Journal of Contemporary Issues in Business and Government Vol. 27, No. 5,2021
https://cibg.org.au/

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

The Role of CEO Leadership and Project Management for Innovation Success in IT Sector of Pakistan: A Moderating Effect Of Human Capital

1. Hassan Daud Butt
CEO KPK Board of Investment / Ex-Project Director CPEC
hdb4049@gmail.com
2. Urooj Aijaz
Bahria University Karachi
uroojaijaz.bukc@bahria.edu.pk
3.Sofia Bano
University of Karachi
sofiashaikh@hotmail.com
4.Dr.Asif Shamim
Bahria University Karachi
asifshamim.bukc@bahria.edu.pk
5.Anum Hayat
Jinnah University for Women
hayatanum9@gmail.com
6.Marium Mazhar
mariummazhar01@gmail.com

Abstract
The purpose is to examine the effect of CEO transformational leadership, and project management best practices on innovation success with the moderating effect of human capital in IT firms of Pakistan. Using purposive sampling technique, 306 responses have been collected from the IT professionals of Karachi, Pakistan while PLS-SEM has been employed for analysis. The results have shown that CEO transformational leadership and technical aspects of project management best practices have positive effect on innovation success of IT firms while people aspects of project management best practices have no effect on innovation success of IT firms. However, human capital does not moderate the effect of CEO transformational leadership and project management best practices on IT firms' innovation success in Pakistan. Hence, the study has suggestedthat the correct choice of tools and procedures leads to innovation, PMBP can also be used strategically by organizations. It will streamline management actions for the progress of innovation, as well as build invaluable tools for the preparation, implementation, monitoring and assessment of innovative workflows, develop improved connectivity and efficient coordination with clients.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

Keywords: *CEO Transformational Leadership, Project Management, Innovation Success, Human Capital, IT Sector, Pakistan*

Introduction

In a progressing, project-based world economy, the opportunity to harness innovation, and disruptive innovations and their adoption are crucial to the success of product and process innovation(Zaman, Nawaz*, et al.*, 2020).Usually, innovative projects of businesses include the creation of new products and new methods, which are synonymous with possibilities for new ideas to emerge and strengthen the capacity for innovative potential in companies(Krchová, 2019).Although disruptive technologies revolutionize whole markets, corporate leaders are exercising intense caution in taking the risks required to innovate their goods and processes for global competitiveness(Zaman, Nawaz*, et al.*, 2020).Innovation allows businesses to discover innovative ways of working and to follow the right management practices to do so, also adopting emerging technologies which serve as a conduit for modern companies (Kerzner, 2018). In order to navigate an increasingly competitive and unpredictable industry climate, the company's readiness to evolve and market pace allows them to flesh out a technology-driven project charter(Shenhar *et al.*, 2020).

Furthermore, in most companies, project management is certainly one of the key topics. Project management for the business innovation process acts as a very useful application platform. Today, projects are very complex as may have varying priorities, needs, and specifications(Guertler & Sick, 2020).In their phenomenal research, Shenhar *et al.* (2020) provided a single holistic paradigm for innovation success by implementing project management principles as an important instrument for efficient development and addressing shortcomings in innovation. The researcher concluded that progress in innovation, along with innovative technology, can be swindled by high risk and volatile market conditions.Therefore, through eliminating operational inefficiencies, minimizing complications, and efficiently mitigating uncertainties, project management best practices (PMBP) will dramatically help successful innovations(Martinsuo, 2020).When sound project management practices and measuring instruments play a role in project performance, business value is generated(Hrůzová, 2017).

Additionally, transformational leadership is an innovative leadership style that facilitates intellectual stimulation, empowers followers, produces idealized effects, inspires creativity, and stimulates innovative development(Zuraik & Kelly, 2019).The style of transformational leadership is a well-known and generally recognized style of leadership. These leaders are highly regarded, revered and exhibit high professional expectations and moral principles(Al Ahmad *et al.*, 2019). As they showcase potential states and demonstrate a high degree of dedication to their goals, transformational leaders are innovative(Mokhber *et al.*, 2018).Therefore, one of the main functions of Chief Executive Officers (CEOs) is to organize personnel to adhere to the corporate priorities of the company efficiently. CEO transformational leadership (CTL) not only increases the dedication of workers to the company, it also helps them contribute to corporate efforts to innovate(Zaman, Nawaz*, et al.*, 2020).

