

The Effects of Corporate Entrepreneurship and Organizational Knowledge Creation on Firm Second-order Competences: Exploratory Evidence from Knowledge-intensive Sectors

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Abstract

While corporate entrepreneurship (CE) is viewed to influence firm competences, their relationship, along with organizational knowledge creation, remains largely unexplored. This paper examines whether and how CE associates with second-order R&D and marketing competences. Building on resource-based view of the firm (RBV), in our developed model; we propose that firm second-order R&D and marketing competences are differently influenced by variations of CE and organizational knowledge creation. Regression modeling, used to analyze data collected from various firms in knowledge-intensive sectors, supports our main arguments. Important and novel theoretical and managerial implications emerge from this study.

Keywords: corporate entrepreneurship, second-order competences, resource-based view, organizational knowledge creation

1. Introduction

Scholars in strategic management and entrepreneurship fields broadly concur on the important role of competences as a firm's internal critical resource, among others, in theorizing a firm's firm assets, competitive advantage, and rent earnings (Barney, 1991; Dierickx & Cool, 1989; McGrath, Venkataraman, & MacMillan, 1994; Penrose, 1958). Whilst a pivotal concept, extant literature on firm competences lacks consensus on its association with various entrepreneurial phenomena and an integrative parsimonious predictive model is yet to emerge. In 1999, Zahra, Nielsen, & Bogner insightfully proposed a firm-level entrepreneurial framework with cascading effects on firms' various internal attributes of interests in this research are the 'competence' and 'new knowledge' (p.172). In their proposed model, while corporate entrepreneurship, henceforth referred to as (CE), does not directly associate with firm competences; yet, such linkage is delineated as a lagged effect and no other study, to date, has extended productiveness of their model. CE, organizational knowledge, and competences are central themes to build and sustain a firm's competitive advantage, and equally important, managers face realities associated to manage them simultaneously. This scheme raises a paradox whether and how organization's pursuit of CE actions and competences, while managing knowledge repertoire, are associated? Our aim is to find answers to this.

Inspired by Zahra and colleagues (1999), we synthesize, and propose, a firm-level entrepreneurial framework and a model that lends itself to predictive evidence. Building on resource-based view of the firm (Penrose, 1958) in the proposed model, we delineate the influence of CE (i.e. innovation, strategic renewal and corporate venturing), along with a firm's propensity to create knowledge, on two types of a firm's second order competences, henceforth referred to as (SOCs)- R&D and marketing. We subscribe to the assumptions that SOCs, embedding know-how and learnings of a firm's experience and interactions with its environment (Danneels, 2002; Floyd & Wooldridge, 1999), are a form, among others, of a firm's strategic critical resources required to build and sustain a competitive advantage (Barney, 1991; McGrath et al., 1994). This study aims to contribute to existing literature. To corporate entrepreneurship literature, we propose a parsimonious model that theoretically articulates, with early evidence, for a significant association between CE and second-order R&D and marketing competences. We thereby respond to three specific calls. The first is recent call by Corbett, Covin, O'Connor, & Tucci (2013) who emphasize that management scholars and managers need

to expand scope of CE outcome by examining what and how CE initiatives of managers are beneficial at certain moment in the life of an organization and when these initiatives are not. The second, a call by Bierwerth, Schwens, Isidor, & Kabst (2015) who emphasize, in their valued meta-analysis, that a firm's pursuit of CE, while acknowledging different organizational motivations, reflects mixture of immediate and delayed returns mainly due to variations of organizational attributes and capabilities that need to be further unveiled. The third call is that of Zahra (2007) who calls for integrating an emerging phenomenon with a new theory- competence development and the revitalizing role of RBV in entrepreneurship literature respectively. Our proposed model integrates organizational knowledge creation as a mid-range theory, thus extending our view of firm-level entrepreneurship as a phenomenon influenced by knowledge management (Dess, Ireland, Zahra, & Floyd, 2003). We also contribute to the boarder competence literature by expanding our scope of understanding to the important association between CE, along with knowledge creation, on second-order competences. We propose an early-stage predictive model of competence-based entrepreneurship capturing what and how such linkages influence important and strategic decisions to develop critical resources and design and implementation of growth and profitable strategies. The paper is organized as follow. First, we briefly review pertinent literature in entrepreneurship and strategic management- from a resource based perspective- to define the sense of what entrepreneurial types and which competences are portrayed in this research and hypothesized relationships. This is followed by the research design and methodology. The study empirical findings are then presented and discussed. In closing, limitations and important direction for future research and managerial implications are presented.

2. Overview of Relative Literature & Hypotheses Development

2.1 Corporate Entrepreneurship and Firm Resources

For decades, literature on entrepreneurship scholarship has focused mainly on theoretical development rather than empirical work (Brush et al., 2003; Sharma & Chrisman, 1999; Wiklund, Davidsson, Audretsch, & Karlsson, 2011). Scholars (e.g. Bettis & Hitt (1995) and Hitt & Reed (2000)) suggest that future entrepreneurship research could play an important role by taking more a phenomenon-based approach and by developing and investigating questions and methodologies with equivocal significance to theory and "real-world applications" (Wiklund et al., 2011: 6). Their main argument is that, in 21st century, various factors such as global market dynamic, competitive landscape and overlap of boundaries among industries have inflicted a wide range of pressure of chaos, complexity, and inevitable constant change. Also, digital technology has variably influenced economic landscape throughout the world with an overall effect to create new industries while disaggregating and rejuvenating old ones. It comes, then, as no surprise that researchers have investigated various entrepreneurial and strategic actions that a firm pursues, by exploring new technologies and venturing new markets, in order to create growth and wealth (Ireland, Reutzler, & Webb, 2005). Such a reasoning can be traced back as early as 1934 when Schumpeter proposed his theory of competition and argues such challenges force a firm to combine various resources in order to create new ones "creative destruction" (Schumpeter, 1934). Creative destruction offers the firm opportunities of self-renewal, relative to competitors, and to sustain rent-generating advantage by creating disequilibrium, thereby preventing the economic system from reach perfect competition that would erode such a firm's advantage. While firm-level entrepreneurship is variably debated, in this research, we subscribe to the concept of corporate entrepreneurship (Guth & Ginsberg, 1990; Sharma & Chrisman, 1999; Zahra & Covin, 1995)¹.

