Intellectual Capital for Innovation Capability: A Conceptual Model for Innovation

Xiaobo Wu and V. Sivalogathasan

***Abstract*—This paper presents a wide-range conceptual analysis of intellectual capital in business environment. The primary research objective was to look at intellectual capital with innovation capability and in order to enable the fine-tuning of intellectual capital literature. The role of intellectual capital value drivers focused through organizational motivation into innovation capability. This research has been viewed, first as a contribution to refinement of the existing intellectual capital literature methods with respect to unique characteristics of the industries, and Second, the relationship between intellectual capital and organizational motivation been theoretically inspected. Third, the paper investigates the multidimensional and contingent gradual effect of intellectual capital on innovation capability and firm performance through the mediating role of organizational motivation and moderating role of organizational characteristics. Finally, proposed some hypotheses about the possible conditioning of the impact factor on the intellectual capital, innovation capability and firm performance.**

***Index Terms*—Intellectual capital, innovation capability, organizational motivation, firm performance, organizational characteristics.**

I. Introduction

The globalization of markets has forced firms to attempt to increase their competitive advantage via internally generated intangible assets which cannot be easily imitated by competitors. In this context, knowledge has been advocated as a key driver of sustained firm performance [1]. Intellectual capital has been defined as the knowledge that firms utilize for competitive advantage and it includes human capital such as knowledge, skills, and abilities of individuals, organizational capital - routines, processes, system and databases, and social capital - interactions among individuals and their networks of relationships [2]. By taking an organizational perspective, scholars have suggested that intellectual capital drives firm performance, influences firm innovative capabilities, and positively affects firm capability and firm performance [3]-[6]. Additionally, studies have identified specific human resource configurations and organizational structures as antecedents of Intellectual Capital, Organizational-level metrics to assess Intellectual Capital have been proposed, together with the links among Intellectual Capital dimensions of human, organizational, and social capital, [2],[7].

Intellectual capital is a resource that is embedded in the actions and capabilities of the individuals that operate in an organization; it has therefore been suggested that researchers should explore intellectual capability from an individual-rather than an organizational-level perspective in order to gain more precise knowledge about Intellectual Capital-related phenomena. Also, knowledge-based theorists have strongly underscored the need to address the process of knowledge-based value creation, and that this is typically rooted in individual action and interaction, [8]. Therefore researchers [1], [3] investigate the link between Intellectual capital and firm outcomes; Intellectual capital metrics; and the factors that influence Innovation capability. Thus this study investigates the effect of intellectual capital on innovation capability and firm performance and develop conceptual model with some propositions.

The Resource Base View (RBV) initially looks internally for sources of competitive advantage by defining and developing core competencies from firm-specific capabilities derived from stocks of assets, primarily intangible [9]-[10]. These core competencies allow an organization to find a better fit with its external environment to withstand competitive forces. While an organization can have many capabilities, those that are widespread and successful in differentiating the organization from its competitors can be called core competencies [9], [11]. These competencies evolve from stocks of human knowledge, supported by organization structures, processes, and relationships. The combination of these capabilities (human, structural, and relational) is often referred to as Intellectual Capital [12], [13].

Why do some organizations appear to be more successful than others at Intellectual Capital management activities? These activities provide the foundation for capability development. However, their very nature makes them prone to uncertainty. We investigate the question of how an organization should be designed to reduce uncertainty specifically related to decisions associated with Intellectual Capital activities.

II. Literature Revie

Carmeli and Tishler [14] and Riahi-Belkaoui [15] proved the positive association between intellectual capital and firm future performance. On the other hand, the research suggests that this relationship might be industry and country specific. Still in some industries and some countries tangible assets

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may play a more important role than intangibles in enhancing firm performance and firm competitiveness [16]. Despite the relevance of these all works, still more empirical research is needed to test the link between intellectual capital and firm performance [16]-[17]. The challenge appears to further investigate the link between intellectual capital and innovation capability lead to the firm performance.

Intellectual capitals are complex constructs which can be classified into human, structural and relational capital [13], [18]. While all three dimensions are sources of firm competitive advantage and superior performance, however they are not equally important. The theoretical considerations indicate that human capital is central to intangibles since it is the source of innovation and renewal [13]. However, the empirical research shows mixed results. For example, Bontis [18] found that human capital without the support of structural capital is practically useless. Li and Wu [19]confirmed the more important role of structural capital for firm performance. On the other hand, Wang and Chang [20] study found the human capital as the most crucial component. Still more empirical research is needed to investigate the importance of different intellectual capital for firm performance [21]. In this context the challenge appears to investigate the importance of different intellectual capital dimensions for innovation capability lead firm competitiveness and performance.

