International Journal of Business and Management Sciences **E ISSN**: 2708 – 4337 **P ISSN:** 2708 – 4329
Available online at http://www.ijbms.org
International Journal of Business and Management Sciences
Volume 04 (04), 2023
Received, 17 September, 2023, Accepted, 27 December, 2023, Published, 31 December, 2023.

Influence of Intellectual Capital on Project-based Organization Innovation Performance

[1]*Ayesha Noor*, [2]*Muhammad Aamir Saeed*, [3]*Ayaz Ahmad*, [4]*Wisal Ahmad*

ABSTRACT

This study investigates the influence of intellectual capital on project-based organization innovation performance, considering knowledge sharing as a mediator and psychological distress as a moderator. Project-based organizations rely on innovation to succeed in dynamic environments, and intellectual capital plays a vital role in fostering innovation. However, the specific mechanisms through which intellectual capital affects innovation performance remain unclear. This research aims to fill this gap by exploring the mediating role of knowledge sharing. This study aims to enhance our understanding of the factors contributing to successful innovation outcomes in project-based organizations by conducting an in-depth analysis. The study employs a quantitative research design, collecting data through surveys from employees working in project-based organizations. Structural equation modeling (SEM) was utilized to analyze the data and test the proposed hypotheses. The findings provide insights into the extent to which intellectual capital influences innovation performance, with knowledge sharing acting as a mediating mechanism.

Keywords:
Innovation Performance (IP), Intellectual Capital (IC), Structural Capital (SC), Human Capital (HC), Relational Capital (RC), Knowledge Sharing (KS).

INTRODUCTION

For businesses and non-profit organizations worldwide, securing a sustainable competitive position (SCP) in a volatile market has become essential. The previous few decades have seen a global trend of commercial enterprises fighting for sustainable growth and sustainable competitive advantage (Lu *et al.*, 2021). The link between Intellectual Capital (IC) and innovation has been strengthened over time, now organizations focus more on creativity and innovation keeping IC in account (Cabrilo, Kianto, and Milic, 2019). At a global level IC was studied back in 1960 to gain a competitive advantage at the organizational level to promote innovation, and performance keeping knowledge and education in mind (Al-Khoury *et al.*,

[1] *Research Scholer, Comsats University Islamabad, Wah Campus, Pakistan. Email ayesha.noor590.an@gmail.com*
[2] *Assitant Proffesor, Comsats University Islamabad, Wah Campus, Pakistan. Email aamirsaeed@ciitwah.edu.pk (Corresponding Author)*
[3] *Assitant Proffesor, Comsats University Islamabad, Wah Campus, Pakistan. Email: ayazahmad@ciitwah.edu.pk*
[4] *Professor, Kohat University of Science and Technology, Pakistan. Email: dr.wisal@kust.edu.pk*

2022). In the current era, project-based organizations especially the construction industries are pressured to compete the new ways, bringing innovation and creativity to their practices and performance (Li *et al.*, 2019).

The organization must possess the required knowledge and IC to realize innovation and IC plays as they play a role in achieving the organizational goal (Li *et al.*, 2019). The restrictive conditions of today's century link the performance of organization to generate results and benefit from the innovation processes (Slimene, Fessi and Lakhal, 2022). Innovation has been acknowledge as a pre-construct of growing economy and its success (Suseno *et al.*, 2020). According to a researcher Paul Trott (2016), innovation is the engine to the growth. Manufacturing businesses may use product innovation to differentiate their products, while process innovation can lower production costs and shorten the production cycle (Xu *et al.*, 2019).

IC includes knowledge inventions, utility models, copyrights, trademarks, and other forms of intellectual property, is a term that is frequently used to describe a wide variety of intangible assets (Gómez-Valenzuela, 2022). Studies have shown three main components of IC; structural, human, and relational capital (Ansari, Barati, and Sharabiani, 2016).

Structural capital (SC) is the component of IC that has been given greater importance within the company and is required by the managers in the company (Prieto-Pastor, Martín-Pérez and Martín-Cruz, 2018). SC is also known as organizational capital which helps an employee to provide optimal intellectual performance thus achieving better performance (Slimene, Fessi, and Lakhal, 2022).

The SC that determines who can be approached and how; the system pattern, density, connectedness, and hierarchy are measured by the variables (Prieto-Pastor, Martín-Pérez and Martín-Cruz, 2018). It is also possible to describe SC as the institutionalization of knowledge and experience that have been acquired and are based on well-established structures, methods, and procedures. SC is closely related to (Beltramino *et al.*, 2020) Human Capital.

