Pakistan Journal of Commerce and Social Sciences
2019, Vol. 13 (3), 656-679
Pak J Commer Soc Sci

The Mediating Role of Absorptive Capacity in the Relationship between Intellectual Capital and Organizational Innovation in Higher Education Institutes of Punjab, Pakistan

Shazia Kousar (Corresponding author)
The Superior College Lahore, Pakistan
Email: shazia.kousar@superior.edu.pk

Mahwish Zafar
The Superior College Lahore, Lahore Pakistan
Email: mahwish.zafar@superior.edu.pk

Syeda Azra Batool,
School of economics Bahauddin Zakariya University, Multan, Pakistan
Email: azrabatool@bzu.edu.pk

Ali Sajjad
The Superior College Lahore, Pakistan
Email: alisajjadc@gmail.com

Abstract

This study aims to investigate the mediating role of absorptive capacity (ACAP) between intellectual capital (IC) and organizational innovation in the context of Higher education institutions (HEI) of Punjab Pakistan. This study used a structured questionnaire to collect the data from employees of HEI Pakistan. This study uses a covariance-based structural equation modeling technique (CB-SEM) for data analysis through AMOSE software. This study performed CB-SEM in two steps; confirmatory factor analysis (CFA) and SEM analysis. Confirmatory factor analysis ensures the reliability and validity of the construct while SEM analysis was used to test the modeled hypothesis. The study found that IC has a significant positive relationship with ACAP and organizational innovation. ACAP has a significant and positive relationship with organizational innovation and also plays a mediating role between IC and organizational innovation. The study will help the HEIs of Pakistan to boost innovation activities more effectively in order to improve their innovations performance. This study enriches the theoretical literature of IC by using five dimensions, human, social, structural, relational and spiritual capital, of IC and by suggesting a new path for organizational innovations. Moreover, a few studies investigated a relationship between IC and organizational innovation with the mediating role of absorptive capacity; however, in HEIs Pakistan

context, no study exists. This study can be reproduced in another sector like information and communication technology and the banking sector.

Keyword: higher education institutions, social capital, spiritual capital, absorptive capacity, organizational innovation, intellectual capital.

1. Introduction

1.1 Back Ground of HEIs

Before 1980, in Pakistan, educational institutions were owned by the government sector, so there was no competition among these institutions. Their sole function was to transfer store knowledge through traditional teaching. Moreover, these universities were with limited capacity to accommodate the students. Only 25% of graduates were accommodated in HEIs while 75% of graduates were gone where nobody knows. In the early 1980s, the adversity of the situation was realized by the government and private sector was allowed to contribute to the higher education system in collaboration with the public sector. Before the 1990s, only Aga Khan and Lahore University of management sciences were recognized by the government of Pakistan and now there are 196 recognized HEIs, who are actively contributing to knowledge creation.

Therefore, intensive competition among the HEIs emerged and private institutions realized to make arrangements for the process of organizational innovation for survival and to get a distinctive place in the market. Higher education institutions started to shift their reliance from material to immaterial assets to seek new solutions for the survival and development of their business (Bannany 2012; Tseng & James, 2005). Investment in intangible assets increases the workforce productivity and enhances the probabilities for the organization to show higher efficiency in the local as well as in the global market. No doubt IC is a vital intangible asset that helps the organization to earn sustainable competitive advantage (Augier & Teece, 2005; Marr & Moustaghfir, 2005). It has been documented that 20% success of the organization is dependent on tangible while 80% is dependent on intangible assets (Roos et al., 2001); so the success of the organization greatly depends on intellectual capital. Intellectual capital management approach helps the organizational innovation (Bontis et al., 2007). In this era of complex and high-velocity business, a firm can survive and attain long term success through intensive innovations (Baker & Sinkula, 2002; Bruni & Verona, 2009; Trantopoulos, Wallin, & Woerter, 2017). Therefore, firms are increasingly seeking internal and external knowledge to expedite the process of innovation (Chesbrough & Appleyard, 2007; Hsu & Sabherwal, 2012; Nonaka & Krogh, 2009). Utilization of internal and external knowledge for innovation depends on the ACAP of the organization (Hoon et al., 2011; Lynn, 2000; Rezaei-Zadeh & Darwish, 2016). In literature ACAP is a firm's “ability to recognize the value of new information, assimilate it, and apply it to commercial ends” (Cohen & Levinthal, 1990); ACAP expands firms' competences and innovation performance. ACAP is a multidimensional concept and literature identified its four dimensions like “acquisition, assimilation, transformation, and exploitation” of knowledge (Zahra & George, 2002).

ACAP is essential for organizational innovations because it enhances the firm’s ability to recognize external knowledge and to use this knowledge for commercial ends (W. M.

Cohen & Levinthal, 1990). Similarly, Zahra and George (2002) also argued that ACAP plays a vital role in system improvements and organizational innovations. An empirical study shows that absorptive capacities enhance a firm's innovation activities (Tai & Chen, 2009) and earn a competitive advantage for the firm (Darwish et al., 2018). A Firm with well-developed ACAP possesses outstanding abilities to utilized new external knowledge in combination with existing knowledge to achieve amazing innovation performance (Engelman et al., 2017). Therefore, as ACAP increases organizational innovation will enhance (Escribano et al., 2009; Tsai, 2001). Most of the studies (Naqshbandi & Tabche, 2018) focused on the role of ACAP in organizational performance while the factors necessary for ACAP is overlooked in the literature. Thus, there is need to investigate the relationship between intangible sources (IC) of the firm and its absorptive capacity.

Different organizations have different capacity to absorb knowledge; so their capacity to innovate is also different (Jansen et al., 2005; Nieto & Quevedo, 2005; Subramaniam & Youndt, 2005). Moreover, due to having a unique resource, each firm has a specific ACAP level which is different from others. Resource-based view theory advocates that internal sources are the key driver of the innovation process. Each firm has a unique combination of tangible and intangible sources (IC) which affect ACAP of the firm and make it different from others. Intellectual capital has been conceptualized in the early 90s and different researchers define IC differently (Bontis, 1998; Salleh & Selamat, 2007; Sullivan, 1999). However, researchers are agreed that IC is associated with human factor as well as with organization systems, procedures, structures and co-workers network (Paździor & Paździor, 2012).

Most of the literature categories IC into four dimensions like human capital (HC), structural capital (STC), social capital (SOC) and relational capital (RC) (Kar & Khavandkar, 2013). Subramaniam and Youndt (2005) stated that an organization's IC depends on the interrelationship of HC, RC, and SOC and has a positive relationship with organizational innovation. However, theoretical literature also considered spiritual capital as an important component of the IC. Spiritual capital (SPC), implicit knowledge, faith and emotion that ingrained in the mind of individual and in the heart of the organization, that strongly affects organizational culture and values (Ismail, 2005). However, empirical literature did not use spiritual capital as a dimension of IC. Therefore, this study bridges the gap and used five dimensions to develop a construct of IC.

1.2 Research Gap and Contribution

Empirical literature has discussed the strategic importance of intellectual capital to maintain high level of competitiveness and its relationship with firm performance (Gustafsson et al., 2005) but the relationship of intellectual capital with organization's innovations is relatively less research area (Rehman et al., 2011; Wang & Chang, 2005). In this era of globalization, the survival of the organization depends on their ability to innovate and organization's abilities of innovation depend on organization's knowledge systems, employee's skill and abilities (Li & Yu, 2018; Santos et al., 2013).