Relatedly, resource-based view of the firm, henceforth referred to as (RBV), argues that it is only when the firm successfully secures valuable, rare, inimitable and non-substitutable, collectively known as (VRIN) resources, that it would be able to sustain its competitive advantage and economic rent² performance (Barney, 1991). Importantly, second-order competences, that are knowledge-based (Das & Teng, 2000), are a category among others of VRIN resources (Danneels, 2008). These idiosyncratic resources determine breadth, scope, and quality of firm's "productive services" (Penrose, 1958: 77) while

¹One camp, represented by Miller (1983) and Lumpkin & Dess (1995), among others, frame firm-level entrepreneurship in such main attributes as proactiveness, risk taking, innovativeness, on the part of managers, collectively known as entrepreneurial orientation (EO). The other camp, represented by (Guth & Ginsberg, 1990; Zahra, 1995; Zahra & Garvis, 2000), view the concept in terms of innovation, venturing, and strategic renewal, collectively known as corporate entrepreneurship (CE), which is the main focus of this study. It is beyond the objective of this paper to compare and contrast review these two research streams.

²By rent, we refer to the firm capacity to secure above normal earning, compared to other players and while simultaneously not probing for competition, and therefore, exposing the rent earning position to erosion. In this sense, we refer to the Ricardian rent- that is based on firm VRIN-based advantages. Such a rent earning differs from monopolistic Rent that is earned based on external firm factors, such as regulations and policies, that do not permit other players to enter the firm market (Alchian, 1991).

reflecting its capacity of innovation based on strategic managerial decisions (Galunic & Rodan, 1997). In context of this research, firm resources are defined as the sum of various assets, organizational processes, competences, and knowledge that provide the firm with the capacity to design and implement competitive strategies to improve its effectiveness (Daft, 2009). These resources are of different types³ and have long been viewed as a source of variable influence on strategic growth mechanism to build a firm's competitive advantage. (Barney, 1991). Evidently, entrepreneurship and strategy scholars concur for the influential role of such particular firm internal resources as critical means (Penrose, 1958) to define, design, and achieve corporate business goals (Guth & Ginsberg, 1990; Zahra, 1993; Zahra & Covin, 1995). But on the one side, earlier, RBV did not integrate creativity and entrepreneurial actions due to insufficient interest by researchers (Barney, 1991). Entrepreneurship, on the other side, has been developing into a legitimate and promising field (Shane & Venkataraman, 2000). Taken together, CE and RBV have improved the integrative debate of firm-level entrepreneurship by taking it far beyond a simple empirical setting (Alvarez & Busenitz, 2001; Shane & Venkataraman, 2000). Heterogeneity is a common attribute to RBV and entrepreneurship. While in RBV, the focus is on heterogeneity of resources that in entrepreneurship is on heterogeneity of beliefs about values of these resources. To an entrepreneurial firm, resources, either cognitive or capability-based value (Alvarez & Busenitz, 2001), are mobilized towards the firm's capacity to achieve entrepreneurial rent. In both literatures, the variety in a firm's resources generates such heterogeneity. Importantly, knowledge is a valuable resource. It comprises technical know-how and the ability to process information (Grant, 1996a). It is of types, tacit or explicit, and both must be integrated and coordinated within the firm to generate and continually replenish firm's knowledge repertoire that, in turn, contribute to resource heterogeneity (Polanyi, 1962). For this to happen, it is critical for the firm to rely on information inflow from the market to create its own specific and specialized knowledge.

2.2 Resource-based View and Firm Second-order Competences

Strategy scholars vary in their views of how firm competences relate to competitive advantage. Hofer & Schendel (1978) were the first to formally argue for the role of direct association between competences and competitive advantage as strategic growth drivers in differentiating a firm from its competitors. The formal conceptualization of a firm's competences - as an organically developed component can be traced back to Selznick (1957), who used the term 'distinctive competence' to refer to those qualities that allow a firm to act idiosyncratically and infuse value into its products, exceeding that of its competitors. Later on, Penrose (1958) argued for the firm's influential, unique and heterogeneous values of its internal resources that contributes to its competitive edge. Our readings from the literatures on CE, strategic management of firm resources, and competence development reveal that questions remain. Researchers in these fields broadly advocate the underpinning role of competences giving a firm its competitive edge.

From an RBV perspective, researchers broadly conceptualize competences defined as unique and idiosyncratic skills as major factors in a firm's competitive strength *vis-à-vis* its market rivals (Barney, 1986). But this literature gives diverse labels (at least twelve) to such competences with relative empirical evidence⁴. While these valued efforts cogently articulate the important influence of competences along with various organizational factors- on firm growth, the wide diversity of methods used to measure competences significantly limits the capacity for consistent and comparative interpretations and serves objective accumulated knowledge (Tsang, 1997). With these arguments in mind, it can be inferred that "competences", by definition, integrate elements of specialized knowledge embedded within the individual who performs a specialized action or task. For instance, in the literature of dynamic capabilities, competence is defined as "configuration of resources that enable the firm to accomplish a particular task" (Helfat & Peteraf, 2003). Foss & Knudsen (2006) define competence as "typically idiosyncratic knowledge capital that allows its holder to perform activities- in particular, to solve problems- in certain ways and typically do this more efficiently than others" (p.1).

Similar to CE, studies on firm competences provide a distinctive understanding of what and how a firm competes based on its assets of resources. This is done through exploratory behavior that allows the firm to exploit its unique resources and idiosyncratic skills and competence. While acknowledging that the concept of "firm competences" crosses boundaries with strategic management, in the literature on entrepreneurship in general, and CE in particular, we can find no clear definition of the term. Rather, it is used inter-changeably with a firm's "capabilities" or specific skills that result from entrepreneurial actions. However, both streams of research acknowledge firm competences with attributes of skill-specificity, largely tacit in nature, and asymmetrical among beholders- be it an individual, group of individuals, or

³Firms resources have been collectively classified into three types: human capital resources (Becker, 1964), physical capital resources (Williamson, 1975) and organizational capital resources (Tomer, 1987).

⁴Von Krogh and Roos (Von Krogh & Roos, 1995) insightfully elaborated on lack of consensus on the meaning of competences" in management research. They articulate the nature of a competence as a firm's -resource- engine to competitive advantage and a conduit of knowledge required to perform a particular task.

the firm itself. Our assumption is that for a firm to sustain its existence, it must maintain the minimum of knowledge required to supply a product or service. In this study, we focus on a unique set of firm competences. Back in 2008, Danneels invoked an interesting conceptualization of firm competence that he labeled as second-order competences - 'competence to build competence' (p.519). Firm first-order competence is the skill to perform a task and the skill sets allowing the firm to resume its current activities (Danneels, 2015) while firm second-order competences are 'the skill[s] to learn new tasks' (Danneels, 2008: 520). His assumptions for second-order competences are rooted in those of Collis (1994)- hierarchical stratification of organizational dynamic capabilities.

CE actions of innovation, strategic renewal, and corporate venturing involve more important and complex strategic thinking compared to decisions pertinent to simpler day-today tasks. They are of a strategic hierarchical order that echoes with that of second-order competences both share relatively similar level of complexity, of higher-order level of learning, and therefore, can be thematically related to CE. This orderly categorization provides an interesting framework to help us understand what and how firms CE activities influence their competences as they relate to its competitive stand.