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

Moreover, there is a widening gap in the skill needs of multinational businesses and the availability of a compatible workforce that presents major risks to the dependence of companies on innovative talent that drives competitive developments in goods and processes(Zaman, Nadeem, *et al.*, 2020). To help upgrade and maintain the innovation of their enterprise, it is incredibly difficult for corporate executives and managers to sustain technological advances(Institute, 2019).The role of transformational leadership in promoting a number of innovative initiatives and results has been thoroughly studied in previous literature, e.g., innovation climate(Jaiswal & Dhar, 2015), firm innovation(Chen *et al.*, 2019), product and process innovation(Al-Husseini & Dosa, 2016), as well as innovative performance by the project team(Jiang & Chen, 2018).For reinventing global economies with innovative goods and services, transformational leaders have been widely recognized(Zaman *et al.*, 2019). However, empirical studies on transformation leadership and its impact on the success of multidimensional innovation are exceedingly rare(Zaman, Nawaz, *et al.*, 2020).
Besides, human capital is a collective capital derived from the experience, talents and expertise of employers. Training, for example, helps employees retain state-of-the-art skills and allows them to leverage innovation skills(Al Ahmad *et al.*, 2019).The efficiency and deployment of human capital for innovation is strengthened by the active engagement of workers in business operations(Buenechea-Elberdin *et al.*, 2017).Companies appear to invest their human resources in multiple ways to energize their workforce (Michaelis & Markham, 2017). They should do so in order to coordinate their implementation strategies with the aspects of their organizational structure and the environment in which they function (De Guimarães *et al.*, 2016).
Hence, the current research examine the effect of CEO transformational leadership, and project management best practiceson innovation success with the moderating effect of human capital in IT firms of Karachi Pakistan. The literature review forms the second portion, where the third, fourth, and fifth and sixth parts are consist of study design, data interpretation, findings, and discussion and conclusion.

Literature Reviews

CEO Transformational Leadership, Human Capital and Innovation Success

As transformative innovations revolutionize whole markets vying for global competition, innovation has become a buzzword for modern companies. The transformational CEOs have often embodied critical leadership skills for the most innovative companies to technology-intensive successful startups(Zaman, Nadeem, *et al.*, 2020).Transformational CEOs have radically set fresh and exciting paths that encourage revolutionary transformation and developments in technology across a variety of industries.Transformational CEOs of leading global high-tech corporations promote and cultivate innovations that produce successful breakthroughs in innovation(Chen *et al.*, 2019). In addition to continued active spin-offs, transformational CEOs often demonstrate clear and motivating leadership skills to match the creative talent of the company with the corporate plan(Cortes & Herrmann, 2020).
Organizations are expected to be more agile, innovative and versatile in response to the changing complexities of the global and competitive marketplace(Suliman *et al.*, 2019). In different research, the association between transformational leadership and innovation

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

success has been discussed.For e.g. Begum *et al.* (2020) clarified the influence of transformational leadership through innovation climate and culture to accelerate the success of a company's innovation. This aspects of a working environment that workers consider directly or implicitly influence morale and constructive job behavior, which is an integral component of innovation(Zuraik & Kelly, 2019). Such a climate facilitates and supports experimentation and is often open to acknowledging failures that produce innovative outcomes(Zuraik, 2017). Recent research shows that CTL aligns policies, establishes processes and creates desirable conditions that drive innovation. The culture of creativity that leads to successful progress in innovation is powered by CEOs with transformational leadership skills(Le & Lei, 2019). Organizations focused only on practices and strategies but avoiding the development of a community and environment conducive to innovation appear to deliver unwanted effects(Singh *et al.*, 2020). As a result, CTL builds cross-functional teams, empowers individuals and creates a learning atmosphere to encourage innovation and offers such mechanisms and structures to accelerate innovation initiatives(Sheehan *et al.*, 2020).