Moreover, during the last decade, extensive efforts are made to investigate the role of IC at the individual firm level (Vale et al., 2016). However, the application of IC in a specific setting like higher education institutions is missing. Moreover, a few studies have been found that tried to investigate the relationship between IC and organization performance in HEIs context (Awan & Saeed, 2015; Paloma & Elena, 2006; Terry et al., 2013). Moreover, the consensus on the dimension and measurement indicators of IC is absent. This study aims to contribute to the understanding and measurement of IC in the specific setting of HEI Pakistan.

Furthermore, most of the studies investigated the effect of IC on firm performance in banking sector by using secondary data (Maria & Bontis, 2008; Nimtrakoon, 2015; Rehman et al., 2012) but this study aims to investigate the relationship between IC and organizational innovation in HEI by using primary data. However, a few studies used primary data and measured IC with the help of HC, SOC, and RC in the banking and pharmaceutical sector (Chahal & Bakshi, 2016). Besides these studies, no study has been found in the context of HEI Pakistan which has used primary data to measured IC with its five effective dimensions, HC, STC, RC, SOC, and SPC and investigated the relationship of IC with organizational innovation. Higher Education Institutions are responsible to produce knowledge, skill, and relationships among human beings; so it is an ideal sector to study the relationship between intellectual capital and organizational innovation. Moreover, this study examined the mediating role of ACAP between IC and organizational innovation while most of the studies use ACAP as a moderator between organizational culture and organization innovation (Escribano et al., 2009; Naqshbandi & Tabche, 2018) while some have used it as predictor for organization performance (Ali et al., 2016; Harrington & Guimaraes, 2005; Wales et al., 2013).

1.3 The Objective of the Study

Empirical literature emphasized that IC is a new and theoretically emerging concept and it provides the space to researchers to contribute in the measurement of IC (Curado & Bontis, 2007; Sharabati et al., 2010; Tseng & James, 2005; Vargas & Noruzi, 2010). Moreover, some studies investigated the impact of IC on financial performance, competitive advantage and product innovation (Ahangar, 2011; Maditinos et al., 2011; Reed et al., 2006). Some studies have investigated the mediating role of competitive advantage between IC and business performance (Kamukama et al., 2011). Prieto and Revilla (2006) identified the antecedent and consequences of individual and organizational learning capabilities. On the basis of literature, this study aims to investigate

- The impact of IC on organizational innovation in HEI Pakistan while most of the studies have been conducted in the banking sector in developed economies (Joshi, Cahill, & Sidhu, 2010).
- ACAP mediates between IC and organizational innovation.

1.3 Research Question and Implications

This study attempts to investigate one main question; does ACAP mediates between IC and ACAP and three sub-questions; first, does IC has a relationship with organizational

innovations, second; does ACAP has a relationship with organizational innovation and third; does IC has a relationship between organizational innovation. The study found a significant direct and indirect relationship of IC with organizational innovation. The results of the study have several theoretical and managerial implications; first, this study contributes in the conceptualization of IC and extends the literature by suggesting a new path to organizational innovation; so firms can achieve distinctive identity in this modern competitive business environment. Second; the companies who are desperately intended to engage them into the innovation process must be aware of their IC, human, social, relational, structural and spiritual capital, and pay full attention to promote it. Third, in order to increase IC, organizations should arrange training, workshops, and seminars which can help to improve their employee's business proficiency and social network. Fourth, following the footprint of Huawei, who earned a distinguishing profit and position in the market by establishing Huawei University for training of its employees, organization should establish training college/university where employees of different organization come together for knowledge sharing and business cooperation. The fifth, study found a significant mediating role of ACAP between IC and organizational innovation. Result suggests that organizations should develop an automated internal management system which supports acquisition, assimilation, transformation, and exploitation of knowledge in a sequential and complementary manner.

2. Empirical Literature Review

2.1 Intellectual Capital (IC)

The intellectual capital term was introduced by John Kenneth Galbraith in 1969. He proposed that IC is a degree of action that requires the exercise of the brain. Intellectual capital is basically a knowledge-based set of activities which are necessary for organization growth and development. Usually, firms possess tangible and intangible assets. Tangible assets are not firm-specific and can be easily copied while intangible assets are firm-specific; having a limited life and cannot be copied easily by other firms (Bontis et al., 2007). These intangible assets are termed in literature as intellectual capital (IC). Intellectual capital converts manufacturing economies into knowledge economies (Marr et al., 2003). Therefore, intellectual capital also plays a crucial role in the growth and development of the organization and produces a competitive advantage for the organization in this world of monopolistic competition (Saeed et al., 2013). In this era of intellectual capital, the value of an organization is determined by its intangible assets rather than tangible assets.

Empirical literature documented that human resources, their capabilities, and competencies lead the organization toward the competitive edge to earn value and wealth in this world of intellect business (Bontis, 1998; Subramaniam & Youndt, 2005). This study adapted a systematic interpretation of IC by utilizing five main dimensions named as HC, SOC, RC, STC, and SPC.

2.1.1 Human Capital

Different scholars have defined HC differently. As Schultz (1961) defined that HC means the knowledge, skill, and abilities that an individual possess and exercise. Cricelli et al. (2014) stated that competency, attitude and intellectual agility is termed as HC. Moreover, Youndt et al. (1996) suggested that creative, bright and skilled human beings

are called HC and they are able to produce new knowledge and ideas for the betterment of the organization.

2.1.2 Social Capital

Social capital means social norms, beliefs, values, relationships, friends, trusts, obligations, information flows, social norms, engagements and collective actions for mutual benefits and contributions to social and economic development (Bhandari & Yasunobu, 2009). SC is referred to as the networks of relationships among people who are living and working in a group that enables them to become more effective (Nahapiet & Ghoshal, 1998). Initially, the concept of SC was famous in community studies and it was used to explain the relationship of a person with the other person in the community (Chang et al., 2006).

2.1.3 Structural capital

Tangible and intangible assets of the organization are called structural capitals. Intangible elements are firm-specific like firm's system, procedures, and strategic plans while tangible elements include financial assets that are valued on the company's balance sheet (Seetharaman et al., 2004). Structural capital is also called strategic asset, and it includes the non-human assets such as procedure, routine, systems, databases and information systems (Bontis et al., 2000). It also called a glue and skeleton of an organization because it provides outfits and architecture for packaging, retaining and moving knowledge along with value change (Maria do Rosário Cabrita & Vaz, 2008).

2.1.4 Relational capital

Relational capital is basically a knowledge embedded in association with suppliers, customers, industry, or another stakeholder that affect the organization life (Maria & Bontis, 2008).

2.1.5 Spiritual capital

Spiritual capital defined as "the fund of beliefs, commitments, and values that transferred from one generation to others" (Verter, 2003). According to Adam Smith, we are moral beings but, we are also spiritual beings. Human beings are connected with each other in the association with prayers and worship. Moreover, spiritual discipline, exercises, and habit increase individual as well as organization abilities (Roosevelt Malloch, 2010).