2.3 Second-order R&D and Marketing Competences

Similar to firm's pursuits of CE to explore new ideas of products and services or new ways to exploit its resources and skills, second-order R&D and marketing competences help the firm identifies new technologies and new markets. Said differently, "it's the firm's ability to add new customer and technological competences, respectively" (Danneels, 2002:520) to its competence portfolio. Echoing with organizational learning, second-order R&D and marketing competences are the competences of exploring new technologies and new customers through explorative learning. Due to changing market dynamics, it is inevitable for a firm to identify new technologies, and towards that purpose, it must upgrade its R&D-related skills, brings in newly required personnel, or perhaps do both and sets forth plans for facility development. In such strategic scenarios, a firm engages in building new technological competences, to complement or replace the existing ones. In parallel analogy, to gain market share or identify opportunities in new markets not seen by competitors, a firm must attain knowledge about new customers ("new market competence) - where they are and how to access them. This can be done through competitive sales activities or channels of distribution to identify and add new customers and markets. So developing such competence necessitates the firm to acquire and develop unique resources and specific skills so it can translates its strategic planning and vision into a sustained competitive edge. Corporate entrepreneurial activities reflect a firm's strategic plan to sustain (or develop) its competitive advantage, increase profits and grow in size by acquiring new capabilities ("competences") to add new customers and develop additional products and services domestically and/or (Alvarez & Busenitz, 2001; Zahra & Garvis, 2000; Zahra, Jennings, & Kuratko, 1999; Zahra, Neubaum, & Huse, 2000). These arguments thus allow us to hypothesize that:

Hypothesis 1: *CE will have positive but different association with firm's different forms of SOC's. Specifically, CE has: (H1a) a stronger positive relationship with SOC R&D compared to that with SOC-Marketing, and (H2b) a positive but weaker relation with SOC-Marketing compared to that with SOC-R&D.*

3. Towards a Contingent Approach of Organizational Knowledge Creation and Second-order Competences

3.1 Information and Dimensions of Organizational Knowledge Creation

Strategy and entrepreneurship literatures, among others, contain a plethora of evidence regarding the importance of knowledge to organizations [for a review please refer to Sambrook & Roberts(2005)], but has largely ignored how new knowledge (Zahra, Nielsen, et al., 1999) in combination with exiting knowledge, can contribute to development of organizational competences. Viewed as such, failure to address competence development, within an entrepreneurial framework, in terms of both existing and new knowledge has produced limited theories of the entrepreneurial actions when used at the firm-level of analysis. With ongoing environmental uncertainty and complexity, organizational knowledge can be an effective and efficient attribute in reducing these uncertainties (Kirzner, 1979) and to guide strategic decision-making of the entrepreneurial firm. For the purpose of our discussion, we distinguish between information and knowledge- a distinction grounded in the Organizational Knowledge Creation theory (Nonaka, 1994), henceforth referred to as (OKC). Information refers to a flow of messages and signals while knowledge - defined as 'justified true belief' (Nonaka & von Krogh, 2009: 636)- is a multifaceted concept with multi-layered meanings- (Nonaka, Peltokorpi, & Tomae, 2005). Knowledge is created and arranged as influx of information and is associated with commitment and values of the holder (Nonaka, 1994) and can be classified into two types 'explicit' and 'tacit' (Polanyi (1958). Tacit and explicit types of knowledge are not only different but also constantly change over time. Change of tacit knowledge has an analogue characteristic because it is based on interaction between, and among, individuals as they establish shared understanding of various meanings they hold in their mind. Therefore, change of tacit knowledge has a continuous nature due to its tight relatedness to human actions. On the other hand, change in explicit knowledge has a chronological characteristic because exiting documented knowledge (i.e. written routines,

books, archival material ...etc.) are modified or replaced by new records; and therefore, it has a “digital” nature (Bateson, 1972).

3.2 Dynamics of Knowledge Creation Theory

Knowledge creation occurs and aggregates at different levels, beginning with the individual and moving within and between groups, organizations, and ultimately spirals up to the society level (Nonaka, 1994). In essence, it is important to emphasize that knowledge creation is dynamic by nature. Organizations are social structures embedded within social environments and continuously experience an influx of information in the form of messages from customers, suppliers, competitors and many other resources. It is essential, then, that organizations incorporate and synthesize received information, in combination with existing knowledge, transformed into new knowledge. This process extends organizational understanding to strategically map the competitive landscape, maintain valuable resources and acquiring new ones, and discover opportunities to develop and create new competences, products and services. The two types of knowledge- explicit and tacit- can be converted into one another. This is done via four modes: socialization, externalization, internalization, and combination- an important knowledge creation typology coined by Nonaka (1994). He further posits that modes of knowledge conversion interact in a dynamic cycle where tacit knowledge, at the individual level - essential to knowledge creation - is externalized and amplified through this interaction its spirals upward to the inter-organizational level. For this complex process to take place, organizations need to provide a medium of social interactions such as milieu and “self-organizing groups” that collaborate to create knowledge. This knowledge must then be crystallized in the form of innovating and developing new products, services and processes. With an understanding of how organizations create knowledge, we explore the linkage between organizational knowledge creation and firm second-order competences while accounting for various forms of firm-level entrepreneurial activities that take place within the firm. The following section aims to that purpose.

3.3 Organizational Knowledge Creation and Firm Second-order Competences

In 1999, Zahra, Nielsen, et al. (1999) insightfully proposed three different types of new knowledge in CE context: specific, integrative, and exploitative. The questions that remain how do these knowledge types account for a firm’s existing knowledge; and equally important, how can we capture CE effects while accounting for these different types of new knowledge? To date, no empirical studies have documented how a firm’s entrepreneurial action has induced these three types of new knowledge. One explanation could be the underlying and salient tautology among these types of CE- based new knowledge. Perhaps it is more useful to account for both existing and new knowledge, as tacit and explicit knowledge interacting via knowledge creation modes indicated above. Such an approach towards CE view of new knowledge inside the entrepreneurial organization lends itself not only to theoretical parsimony, but also to empirically capturing the magnitude of the effect of organizational knowledge creation on firm second-order competences. To do so, we make an important assumption that a firm operates within an open-system, mingling within their industry-specific group of competitors and their specific market. As such, one of a firm’s major activities is to integrate specific and specialized knowledge (Conner & Prahalad, 1996; Demsetz, 1991) that will enrich its resource heterogeneity, as its competitive position in the market is continuously challenged.