Latest research on transformational leadership demonstrates broad recognition across sectors, in particular some of the big repercussions for creative businesses(Shafique & Kalyar, 2018). Transformational leadership has shown a positive impact by innovation on learning culture and organizational efficiency. Similarly, Gashema and Mokua (2019) found that by fostering an innovation culture in the sense of manufacturing companies, CTL indirectly affects product innovation efficiency. Empirical studies suggest that transformational leadership has a positive effect on product creativity and the performance of a company. CTL reflects a strategic and creative mindset which promotes innovations in the product market(Mokhber *et al.*, 2018). In addition, Fasaghandis and Wilkinson (2019) showed that this action of transformational leadership greatly affects product creativity.

In addition, in every country, outstanding talent is scarce, according to Afsar *et al.* (2017), so it needs to be nurtured. In this respect, to improve their capacities, organizations need to engage in human resource growth practices.This is because intellectual resource growth usually contributes to innovation and therefore international competition. Latest global polls of multinational corporate (MNC) human resources (HR) administrators are rapidly referring to talent shortages as the most critical issue facing MNCs (Strukan *et al.*, 2017).Interestingly, in developing and emerging economies where the rising young workforce lacks the skills that employer's value, the issue of skills shortages tends to be greater (Al Ahmad *et al.*, 2019).Therefore, only hiring and maintaining a graduate workforce would not actually have the human capital required by SSA businesses to innovate and build a competitive edge in the new global climate(Aryee *et al.*, 2016).

The main determinants of global success are human capital and the innovation that it produces. This is because it functions as a support mechanism for the development of core capabilities that would place companies in the area above their rivals in the industry (Łukowski, 2017). The success tale of one SSA country (Mauritius) accurately explains the impact of the production of human resources on creativity in this regard. Private companies in the hotel sector in Mauritius have been supported (through the provision of training grants) by government program such as the Human Resource Development Council (HRDC) to

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

invest in the development of their workers in order to increase innovation by training grants (Ali & Chin-Hong, 2017). As a result, the introduction of workforce training and development has led to a rise in the amount of human resources of workers and innovation in various companies and sectors in the Mauritian economy (Grošelj *et al.*, 2020).

Organizations aiming to build and retain the strategic edge needed to succeed in the new market climate would also need to prioritize the growth of employee resources. This is especially true because individuals, their expertise and ingenuity in terms of their capacity to turn capital into innovation are the important elements of current competitiveness between organizations (Pradhan & Jena, 2019). Organizations also usually require investment in their workers' training (and education) to be able to innovate and achieve the strategic edge they need in today's intensely competitive global market(Chan *et al.*, 2019).

Thus, we hypothesize that:

H1a: CEO transformational leadership has a significant effect on innovation success

H1b: Human capital significant moderates the effect of CEO transformational leadership on innovation success.

Project Management Best Practices, Human Capital and Innovation Process

A growing number of multinational businesses have quickly pushed into new innovation and scaled up their human resources with a high-technology quotient to adopt digital sustainability(Bond-Barnard *et al.*, 2018). By continuously adapting to new innovations that drive product and process breakthrough success, PMBP-T innovators will effectively exploit technology to the benefit of their businesses e.g., self-driving car technologies by Hyundai Mobis Co, in South Korea(Lientz & Rea, 2016). Technology is continually evolving, so corporate executives need to consider and develop a technology quotient to make informed choices on the application of technology and associated investments(Institute, 2019).

The theory of adoption discusses the relationship between the preference of innovation methods and systems and how technological innovation is considered to be embraced or dismissed by individuals.Data reveals that executives with low technology quotient scores appear to make bad business choices, leading to shortcomings in innovation(Bakhshi *et al.*, 2016). Decisions taken without knowledge and basic understanding based on technology contribute to the development of weak technology structures and mechanisms for successful innovation(Ferrer & Santa, 2017). A research undertaken in the health sector by Kahveci and Meads (2008)indicates low usability of data and less awareness of technological developments leads to poor decision-making by the leadership team. Managers overseeing emerging technology ventures that lack the technology quotient are unable to make technologically sound decisions (Demirkiran *et al.*, 2016). Demirkesen and Ozorhon (2017) found that when integrating programs in project management, the absence of technology quotient costs companies more money. Conversely, successful projects are delivered by people with a strong knowledge of technology. Experts believe that adopting the best technologies is an asset for the long-term approach of a company to excel in innovation (Severo *et al.*, 2020).