- **H_1:** There is Relationship between Intellectual Capital and Organizational Innovation

In this era of monopolistic competition, each firm should possess the capabilities of innovation to exist and to flourish. There are two main types of innovation; product innovation and process innovation; product innovation means a new and differentiated product that a firm offers to the customer to increase their satisfaction while process innovation leads toward the changes in the ways and processes that are used to produce and deliver that product. The HEIs are heavily dependent on process innovation to survive and to reduce the probability of elimination from the market. Tsai (2001) described that process innovation means, modification in the current operational

system, and the introduction of a new system and new managerial regulations which causes to reduce production and produce more output for a firm.

Abualoush, Masa'deh, Bataineh, and Alrowwad (2018) studied the relationship between IC and organizational innovation. The study found that intellectual capital significantly enhanced performance and create the ability of market competitiveness. Moreover, Yu, Wang, and Chang (2015) stated that human capital directly affects process innovation and indirectly affect product innovation. Moreover, the study found that organizational innovation fully mediates between IC and competitive advantage. Maurer, Bartsch, and Ebers (2011) found social capital and structural capital is more effective to perform regular operations (execution-oriented task) whereas, relational capital play vital role in innovation-oriented tasks (products and services innovation). Furthermore, social capital is stock of a company which contains human relations, sense of community, trust and personal networks that contributes to knowledge sharing, innovation, creativity, and high productivity (Cohen & Prusak, 2001). Similarly, Roosevelt (2010) determined that spiritual capital is the stock of beliefs and is transmitted from generation to generation by religious traditions.

- **H_2:** There is a Relationship between IC and ACAP

In macroeconomics, ACAP indicates the capacity of the economy to exploit the knowledge and absorb to produce ultimate ends (Soo et al., 2017) while Zahra and George (2002) employed this concept in organizational context and defined that ACAP is the ability of organization to "recognize the value of new information, to integrate it, and apply it to commercial ends" (Kostopoulos, Papalexandris, Papachroni, & Ioannou, 2011). The study utilized this definition of ACAP in strategy and innovation scenario to propose a theoretical model. After recognition of this theoretical definition, literature declared ACAP as a multidimensional construct (Todorova & Durisin, 2007), having four dimensions like acquisition (AQ), assimilation (ASSI), transformation (TRANS), and exploitation (EXP) (Zahra & George, 2002). Acquisition of knowledge is the ability of a firm to identify and acquire the external knowledge while assimilation is the capacity of the firm to understand and analyze that information. In the next step, the firm utilized and transforms the knowledge to reach a new combination of the system; it is called transferability. In the final step; firm applies the knowledge to refine and expand the existing operational procedures (Cohen & Levinthal, 1990). Ultimately ACAP influences the organization performance regarding product and process innovation.

The empirical literature has been divided into two main streams regarding the factors that are important to increase the ACAP of the firm (Escribano et al., 2009). One of them advocated that external knowledge is responsible to increase ACAP (Flatten et al., 2011); while others are convinced that internal sources of the organization are more important for ACAP (Lane et al., 2006). Internal factors can be tangible and intangible sources of the organization. Initially, empirical literature suggested that tangible asset like research and development increases ACAP (Escribano et al., 2005; Mancusi, 2008) but nowadays it has been assumed that R&D is least likely to influence the ACAP of organizations (Jones & Craven, 2001). Therefore, the focus of the researchers has been shifted from this traditional indicator to human resources involved in the process and operations (Lund Vinding, 2006). This study is an attempt to investigate the effect of IC on absorptive capacity.

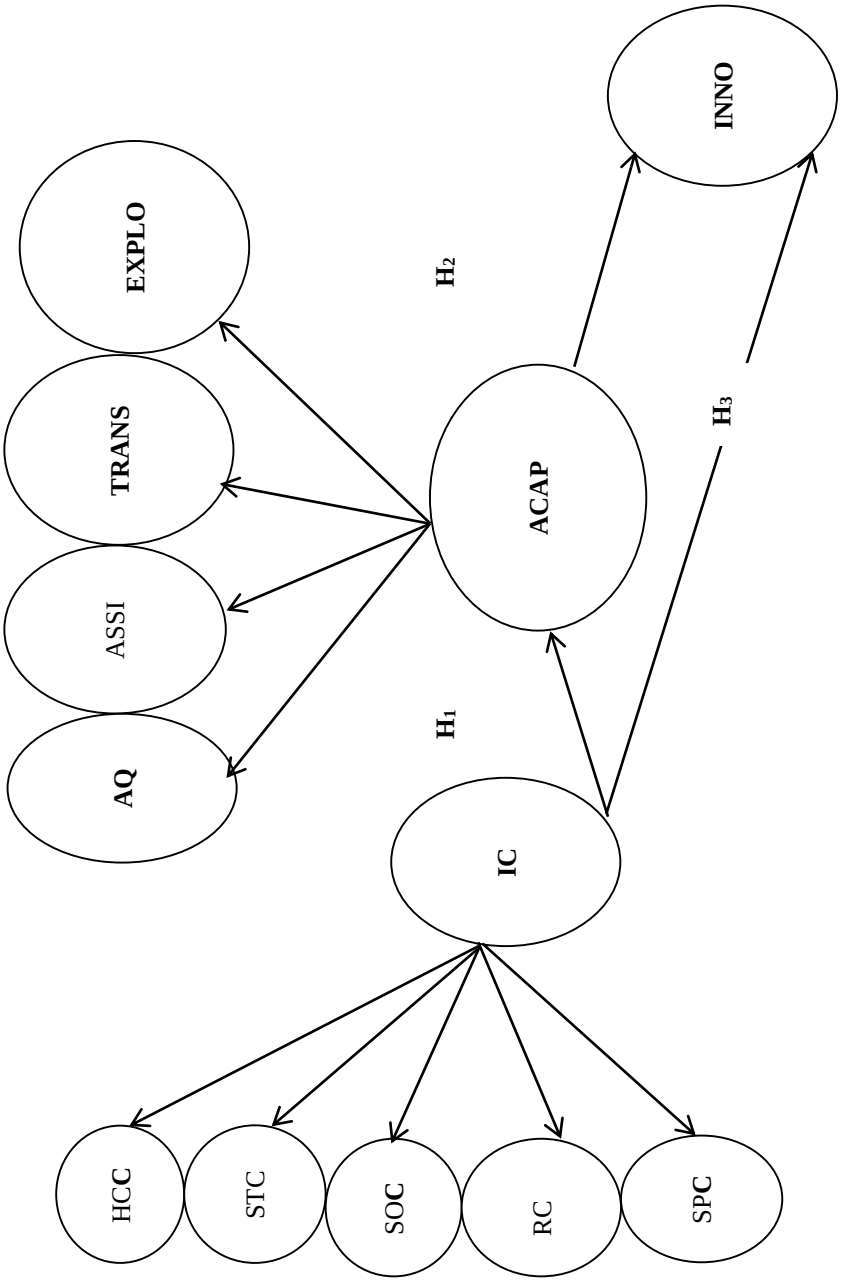
Most of the literature is dedicated to identifying the determinant of ACAP like organizational structure, communication and ability to combine knowledge (Cohen & Levinthal, 1990) but literature did not investigate that how ACAP receives the impact from IC and transmit it to the organizational innovation. This study also focuses on the mediating role of ACAP between IC and organizational innovation in HEI context.