As firms operate within an open system towards their external environment, the influx of information from the market is essential for the firm to be able to create its specific and specialized knowledge repertoire. This in turn, enables the firm to develop and exploit its heterogeneous and idiosyncratic resources. The various divisions (or business units) within a firm work together to plan its strategy for sustaining (or building) its competitive advantage and create an ongoing process of knowledge creation based on interaction between its internal and external environment. As existing knowledge and new knowledge are integrated in either explicit or implicit, they become unique resources controlled by the firm (Barney, Arian, Hitt, Freeman, & Harrison, 2001) to support strategic thrust of innovation, strategic renewal, and venturing as the firm rejuvenates and builds new competences and organizational processes (Zahra, 2000; Zahra & Covin, 1993; Zahra & Das, 1993; Zahra, Neubaum, et al., 2000). Taken together, these points support the following hypotheses:

Hypothesis 2(H2): *Organizational knowledge creation has a positive association with firm’s SOC. Specifically, organization knowledge creation has: (H2a) a stronger positive association with SOC- R&D compared to that with SOC-Marketing; and (H2b) a positive but weaker association with SOC-Marketing as compared to that with SOC-R&D.*

The above mentioned synthesized hypotheses and model are illustrated in Figure (1) below.

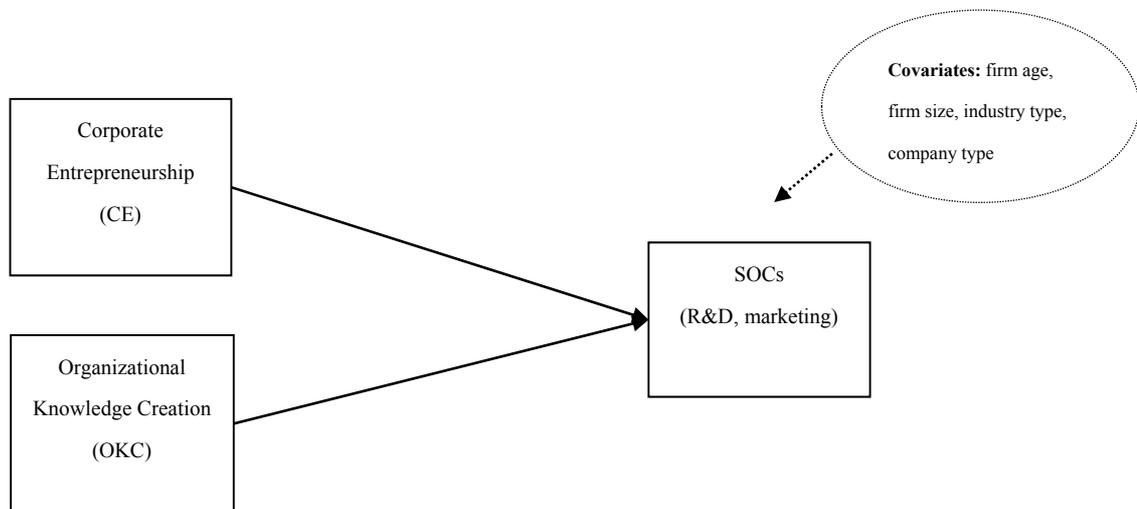


Figure 1. Schematic representation of a firm-level entrepreneurship framework in context of competence development

4. Methodology

4.1 Sample and Data Collection

To test proposed model and hypotheses, we used a web based survey to collect data using established and validated constructs from the literature (Chou & He, 2004; Danneels, 2008; Zahra, 1996; Zahra, Neubaum, et al., 2000). In this study, the unit of analysis is the firm. We made the choice of selecting companies from knowledge-intensive sectors [IT, healthcare and telecommunication], no more suitable context to synthesized arguments. These sectors are of particular interests and importance to research in entrepreneurship and strategy because they: 1) offer context settings whereby generating of new technologies and their ultimate commercialization are highly pertinent to entrepreneurial actions (Acs, 2004; Baumol, 2002), 2) are contexts wherein entrepreneurship has its highest potential (Henrekson & Johansson, 2009), 3) include but not only limited to high-tech firms (Delmar & Wennburg, 2010), and 4) include firms operating in different industries and thus offering relative different uncertainty and change of the firm's competitive environment that may not be the same for a study conducted in a single industry.

Firms selected in this study are from healthcare, telecommunication, and IT industries and were approached because of professional and or/ social network relationship with one of top executive members. We followed recommendations of Huber & Power (1985) to improve accuracy of data collected from key respondents, guidelines of Simsek & Veiga (2000, 2001) for employing web-based survey. We approached the most senior executive in each selected firm on the assumption that such an individual would be most knowledgeable about firm's strategic planning and activities (Covin & Slevin, 1991; Kuratko, Montagno, & Hornsby, 1990; Zahra, 1996). To consolidate our sample pool, we used both Orbis and Bloomberg databases to capture specific demographics for firms publicly traded. We collected demographic information of private firms from various network resources. This information was later confirmed by respondents themselves. As such, study sampling approach is nonrandom sampling. Consistent with our data collection method, we accounted for the lagged effect described by Zahra *et al.*, (2000), by having the most informed person in the company evaluate all firm-level variable items related to the firm's entrepreneurial actions relative to competitors over the past three years.

We contacted 94 firms and only 37 of them accepted and returned the study survey, representing an initial response rate of 39 percent, and in our analysis we included only completed surveys, thus resulted in a usable sample of 26 firms representing an effective response rate of 28 percent consistent with the recommended 10 to 12 percent response rate for surveys addressed to top executives (Hambrick, Geletkanycz, & Fredrickson, 1993). While collected data is exclusive and appropriate for this study; nevertheless, it has its limitations. First, while survey response rate is within recommended rate, sample size is small. However, in earlier such important published works (Doty, Glick, & Huber, 1993; Fiss, 2011; Ketchen, Thomas, & Snow, 1993; Miller, 1983) wherein sample size was small in these studies. Second, in this research, we cannot assume a random sample since firms were selected based on convenience of access and the willingness of the top executives to cooperate and take the study survey; yet, the latter influential studies had non-random sampling approach due research selective convenient and pragmatic factors. Additionally, representativeness of the sample is of less validity threat since this is an exploratory study and the knowledge-intensive sectors are the context that is most relevant to test arguments, particularly within the adopted resource-based view framework. The dimensions of every construct were averaged to obtain the variable scores. And finally, although this study is cross sectional, but its design with multisource data, and the distribution of construct items within the questionnaires, considerably ameliorates concerns of common method variance (Podsakoff, MacKenzie, Jeong-Yeon, &

Podsakoff, 2003). Evidence shows this concern is elevated when dependent and explanatory variables are perceptual measures and collected from same respondent (Chang, Van Witteloostuijn, & Eden, 2010; Podsakoff & Organ, 1986).