Technological developments have been shown to enhance the quality and efficacy of human resource management. The top-performing businesses were dramatically (three times) more likely to use analytics; these companies' probability of seeing their analytics activity as the

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

strategic differentiator was double that of companies deemed less competitive(Urbański *et al.*, 2019).Kristiansen and Ritala (2018) claimed that company processes and administration, such as artificial intelligence, statistical software, pulse surveys, and intelligent bots, were reinvented on the back of new technologies.This may understand why major corporations and government departments, such as U.S. government agencies, have reported that certain common innovations have been integrated into workforce engagement systems in order to improve the productivity of 40 employee development(Bjorvatn & Wald, 2018).

In the meantime, Appio *et al.* (2019) indicated that organizations should implement new technology to enhance productivity and connectivity and lower employee stress levels, instead of losing staff through turnover after strong investment in their recruiting and growth, which would help improve talent retention.Martinez *et al.* (2020) concluded that enterprises should evolve and adjust market plans from time to time during a time of expedited technology implementation, instead of being static and stuck to a predetermined innovation phase schedule. Talent plans can also be flexible to the evolving labor market.It was suggested that HR positions in an organization must respond to business needs. With the availability of knowledge, they proposed that adequate technology have enabled HR practitioners to evaluate needs in the developing world and emerging patterns(Nieves & Quintana, 2018).

Technology was described by Abdurakhmanova *et al.* (2020) as the single most significant force that could change existing trends and generate new prospects for the work of innovation and organizations in general. It was also predicted that labor productivity would skyrocket against this backdrop. By embracing human resource analytics, businesses will recognize ties between variables that have been overlooked by proposing that human capital analytics could better refine human capital plans and enhance corporate practices, enabling them to have suitable measures for various priorities and objectives(Rajapathirana & Hui, 2018).In short, the literature shows that technological advances contribute to more successful project management activities, which in turn boost corporate processes and innovation success. In the light of literatures discussed that, hypothesis developed as:

H2a: Technical aspects of project management best practice have a significant effect on innovation success.

H2b: Human capital significantly moderates the effect of technical aspects of project management best practice on innovation success.

Project Management Best Practices People, Human Capital and Innovation Success

Today, in the rapid competitiveness of foreign markets, innovation has been the most significant consideration for commercial businesses. Corporations can have to improve their workforce to develop management skills in order to produce advances in new goods and services(Michaelis & Markham, 2017).Innovation is a very common and valuable human resource that needs clear direction, a suitable work environment and a rewards scheme, as well as a target application program(Galleli *et al.*, 2019). Sustainable project management best practices (PMBP) are proposed as a next, innovative and enabling domain for management-level theory building, study and practice. Sustainable PMBP is becoming increasingly relevant and is attracting attention from researchers and students alike(Buenechea-Elberdin *et al.*, 2017).Kuznetsova *et al.* (2019)researched how sustainable

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

PMBP would impact the loyalty and innovation of consumers. While the company is responsible for the outcomes, its competitiveness relies on the fact that the organization has an opportunity to exceed the employees' anticipated responses.