- **H_3:** There is a Relationship between ACAP and Organizational innovation

Absorptive capacity is a strategic capability of the firm which enables it to uses different external sources of knowledge for innovation. Moreover, it is evident that an organization with the aims to enhance organizational innovation should possess sufficient absorptive capacity (Murovec & Prodan, 2008). The asymmetric ACAP of organizations affects the speed, frequency, and magnitude of innovation. Although several studies (Cohen & Levinthal, 1990; Knudsen & Roman, 2004; Vinding, 2006; Mancusi, 2008; Schmidt, 2005) examined the influence of the ACAP on firm's performance but a few have investigated the influence of the ACAP on organizational innovation (Arundel & Kabla, 1998; Gopalakrishnan & Damanpour, 1997; Utterback & Abernathy, 1975).

Moreover, despite this fact that process innovation creates long term competitive advantage (Birkinshaw et al., 2008); literature ignored to investigate that how to process innovations are created and sustained (Birkinshaw et al., 2008). Though organizational innovations are considered key determinant of firm's productivity and economic growth (Griffith et al., 2006) but the capacity of organizations to innovate vary and depends on the firm's capacity to absorb knowledge. The ACAP of the firms depends on its unique resources that are firm-specific and not transferable (Nieto & Quevedo, 2005). Several studies examined the relationship between the ACAP of the organization and product innovation (Escribano et al., 2009; Tsai, 2001) while some studies investigated the relationship between intellectual capital and ACAP (Hsu & Buckley, 2009). However, this study examined the mediating role of ACAP between intellectual capital and organizational innovation.

3. Theoretical Framework and Underpinning Theory behind Conceptual Model



The conceptual framework indicates that IC is a second-order construct which has five dimensions like human, structural, social, relational and spiritual capital and ACAP is

also a second-order construct which has four dimensions like acquisition, assimilation, transformation, and exploitation. The conceptual framework of this study deduced from the knowledge-based view. Therefore, this study develops four hypotheses based on the conceptual framework.

- **H_1:** There is a relationship between IC and absorptive capacity
- **H_2:** There is a relationship between ACAP and organizational innovation
- **H_3:** There is a relationship between IC and organizational innovation
- **H_4:** ACAP mediates between IC and organizational innovation

3.1 The Knowledge-Based View (KBV)

This study used the lens of KBV to develop the theoretical framework. KBV is the extension of the theory of the resource-based view (Acedo, Barroso, & Galan, 2006; Curado, 2006). RBV theory got popularity in management and international literature during the 1980s. Kor and Mahoney (2004) stated that Penrose (1959) was the first who conceptualized that a firm can earn competitive advantage if it has a valuable, rare, non-substitutable set of tangible and non-tangible resources (Burvill, Jones, & Rowlands, 2018). Wernerfelt (1984) extended the Penrose idea by introducing knowledge as a resource and argued that the firm knowledge resources are more important than the firm's product to survive in the market. In the 90s, Barney suggested that knowledge resources are equally important as the other sources of the firm; he argued that the ability of the organization to absorb and apply the knowledge is more important for strategic and competitive advantage. Moreover, he explained that resources which are heterogeneous in nature and are firm-specific enable the firm to convert the short-run competitive advantage into a long run and sustainable advantages (Barney, 2001).

Furthermore, Foss and Eriksen (1995) distinguished resources from capabilities and argued that resources are always tradable and often tied to the individual while capabilities are non-tradable and do not necessarily tied with the individuals. Therefore, KBV advocates that the contribution of human capital along with structural and operational capital is important in the organization learning process. A firm can achieve sustainable competitive advantage if it possesses heterogeneous knowledge and structures across the management hierarchies of a firm because knowledge-based resources are firm-specific and characterized by difficulties of transmission, imitation, and social complexities.

4. Methodology

Constructivism, Positivism, and Pragmatism are three acceptable research paradigms which provides guidance about philosophical assumption and appropriate selection of tools, instrument, participant, and methods to conduct the study (Cole & Denzine, 2002). The objective of my study is to propose and test a model on the mediating mechanism between IC and organizational innovation in HEI Lahore Pakistan. Thus under the umbrella of the positivist paradigm, quantitative approach is appropriate to fulfill the objective of this study. This study used a structured questionnaire to collect the data from a selected sample of HEIs in Lahore city.

4.1 Description of Sample

Sampling is a strategy in research that helps to choose the sample from the population for investigation. Generally, probability sampling and non-probability sampling techniques are used to select a sample. When the total population is known, probability sampling is appropriate while in case of unknown population, non-probability sampling is more appropriate. This study utilized stratified random probability sampling to select the sample from the known population. There is a total of 38 universities in Punjab which is a most populated province of Pakistan. Out of 38, 21 are public universities and 17 are private universities. Among 38 universities of Punjab, 25 are located in Lahore while 13 are located in other cities of Punjab. Among 25universities of Lahore, 11 are public and 14 are private universities. This study divides the total population into two strata; public and private universities and selected respondent from each stratum randomly. The study has collected the data from teachers and program manager of public and private universities who have at least 2-year experience in their present institution. The criteria of two years minimum experience with the present institution ensure that respondent has a clear understanding of organizational culture, structure, systems, and processes. Before data collection, it is necessary for the researcher to determine the minimum sample size for two reasons; first to achieve sufficient statistical power and second is to increase the probability to generalize the results. Hair et al., 1998 stated that the sample size has a direct effect on the power of statistical analysis and the generalizability of results. Moreover, an appropriate sample size is necessary to get reliable results in SEM. However, in literature, there is no consensus about appropriate sample size for SEM (Hoyle & Kenny, 1999; Li & Yu, 2018). In order to maintain the above-mentioned criteria, this study mailed a structured questionnaire to 620 respondent and 610 have been returned back.

4.2 Instrument

This study used IC and ACAP as a multidimensional constructs; intellectual capital has five dimensions; human, social, structural, relational and religious capital while ACAP has four dimensions named as acquisition, assimilation, transformation, and exploitation. Human capital has five elements which are related to the skill, expertise and creative abilities of the employees. Structural capital consists of five elements that are related to patents, database, communication and exchange of knowledge. Similarly social capital consists of five elements which are related to how employees of the firm share their knowledge, ideas and information within their network, suppliers, alliances, and partners. The relational capital consists of nine elements which are related to the sale, quality, customer satisfaction, and brand recognition. The items included in the measurement scale of human, social, structural and relational capital is adopted from Carmeli and Tishler (2004), Subramaniam and Youndt (2005), and Engelman et al. (2017). Similarly, five questions that are used to depict the attributes of spiritual capital are adapted from Khalique et al. (2015).

This study adapted the measure of ACAP based on four dimensions; acquisition, assimilation, exploitation, and transformation from Flatten et al. (2011). The elements of the acquisition have explained the extent to which firm is using external sources while elements of assimilation are related to the communication flow of ideas and

information among different departments. Similarly, transformation and exploitation are related to knowledge processing and commercial use of new knowledge.

Moreover, this study used organizational innovation constitutes three elements regarding the new method, new regulation, and new administrative practices from Fagerberg, Mowery, and Nelson (2005). A five-point Likert scale (5 = strongly agree, 1 = strongly disagree) was used to measure the employed items of IC, ACAP, and organizational innovation.

4.3 Results and Interpretations

In this study, 47.4% respondents are male while 52.6% are female and 34% of respondents have aged up to 25 years and 64.5% belong to 26-45 years category while 1.5% is above 45 years. Majority of the respondents were having Master degree qualification with a percentage of 72%. 34.8% of respondents have less than one year experience while 56.5% have less than 5 years' experience. Similarly, 8.8% have more than 5-year experience. 70.4% of respondents are working on contract while 14.6% were permanent faculty members. 15.1 are visiting faculty members.