A. Intellectual Capital

Intellectual capital is defined as the sum of all knowledge an organization is able to leverage in the process of conducting business to gain competitive advantage, Such knowledge accumulates over time and resides in an organization's people, structures, systems, processes, and databases [2] , [22]. Previous research has identified three aspects of intellectual capital; namely, human, organizational, and social capital [6], [23]. There are dynamic and complex interrelationships among the three aspects of intellectual capital [2] and looking independently at any one of these subcategories most certainly results in an incomplete account of an organization's intellectual capital. Yet, the precise nature of the interrelationships between human, organizational, and social capital are not known and several possibilities exist.

Human capital is the knowledge, skills, and abilities residing in and utilized by individual employees and creates value for firms in return for the investments (hiring, training, motivating) made in them [24]-[25]. Organizational capital is the institutionalized knowledge and codified experience stored in databases, routines, patents, manuals, structures, and the like [2]. Organizational capital requires the establishment of information storage mechanisms as well as formalization and reutilization of organizational policies, practices, and processes. The third aspect, social capital suggests that organizational knowledge can also reside in interactions among individuals and their networks of interrelationships [23]. Development of social capital in organizations requires establishing norms for collaboration, interaction, and sharing of ideas within firms [6].

Stewart [13] described the three major elements of intellectual capital: human capital, structural capital, and customer capital. Human capital refers to innovation, employee attitudes, seniority, turnover, experience, and learning; structural capital refers to using highly effective way to collect, test, organize, integrate existing knowledge and to eliminate the impure and to retain the pure then disseminate it; customer capital refers to the relationship between a certain organization and the people it deals with, such as customer satisfaction, customer retention rate, and customer loyalty.

Edvinsson & Malone [12] explained the implementation process and the measuring indicators of organization. In addition, intellectual capital includes human capital, structural capital, and customer capital. Human capital refers to the individual capability, knowledge, skills, experience, and it also includes an organization's creativity and innovation; structural capital refers to being capable of materializing and giving power to the human capital, and the supporting infrastructure, it's a kind of ability to organize including a tangible system used to transmit and to store smart materials; customer capital refers to customer satisfaction, constancy, price sensitivity, and the financial condition of long-term customers.

The different dimensions of intellectual capital can have independent and non-overlapping effects on organizational outcomes. This would be the case if having all aspects of intellectual capital together resulted in a greater level of the outcome than having either aspect alone, but not more than the sum of the individual effects of each form of capital [27]. It is also possible that the effectiveness of one aspect of intellectual capital can depend on the effectiveness of the other, thus, different aspects of intellectual capital acting in a synergistic manner. For example, Burt [26] posits that the value of human capital is meaningless if without social capital. Also, previous research suggests that human capital interacts with social capital to influence innovative capabilities; but without social capital, human capital does not work in isolation [6]. This synergistic idea has noting that unless individual knowledge is networked, shared, and channeled through relationships, it provides little benefit to organizations in terms of innovative capabilities.

A firm's capacity to develop and apply its expertise and knowledge is highly related to its intellectual capital. The most commonly given definition for intellectual capital delineates this concept as the overall knowledge and capabilities that an organization can use in order to achieve a competitive advantage [2], [13], [23]. Edvinsson [12] described intellectual capital simply: intellectual capital is the pillars of the future of any enterprise; it's an indicator of whether an enterprise can operate effectively. Therefore, we hypothesize that:

Hypothesis 1: Intellectual capital of firm has positive and significant effect on innovation capability and lead to firm performance.

Hypothesis 1a: Human capital of firm has positive and significant effect on innovation capability and lead to firm performance.

Hypothesis 1b: Social capital of firm has positive and significant effect on innovation capability and lead to firm performance.

Hypothesis 1c: Organizational capital of firm has positive

and significant effect on innovation capability and lead to firm performance.

The above descriptions were consolidated, and therefore, the conceptual definition of intellectual capital is that the skills, knowledge, information, experience, problem-solving abilities and wisdom which cover the entire organization, and integrated with human capital, organizational capital and social capital, and its operational definition is summarized as: (a) Human capital: the knowledge, skills, and experience of all employees and managers of a company, (b) Organizational capital: the overall system and process of problem solving and value creation of a company, and (c) Social capital: the establishment, maintenance and development of external relationships by the organization including customers, suppliers and partners.