In the case of a sustainable PMBP scheme, companies not only provide their workers with economic strength, but also make investments in their growth with a view to ensuring their leadership with regard to the viability of those investments(Danquah & Amankwah-Amoah, 2017).This may be expected to contribute to innovation and pro-activity in employment partnerships, which are potential priorities and eventually corporate survival. The sustainable PMBP framework acts as a driver for improving employee engagement and participation in sustainability(Banihashemi *et al.*, 2017).Sustainable work partnerships will require increasing employee awareness and expertise in innovative procedures and actions, as well as promoting input on desirable results that allow employee involvement and motivation, according to (Haneda & Ito, 2018). Innovative businesses are continuously educating their workers to develop their goods and services. Inside organizations that have a sustainable HRM structure, constructive management and productive human resource management is an essential activity that allows problem solving, imagination and innovation(Davies *et al.*, 2018).How to accomplish innovation between companies is, above all, a human challenge. The expertise and skills that firms use to build inspiration are being used by their own staff. Innovation efforts also rely heavily on the expertise, abilities, and experience of workers in the value creating process(Alawamleh *et al.*, 2019). In this line of view, the hypothesis proposed as:

H3a: People aspects of project management best practices have a significant effect on innovation success.

H3b:Human capital significantly moderates the effect of people aspects of project management best practices on innovation success.

Methodology

Sampling Design

According to Bentler and Chou (1987), sample size can be estimated using N10 or multiple of ten for number of items in the instrument. Herein, the study has total 28 items in the instrument and therefore, minimum sample required for data analysis was 280 responses. Hence, the study has collected 306 responses from the sample population. However, purposive sampling technique has been used for collected the required sample responses while the selection of purposive-criterion sampling was based on the rationale that the study has focused on gathering the information from the relevant IT professionals of Karachi-based software houses, IT and ERP consultancies, IT product and service providers and some other IT firms. Moreover, the study has also taken the consideration of collecting data from the managers, assistant managers, and key personnel of the IT firms.

Demographic Profile of the Respondents

Amongst 306 respondents, majority of the respondents were male (n = 155, 50.7%) while females were 151 (49.3%). In regards to age groups, 83 respondents were less than 25 years, 70 respondents were between 25 years and 34 years of age, 72 respondents were between 35 years and 44 years of age while majority of the respondents (n = 81, 26.5%) were 45 years and above. Moreover, 73 respondents have working experience 1 to 3 years, 75 respondents have working experience between 3 to 6 years, another 75 respondents have working

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

experience between 6 to 10 years while majority of the respondents (n = 83, 27.1%) holds professional experience of more than 10 years. In regards to the firm size of the respondents, majority (n = 91, 29.7%) belongs to firms having more than 250 employees, followed by 76 respondents affiliated with the firms having 151 to 250 employees, whereas 74 respondents were working small-sized or startup IT firms and only 65 out of 306 respondents comprising 21.2 percent of the sample population were working in IT firms with 50 to 150 employees. Lastly, majority respondents (n = 87, 28.4%) were belongs to IT product organizations, followed by 76 respondents from other IT firms while 73 respondents belongs to IT service organizations and 70 respondents were working in IT/ERP consultancy firms of Karachi.

Data Analysis

There has been extensive scholarly debate (Afthanorhan, 2013; Astrachan *et al.*, 2014; Hair *et al.*, 2017) on the usability of PLS-SEM contrasting to CB-SEM. However, Hair *et al.* (2011) deliberately explained the appropriation of using PLS-SEM in conditions that are PLS can handle smaller sample size data, missing values and non-normal distributed data. Nevertheless, PLS-SEM is a useful technique for estimating moderation analysis (Henseler & Fassott, 2010) while in case of the exploratory modeling framework and theoretical diffusions to explain the phenomenon, PLS-SEM can be an effective 2nd generation statistical technique (Hair *et al.*, 2016). Therein, the study has used PLS-SEM for data analysis using SmartPLS version 3.2.9.

Measurement Model

The measurement model in PLS-SEM has been estimated for the relationship between indicators and latent constructs that are theoretically related (Hair *et al.*, 2017) while it also comprised of the assessment of discriminant validity (Sarstedt *et al.*, 2014). The following table 1 shows the result of measurement model using PLS algorithm comprising factor loadings, composite reliability (CR) and average variance extracted (AVE).