4.4 Assessment of Measurement Model

4.4.1 Confirmatory Factor Analysis

The study employed CFA to ensure reliability and validity of constructs and CB-SEM to test the hypothesized relationship between IC and organizational innovation and mediating role of ACAP between IC and organizational innovation.

This study used chi-square per degree of freedom ratio (x^2/df), incremental fit index (IFI), goodness of fit indices (GFI), adjusted goodness of fit indices (AGFI), comparative fit index (CFI), root mean square error of approximation (RMSEA) and PCLOSE to assess goodness of fit for CFA and SEM. The results have been reported in table 1. Results demonstrate that all goodness of fit indices of CFA and SEM meet the threshold criteria. Moreover, the standardized regression weights are used to depict the factor loading toward the latent variable. In this study, IC and ACAP are second-order constructs while organizational innovation is the first-order construct. The factor loading for first and second-order construct has been reported in table 2.

Results indicate all indicators meet the minimum recommended value (.40) of factor loading (Hair et al., 2014; Newkirk & Lederer, 2006).

Table 1: Model Fit Summary OF CFA and SEM

Measures with Threshold values	Model Fit Indices for CFA	Model Fit Indices for SEM
CMIN/df < 5 is permissible	3.568	2.24
GFI > .95 great; > .90 traditional; > .80 permissible	.894	.823
AGFI> .80	.848	.810
CFI > .90	.939	.846
RMSEA < .05 good; .05-.10 moderate	.047	.074
PCLOSE > .05	.06	.072

Table 2: Factor Loadings

Latent variable	Dimensions	Indicators	First-order loadings	Second-order loadings
Intellectual Capital	RC	RC1	.67	.75
		RC2	.82	
		RC3	.81	
		RC4	.74	
		RC5	.81	
		RC6	.79	
		RC7	.72	
		RC8	.80	
	SPC	SPC1	.40	.62
		SPC2	.48	
		SPC3	.86	
		SPC4	.95	
		SPC5	.92	
	STC	ST1	.59	.81
		ST2	.62	
		ST3	.80	
		ST4	.84	
		ST5	.86	
	SOC	SC1	.64	.92
		SC2	.73	

		SC3	.83	
		SC4	.73	
		SC5	.64	
	HC	HC1	.72	.74
		HC2	.86	
		HC3	.90	
		HC4	.81	
		HC5	.55	
Absorptive Capacity	AQ	A1	.75	.83
		A2	.84	
		A3	.76	
	EXP	AT1	.89	.72
		AT2	.96	
	TRANS	T1	.68	.89
		T2	.61	
	ASSI	AS1	..68	.73
		AS2	.76	
		AS3	.69	
Organizational Innovation	INOV	I1	.61	
		I2	.77	
		I3	.75	

4.4.2 Reliability, and Validity Analysis

This study utilized three latent variables, intellectual capital, absorptive capacity, and organizational innovation; thus study needs to address the problems of reliability and validity of the construct. Reliability of the construct ensures that construct will produce consistent results when it will be used in a different context while validity ensures that construct is measuring for what it has been devised to measure. This study used composite reliability (CR), average variance explained (AVE), maximum shared variance (MSV) and correlations to ensure reliability, convergent and discriminant validity. The results of reliability and validity are reported in table 3. The results indicate that the value of CR for all three constructs is above .7 which ensures that constructs are highly reliable. Similarly, all values of AVE are greater than .50 which ensures that constructs possess the convergent validity and all values of AVE are greater than MSV for three constructs, which indicates that constructs have discriminant validity (Choi et al., 2005). Similarly, high correlation values at diagonals also reflect that constructs own the discriminant validity.

Table 3: Reliability, Convergent and Discriminant Validity

	CR	AVE	MSV	INVO	IC	ABSOR
INVO	0.758	0.513	0.384	0.716		
IC	0.875	0.588	0.384	0.620	0.767	
ABSOR	0.825	0.677	0.284	0.533	0.499	0.822

4.5 Assessment of Structural Model

This study estimated CB-SEM by using the maximum likelihood method to test the modeled hypothesis and results is reported in table 4 and 5. Results indicate that IC has a significant and positive impact on absorptive capacity. It means that if the IC increases, the ACAP of the organization also increases. Moreover, results indicate that 1 unit change in IC will bring .50 unit increases in the ACAP of the organization. Similarly, 1 unit increase in ACAP causes .30 unit increases in organizational innovations. Moreover, the direct effect of IC on organizational innovation also positive and significant (β=.47 p=.000).

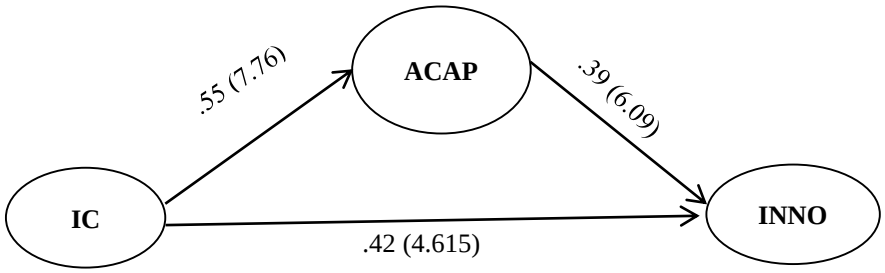


Figure 1: SEM Model

Table 4: Structural Equation Model 1 (Direct Hypothesis)

Path	Estimate	S.E.	C.R.	P	Hypothesis	Decision
IC → ABSORB	.55	.071	7.76	0.000	H_1	Accepted
ABSORB→ INOV	.39	.064	6.09	0.000	H_2	Accepted
IC → INOV	.42	.091	4.615	0.000	H_3	Accepted

4.6 Mediation Analysis

This study used ACAP as a mediator which help to understand, how IC affects the organizational innovations. Mediation analysis provides a deep understanding of the mechanism that how IC indirectly affect organizational innovations. The result of the indirect hypothesis (mediation) indicates that ACAP significantly mediates between IC and organizational innovation (β = .231 ρ = .000).

Table 5: Structural Equation Model (Indirect Hypothesis)

Path	Indirect effect	P-value	Hypothesis	Decision
IC → ABSORB→ INOV	.231	0.000	H_4	Accepted

5. Discussion and Conclusion

This study will enhance intellectual capital literature in two ways; first, this study utilized five dimensions of IC and its implementation in the context of Pakistan higher education sector. Secondly, this study investigated a mediating model for the relationship between IC and organizational innovation. In this era of monopolistic competition, organizational innovations play a vital role to increase the financial performance of HEIs Pakistan.

The results of the study indicated that IC affect significantly and positively to organizational innovation ($\beta = .696$ $\rho = .000$). The results of the study are consistent with various scholars like Han and Li (2015), (Telbani, 2013), Santos et al. (2013) and Verde, Martín and Emilio (2011) who have suggested that IC has a positive and significant association with organizational innovation. Results of the study suggest that innovation-oriented organizational should take necessary steps to promote intellectual capital which is necessary for new knowledge and radical innovation (Delgado et al., 2014).

