(4), 805-819.

221) Steffens, P., Terjesen, S., & Davidsson, P. (2012). Birds of a feather get lost together: new venture team composition and performance. *Small Business Economics*, 39, 727-743.

222) Stewart, T. A. (1997). Intellectual capital: The new wealth of nations. *New York*.

223) Stinchcombe, A. and Heimer, C. A. (1988). 'Interorganizational relations and careers in computer software firms'. In: Simpson, I. H. and Simpson, R. L. (Eds) Research in the Sociology of Work, Vol. 4: High Tech Work, JAI Press, pp. 179-204.

224) Stone, K. V. W. (2002). Knowledge at work: Disputes over the ownership of human capital in the changing workplace. *Connecticut Law Review,* 34, 721-763.

225) Stuart, T. E., & Podolny, J. M. (1996). Local search and the evolution of technological capabilities. *Strategic Management Journal*, 17(1), 21-38.

226) Sturman, M. C., Walsh, K., & Cheramie, R. A. 2008. The value of human capital specificity versus transferability. *Journal of Management*, 34, 290-316.

227) Subramaniam, M., & Youndt, M. A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*, *48*(3), 450-463.

228) Teece, D. J. (1981). The market for know-how and the efficient international transfer of technology. *The Annals of the American Academy of Political and Social Science*, *458*(1), 81-96.

229) Teece, D.J. (1986). Profiting from technological innovation. *Research Policy*, 15(6), 285-305.

230) Thomas, J. B., & McDaniel, R. R. (1990). Interpreting strategic issues: Effects of strategy and the information-processing structure of top management teams. *Academy of management Journal*, *33*(2), 286-306.

231) Timmons, Jeffry, A. (1994), New Venture Creation: Entrepreneurship for the 21st Century, 4th edn, Massachusetts: Irwin.

232) Topel, R. (1991). Specific Capital, Mobility, and Wages: Wages Rise with Job Seniority. *Journal of Political Economy*, 99(1), 145-176.

233) Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing*, *26*(3), 341-358.

234) Vanaelst, I., Clarysse, B., Wright, M., Lockett, A., Moray, N., & S'Jegers, R. (2006). Entrepreneurial team development in academic spinouts: An examination of team heterogeneity. *Entrepreneurship Theory and Practice*, 30(2), 249-271.

235) Van den Bosch, F.; Volberda, H.; and Boer, M. (1999). Coevolution of firm absorptive capacity and knowledge environment: Organizational forms and combinative capabilities. *Organization Science*, 10(5) 551–568.

236) Vinding, A.L. (2000), Absorptive Capacity and Innovation performance: A human capital approach. Department of Business Studies-DRUID/IKE Group, Aalborg University, Denmark.

237) Vygotsky, L. S. (1987). Thinking and speech. *The collected works of LS Vygotsky*, *1*, 39-285.

238) Wang, Q., & von Tunzelmann, N. (2000). Complexity and the functions of the firm: breadth and depth. *Research Policy*, 29(7), 805-818.

239) Wang, H. C., & Barney, J. B. (2006). Employee incentives to make firm-specific investments: Implications for resource based theories of corporate diversification. *Academy of Management Review*, 31, 466 – 476.

240) Wade, M. R., & Gravill, J. I. (2003). Diversification and performance of Japanese IT subsidiaries: a resource-based view. *Information and Management*, 40(4), 305-316.

241) Weick, K. E. (1995). *Sensemaking in organizations* (Vol. 3). Sage.

242) Wenger, E. (2004). Knowledge management as a doughnut: Shaping your knowledge strategy through communities of practice. *Ivey Business Journal*, *68*(3), 1-8.

243) Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180.

244) Wernerfelt, B., & Montgomery, C. A. (1988). Tobin's q and the importance of focus in firm performance. *The American Economic Review*, 246-250.

245) Wezel, F. C., Cattani, G., & Pennings, J. M. (2006). Competitive implications of interfirm mobility. *Organization Science*, 17(6), 691-709.

246) White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. Econometrica: *Journal of the Econometric Society*, 817-838.

247) Wiklund, J., Patzelt, H., & Shepherd, D. A. (2009). Building an integrative model of small business growth. *Small Business Economics*, 32(4), 351-374.

248) Williams, K. Y., & O'Reilly, C. A. (1998). Demography and diversity in organizations: A review of 40 years of research. *Research in Organizational Behavior*, *20*, 77-140.

249) Yang, Q., Zimmerman, M., & Jiang, C. (2011). An Empirical Study of the Impact of CEO Characteristics on New Firms' Time to IPO. *Journal of Small Business Management*, *49*(2), 163-184.