B. Innovation Capability

The resources become inimitable if they develop as a result of unique historical conditions and if the link between the resource and competitive advantage is causally ambiguous and socially complex [28]. Innovation capability is further not tradable in factor markets, path dependent, and is influenced by a firm's previous experiences [29]-[30]. The key to competitive advantage lies in a firm's ability to identify and respond to environmental changes in advance of competitors. Therefore, the intellectual capital for Innovation capability in advance of motivation should lead to superior performance.

Innovation capability is defined by Kim [31] as the ability to create new and useful knowledge based on previous knowledge. The innovation capability is the comprehensive set of characteristics of an organization that facilitate and support innovation strategies. Lawson and Samson [32] extend the definition considering that an innovation capability is a higher order integration capability: they have the ability to mold and manage different key organizational capabilities and resources that successfully stimulate the innovation activities.

Knowledge creation denotes an intellectual capital to apply knowledge that has been acquired and learned, to commercial ends. It refers to the capability to exploit acquired knowledge through finding out new, improved, and refined ways of doing things that create organizational value or increase operational efficiency [30]. The knowledge creation perspective has taken similarities with what has been defined in the literature as incremental innovation; Incremental innovations refine and reinforce exiting products, services, and processes typically by exploiting the existing knowledge base of a firm [6]. Such innovations should be more prevalent in subsidiaries compared to radical innovations (major transformations of exiting products, services, processes), unless a subsidiary operates as an R&D hub or a Center of Excellence. In line with these arguments, propose the following:

Hypothesis 2: Innovation capability has a significant, positive effect on organizational performance

C. Organizational Motivation

Viewed in combination, the effects of Intellectual capital on Innovation capability and firm competitive advantage should be mediated by organizational motivation of internal and external factors. This argument is consistent with the work of Zahra and George [30] who claim that firms that focus extensively on learning from and exploring the environment can constantly renew their knowledge stock but cannot benefit from it unless they can exploit what they have learned from their environment. Similarly, in his seminal work on the role of exploration and exploitation in organizational motivation, March [33] notes that Adaptive systems that engage in exploration to the exclusion of exploitation are likely to find that they suffer the costs of experimentation without gaining many of its benefits. Therefore, the absorptive capacity theorists suggest organizational motivation should play a mediating role in the Intellectual capital and Innovation capability lead to firm competitive advantage and performance relationship.

The intellectual capital of an organization that consists of its human, social, and organizational capital is likely to mediate the effect of organizational motivation on Innovation capability. Although motivation in itself can lead to greater levels of Innovation capability, its real impact may depend on the extent to which there are individuals who are capable of exploiting the acquired knowledge, organizational norms for sharing and exchanging knowledge within the organization, and systems and structures in place for storing and withdrawing information in the organization. There are several reasons to believe that organizational motivation will be more conductive to innovation capability in organization with higher levels of intellectual capital.

The organizational motivation framework requires an assessment of the existing and collective influence factor of a firm; this study treats intellectual capital as holistic construct that takes into account all of its different aspects rather than focusing on one or two dimensions, but examines its different aspects separately since difference forms of intellectual capital may have different implications for enhancing motivation. In a similar manner, learning from external units will create opportunities to integrate local knowledge with a firm's existing knowledge stock. For example, learning from local customers, suppliers, and distributors on product and process improvement possibilities can lead to innovations in these areas; learning about market trends, changes, and shifts from industry friends can lead to coming up with new ways to respond to these shifts. Thus, argue that learning from internal and external units are both positively related to innovation capability.

Organizational motivations define as an organization's ability to recognize the value of new external information, assimilate it, and apply it to commercial ends. According to Zahra and George (2002[30], absorptive capacity is a set of organizational routines and processes, by which firms acquire, assimilate, transform, and exploit knowledge. Lane, Koka, and Pathak [29] define absorptive capacity as a firm's ability to utilize externally held knowledge through three sequential processes. the understanding that these different components result from different sets of organizational routines and practices, and its conceptualization primarily as an organizational motivation to learn from external knowledge sources and to create new knowledge based on the acquired knowledge.

Thus, propose that innovation capability should be greatest when both types of motivation are high. In other words higher intellectual capital and higher organizational motivation makes higher innovation capability. Collectively, the mediational logic is consistent with models of organizational motivation which suggest market share, reputation, incentives, competition, and low cost. These arguments lend themselves to a mediational hypothesis.