Moreover, this study found that IC significantly and positively affect the absorption capacity of the organization ($\beta = .596$, $\rho = .000$). Results are consistent with (Mariano & Walter, 2015; Martín, 2015), who documented that IC enhances the organization ability to utilize the existing knowledge of the organization to develop new ideas and concepts. Moreover, IC helps the organization to link existing knowledge with new insights. The study also found that the ACAP of the organization also has a significant relationship with organizational innovation ($\beta = .388$, $\rho = .000$). Results indicate that as the ACAP of the organization increases, it will cause to increase strategic competencies of the organization for innovation and lead the company toward sustainable competitive advantage in the future. Moreover, ACAP promotes an innovation-oriented organization culture and company encourages employees to take initiative and behave innovatively to survive in this era of competition. Results are consistent with Kostopoulos et al. (2011). Furthermore, this study has also enhanced the literature by introducing a mediating mechanism between IC and organizational innovation in HEIs Pakistan. Study found that ACAP significantly mediates between IC and organization ($\beta = .231$, $\rho = .000$).

Consequently, IC has a positive and significant relationship with ACAP and organizational innovations. Moreover, ACAP significantly affects organizational innovations and mediates between IC and absorptive capacity. The study concludes that IC is important for creating and sharing knowledge atmosphere which leads the traditional organization toward innovative organizations.

6. Limitations and Future Research Direction

This study has some limitations; first, this study has investigated the impact of IC on organizational innovation, it did not highlight how different dimensions of IC affect organizational innovation. The different dimensions of IC could have a different effect on organizational innovations. Second, this study utilized organizational innovation as a uni-dimensional construct; further studies can utilize three dimensions of organization innovations like product, process and management innovation. Third, this study has been conducted in the education sector, another sector of the economy where radical changes are necessary like telecommunication sector should be considered for further research.

REFERENCES

Abualoush, S., Masa'deh, R. e., Bataineh, K., & Alrowwad, A. (2018). The role of knowledge management process and intellectual capital as intermediary variables between knowledge management infrastructure and organization performance. *Interdisciplinary Journal of Information, Knowledge, and Management, 13*, 279-309.

Acedo, F. J., Barroso, C., & Galan, J. L. (2006). The resource-based theory: dissemination and main trends. *Strategic Management Journal, 27*(7), 621-636.

Ahangar, R. G. (2011). The relationship between intellectual capital and financial performance: An empirical investigation in an Iranian company. *African Journal of Business Management, 5*(1), 88-95.

Ali, M., Kan, K. A. S., & Sarstedt, M. (2016). Direct and configurational paths of absorptive capacity and organizational innovation to successful organizational performance. *Journal of Business Research, 69*(11), 5317-5323.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411.

Arundel, A., & Kabla, I. (1998). What percentage of innovations are patented? Empirical estimates for European firms. *Research Policy, 27*(2), 127-141.

Augier, M. and Teece, D.J. (2005). An economics perspective on intellectual capital in MARR, B. (ed) *Perspectives on Intellectual Capital*. USA: Elsevier Inc.

Awan, A. G., & Saeed, K. (2015). Relationship between Intellectual Capital and Organizational Performance: A case Study of Public Sector Universities in Southern Punjab-Pakistan. *Journal of Resources Development and Management, 9(1)*, 35-46.

Baker, W. E., & Sinkula, J. M. (2002). Market orientation, learning orientation and product innovation: delving into the organization's black box. *Journal of Market-Focused Management, 5*(1), 5-23.

Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management, 27*(6), 643-650.

Bentler, P. M., & Chou, C.-P. (1987). Practical issues in structural modeling. *Sociological Methods & Research, 16*(1), 78-117.

Bhandari, H., & Yasunobu, K. (2009). What is social capital? A comprehensive review of the concept. *Asian Journal of Social Science, 37*(3), 480-510.

Birkinshaw, J., Hamel, G., & Mol, M. J. (2008). Management innovation. *Academy of Management Review, 33*(4), 825-845.

Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. *Management Decision, 36*(2), 63-76.

Bontis, N., Bart, C. K., Ramírez, Y., Lorduy, C., & Rojas, J. A. (2007). Intellectual capital management in Spanish universities. *Journal of Intellectual Capital, 8*, 732-48.

Bontis, N., Bart, C., Wakefield, P., & Kristandl, G. (2007). Constructing a definition for intangibles using the resource based view of the firm. *Management Decision, 45*(9), 1510-1524.

Bontis, N., Chua Chong Keow, W., & Richardson, S. (2000). Intellectual capital and business performance in Malaysian industries. *Journal of Intellectual Capital, 1*(1), 85-100.

Bruni, D. S., & Verona, G. (2009). Dynamic marketing capabilities in Science-based firms: An exploratory investigation of the pharmaceutical industry. *British Journal of Management, 20*, S101-S117.

Burvill, S. M., Jones-Evans, D., & Rowlands, H. (2018). Reconceptualising the principles of Penrose's (1959) theory and the resource based view of the firm: The generation of a new conceptual framework. *Journal of Small Business and Enterprise Development, 25*(6), 930-959.

Cabrita, M. d. R., & Bontis, N. (2008). Intellectual capital and business performance in the Portuguese banking industry. *International Journal of Technology Management, 43*(1-3), 212-237.

Cabrita, M. d. R., & Vaz, J. L. d. (2008). Creating value from intellectual capital: an approach based on the specification of models. *Portuguese Journal of Management Studies, 13*(2), 221-236.

Carmeli, A., & Tishler, A. (2004). The relationships between intangible organizational elements and organizational performance. *Strategic Management Journal, 25*(13), 1257-1278.

Chahal, H., & Bakshi, P. (2016). Measurement of intellectual capital in the Indian banking sector. *Vikalpa, 41*(1), 61-73.

Chang, S.-C., Chiang, C.-Y., Chu, C.-Y., & Wang, Y.-B. (2006). The study of social capital, organizational learning, innovativeness, intellectual capital, and performance. *The Journal of Human Resource and Adult Learning, 2006*(November), 64-71.

Charter, R. A. (1999). Sample size requirements for precise estimates of reliability, generalizability, and validity coefficients. *Journal of Clinical and Experimental Neuropsychology, 21*(4), 559-566.

Chesbrough, H. W., & Appleyard, M. M. (2007). Open innovation and strategy. *California Management Review, 50*(1), 57-76.

Choi, J., Tran, T., El-Keib, A., Thomas, R., Oh, H., & Billinton, R. (2005). A method for transmission system expansion planning considering probabilistic reliability criteria. *IEEE Transactions on Power Systems, 20*(3), 1606-1615.

Cohen, D., Prusak, L. (2001). In Good Company: How Social Capital Makes Organizations Work. Harvard Business School Press, Cambridge, MA

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly, 35*(1), 128-152.

Cole, J. S., & Denzine, G. M. (2002). Comparing the academic engagement of American Indian and white college students. *Journal of American Indian Education, 41*(1), 19-34.

Cricelli, L., Greco, M., & Grimaldi, M. (2014). An overall index of intellectual capital. *Management Research Review, 37*(10), 880-901.

Curado, C. (2006). The knowledge based-view of the firm: from theoretical origins to future implications. Department of Management Working paper Series ISSNº 0874-8470

Curado, C., & Bontis, N. (2007). Managing intellectual capital: the MIC matrix, working paper Series ISSNº 0874-8470.

Darwish, T. K., Zeng, J., Rezaei Zadeh, M., & Haak-Saheem, W. (2018). Organizational Learning of Absorptive Capacity and Innovation: Does Leadership Matter? *European Management Review, 2018*, 1-18.