Researchers have emphasized the role of HC in explaining how the firms successfully incorporate and translate innovation input into innovation output (Fonseca, de Faria, and Lima, 2019). HC includes organizational employees, their knowledge, skills, and abilities of the labor source (Cabello-Medina *et al.*, 2011). High-skilled and informed employees provide for superior HC, which increases a company's likelihood of producing new information and making wise decisions that improve organizational innovation (Sandri and Widodo, 2020).

Relational capital (RC) consists of a variety of elements, including brand, reputation, and collaboration with outside partners, all of which have been shown to have a favorable influence (Robert G. Cooper, 2017), on Innovation Performance (IP). The interactions between employees (individuals or groups) within a social collectivity are the focus of internal social capital (organization, community, nation, and so forth) (Lumpkin, Steier and Wright, 2011). RC is receiving attention as a factor that affects how well SMEs innovate since it makes use of outside expertise and knowledge for technical innovation (Ryu, Baek and Yoon, 2021). RC give birth to high-level relation, these relation develop trust and reputation to work up to the mark and improve the flow of knowledge transfer thus improving the performance (Prieto-Pastor, Martín-Pérez and Martín-Cruz, 2018).

Research Background

Intellectual Capital

Understanding the many functions that intangible assets play in the entrepreneurial innovation process is made easier by IC ideas and taxonomies. Many scholars on this subject contend that a firm's competitiveness and innovativeness are influenced by many types of IC, such as human, structural, and RC (Leitner, 2015). Early in the 1980s, the idea of IC came into being in response to the desire for business professionals to comprehend the foundations of organizational performance. Since then, this idea has developed into a well-liked academic strategy that was extensively embraced by scholars in the 1990s (Li *et al.*, 2019). IC was first described as the total of individual knowledge and abilities in 1836 (Xu *et al.*, 2019). An economist first used the terminology IC to refer to an asset that added value to the old economy via intellectual action rather than merely information (Al-Khoury *et al.*, 2022).

They may be a source of long-term competitive advantage since interactions between different forms of IC in facilitating innovation in the company are simply too complex and route-dependent. This also implies that it is challenging to identify the precise interrelationships between IC components in innovation development (Cabrilo, Kianto, and Milic, 2019).

According to recent findings, IC is becoming more crucial for the global virtual economy. Various studies define IC as the innovative use of integrated market strategies, intellectual property, human and intangible resources, as well as knowledge for generating the value chain (Al-Khoury *et al.*, 2022). According to many experts, IC serves as the cornerstone for a nation or region's future rapid economic growth and wealth accumulation, and its constituent parts are essential to ensuring sustainable development (Beltramino et al., 2020). Not only

can emphasizing the value of IC increase competitive advantage, but it may also promote sustainability and economic growth (Robert G. Cooper, 2017). IC is increasingly being recognized as a crucial component of boosting an organization's non-financial and creative performance in the age of globalization (Li *et al.*, 2019).

Innovation Performance

Project-based organizations are companies that organize their work around projects, rather than traditional departments or functions. These organizations are becoming increasingly common, particularly in industries such as technology, construction, and engineering. In a project-based organization, innovation performance is a critical factor for success (Le and Le, 2021).

Project-based organizations are well-suited for IP because they allow for flexibility, agility, and creativity (Cabrilo, Kianto and Milic, 2019). Projects are often created to solve specific problems or pursue new opportunities, which means that they require innovative thinking and a willingness to take risks. Project teams can be assembled based on the skills and expertise required for the project, which means that organizations can quickly adapt to new challenges and opportunities (Fonseca, de Faria and Lima, 2019).

In addition to having a direct impact on product innovation activities, IC is also thought of by our research as a moderating element in the link between innovation and company success (Leitner, 2015). In order to increase a company's performance in terms of innovation, one might consider whether investments should be made in SC (such as organizational procedures), HC (such as staff training), or both. Additionally, the concept of IC is founded on linkages, permutations, and complementarities (Le and Le, 2021).

Knowledge Sharing

The value of Knowledge Sharing (KS) has been extensively studied, with studies looking at how organizations, teams, individuals, or other elements like culture and environment, managerial support, rewards and incentives, diversity, and social networks are regarded(Wang, Wang and Liang, 2014). Costs and benefits of interpersonal justice and trust, knowledge ownership convictions, and other factors all have an impact. KS (Tassabehji, Mishra and Dominguez-Péry, 2019).