250) Youndt, M. A., Subramaniam, M., & Snell, S. A. (2004). Intellectual Capital Profiles: An Examination of Investments and Returns*. *Journal of Management Studies*, *41*(2), 335-361.

251) Zacharakis, A. L., & Meyer, G. D. (2000). The potential of actuarial decision models: can they improve the venture capital investment decision? Journal of Business Venturing, 15(4), 323-346.

252) Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, *27*(2), 185-203.

253) Zellmer-Bruhn, M., & Gibson, C. (2006). Multinational organization context: Implications for team learning and performance. *Academy of Management Journal*, 49(3), 501-518.

254) Zingales L (2000). In search of New Foundations. *The Journal of Finance*, 55(4), 1623 – 1653.

255) Zucker, L. G., Darby, M. R., & Armstrong, J. S. (2002). Commercializing knowledge: University science, knowledge capture, and firm performance in biotechnology. *Management Science*, *48*(1), 138-153.

ABSTRACT

ESSAYS ON THE ROLE OF COMPETITOR-SPECIFIC HUMAN CAPITAL ON INITIAL PUBLIC OFFERINGS (IPOs) PERFORMANCE

by

TAPAN SETH

August 2014

Advisor: Dr. Amanuel Tekleab

Co-Advisor: Dr. Jaegul Lee

Major: Business Administration

Degree: Doctor of Philosophy

This dissertation splits the idea of competitor-specific human capital into two types: competitor-specific-direct (CSD) human capital and competitor-specific-indirect (CSI) human capital, and inspects how these two types of human capital held by IPO Top Management Team (TMT) members are associated with IPO performance. Furthermore, by utilizing research on human capital, competitive dynamics, and knowledge-based view of the firm, this dissertation identifies important antecedents that result in higher degree of impact of such human capital on the IPO firm, and IPO firm's capabilities absorb such knowledge that results in higher valuations at IPO. By employing a multi-year panel data of new IPOs between 1995-2010 within the context of U.S. semiconductor industry, the first chapter shows that the prevalence of CSD and CSI knowledge in the TMT of IPO firms leads to higher market valuations of the IPO firm. Moreover, the results show that the prior employment characteristics such as tenure and the position held at competitor firms, and the complexity of the competitor source firm (the product-

market diversity and the learning emphasis) moderate the relationship between CSD and CSI human capital and IPO performance. The second chapter explores internal characteristics of the IPO firm that facilitate its ability to exploit the CSD and CSI human capital. I argue that in the context of new ventures, TMT intellectual capital plays an integral role in churning information into useful knowledge of one's competitors or group of competitors. Additionally, results indicate that TMT's potential absorptive capacity, shared team-specific experience, and CEO's functional background influence the relationship between CSD and CSI human capital and IPO performance.

AUTOBIOGRAPHICAL STATEMENT

PROFESSIONAL APPOINTMENTS

Wayne State University, Part-Time Faculty, 2012-Present

Wayne State University, Graduate Research Assistant, 2009-2012

ACADEMIC BACKGROUND

Ph.D. Strategic Management and Entrepreneurship, Wayne State University, Detroit, MI, August 2014

Dissertation: "Essays on the Role of Competitor-Specific Human Capital on Initial Public Offerings (IPOs) Performance"

Committee: Dr. Amanuel Tekleab (Co-Chair), Dr. Jaegul Lee (Co-Chair), Dr. Scott Julian, Dr. David Merolla, Dr. Xun Wu

M.S. Finance, University of Tulsa, Tulsa, OK, August 2007

B.S. Management, Brigham Young University, Provo, UT, April, 2005

SELECTED PUBLICATIONS AND PRESENTATIONS

Seth, T., & Tekleab, A. (2010). Impact of Board Composition, Top Management Team, and Trust on the Transformational Leader Effectiveness. Paper presented at the Academy of Management Annual Meeting, Montreal, Canada.

Seth, T., & Yaprak, A. (2012). Outward Foreign Direct Investment by Chinese Firms: Institutional Theory and Resource Dependence Perspectives. *Impacts of Emerging Economies and Firms on International Business*, 32.

Seth, T., & Lee, J. Exploring Moderating Effect of Knowledge Workers on Industry Environment and Entrepreneurial Entry. AOM Best Paper Proceedings 2013, Lake Buena Vista, Florida.

Liu, K., & Seth, T. (2013). Architectural Advantages of Vertical Integration in the Event of Competitor IPO. Paper presented at the Academy of Management Annual Meeting, Lake Buena Vista, Florida.