Delgado-Verde, M., Martin de Castro, G., Navas-López, J. E., & Amores-Salvadó, J. (2014). Vertical relationships, complementarity and product innovation: an intellectual capital-based view. *Knowledge Management Research & Practice, 12*(2), 226-235.

Delgado-Verde, M., Martín-de Castro, G., & Emilio Navas-López, J. (2011). Organizational knowledge assets and innovation capability: evidence from Spanish manufacturing firms. *Journal of Intellectual Capital, 12*(1), 5-19.

El Telbani, N. (2013). The Relationship between intellectual capital and innovation in Jawwal Company-Gaza. *Jordan Journal of Business Administration, 9*(3), 619-650.

El-Bannany, M. (2012). Global financial crisis and the intellectual capital performance of UAE banks. *Journal of Human Resource Costing & Accounting, 16*(1), 20-36.

Engelman, R. M., Fracasso, E. M., Schmidt, S., & Zen, A. C. (2017). Intellectual capital, absorptive capacity and product innovation. *Management Decision, 55*(3), 474-490.

Escribano, A., Fosfuri, A., & Tribo, J. (2005). *Managing knowledge spillovers: The impact of absorptive capacity on innovation performance.* Paper presented at the 32e Conférence de l'Association européenne de la recherche sur l'industrie et l'économie.

Escribano, A., Fosfuri, A., & Tribó, J. A. (2009). Managing external knowledge flows: The moderating role of absorptive capacity. *Research Policy, 38*(1), 96-105.

Fagerberg, J., Mowery, D. C., & Nelson, R. R. (2005). *The Oxford handbook of innovation*: Oxford University Press.

Flatten, T. C., Engelen, A., Zahra, S. A., & Brettel, M. (2011). A measure of absorptive capacity: Scale development and validation. *European Management Journal, 29*(2), 98-116.

Foss, N. J., & Eriksen, B. (1995). Competitive advantage and industry capabilities *Resource-based and evolutionary theories of the firm: Towards a synthesis* (pp. 43-69): Springer.

Gopalakrishnan, S., & Damanpour, F. (1997). A review of innovation research in economics, sociology and technology management. *Omega, 25*(1), 15-28.

Griffith, R., Huergo, E., Mairesse, J., & Peters, B. (2006). Innovation and productivity across four European countries. *Oxford Review of Economic Policy, 22*(4), 483-498.

Gustafsson, A., Johnson, M. D., & Roos, I. (2005). The effects of customer satisfaction, relationship commitment dimensions, and triggers on customer retention. *Journal of Marketing, 69*(4), 210-218.

Hair, J. F., Gabriel, M., & Patel, V. (2014). AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. *Brazilian Journal of Marketing, 13*(2), 44-55.

Han, Y., & Li, D. (2015). Effects of intellectual capital on innovative performance: The role of knowledge-based dynamic capability. *Management Decision, 53*(1), 40-56.

Harrington, S. J., & Guimaraes, T. (2005). Corporate culture, absorptive capacity and IT success. *Information and Organization, 15*(1), 39-63.

Hoogland, J. J., & Boomsma, A. (1998). Robustness studies in covariance structure modeling: An overview and a meta-analysis. *Sociological Methods & Research, 26*(3), 329-367.

Hoon Song, J., Jeung, C.-W., & Hyoung Cho, S. (2011). The impact of the learning organization environment on the organizational learning process in the Korean business context. *The Learning Organization, 18*(6), 468-485.

Hoyle, R. H., & Kenny, D. A. (1999). Sample size, reliability, and tests of statistical mediation. *Statistical Strategies for Small Sample Research, 1*, 195-222.

Hsu, I. C., & Sabherwal, R. (2012). Relationship between intellectual capital and knowledge management: an empirical investigation. *Decision Sciences, 43*(3), 489-524.

Hsu, S.-F., & Buckley, D. H. (2009). Evidence for the functional significance of diazotroph community structure in soil. *The ISME Journal, 3*(1), 124-136.

Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2005). Managing potential and realized absorptive capacity: how do organizational antecedents matter? *Academy of Management journal, 48*(6), 999-1015.

Jones, O., & Craven, M. (2001). Expanding capabilities in a mature manufacturing firm: absorptive capacity and the TCS. *International Small Business Journal, 19*(3), 39-55.

Joshi, M., Cahill, D., & Sidhu, J. (2010). Intellectual capital performance in the banking sector: An assessment of Australian owned banks. *Journal of Human Resource Costing & Accounting, 14*(2), 151-170.

Kamukama, N., Ahiauzu, A., & Ntayi, J. M. (2011). Competitive advantage: mediator of intellectual capital and performance. *Journal of Intellectual Capital, 12*(1), 152-164.

Kar, J. K., & Khavandkar, E. (2013). *Intellectual Capital: Management, Development and Measurement Models*: MSRT Press.

Khalique, M., Bontis, N., Abdul Nassir bin Shaari, J., & Hassan Md. Isa, A. (2015). Intellectual capital in small and medium enterprises in Pakistan. *Journal of Intellectual Capital, 16*(1), 224-238.

Knudsen, H. K., & Roman, P. M. (2004). Modeling the use of innovations in private treatment organizations: The role of absorptive capacity. *Journal of Substance Abuse Treatment, 26*(1), 51-59.

Kor, Y. Y., & Mahoney, J. T. (2004). Edith Penrose's (1959) contributions to the resource-based view of strategic management. *Journal of Management Studies, 41*(1), 183-191.

Kostopoulos, K., Papalexandris, A., Papachroni, M., & Ioannou, G. (2011). Absorptive capacity, innovation, and financial performance. *Journal of Business Research, 64*(12), 1335-1343.

Lane, P. J., Koka, B. R., & Pathak, S. (2006). The reification of absorptive capacity: A critical review and rejuvenation of the construct. *Academy of Management Review, 31*(4), 833-863.

Li, J., & Yu, D. (2018). The Path to Innovation: The Antecedent Perspective of Intellectual Capital and Organizational Character. *Frontiers in Psychology, 9*, 24-45.

Lund Vinding, A. (2006). Absorptive capacity and innovative performance: A human capital approach. *Economics of Innovation and New Technology, 15*(4-5), 507-517.

Lynn, B. E. (2000). Intellectual capital. *Ivey Business Journal, 64*(3), 48-52.

Maditinos, D., Chatzoudes, D., Tsairidis, C., & Theriou, G. (2011). The impact of intellectual capital on firms' market value and financial performance. *Journal of Intellectual Capital, 12*(1), 132-151.

Mancusi, M. L. (2008). International spillovers and absorptive capacity: A cross-country cross-sector analysis based on patents and citations. *Journal of International Economics, 76*(2), 155-165.

Mariano, S., & Walter, C. (2015). The construct of absorptive capacity in knowledge management and intellectual capital research: content and text analyses. *Journal of Knowledge Management, 19*(2), 372-400.

Marr, B., & Moustaghfir, K. (2005). Defining intellectual capital: a three-dimensional approach. *Management Decision, 43*(9), 1114-1128.

Marr, B., Gray, D., & Neely, A. (2003). Why do firms measure their intellectual capital? *Journal of Intellectual Capital, 4*(4), 441-464.