According to Grant in 1991, believes that the key resource a company can employ to build a sustained competitive advantage is knowledge. In a knowledge-based economy, knowledge is more crucial than physical resources to maintain a competitive advantage (Oliveira *et al.*, 2020). An organization with effective KS platforms will probably see an increase in staff

productivity, it may be necessary for the organization to strategically consider its KS methodologies, processes, and knowledge kinds in order to develop effective KS systems(Attar, Kang and Sohaib, 2018). An essential component of knowledge management systems is KS behavior (KSB), the knowledge management literature, which is connected to the knowledge-based philosophy of the enterprise, is where the notion of KS first appeared. KS is described by Bartol and Srivastava as "individuals sharing information, ideas, proposals, and expertise with one another that is organizationally relevant" (Marjerison, Andrews and Kuan, 2022).

Hypothesis Development

Intellectual Capital and Innovation Performance

IC first came into the light of the literature was in 1960. It was away to gather and obtain the proficiency for the organization which give importance to the knowledge and learning(Al-Khoury *et al.*, 2022). The terminology IC was conceived by the economist who was of the view that "the result of intellectual action activity rather than just knowledge, creating value in the old economy as a new asset"(Al-Khoury *et al.*, 2022).

IC is the aggregation all the knowledge and knowledge competency that will be utmost important for the performance of the organization(Maqsoom *et al.*, 2022). From the beginning the concept of IC was introduced to differentiate between the organization book value and market value (AlQershi, Abas and Mokhtar, 2021).

Research conducted on IC can be divided on four stages. The first stage (early 1980s to mid-1990s) focuses on the importance of IC and its significance on organization performance to gain proficiency in market. The second stage (late 1990s to early 2000s) dissect the value of IC in providing aid in the market and achieving positive financial benefit (Li *et al.*, 2019). The third stage (late 2000s to early 2010s) suggest that how mangers can use IC to supervise and utilize it for the business and project (Dumay and Garanina, 2013). The fourth and the last stage (mid 2010s to present) focus on building strong communal, commercial and biodegradable ecosystem where organization can grow and excel in positive manner (Li *et al.*, 2019). In the recent decade, management literature uses the concept of IC as the key component for the organization, it is the "possession of knowledge, applied experience, organization technology, customer relationship and professional skills that generates the benefit for the organization in market"(Kianto, Sáenz and Aramburu, 2017). As the literature provided, the first hypothesis is propose as;

H1: *Intellectual capital has a significant relationship with innovation performance.*

Structural capital and Innovation Performance

The SC comprises of all "non-human assets" like as databases, organizational graphs, functional manuals, approaches, procedures, and anything else whose worth to the firm exceeds its material value (Beltramino et al., 2020). It increase the ability of organization technical staff to produce enough by using fewer labor to complete a task (AlQershi, Abas and Mokhtar, 2021). The SC helps in building innovation through technology, and mental infrastructure of knowledge and innovation creation (Cabello-Medina et al., 2011). SC stock the organizational knowledge which brings innovation in designing new product or project (Kianto, Sáenz and Aramburu, 2017; Oliveira *et al.*, 2020). The evolution of the processes and routine in the organization give rise to the innovation performance(Al-Khoury *et al.*, 2022). According to literature provided above the next hypothesis is proposed as

H2: *Structural capital has significant relationship on innovation performance.*

Human capital and Innovation Performance

Literature has argue that “high-skilled HC as a crucial dimension of innovation processes at the organization level”(Fonseca, de Faria and Lima, 2019). The studies indicated that the innovation and HC were different on each level, the study of Aalbers, Dolfman and Koppius in (2013) worked on individual level and came to a conclusion that the “there is a relationship between individual intrinsic and extrinsic motivation on knowledge transfer in innovation network”. On the group level, a study conducted by Han and Brass (2014) “HC is supposed to be the antecedents of social capital for team creativity”. The third and final stage studied by the Alpakan (2010) at firm level “, HC moderates the relationship between organizational support and innovative performance”(Suseno and Pinnington, 2018). In the last fifteen year or more the empirical evidence show that the HC has a kink with the innovation and leading to positive effect on performance (Cabrilo, Kianto and Milic, 2019). HC is consider the most important element of IC in the context of organization as without it IP cannot exist (Kianto, Sáenz and Aramburu, 2017) Researcher were of the view that the HC is very much important for the as the knowledge and skill of the employees are required for the changing conditions of the business (Al-Khoury *et al.*, 2022). According to literature provided above the next hypothesis is proposed as