Table 1:

Measurement Model

Variables	Items	Loadings	CR	AVE
CEO Transformational Leadership	CEO2	0.571	0.774	0.544
	CEO6	0.935		
	CEO7	0.657		
Human Capital	HC3	0.773	0.882	0.716
	HC4	0.978		
	HC6	0.772		
Innovation Success	IS3	0.912	0.952	0.834
	IS4	0.929		
	IS5	0.854		
	IS6	0.954		
PM Best Practices (People)	PMP1	0.783	0.866	0.688
	PMP2	0.994		
	PMP3	0.681		

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

	PMT1	0.929		
PM Best Practices (Technical)	PMT2	0.785	0.792	0.574
	PMT3	0.492		

It has been recommended by Hair *et al.* (2016) that indicators with loadings higher than 0.70 should be retained while indicators with loadings below 0.40 should be deleted from the model. However, indicators reliability between 0.40 and 0.70 should be retained on the basis of their acceptable CR and AVE coefficients. In this case, Hair *et al.* (2011) suggested that CR should be higher than 0.80, whereas AVE should be higher than 0.50 for substantial degree of convergence amid indicators and latent constructs. Herein, above table showed that CEO transformational leadership has three indicators with least loading of 0.571 (CEO2) while it's CR and AVE has higher coefficients than the recommended thresholds of 0.80 and 0.50 respectively. Moreover, human capital has three indicators with loadings higher than 0.70, CR higher than 0.80 and AVE higher than 0.50. Furthermore, project management best practices (people) has three indicators with least loading of 0.681 (PMP3) with CR of 0.866 and AVE of 0.688; whereas, project management best practices (technical) has three indicators with least loading of 0.492 (PMT3) with CR of 0.792 and AVE of 0.572. Hence, it has been manifested that measurement model substantially developed construct.

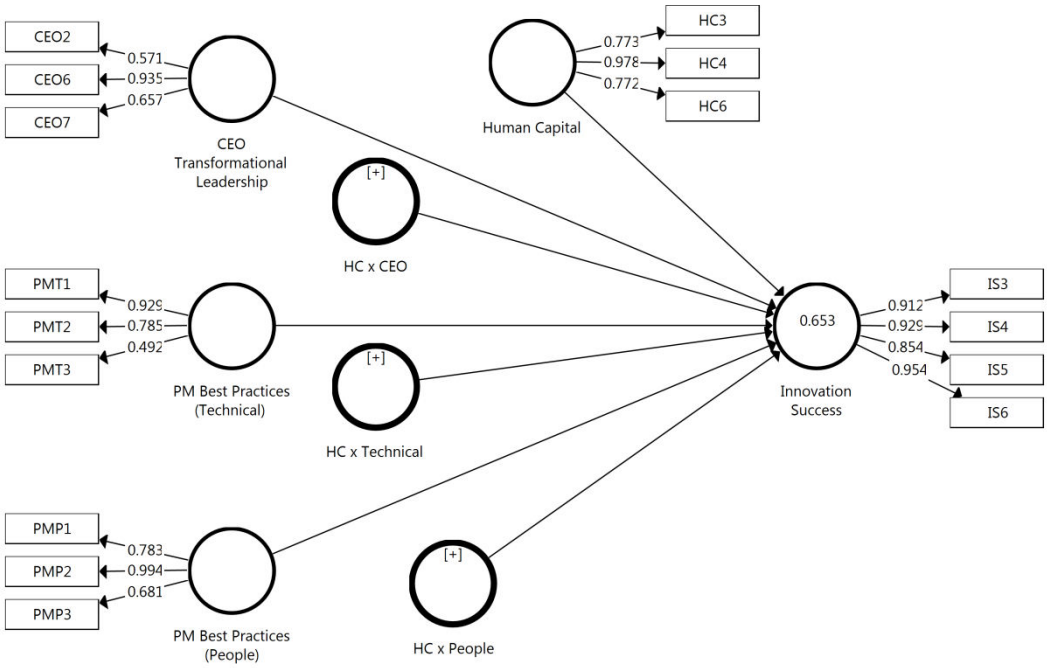

Figure 2: PLS Algorithm Illustration

Discriminant validity

In the following table 2, discriminant validity using Fornell and Larcker (1981) has been estimated.