Martín-de Castro, G. (2015). Knowledge management and innovation in knowledge-based and high-tech industrial markets: The role of openness and absorptive capacity. *Industrial Marketing Management, 47*, 143-146.

Maurer, I., Bartsch, V., & Ebers, M. (2011). The value of intra-organizational social capital: How it fosters knowledge transfer, innovation performance, and growth. *Organization Studies, 32*(2), 157-185.

Murovec, N., & Prodan, I. (2008). The influence of organizational absorptive capacity on product and process innovation. *Organizacija, 41*(2), 43-49.

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

Naqshbandi, M. M., & Tabche, I. (2018). The interplay of leadership, absorptive capacity, and organizational learning culture in open innovation: Testing a moderated mediation model. *Technological Forecasting and Social Change, 133*, 156-167.

Newkirk, H. E., & Lederer, A. L. (2006). Incremental and comprehensive strategic information systems planning in an uncertain environment. *IEEE Transactions on Engineering Management, 53*(3), 380-394.

Nieto, M., & Quevedo, P. (2005). Absorptive capacity, technological opportunity, knowledge spillovers, and innovative effort. *Technovation, 25*(10), 1141-1157.

Nimtrakoon, S. (2015). The relationship between intellectual capital, firms' market value and financial performance: Empirical evidence from the ASEAN. *Journal of Intellectual Capital, 16*(3), 587-618.

Nonaka, I., & Von Krogh, G. (2009). Perspective—Tacit knowledge and knowledge conversion: Controversy and advancement in organizational knowledge creation theory. *Organization Science, 20*(3), 635-652.

Paloma Sánchez, M., & Elena, S. (2006). Intellectual capital in universities: Improving transparency and internal management. *Journal of Intellectual Capital, 7*(4), 529-548.

Paździor, A., & Paździor, M. (2012). *Measurement of intellectual capital in a company.* Paper presented at the International Conference management, knowledge and Learning.

Prieto, I. M., & Revilla, E. (2006). Learning capability and business performance: a non-financial and financial assessment. *The Learning Organization, 13*(2), 166-185.

Reed, K. K., Lubatkin, M., & Srinivasan, N. (2006). Proposing and testing an intellectual capital-based view of the firm. *Journal of Management Studies, 43*(4), 867-893.

Rehman, W. U., Chaudhary, A. R., Rehman, H. U., & Zahid, A. (2011). Intellectual capital performance and its impact on corporate performance: An empirical evidence from modaraba sector of Pakistan. *Australian Journal of Business and Management Research, 1*(5), 8-25.

Rehman, W. U., Rehman, H. U., Usman, M., & Asghar, N. (2012). A Link of intellectual capital performance with corporate performance: comparative study from banking sector in Pakistan. *International Journal of Business and Social Science, 3*(12), 313-321.

Rezaei-Zadeh, M., & Darwish, T. K. (2016). Antecedents of absorptive capacity: A new model for developing learning processes. *The Learning Organization, 23*(1), 77-91.

Roos, G., Bainbridge, A., & Jacobsen, K. (2001). Intellectual capital analysis as a strategic tool. *Strategy & Leadership, 29*(4), 21-26.

Roosevelt Malloch, T. (2010). Spiritual capital and practical wisdom. *Journal of Management Development, 29*(7/8), 755-759.

Saeed, R., Sami, A., Lodhi, R., & Iqbal, A. (2013). Intellectual capital and organizational performance: An empirical study in telecom sector of Pakistan. *Middle-East Journal of Scientific Research, 18*(4), 517-523.

Salleh, A. L., & Selamat, F. (2007). Intellectual capital management in Malaysian public listed companies. *International Review of Business Research Papers, 3*(1), 266-278.

Santos-Rodrigues, H., Faria, J., Cranfield, D., & Morais, C. (2013). Intellectual capital and innovation: A case study of a public healthcare organisation in Europe. *Electronic Journal of Knowledge Management, 11*(4), 361-385.

Schmidt, T. (2005). *What determines absorptive capacity.* Paper presented at the DRUID summer conference.

Schultz, T. W. (1961). Investment in human capital. *The American Economic Review*, *51*(1), 1-17.

Seetharaman, A., Lock Teng Low, K., & Saravanan, A. (2004). Comparative justification on intellectual capital. *Journal of Intellectual Capital*, *5*(4), 522-539.

Sharabati, A.-A. A., Naji Jawad, S., & Bontis, N. (2010). Intellectual capital and business performance in the pharmaceutical sector of Jordan. *Management Decision*, *48*(1), 105-131.

Soo, C., Tian, A. W., Teo, S. T., & Cordery, J. (2017). Intellectual capital–enhancing HR, absorptive capacity, and innovation. *Human Resource Management*, *56*(3), 431-454.

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

Sullivan, P. H. (1999). Profiting from intellectual capital. *Journal of Knowledge Management*, *3*(2), 132-143.

Tai, W.-S., & Chen, C.-T. (2009). A new evaluation model for intellectual capital based on computing with linguistic variable. *Expert Systems with Applications*, *36*(2), 3483-3488.

Terry Kim, T., Lee, G., Paek, S., & Lee, S. (2013). Social capital, knowledge sharing and organizational performance: what structural relationship do they have in hotels? *International Journal of Contemporary Hospitality Management*, *25*(5), 683-704.

Todorova, G., & Durisin, B. (2007). Absorptive capacity: Valuing a reconceptualization. *Academy of Management Review*, *32*(3), 774-786.

Trantopoulos, K., von Krogh, G., Wallin, M. W., & Woerter, M. (2017). External knowledge and information technology: Implications for process innovation performance. *MIS quarterly*, *41*(1), 287-300.

Tsai, W. (2001). Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal*, *44*(5), 996-1004.

Tseng, C. Y., & James Goo, Y. J. (2005). Intellectual capital and corporate value in an emerging economy: empirical study of Taiwanese manufacturers. *R&D Management*, *35*(2), 187-201.

Utterback, J. M., & Abernathy, W. J. (1975). A dynamic model of process and product innovation. *Omega*, *3*(6), 639-656.

Vale, J., Branco, M. C., & Ribeiro, J. (2016). Individual intellectual capital versus collective intellectual capital in a meta-organization. *Journal of Intellectual Capital*, *17*(2), 279-297.

Vargas-Hernández, J. G., & Noruzi, M. R. (2010). How intellectual capital and learning organization can foster organizational competitiveness? *International Journal of Business and Management*, *5*(4), 183-193.

Verter, B. (2003). Spiritual capital: Theorizing religion with Bourdieu against Bourdieu. *Sociological Theory*, *21*(2), 150-174.

Wales, W. J., Parida, V., & Patel, P. C. (2013). Too much of a good thing? Absorptive capacity, firm performance, and the moderating role of entrepreneurial orientation. *Strategic Management Journal, 34*(5), 622-633.

Wang, W.-Y., & Chang, C. (2005). Intellectual capital and performance in causal models: Evidence from the information technology industry in Taiwan. *Journal of Intellectual Capital, 6*(2), 222-236.

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

Youndt, M. A., Snell, S. A., Dean Jr, J. W., & Lepak, D. P. (1996). Human resource management, manufacturing strategy, and firm performance. *Academy of Management Journal, 39*(4), 836-866.

Yu, H.-C., Wang, W.-Y., & Chang, C. (2015). The stock market valuation of intellectual capital in the IT industry. *Review of Quantitative Finance and Accounting, 45*(2), 279-304.

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