Hypothesis 3: Intellectual capital and Motivation of firm has positive and significant influence on innovation capability and lead to firm performance.

Hypothesis 3a: Organizational motivation will mediate the relationship between Intellectual capital and innovation capability lead to firm performance.

D. Organizational Characteristics

Several firm-level variables that can potentially affect the outcomes of this study were used as moderate variables. Firm size was measured as the total number of employees of the operation. Firm age was measured as the age when the firm was originally established in. Upstream competence of the firm was also controlled for. Presence of an upstream value activity was measured by combining two items which asked about the firm status and the employee involvement in the business process. Numerous organizational factors beyond intellectual capital may influence innovative capabilities. For example, large organizations may be more likely to develop innovative capabilities owing to their extensive resource bases [34]; however, smaller organizations may be more innovative owing to their flexibility [36]. Thus, we can control for any extraneous effects of organization size. Additionally, for age of organization, whether the organization has been established before. We can control for prior performance, as associated slack resources in organizations could influence their innovative capabilities [35]. We will measure status of organization by asking question that has been awarded. Lastly, nature of the organization, we will measure how employee can contribute effectively to achieving organization goals. The nature of the organizations and employee contribution are competing in environment control which is known to influence their innovative capabilities.

Hypothesis 4: Organizational characteristics will moderate the association between the intellectual capital and innovation capability and firm performance.

Hypothesis 4a: Organizational characteristics will moderate the association between the motivation and innovation capability and firm performance.

E. Organizational Performance

Bonoma & Clark [37] found what's used more commonly by the enterprise to measure the financial side included the rate of profit, sales growth rate, market share, and cash flow. Vorhies & Morgan [38] pointed out when a company is judging whether it's organizational marketing capabilities can shape its organization's competitive advantages, it can carry out measurement from three performance indicators, that the characteristics and the content of these three measuring indicators are: (a) Customer satisfaction: this indicator includes various actions that can be taken to improve customer satisfaction. For example: customer satisfaction, the delivery capability of customer values, the ability to satisfy customers, retaining valuable customers, etc. (b) Market performance: this indicator is mainly used to measure the company's ability to achieve various goals related to markets. For example: the growth of market share, the growth of sales revenue, the growing number of new customers, and the growth of sales volume to existing customers, etc. (c) Expected or existing earning power: this indicator is mainly used to measure the warning situation within the past year and forecast the earning situation in the next year. For example: earning power, rate of return, return on sales, and the ability to achieve the financial goals of a business unit, etc. therefore, the sales growth rate, profitability and market share are the most commonly used measuring indicators in business.

The intellectual capital had a significant contribution to the creation of organizational values and organizational competitive advantages. Rudez and Mihalic [39] pointed out that industry must promote the development of its intellectual capital so it can maintain its competitiveness. Therefore, an organization should develop the human capital that cannot be imitated by the competitors easily, converting the wisdom and capabilities it has accumulated into its core competencies: operating the functions of organizational capital to create distinct characters of an organization. It establishes an irreplaceable external relationship to enhance an organization's social capital, and the synergy created from the interaction among human capital, organizational capital and social capital is a key for an organization to build competitiveness. Thus, an organization's intellectual capital had a significant positive effect on organizational performance. According to the above analysis, this research can deduce the following hypotheses:

Hypothesis 5: The accumulation of intellectual capital has a significant, positive effect on organizational performance.

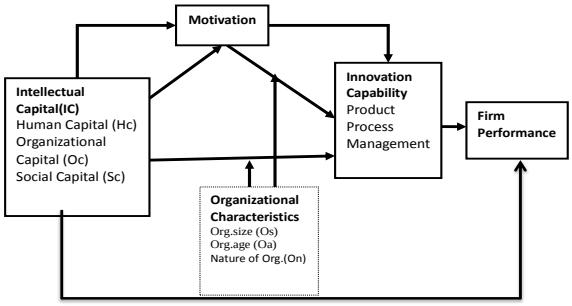

Fig. 1. Conceptual model for Intellectual capital and Innovation Capability

III. Conclusions

The intellectual capital of an organization that consists of its human, social, and organizational capital is likely to affect Innovation capability by moderate motivating factor. There are several reasons to believe that intellectual capital will be more conductive to Innovation capability in the organization with higher levels of motivation. Based on the above, organizational motivation is not a construct per se – but rather - an overarching theoretical framework for explaining and mediating firm innovation as a function of firm capabilities

related to intellectual capital. In line with this understanding, this study do not define or treat firm organizational motivation as a construct but rather, define it as a collection of motivation to Innovation capabilities related to intellectual capital and enhanced by human, social, and organizational capital.