The variables measured in our study pertain to specific firm's characteristics and actions taken rather than constructs of perceptions. Pertinent literature indicates the more questionnaire items are fact-based, the less likely the concern of common method variance (Podsakoff et al., 2003). Respondents were informed that there is no one right answer, assured the confidentiality of their input, and their answers be to the best of their knowledge as the top executives of their firm (Chang et al., 2010). Table (1) provides the Cronbach's alphas, descriptive statistics, and correlation of constructs used. The sample's mean firm age was 27.42 years, with mean firm size of 17923 (measured as the average number of employees between 2009 and 2011).

4.2 Variables and Measures

4.2.1 Independent Variables

Corporate Entrepreneurship (CE) was measured using previously established instruments (Zahra, 1996a; Zahra, Neubaum, and Huse, 2000), to assess the extent to which a firm's pursuit of CE. Higher CE score indicates more entrepreneurial actions occurring inside the firm. Items are assessed using a five-point scale, ranging from 1 ('strongly disagree') to 5 ('strongly agree'). As a latent construct, CE instruments consisted of 26 items reflecting of firm's entrepreneurial actions of innovation, strategic renewal, and corporate venturing. Our rationale, and in consistency with established literature, CE, as a latent construct, reflects and captures a minimum level, and complementarity, of innovation, strategic renewal, and venturing actions of an entrepreneurial organization (Miller, 1983; Simsek & Heavey, 2011). The Cronbach's alpha for CE, as a latent construct, is (0.90). Table (1) lists the reliability for CE in addition to reliability coefficients of its sub-dimensions that are used in the discussion section. All alpha coefficients are consistent with previously reported Cronbach's α of these indices. Organizational Knowledge Creation (OKC) is captured as a latent meta-construct constituted of the four modes of knowledge creation. Specifically, we employ instruments proposed by Chou & He (2004) that measure the four modes of organizational knowledge creation- socialization, internalization, externalization and combination, originally theorized by Nonaka (1994). In total, fifteen items were employed using a 7-point scale asking the CEOs to indicate their assessment of their employees' engagement in various organizational knowledge- creation activities. Responses ranged from 1 (strongly disagree) to 7 (strongly agree)⁵. Organizational knowledge creation as a latent construct, with 15 items, Cronbach's alpha is (0.89). The alpha coefficients of the sub dimensions and the meta construct in this research are consistent with those seen in previous research using these scales (Chou & He, 2004; Li, Huang, & Tsai, 2009; Sabherwal & Becerra-Fernandez, 2003). Consistent with previous theory, we controlled for firm age, measured as the number of years since the firm was created (Acs & Preston, 1997; Fujita, 1997), and firm size in total number of employees (Acs & Preston, 1997; Scherer & Ross, 1990). Firm age and size have been found to influence survival rate (Reed, Lubatkin, & Srinivasan, 2006). We use the log-transformed values for both parameters to achieve normality (Tabachnick & Fidell, 1996). We also controlled for industry effects and for firm type.

4.2.2 Dependent Variables

We employed Danneels (2008) version of the instruments, consisting of SOC-R&D and SOC-marketing competences. Items in both categories were assessed on a 7-point scale with responses ranging from 1 ('not at all') to 7 ('to a great extent'). Firm's SOC-R&D was measured using six items. These items consist of questions asking the CEOs to rate their firm's ability, relative to competitors, to identify and integrate new technologies through development of specific skills. Examples of these skills are upgrading new manufacturing processes, discovering and learning new technologies, evaluating these new technologies, and recruiting employees in new technical areas. Analysis shows 6-item scale Cronbach's alpha is (0.89). Firm's SOC-marketing was gauged using eight items asking the CEOs to rate how well their firm, relative to competitors, is generally good or poor at entering a potential new market, establishing a new network and relationship to enter a new market and distribution channels, developing marketing, pricing and advertising strategies and finally, performing business intelligence on new customers and new competitors. Analysis for SOC marketing competence scale with eight items shows an alpha of (0.89). These alpha coefficients are consistent with those seen in previous research using these dimensions (Danneels, 2008).

⁵Items were preceded with the statement: 'The following questions ask you to assess your company's employee's involvement in various activities. Over the past three years, in my company; employees have been deeply involved in the following activities'. Alpha coefficients of OKC subdimensions and the meta construct in this research were consistent with (Chou & He, 2004; Li, Huang, & Tsai, 2009; Sabherwal & Becerra-Fernandez, 2003),

Table 1. Means, Standard Deviations, Cronbach’s Alpha, and Pearson Correlations

			Mean	S.D.	Alpha	Min.	Max.	1	2	3	4	5	6	7	8	9	10	11	12	13	14		
Dependent Variables	1	SOC- R&D	4.33	1.43	0.89	1	6.67	1															
	2	SOC- Marketing	4.29	1.34	0.89	1.5	6.63	0.41*	1														
Independent Variables	3	CE	3.15	.60	0.90	1.70	4.19	0.48*	0.65***	1													
	4 [‡]	Innovation	3.21	0.73	0.88	1.77	4.62	0.61**	0.63***	0.82***	1												
	5 [‡]	Strategic renewal	3.40	0.78	0.66	1.75	4.75	0.18	0.23	0.68***	0.35	1											
	6 [‡]	(CV)	2.82	2.82	0.84	1	4.89	0.32	0.62***	0.78***	0.53**	0.21	1										
	7 [‡]	CV(Domestic)	2.82	0.99	0.85	1	5	0.15	0.30	0.59**	0.32	0.15	0.83***	1									
	8 [‡]	CV(International)	2.83	1.12	0.87	1	4.75	0.38	0.73***	0.68***	0.55**	0.19	0.79***	0.31	1								
	9	OKC	4.60	1.17	0.93	1.67	6.83	0.36 [‡]	0.48*	0.42*	0.39*	0.31	0.25	0.02	.47*	1							
Control Variables	10	Firm age (log)	27.42	22.60		7	85	-0.13	0.03	-0.11	-0.11	0.05	-0.18	-0.11	-0.18	-0.21	1						
	11	Firm Size (log)	17923	15.38		13	1143	0.17	0.24	0.33	0.29	0.17	0.26	0.04	0.41*	-0.06	0.54**	1					
	12	Firm Type						0.09 [‡]	-0.11	-	0.15	0.171	-0.08	-0.38	-0.36	-0.26	0.07	-0.09	-0.21	1			
	13	Industry Type (Healthcare)						0.06	0.01	0.22	0.26 [‡]	0.13	0.12	0.22	0.05	-0.24	0.27 [‡]	0.42*	0.12	1			
	14	Industry Type (IT)						-0.11	0.05	-0.16	-0.31	-0.14	0.06	0.03	0.07	0.33	-0.15	-0.37	-0.32	0.82***	1		

N = 26; correlations of 0.36 or higher are significant @ (p< 0.10; [‡]), correlations of 0.41 or higher are significant @ (p< 0.05; *), correlations of 0.53 or higher are significant @ (p< 0.01; **), and correlations of 0.63 or higher are significant @ (p < 0.001; ***), (SOC)= *Second-order competence*; (CE) = *Corporate Entrepreneurship*; (OKC)= *Organizational Knowledge Creation*; ; (CV)= *Corporate Venturing*; [‡]: variables intended for extended ad hoc analysis

4.2.3 Control Variables

Consistent with previous theory, we controlled for firm age, measured as the number of years since the firm was created (Acs & Preston, 1997; Fujita, 1997), and firm size in total number of employees (Scherer & Ross, 1990). Firm age and size have been found to influence survival rate (Reed, Lubatkin, & Srinivasan, 2006). We use the log-transformed values for both parameters to achieve normality (Tabachnick & Fidell, 1996). We also controlled for industry effects and for firm type.