H3: *Human Capital has significant relationship with Innovation Performance.*

Relational Capital and Innovation Performance

“RC refers to intangible assets that can be acquired through relationships between external companies and customers”. RC is described as the ability to absorb and apply relevant

information through the search for external knowledge in a firm's value chain linkages (Ryu, Baek, and Yoon, 2021). Relationships both internal and external are linked with IP so as well as with the KS (Suseno and Pinnington, 2018). RC plays a vital role as not all the knowledge that is required for innovation is present in organization, sometimes it originates from the relationship with customers, suppliers, and other external agents (Buenechea-Elberdin, Sáenz and Kianto, 2018). The relationship between IP and it helps organizations to combine external knowledge with existing knowledge for innovativeness in their projects (Al-Khoury *et al.*, 2022). According to the literature provided above the next hypothesis is proposed as

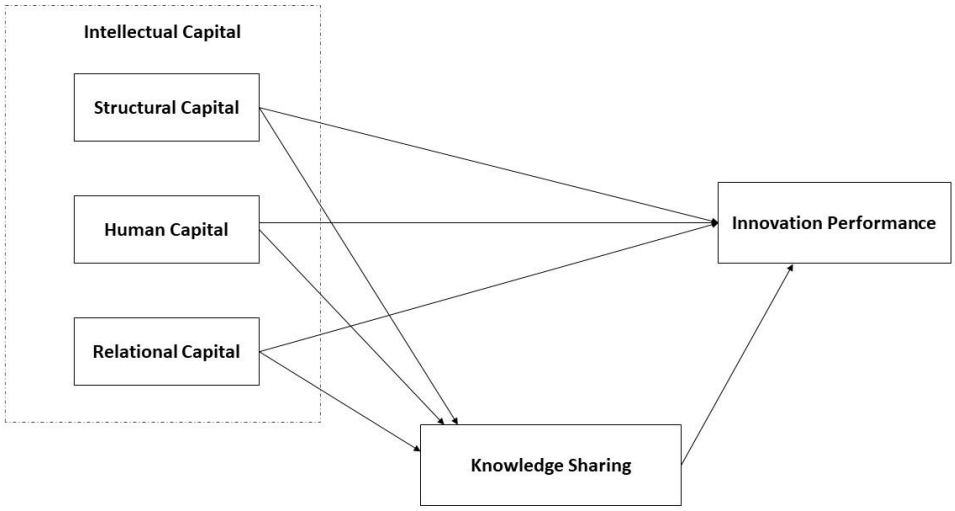
H4: *Relational Capital has a significant relationship with Innovation Performance.*

Mediating Effect of Knowledge Sharing on Innovation Performance

KS refers to the action through which knowledge from various sources is transferred or traveled from one person to another, KS emphasis more on the process of collection of knowledge and diffusion of it (Lu *et al.*, 2021). The research on KS in the field of project performance is still underdeveloped. Even the PMBOK does not provide enough evidence for it. Later on in the sixth edition of PMBOK a methodological approach on Knowledge Management from prospective of projects were elaborated or highlighted (Tassabehji, Mishra, and Dominguez-Péry, 2019). Nonaka defined KS in 1994, the term implies that "KS is the process of exchanging tacit knowledge through social and collaborative processes". The initial operation of KS includes the ideation or creation, transferring or sharing, usage or storage which are required for innovation (Tassabehji, Mishra and Dominguez-Péry, 2019). The organizations have worked to attain and grasp the knowledge from the outside as well as the inside to help in the generation of IP (Markovic and Bagherzadeh, 2018). Researchers from year (2005 and 2012) studied the mediating role KS between IC and IP and came to the result that "knowledge and learning capability is positively associated with innovation speed and innovation quality of a firm" (Le and Le, 2021). Today, the shift in economy and weighting it to the side of knowledge making it a survival element for the firm and organization (Akram *et al.*, 2020). According to empirical evidence, the KS mediate the IC and IP by creating an appropriate environment for the employees to awaken their skills and produce innovation in their performance(Le and Le, 2021). According to a study of 169 Danish firms it turns out that the KS positively influences the innovation performance (Markovic and Bagherzadeh, 2018). According to the literature provided above the next hypothesizes are proposed as

H5: *Knowledge Sharing has mediating effect between Intellectual Capital and innovation performance.*

To examine and evaluate the influence of IC along with its components, SC, RC, and HC on project-based organization innovation performance.