The arguments of organizational motivation, Intellectual capital and Innovation capability, theorists suggest Organizational motivation should play a mediating role in the Intellectual capital – innovation capability and firm performance relationship. As it has been explained, even though there are existing literatures on the innovation capability, determining the organizational characteristics that predict innovation, empirical research remains scarce [40]. In this sense, this study has tried to establish the sources of innovation capability from, an Intellectual Capital- Based View. Hence, this study contributes empirically to highlight their important role within innovation capability, in spite of all of them play a relevant role on both kind of innovation because they have a positive and significant influence on innovation.

Finally, as expected, regarding the interaction of human capital, organizational capital and social capital, this research has found a significant influence on innovation capability, appearing to show that organizational motivation mediates and organizational characteristics moderates the relationships between intellectual capital and innovation capability. In this sense, this study contributes to facilitate intangible factors assessment; and shows the different explanation powers of each intellectual capital component on innovation capability.

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REFERENCES

[1] B. Choi and H. Lee, "An Empirical Investigation of KM Styles and The Effect on Corporate Performance," *Jr.Information& Management*, vol. 40, no. 5, pp. 403-41, 2003.

[2] M. A. Youndt, M. Subramaniam, and S. A. Snell, "Intellectual capital profiles: An examination of investments and returns," *Journal of Management Studies*, vol. 41, pp. 335–362, 2004.

[3] C. J. Chen and J. W. Huang, "Strategic human resource practices and innovation performance-The mediating role of knowledge management capacity," *Journal of Business Research*, vol. 62, no. 1, pp. 104-114, 2009.

[4] S. C. Kang and S. A Snell, "Intellectual capital architectures and ambidextrous learning: a framework for human resource management," *Journal of Management Studies*, vol. 46, no. 1, pp. 65-92, 2009.

[5] K. K. Reed, M. Lubatkin, and N. Srinivasan, "Proposing and Testing an Intellectual Capital-Based View of the Firm," *Journal of Management Studies*, vol. 43, pp. 867-893, 2006.

[6] M. Subramaniam and M. A. Youndt, "The Influence of Intellectual Capital on the Types of Innovative Capabilities," *Academy of Management Journal*, vol. 48, no. 3, pp. 450–463, 2005.

[7] A. Martinez-Torres, "Procedure to Design a Structural and Measurement Model of Intellectual Capital: An Exploratory Study," *Information & Management*, vol. 43, pp. 617–626, 2006.

[8] R. E. De Vries, B. Van den Hoff, and J. A. de Ridder, "Explaining knowledge sharing: the role of team communication styles, job satisfaction, and performance beliefs," *Communication Research*, vol. 33, no. 2, pp. 115-135, 2006.

[9] J. B. Barney, "Resource based theories of competitive advantage: A ten year retrospective on the resource based view," *Journal of Management*, vol. 27, pp. 643-650, 2001.

[10] R. M. Grant, "The Resource-basedtheory of competitive advantage: Implications for strategy formulation," *California Manage*. Rev., vol. 33, no. 3, pp. 114-135, 1991.

[11] D. L. Barton, "Core capabilities and core rigidities: a paradox in managing new product development," *Strategic Management Journal*, vol. 13, 1992.

[12] L. Edvinsson, *Corporate Longitude: What You Need To Know To Navigate The Knowledge Economy*, Financial Times Prentice Hall, Pearson Education, Inc., Upper, 2003.

[13] A. Thomas, Stewart, *Intellectual capital: the new wealth of organizations*, Doubleday New York, NY, USA, 1997.

[14] A. Carmeli and A. Tishler, "The relationships between intangible organizational elements and organizational performance," *Strategic Management Journal*, vol. 25, pp. 1257-1278, 2004.

[15] A. Riahi-Belkaoui, "Intellectual capital and firm performance of US multinational firms," *Journal of Intellectual Capital*, vol. 4, no. 2, pp. 215–226, 2003.

[16] S. Firer and M. Williams, "Intellectual capital and traditional measures of corporate performance," *Journal of Intellectual Capital*, vol. 4, no. 3, pp. 348-360, 2003.

[17] N. Bontis, W. C. C. Keow, and S. Richardson, "Intellectual capital and business performance in Malaysian industries," *Journal of Intellectual Capital*, vol. 1, pp. 85-100, 2000.