5. Results

Table 1 summarizes the mean, standard deviation and inter-correlations among variables employed in this research. Based on the recommendations of Tabachnick & Fidell (1996), not to pass the level of (0.7) for inter-factor correlation, none of the employed main effect variables of this study passed this level. Diagnosing Variance Inflation Factor (VIF) and condition indices, in line with established recommendations (Kleinbaum, Kupper, & Muller, 1999; Neter, Kutner, Nachtsheim, & Wasserman, 1996) gave predictor VIF range from 1.26- to 1.89 and the mean VIF score ranged from 1.34 to 1.66, suggesting absence of multi-collinearity issues. The results of bivariate correlations illustrate all employed main-effect variables in this research were significantly linked to firm’s SOC’s (R&D and marketing). Yet, correlation manifestations provide initial support to various model relationships hypothesized. What follows will discuss the ordinary least square (OLS) regression modeling that we ran for main effects. These models allowed us to examine added explanatory variance of each predictor, along with corresponding added control variable which manifested statistical significance effect in control variable regression runs. We assessed applicability of parametric test of significance. Skewness and kurtosis of the dependent variable were tested, and their values were well within the boundaries for normality (Robinson & Hofer, 1997; Shapiro & Wilk, 1965). To minimize constraints and maximize stability of various OLS regression runs, we regressed control variables on the dependent variables (SOR-R&D, SOC-Marketing) separately, models one and five in table (2), and where applicable, we included only those control variable(s) manifesting significance against corresponding dependent variable when running the regressions testing main relationships of our model.

5.1 CE and Firm's SOC's

Table 2 depicts the regression runs testing proposed hypotheses. Model two explored CE main effect on firm SOC-R&D. Models three and four explored the effect of organizational knowledge creation; then after, dual effect of OKC and CE on SOC-R&D respectively. We followed the similar logic of analysis by when regressing SOC-marketing on CE and OKC (table 2: models 6, 7, and 8). The R-squared values pointed to comforting results of the data percent variances of SOC-R&D, and that of SOC-marketing, explained by proposed models and their overall fits have ranged between high and extremely high confidence: 95.00 to above 99.99 percent. The R-squared values of models 2, 3, and 4, illustrate increasing explanatory power between 2 and 3, and that of 4. Similarly, R-squared values of models 6, 7, and 8, illustrate increasing explanatory power between 6 and 7, and that of 8. Our first hypothesis predicted positive, and stronger, relationship between CE and SOC-R&D as compared to that of SOC-Marketing ($\beta = 0.39$, $p < 0.01$; $\beta = 0.54$, $p < 0.01$). (H1a) is partially supported. We predicted positive, but weaker, direct association between CE and SOC-Marketing; and therefore, hypothesis (H1b) is also partially supported as illustrated in models 4 and 8. Very interestingly, and rather surprisingly, CE manifested persisting significant positive association with firm-second-order R&D competence (models 2, 3, and 4) and on SOC-marketing (models 6, 7, and 8); yet, such association is stronger with the latter than with the former as the data revealed, and therefore partially contrary to our prediction.

Table 2. Results of OLS regression tests

Variable; β (t's)	Model (1) SOC-R&D	Model (2) SOC-R&D	Model (3) SOC-R&D	Model (4) SOC-R&D	Model (5) SOC-MC	Model (6) SOC-MC	Model (7) SOC-MC	Model (8) SOC-MC
■ Firm size (log # empls)	0.323 (1.63)				0.387 (1.66)			
■ Firm age (log)	-0.295 (-1.68)				-0.167 (-0.68)			
■ Industry-Health care	-0.072 (-0.15)				0.089 (0.14)			
■ Industry-IT	-0.089 (-0.19)				0.243 (0.42)			
CE		0.476** (3.40)		0.394** (2.86)		0.647*** (4.54)		0.541** (3.17)
OKC			0.362* (2.34)	0.197 (1.30)			0.480* (2.29)	0.255 (1.48)
R-squared (df)	0.10 (21)	0.23 (24)	0.13 (24)	0.26 (23)	0.10 (21)	0.42 (24)	0.23 (24)	0.47 (23)
Adjusted R²	-0.076 1.147	0.195 11.57	0.095 5.496	0.195 6.770	-0.069 0.845	0.394 20.62	0.199 5.234	0.426 25.83
F	($p > F =$ 0.36)	($p > F =$ 0.002)	($p > F =$ 0.028)	($p > F =$ 0.05)	($p > F =$ 0.5)	($p > F =$ 0.00)	($p > F =$ 0.03)	($p > F =$ 0.00)
Root MSE	1.479	1.280	1.357	1.280	1.382	1.040	1.196	1.012
N	26	26	26	26	26	26	26	26

t statistics in parentheses; $\Psi p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, (SOC) = Second-order competence; (CE) = Corporate Entrepreneurship; (OKC) = Organizational Knowledge Creation; ■ Control variables

5.2 OKC and Firm's SOC's

Models 3 and 7 (table 2) explored OKC main association with firm's SOC-R&D and marketing respectively. This is followed by examining OKC effect while accounting for CE (table 2, models 4 and 8). The result is easily supported and with statistical significance ($\beta = 0.36$, $p < 0.05$; $\beta = 0.36$, $p < 0.05$). Our prediction for the association of OKC with SOC-R&D and marketing respectively, though partially supported, but surprisingly, only when that of CE is alleviated ($\beta = 0.36$, $p < 0.05$; $\beta = 0.54$, $p < 0.01$) as manifested by models 3 and 7. Once both CE and OKC are accounted for in the same regression model, and as theorized in this study, CE takes precedence in its significant association on both SOC types while that of OKC is nullified as models 4 and 8 illustrate.