METHODOLOGY

Research Design

Sampling and Data collection

A structured questionnaire survey was employed to collect the data. It was divided into two primary sections: (1) demographic data on professional experience; and (2) an explanation of the relevance of the elements that influence innovation performance. Surveys were distributed to everyone involved in Pakistan's construction infrastructure, including owners, contractors, consultants, researchers, and project economists.

The survey contains components and variables that were collected through a questionnaire. The respondents were asked to rate their feelings on the influence of each independent variable on the dependent variable on a Likert scale of 1 to 5, where 5 denotes strongly agree, 1 strongly disagrees, 2 disagrees, 3 neither agrees nor disagrees, and 4 agrees. Except for psychological distress on Likert scale of 1 to 5, where 5 denotes as all of the time and 1 denotes as none of the time.

Demographics details are presented in the table below. The demographics section was the first part of the questionnaire, which include gender, age, education and designation in particular construction industries of Pakistan. In the below table, the frequency of demographics will be discuss.

Gender	Frequency	Percentage
Male	266	78%
Female	71	21%
Age		
20-30	105	31%
31-40	156	46%
41-50	50	14%
Above 50	26	7%
Education		
Intermediate	50	14%
Bachelor	190	56%
Master	89	26%
PhD	8	2%

ANALYSIS

Reliability and Validity

The reflecting model's evaluation's initial phase is its internal consistency reliability (Campos *et al.*, 2022). Historically, internal consistency has been evaluated using Cronbach's alpha. It considers the validity of each indicator. The indicators are given precedence by PLS-SEM because of individual reliability. All the values obtained met the threshold of 0.7 that establish the reliability of the constructs used.

	Cronbach's alpha	Composite reliability (rho_a)
ICHC	0.717	0.723
ICRC	0.782	0.793
ICSC	0.761	0.763
Innovation Performance	0.800	0.809
Knowledge Sharing	0.773	0.776

Descriptive Statistics

Descriptive statistics were used to highlight and clarify the key features of the data. Descriptive analysis of the data set comprised of mean, variance, standard deviation, and other metrics, researchers can acquire a general idea of how survey respondents have responded to the study's survey instrument (Campos *et al.*, 2022).

	N	Minimum	Maximum	Mean	Std. Deviation
ICHS	337	1.00	5.00	3.6543	.74247
ICSC	337	1.00	5.00	3.5823	.76964
ICRC	337	1.00	5.00	3.6306	.77633
IP	337	1.00	5.00	3.5282	.71926
KS	337	1.00	5.00	3.6625	.73884
Valid N (list wise)	337				

Hypotheses Testing

Non-significant paths or paths that points in the opposite direction of the expected relationship do not support the previous hypothesis. Whereas significant path on the other hand are empirically supportive of the proposed relationship (Gómez-Valenzuela, 2022). As the domains of IC (structural capital, human capital and relational capital) have the significant relationship with IPso it leads to the approval of hypothesis H1. Hypothesis H2, expressing, is valid (t=4.662, p=0.000). A significantly positive relationship was found between SC and innovation performance. Similarly, hypothesis 3 also proved to have a significantly positive relationship between HC and IP (t=2.500, p=0.012). Additionally, it was determined that H4, a positive significant relationship between RC and IP is accepted at (t=.6.816, p0.000).

Hypothesis effect	Sample	Mean	STDEV	b-value	t-value	p-value	Decision
ICSC -> IP	0.396	0.393	0.085	0.396	4.662	0.000***	Supported
ICHC -> IP	0.266	0.254	0.106	0.266	2.500	0.012***	Supported
ICRC -> IP	0.497	0.492	0.073	0.497	6.816	0.000***	Supported

****: P<0.01 **: P<0.05 *: P<0.1*

Three steps were included in the indirect analysis. The model fit is the first step, followed by the t-test and finally the standard error(Oliveira *et al.*, 2020). Table 13 shows the indirect effect of the constructs. Mediating effect can be described as the "indirect effect. The mediating effect in research is define as "two variable of interest are associated via a third variable"(AlQershi, Abas and Mokhtar, 2021)The bootstrapping analysis showed that KS has mediating effect between SC and IP(t=3.571, p=0.000). Hence H5 has been proved statically. The bootstrapping analysis shows that KS has mediating effect between HC and IP(t= 2.07, p=0.039). Hence H7 has been proved statistically. Additionally H7, KS has mediating effect between RCs and IPis valid (t=2.869, p=0.002). Hence H7 has been proved statistically.