[18] N. Bontis, "Intellectual capital: an exploratory study that develops measures and models," *Management Decision*, vol. 36, no. 2, pp. 63-76, 1998.

[19] D. Q. Li and X. B. Wu, "Empirical study on the linkage of intellectual capital and firm performance," *International Engineering Management Conference*, 2004.

[20] W. Y. Wang and C. Chang, "Intellectual capital and performance in causal models Evidence from the information technology industry in Taiwan," *Journal of Intellectual Capital*, vol.6, no. 2, pp. 222-236, 2005.

[21] L. Kaufmann and Y. Schneider, "Intangibles: a synthesis of current research," *Journal of Intellectual Capital*, vol. 5, no. 3, pp. 366-388, 2004.

[22] I. Dierickx and K. Cool, "Asset stock accumulation and sustainability of competitive advantage," *Management Science*, vol. 35, no. 12, pp. 1504-1511, 1989.

[23] J. Nahapiet and S. Ghoshal, "Social Capital, Intellectual Capital, and the Organizational Advantage," *Academy of Management Review*, vol. 23, pp. 242-266, 1998.

[24] D. P. Lepak and S. A. Snell, "The Human Resource Architecture: Toward a Theory of Human Capital Allocation and Development," *Academy of Management Review*, vol. 24, pp. 31–48, 1999.

[25] S. A. Snell and J. W. Dean, "Integrated manufacturing and human resources management: a human capital perspective," *Academy of Management Journal*, vol. 35, 1992.

[26] R. S. Burt, "The contingent value of social capital," *Administrative Science Quarterly*, vol. 42, no. 5, pp. 339–365, 1997.

[27] J. E. Delery and D. H. Doty, "Modes of theorizing in Strategic human resource management: tests of universalistic, contingency and configurationally performance predictions," *Academy of Management Journal*, vol. 39, no. 4, pp. 802-835, 1996.

[28] J. Barney, "The resource-based model of the firm: Origins, implications, and prospects," *Journal of Management*, vol. 17, no. 1, pp. 97-98, 1991.

[29] Lane, Koka, and Pathak, "The Reification of Absorptive Capacity: A Critical Review and Rejuvenation of the Construct," *Academy of Management Review*, vol. 31, no. 4, pp. 833–863, 2006.

[30] S. A. Zahra and G. George, "Absorptive capacity: A review, reconceptualization, and extension," *Academy of Management Review*, vol. 27, no. 2, pp. 185-203, 2002.

[31] L. Kim, *Imitation to Innovation: The Dynamics of Korea's Technological Learning*, Harvard Business School Press: Boston, MA, 1997.

[32] B. Lawson and D. Samson, "Developing Innovation Capability in Organizations: A Dynamic Capabilities Approach," *International Journal of Innovation Management*, vol. 5, no. 3. pp. 377-400, 2001.

[33] J. March, "Exploration and exploitation in organizational learning," *Organization Science*, vol. 2, pp. 71–87, 1991.

[34] R. Henderson and I. Cockburn, "Measuring core competence? Evidence from the pharmaceutical industry," *Strategic Management Journal*, vol. 15, pp. 63–84, 1994.

[35] C. W. L. Hill and F. T. Rothaermel, "The performance of incumbent firms in the face of radical technological innovation," *Academy of Management Review*, vol. 28, pp. 257–274, 2003.
[36] W. M. Cohen, "Empirical studies of innovative activity, In P. Stoneham (Ed.)," *Handbook of the economics of innovation and technological change*, pp. 182–264. Oxford, England: Blackwell, 1995.
[37] T. V. Bonoma and B. C. Clark, *Marketing Performance Assessment*, Boston: Harvard Business School Press, 1988.
[38] V. W. Douglas and N. A. Morgan, "Benchmarking Marketing Capabilities for Sustainable Competitive Advantage," *Journal of Marketing*, vol. 69 (January), pp. 80–94, 2005.
[39] H. N. Rudez and T. Mihalic, "Intellectual capital in the hotel industry: A case study from Slovenia," *Hospitality Management*, vol. 26, no. 2, 188-199, 2007.
[40] A. L. Cabrales, C. Cabello-Medina, A. Carmona-Lavado, and R. Valle-Cabrera, "Managing Functional Diversity, Risk Taking and Incentives for Teams to Achieve Radical Innovations," *R&D Management*, vol. 38, pp. 35-50, 2008.

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