5.3 Ad Hoc Analysis

We performed a series of post hoc analysis to further verify our findings and to obtain additional insights. First, to test our regression result robustness we ran the regression equations, used in parametric analysis, using non-parametric statistical testing. We used this approach in recognition of sample size limitation. Under non-parametric analysis, we ran

these equations under less restrictive assumptions (Gibbons, 1993), and the results supported our parametric analysis⁶. Second, we conducted the Hausman (1978) test for endogeneity following recommendations of Bascle (2008). Analysis of results, using the following instrumental variables formal CE (Zahra, 1991) and environmental hostility (Covin & Slevin, 1989), indicated ($p > 0.10$) for both Durbin score and Wu-Hausman, and therefore, in this research we can consider CE as an exogenous variable and depends on results of the OLS regression modeling³. Aside from that, and as the bivariate correlation results illustrated in table 1, we wanted to get more insight from the data we have. We conducted further analysis to see what would be the form of association between the CE sub-dimensions and that of both types of a firm's SOC's, though not theoretically articulated in this study. To our greater comfort, parametric analysis, revealed further interesting outcomes. In particular, only innovation, among CE three subdimensions, while accounting for OKC, manifested a significant association with SOC-R&D ($\beta = 0.57$, $p < 0.015$; $R^2 = 0.39$ and $F(3.34)$, $p < F = 0.002$). When regressing SOC-marketing on CE subdimensions and OKC, only international corporate venturing, and less so for innovation, manifested statistically significant association ($R^2 = 0.62$ and $F(6.54)$, $p < F = 0.000$; $\beta(\text{CVintl}) = 0.49$, $p < 0.013$, $\beta(\text{Innovation}) = 0.29$, $p = 0.11$). Due to purpose of this study, and space limitations, it's beyond this study's objective to theoretical articulate on these importantly potential further exploratory early findings.

6. Discussion and Implications

The core argument of this research can be summarized as follows: (1) Firm second-order competences are variably influenced by pursuit of CE actions that are likely reflected in a firm's ability to develop new technological domains and explore new markets; and (2) Organizational knowledge creation may variably associate with a firm's SOC marketing and R&D. We test this reasoning from a large body of literature and from such widely acknowledged perspectives as RBV and OKC. Taken together, our articulated theory and empirical findings contribute to the literature and suggests directions for promising future research.

Analysis between CE and SOC's provides insights into entrepreneurial behavior taken by individual firms to develop their competences. The differing positive association between CE and SOC types suggests that the more a firm manifest entrepreneurial actions the greater development of not only an overall SOC's but also of varied levels between R&D and marketing SOC's. The direct correlation between CE and SOC's echoes with previous research on strategic modes (Mintzberg, 1973) and strategic archetypes (Miles, Snow, M., & Coleman, 1978). That relationship is necessary to build sustained competitive advantage (Hofer & Schendel, 1978) and is an antecedent of a firm's economic rent (McGrath, Tsai, Venkataraman, & MacMillan, 1996). In our findings, however, CE correlates significantly, and more strongly, with SOC-marketing as compared to SOC R&D, and thus, it requires further elucidation. Possible explanations could be attributed to complementary effect of CE sub-dimensions, in this research, we consider CE as a latent construct. Specifically, in our ad hoc analysis, the complimentary effect of domestic and international corporate venturing, together, influence more the SOC-marketing (acquiring new markets or new market shares within an existing market) as compared to innovation that would influence development of new technologies reflected in SOC-R&D.

In addition, perhaps firm's relative familiarity with the culture of its domestic markets as well as a firm's 'competency trap' (Levinthal & March, 1993) could lead to a differential CE association with domestic corporate venturing as compared to international venturing. Innovation and international corporate venturing, viewed as different forms of CE, directly associate with SOC-R&D and SOC-marketing, and with high statistical significance respectively. Success in foreign markets necessitates considerable reduction in uncertainty and ambiguity pertaining to such attributes as local dynamics, state policies and customers' needs and values. Such a venture would indeed require the development of new customer marketing competences (Danneels, 2008, 2015). Zook & Allen (2003) suggested, in established firms, new ventures are more likely to fail when new business venture require knowledge and actions that are vastly different than what is needed for current business. This also affirms previous research that articulated how competence exploitation is associated negatively with radical innovation and positively with incremental innovation (Atuahene-Gima, 2005; Zahra, Ireland, et al., 2000). Even though, and opposite to our speculation, CE had the higher bivariate correlation of (0.65^{***}) with SOC -marketing compared to (0.48^{*}) with SOC-R&D, perhaps our findings, in both parametric and non-parametric analysis, could be attributed to sample size limitation.

More importantly, perhaps we need to examine association of CE dimensions with SOC's. The extended ad hoc analysis mentioned above supports such reasoning. RBV considers firm's knowledge management an important asset (Penrose, 1958). The positive association between OKC, and SOC-R&D and SOC-marketing partially support H2a,b (under parametric and non-parametric analysis) and such a finding is counterintuitive. For a firm to develop new competitive technologies requires considerable engagement with knowledge creation, as compared to such engagement required to enter new market or to increase market share (Hayton & Zahra, 2005) particularly in knowledge intensive contexts. In

⁶ Due to space constrains these results can be made available upon request from authors.

this study, OKC loses its explanatory power when CE is accounted for. Perhaps this is attributed to consistent significant CE association with the two SOC types or to study sample size; yet, this probes for further research.

We cannot claim reverse causality as we shall explain in the section on research limitation. But this finding is consistent with the literatures of entrepreneurship and strategic management. Specifically, the direct correlation between OKC and firm's SOC types is consistent with finding from strategy research of knowledge management (Grant, 1996a); various organizational learning perspectives such as absorptive capacity (Cohen & Levinthal, 1990), among others, concerning a firm's development of idiosyncratic skills and actions to maintain its competitive advantage. What is notable though, while OKC positively influences second-order R&D and marketing competences with significantly large β values (0.36 and 0.48 respectively), such an association diminishes when CE is at play. As table (1) illustrates, OKC mean score is (4.60) on a scale ranges from 1 to 7, CE mean score is (3.15) on a scale ranges from 1 to 5. To account for scale difference between these two predictors, we ran a t-test (unpaired unequal), and results indicated their mean differences is statistically significant ($p < 0.000$), thus entailing a distinctive difference between the two predictors even though answered by same respondent. These outcomes are quite intriguing.