Hypothesis effect	Sample	Mean	STDEV	b-value	t-value	p-value	Decision
ICSC -> KS -> IP	0.116	0.11	0.032	0.116	3.571	0.000***	Support
ICHC -> KS -> IP	0.069	0.069	0.034	0.069	2.07	0.039*	Support
ICRC -> KS -> IP	0.068	0.065	0.024	0.068	2.869	0.002***	Support

****: P<0.01 **: P<0.05 *: P<0.1*

Discussion

The primary aim of this research is to investigate how IC contributes to the IP of construction companies and how KS may act as a mediating factor in the relationship between the two variables. As expected, information sharing somewhat mediates the favorable association between IC and innovation performance.

The following findings are obtained from an analysis of the link between IC, information exchange, and IP in the construction sector using the structural equation model.

Intellectual Capital and Innovation Performance

The emerging topic in the world of project management is the innovation performance. As the construction industries are moving toward the innovation performance, bringing change and creativity in their product, in the manufacturing process, production, technology, marketing schemes and so on. Project Manager are more focus on performance (Bhatti *et al.*, 2021). The construction companies which are project based in nature are shifting and bringing creativity in their work, while managing and ensuring the optimal use of resources. One factor that influence the IP foremost is the IC. IC which is the umbrella term and covers domains like HC, SC, and RC (Beltramino et al., 2020). The previous finding also highlight e.g. (Campos *et al.*, 2022), the positive association between IC and IP through its domains. It is crucial to understand that for the performance and bringing innovation in the performance the domains of the IC should be kept in account. Using data from Pakistan, this studies examined the relationship of IC and IP(Ansari, Barati and Sharabiani, 2016). This study expand the prior studies in Pakistan. As the world is moving toward the economical era and the demand of innovation has increased in the different phases of project. Organizations opt the IP for the better product (Xu *et al.*, 2019). The change in IC helps to achieve innovation performance. The second part of the research highlights the mediating role of KS in the relationship that exists between IC and innovation performance. The deliverance of knowledge in the different hierarchical order influence the performance in the organization.

Conclusion, Suggestion and Implications

The current study adds to the body of evidence already available about the connections between IC, KS, psychological distress, and innovative performance (Attar, Kang and Sohaib, 2018). The study offers more evidence that there is a link between IC and innovation performance. This study supports the resource-based view of organizations and knowledge-based theories of organizations by demonstrating the significance of IC as a driver of innovation. It emphasizes the value of IC management in organizations' innovation plans and the necessity of ongoing investments in the growth of IC. A significant mediator in the relationship between IC and IP is identified by the study is KS. The importance of KS in harnessing IC for innovation is highlighted by this study, which is in line with the knowledge-based perspective of organizations. The results of this study have a number of practical implications to organizations hoping to improve their innovation performance. Organizations ought to appreciate IC and make investments in its growth. This may be accomplished through supporting employees' ongoing learning and knowledge acquisition, fostering teamwork and cross-functional communication, and putting in place procedures for identifying and managing intellectual property. Organizations may lay a solid groundwork for innovation by actively managing their IC. To enable the efficient use of IC, organizations should promote a culture of KS.

Limitations and Directions for Future Research

First, similar research should be conducted in each country since the findings of this study are not immediately transferable to other nations. However, this study's technique can be applied to other investigations of a similar nature. The study's second issue was its tiny sample size, which complicated the use of SEM. The PLS-based technique, But in this work, which is suggested in the literature for small sample sizes. A bigger sample size would also have decreased the chance of biased results and allowed the study to collect other perspectives. Future work may perform as a longitudinal research might be done in the future to determine how the IC of different construction companies differs. Fourth, the key project innovation breakthrough in the building industry is technology innovation. The focus of future research on IP could be limited to technological innovation performance. Fifth, to further our knowledge of how IC influences the IP of construction firms, future research may look at other mediators of the link between company IP and IC.

REFERENCES

Akram, T. *et al.* (2020) 'The impact of organizational justice on employee innovative work behavior: Mediating role of knowledge sharing', *Journal of Innovation and Knowledge*, 5(2), pp. 117–129. Available at: https://doi.org/10.1016/j.jik.2019.10.001.

Al-Khoury, A. *et al.* (2022) 'Intellectual Capital History and Trends: A Bibliometric Analysis Using Scopus Database', *Sustainability (Switzerland)*, 14(18). Available at: https://doi.org/10.3390/su141811615.

AlQershi, N.A., Abas, Z. Bin and Mokhtar, S.S.M. (2021) 'The intervening effect of structural capital on the relationship between strategic innovation and manufacturing SMEs' performance in Yemen', *Management Science Letters*, 11, pp. 21–30. Available at: https://doi.org/10.5267/j.msl.2020.8.034.