Our findings do not differ from those of similar empirical studies that investigated OKC effect on firm attributes of performance (Li et al., 2009) and particularly SOC types (Kokash & Hughes, 2014a, 2014b). Also, Simsek and Heavey (2011) examined the knowledge management interplay in concept of CE-performance relationship. Specifically, they argued for a positive mediating role of knowledge-based capital on the CE- performance. Firms that adopt various entrepreneurial actions must encourage their people to reflect on what is needed to develop specific competence deemed necessary by strategic entrepreneurial decisions, and particularly regarding development of new technologies. Said differently, while our results manifest a higher β value for SOC-marketing (0.54, $p < 0.01$) compared to SOC-R&D (0.39, $p < 0.01$), the entrepreneurial firm is under constant pressure to develop both capabilities but with a varying intensity. Such a firm needs to constantly explore new technologies and new markets, while exploiting existing ones in order to sustain its competitive edge, growth and profit (Alexy, George, & Salter, 2013). As an early-evidence study in the field of entrepreneurship and corporate entrepreneurship in specific, this research first contribution is to conceptually clarify and empirically test a few fundamental factors that gauge association between CE and the development of organizational competences. In this research, we theoretically articulate CE as a meta- encompassing innovation, strategic renewal, and corporate venturing. We also theoretically articulate a firm's SOC types of R&D and marketing. Results indicate that this measure of second-order competences is positively and variably influenced by CE and OKC.

The main predicted positive association between CE and SOC types would appear to indicate that firms adopting entrepreneurial postures can improve their competences by learning to distinguish which type of competence would most benefit from which entrepreneurial action. Furthermore, while we found exploratory evidence for innovation associating SOC-R&D but not SOC-marketing; and international corporate venturing, but not innovation, linked with SOC-marketing, we found no association for strategic renewal with these both types of SOC types. Organizational competences examined in this research are not exhaustive and other unexplored competences could be explored.

A second contribution of this research, particularly in strategic entrepreneurship, all else being equal, the higher the extent to which a firm pursues an entrepreneurial posture, the greater the influence of such a posture will have on its competence repertoire, and strategic and governance mechanisms to support it. Transforming a strategic opportunity envisioned by a firm's executives into a viable product, service, or perhaps a new position in the market where the firm competes, requires a mesh of knowledge management and coordinating mechanisms to secure critical resources. CEOs and firm executives are under constant market pressure to release new products and services, to commercialize them competitively. It is therefore imperative that strategic entrepreneurial engagement in one type of activity not overpower all others. Not all executive decisions to engage a firm entrepreneurially require multiple such activities (Zahra, 1991). For instance, not all firms in the same sector are on the same level in terms of either innovation or venturing.

A third contribution this research offers is an early insight to competence literature. As organizations engage in CE actions, new knowledge is needed to support sustenance and creation of competitive capabilities and economic growth. Little is known, however, on how and what mechanisms drive and control interaction between exiting and new knowledge- to either rejuvenate existing competence and (or) create new ones. For example, research could explore effect of different OKC modes influence SOC types and the possible interplay of knowledge assets on latter relationship. This will help enrich our understanding to what and how knowledge assets, along with the dynamics of organizational knowledge creation, might enforce or weaken the CE- organizational competence relationship, particularly when the latter is exposed to causality validation.

In framework of CE and multinational corporations, how do such organizations manage knowledge creation and integration among the subsidiaries? We intended to spot light, intellectually challenge, and voice a forward thinking

approach to specific practices and functioning inside organizations. As organizations lay down strategies to engage in various entrepreneurial actions, attention to knowledge management remains vital (Alvarez & Busenitz, 2001). Viewed in this way, this research contribution to management practices articulate how various organizational competences are influenced, in part by, various organizational entrepreneurial engagements, and in part, by the organizational creation to knowledge. As firms learn more about what entrepreneurial actions shape their competences, managers can more proactively engage in ways to identify appropriate mechanisms and pathways to strategically configure their firm competitiveness.

However, with the important implications of corporate entrepreneurship and the firm's knowledge creation highlighted in this study, it appears that for managers to engage and assess effects of CE on configuration of firm's competences, and independently of how a firm manages knowledge creation, strongly eclipses the complex processes underlying persistent competence development differences among firms. While CE initiatives are of important influence on organizational competence, managers are required to pay attention to the fact that these intuitive. For example, from merger and acquisition literature, the central issue for firms to follow such a growth strategy is how to ensure synergies and complementarities between the acquiring firm and acquired firm especially in areas of innovation that touches the heart of R&D competences of both firms and their commitments to the same. To illustrate, in a recent study, King, Slotegraaf, and Kesner (2008) found out that complementarities between acquirer marketing resources with that of targeted firm R&D resources has a significantly positive performance output. However, R&D resources of acquirer when interacting with that of targeted firm, the result was significantly negative. We suggest that the issue of how and when a firm merger and acquisition growth strategies matter to its competence development is best understood in the context of differences among firm abilities to engage in the rightful CE activity.

7. Study Limitations and Conclusion

The model articulated in this research is not at odds with CE research. On the contrary, our findings probe for future research avenues to emerge. Yet this study has some limitations. The model does not investigate the entire range of phenomena associated with this identified relationship. For reasons of parsimony in addition to space and time limitation pose constrains to discuss such issues as what difference would there be, if any, among CE forms and knowledge creation modes on SOCs. First, firms are a part of their larger universe- their environment within which they operate and also interact with their competitors within the industry boundary, and perhaps beyond the industry boundary as configuration of market dynamics increasingly converge towards knowledge-engineered economies. Consequently, how would such factors, and their components, influence and be influenced, by the posited association between a firm various entrepreneurial actions and the competences it develops. Given the time limitation, nature of data collected as cross-sectional, we cannot claim and interpret directionality our proposed model. Cross-sectional design limits causal inferences.

Second, firm internal environment is an important factor that must be investigated in further research. Another limitation is the process nature of knowledge creation. It is indeed a pivotal effort that Chou and He (2004) operationalized knowledge creation modes that Nonaka theorized way back in 1995. Perhaps an extended effort or future research is to have a semi-structured interview in parallel to the survey method to capture more accurately various snapshots of firm trajectory as it develops its various competences in order to fit the competitive landscape. In our opinion, the findings of this research should be encouraging to further explore larger and other sectors, to assess differences, if any, between sectors. The current data is for a sample of firms from various sectors within the knowledge-intensive industries. Such entrepreneurial actions among firms are expected to vary considerably and particularly in knowledge-intensive industries that research has classified to be of have "high-velocity environments" (Eisenhardt & Bourgeois, 1988). In addition, these firms, in their respective country of birth, encounter different institutional policies and regulation barriers and accounting practices that could influence their entrepreneurial actions. Our purpose here is to propose a theory-grounded model, integrating organizational knowledge creation, to provide an extended view for CE, thus far broadly viewed from a content stance (Dess et al., 2003). It is an important and useful framework for insights as to why and how corporate entrepreneurial activities directly and differentially influence firm competence development. For example, it would be interesting to conduct an in depth analysis for specific antecedent to knowledge creation, or how these modes take place within an organization. This research has just scratched the surface and offered importantly early evidence for more insights to literatures of CE and competence development can draw from and of possible areas for future studies.

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