Ansari, R., Barati, A. and Sharabiani, A.A.A. (2016) 'The role of dynamic capability in intellectual capital and innovative performance', *International Journal of Innovation and Learning*, 20(1), pp. 47–67. Available at: https://doi.org/10.1504/IJIL.2016.076671.

Attar, M., Kang, K. and Sohaib, O. (2018) 'Knowledge sharing culture, intellectual capital and organizational performance', *Proceedings of the 22nd Pacific Asia Conference on Information Systems - Opportunities and Challenges for the Digitized Society: Are We Ready?, PACIS 2018*, pp. 5578–5587.

Beltramino et al. (2020) 'The structural capital, the innovation and the performance of the industrial SMES', *Journal of Intellectual Capital*, 21(6), pp. 913–945. Available at: https://doi.org/10.1108/JIC-01-2019-0020.

Bhatti, S.H. *et al.* (2021) 'Social capital, knowledge sharing, work meaningfulness and creativity: evidence from the Pakistani pharmaceutical industry', *Journal of Intellectual Capital*, 22(2), pp. 243–259. Available at: https://doi.org/10.1108/JIC-02-2020-0065.

Buenechea-Elberdin, M., Sáenz, J. and Kianto, A. (2018) 'Knowledge management strategies, intellectual capital, and innovation performance: a comparison between high- and low-tech firms', *Journal of Knowledge Management*, 22(8), pp. 1757–1781. Available at: https://doi.org/10.1108/JKM-04-2017-0150.

Cabello-Medina et al. (2011) 'Leveraging the innovative performance of human capital through HRM and social capital in Spanish firms', *International Journal of Human Resource Management*, 22(4), pp. 807–828. Available at: https://doi.org/10.1080/09585192.2011.555125.

Cabrilo, S., Kianto, A. and Milic, B. (in press) (2019) '"The effect of IC components on innovation performance in Serbian companies", VINE Journal of Information and Knowledge Management Systems'.

Campos, S. *et al.* (2022) 'The link between intellectual capital and business performance: a mediation chain approach', *Journal of Intellectual Capital*, 23(2), pp. 401–419. Available at: https://doi.org/10.1108/JIC-12-2019-0302.

Dumay, J. and Garanina, T. (2013) 'Intellectual capital research: A critical examination of the third stage', *Journal of Intellectual Capital*, 14(1), pp. 10–25. Available at: https://doi.org/10.1108/14691931311288995.

Fonseca, T., de Faria, P. and Lima, F. (2019) 'Human capital and innovation: the importance of the optimal organizational task structure', *Research Policy*, 48(3), pp. 616–627. Available at: https://doi.org/10.1016/j.respol.2018.10.010.

Gómez-Valenzuela, V. (2022) 'Intellectual capital factors at work in Dominican firms: understanding their influence', *Journal of Innovation and Entrepreneurship*, 11(1). Available at: https://doi.org/10.1186/s13731-022-00205-8.

Ismail, H.N. and Rishani, M. (2018) 'The Relationships Among Performance Appraisal Satisfaction, Career Development and Creative Behavior', *The Journal of Developing Areas*, 52(3), pp. 109–124. Available at: https://doi.org/10.1353/jda.2018.0040.

Kianto, A., Sáenz, J. and Aramburu, N. (2017) 'Knowledge-based human resource management practices, intellectual capital and innovation', *Journal of Business Research*, 81(July), pp. 11–20. Available at: https://doi.org/10.1016/j.jbusres.2017.07.018.

Le, L.T.K. and Le, P.B. (2021) 'Improving the Innovation Performance for Vietnamese Firm Based on Practices of Idealized Influence and Individualized Consideration: The Mediating Role of Knowledge Sharing', *International Journal of Business Administration*, 12(3), p. 75. Available at: https://doi.org/10.5430/ijba.v12n3p75.

Leitner, K.H. (2015) 'Intellectual Capital, Innovation, and Performance: Empirical Evidence from SMEs', *International Journal of Innovation Management*, 19(5). Available at: https://doi.org/10.1142/S1363919615500607.

Li, Y. *et al.* (2019) 'Intellectual capital, knowledge sharing, and innovation performance: Evidence from the Chinese Construction Industry', *Sustainability (Switzerland)*, 11(9). Available at: https://doi.org/10.3390/su11092713.

Lu, Y. *et al.* (2021) 'Does Intellectual Capital Spur Sustainable Competitive Advantage and Sustainable Growth?: A Study of Chinese and Pakistani Firms', *SAGE Open*, 11(1). Available at: https://doi.org/10.1177/2158244021996702.

Lumpkin, G.T., Steier, L. and Wright, M. (2011) 'in Family Business Business and Strategic', *Strategic Entrepreneurship Journal*, 306, pp. 285–306. Available at: https://doi.org/10.1002/sej.

Maqsoom, A. *et al.* (2022) 'Nexus between Leader–Member Exchange, Paternalistic Leadership, and Creative Behavior in the Construction Industry', *Sustainability (Switzerland)*, 14(12), pp. 1–20. Available at: https://doi.org/10.3390/su14127211.

Marjerison, R.K., Andrews, M. and Kuan, G. (2022) 'Creating Sustainable Organizations through Knowledge Sharing and Organizational Agility: Empirical Evidence from China', *Sustainability (Switzerland)*, 14(8). Available at: https://doi.org/10.3390/su14084531.

Markovic, S. and Bagherzadeh, M. (2018) 'How does breadth of external stakeholder co-creation influence innovation performance? Analyzing the mediating roles of knowledge sharing and product innovation', *Journal of Business Research*, 88(March), pp. 173–186. Available at: https://doi.org/10.1016/j.jbusres.2018.03.028.

Oliveira, M. *et al.* (2020) 'Knowledge sharing, intellectual capital and organizational results in SMES: are they related?', *Journal of Intellectual Capital*, 21(6), pp. 893–911. Available at: https://doi.org/10.1108/JIC-04-2019-0077.

Prieto-Pastor, I., Martín-Pérez, V. and Martín-Cruz, N. (2018) 'Social capital, knowledge integration and learning in project-based organizations: a CEO-based study', *Journal of Knowledge Management*, 22(8), pp. 1803–1825. Available at: https://doi.org/10.1108/JKM-05-2017-0210.

Robert G. Cooper (2017) '기사 (Article) 와 안내문 (Information) [', *Journal of Intellectual Capital*, 18(2), pp. 1–5.

Ryu, D., Baek, K.H. and Yoon, J. (2021) 'Open innovation with relational capital, technological innovation capital, and international performance in SMEs', *Sustainability (Switzerland)*, 13(6), pp. 1–13. Available at: https://doi.org/10.3390/su13063418.

Sadovyy, M., Sánchez-Gómez, M. and Bresó, E. (2021) 'COVID-19: How the stress generated by the pandemic may affect work performance through the moderating role

of emotional intelligence', *Personality and Individual Differences*, 180(May). Available at: https://doi.org/10.1016/j.paid.2021.110986.

Sandri, P. and Widodo (2020) 'Innovative performance development model based on human capital and network quality toward improved marketing performance', *Management Science Letters*, 10(3), pp. 659–664. Available at: https://doi.org/10.5267/j.msl.2019.9.013.

Slimene, S. Ben, Fessi, I. and Lakhal, L. (2022) 'The mediating role of the intellectual capital in the relationship between organizational agility practices and innovation performance study by the role of', *Journal of Business and Management Research*, 15, pp. 277–290. Available at: http://www.knowledgejournals.com/PDF/222.pdf.

Suseno, Y. *et al.* (2020) 'National innovation performance: the role of human capital and social capital', *Innovation: The European Journal of Social Science Research*, 33(3), pp. 296–310. Available at: https://doi.org/10.1080/13511610.2018.1536536.

Suseno, Y. and Pinnington, A.H. (2018) 'The significance of human capital and social capital: professional–client relationships in the Asia Pacific', *Asia Pacific Business Review*, 24(1), pp. 72–89. Available at: https://doi.org/10.1080/13602381.2017.1281641.

Tassabehji, R., Mishra, J.L. and Dominguez-Péry, C. (2019) 'Knowledge sharing for innovation performance improvement in micro/SMEs: an insight from the creative sector', *Production Planning and Control*, 30(10–12), pp. 935–950. Available at: https://doi.org/10.1080/09537287.2019.1582101.

Wang, Z., Wang, N. and Liang, H. (2014) 'Knowledge sharing, intellectual capital and firm performance', *Management Decision*, 52(2), pp. 230–258. Available at: https://doi.org/10.1108/MD-02-2013-0064.

Xu, J. *et al.* (2019) 'Intellectual capital, technological innovation and firm performance: Evidence from China's manufacturing sector', *Sustainability (Switzerland)*, 11(19), pp. 1–16. Available at: https://doi.org/10.3390/su11195328.