Table 2:

Fornell-Larcker Criterion

	CEO	**HC**	**IS**	**PMP**	**PMT**
CEO Transformational Leadership	**0.737**				
Human Capital	0.119	**0.846**			

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

Innovation Success	0.590	-0.331	**0.913**		
PM Best Practices (People)	-0.498	-0.618	-0.101	**0.829**	
PM Best Practices (Technical)	0.127	0.448	0.230	-0.481	**0.758**

It has been shown in the above table that bold diagonal coefficients are the square-rooted AVE coefficients of the latent constructs while these bold diagonal values found higher in contrast to correlation coefficients of other constructs. Hence, in accordance with the criterion proposed by Fornell and Larcker (1981), discriminant validity has been achieved.

Table 4:

Heterotrait-Monotrait Ratio (HTMT)

	CEO	**HC**	**IS**	**PMP**	**PMT**
CEO Transformational Leadership					
Human Capital	0.529				
Innovation Success	0.633	0.295			
PM Best Practices (People)	0.886	0.764	0.167		
PM Best Practices (Technical)	0.411	0.532	0.232	0.561	

Another method for discriminant validity is the HTMT ratio that has been recently proposed by Henseler *et al.* (2015). In this regards, it has been recommended that for considerable difference amid latent constructs in the model, HTMT ratio should be below the cut-off value of 0.90 (Henseler *et al.*, 2016; Henseler *et al.*, 2015). In the above table 4, it has been shown that highest HTMT ratio of 0.886 was found between PM best practices (people) and CEO transformational leadership (CEO) and therefore, discriminant validity using HTMT ratio has been achieved.

Table 3:

Crossloadings

	CEO	**HC**	**IS**	**PMP**	**PMT**
CEO2	**0.571**	0.396	0.218	-0.605	0.272
CEO6	**0.935**	-0.069	0.647	-0.249	0.025
CEO7	**0.657**	0.271	0.233	-0.628	0.156
HC3	0.332	**0.773**	-0.037	-0.724	0.241
HC4	0.106	**0.978**	-0.387	-0.620	0.392
HC6	0.054	**0.772**	-0.131	-0.363	0.509
IS3	0.679	-0.129	**0.912**	-0.315	0.322
IS4	0.457	-0.329	**0.929**	-0.025	0.261
IS5	0.503	-0.430	**0.854**	0.064	0.064
IS6	0.505	-0.327	**0.954**	-0.080	0.188
PMP1	-0.294	-0.515	-0.013	**0.783**	-0.395
PMP2	-0.500	-0.609	-0.115	**0.994**	-0.499
PMP3	-0.375	-0.433	-0.018	**0.681**	-0.176
PMT1	0.208	0.448	0.233	-0.511	**0.929**
PMT2	-0.046	0.306	0.144	-0.276	**0.785**
PMT3	0.058	0.343	-0.007	-0.315	**0.492**

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

The above table 3 showed that indicators have higher loadings in their respective latent constructs while comparatively less factor loadings in other constructs. Therefore, it has been manifested that latent constructs are different from each other on the basis of indicators' reliability (Farrell & Rudd, 2009) and thus, discriminant validity using crossloadings has been achieved.

Structural Model

Path analysis

The study has used path analysis using PLS-SEM for hypothesis-testing; however, path analysis has been estimated using PLS bootstrapping at 5000 subsamples. The analysis was based on two-tailed estimation while probability level was set to 5 percent. The following table 5 shows the result of hypothesis-testing using path analysis.

Table 5:

Path Analysis

	Estimate	Std. Dev.	T-Stats	Prob.
CEO TL -> IS	0.648	0.049	13.185	0.000
PM Best Practices (Technical) -> IS	0.429	0.105	4.081	0.000
PM Best Practices (People) -> IS	0.100	0.091	1.099	0.136

CEOTL = CEO Transformational Leadership; IS = Innovation Success

It has been shown in the above table that *Hypothesis-1a* has been accepted postulating that CEO transformational leadership ($\beta = 0.648$, $p < 0.001$) has a positively significant effect on innovation success in the IT sector of Pakistan while *Hypothesis-2a* has also been accepted positing that technical aspects of project management best practices ($\beta = 0.429$, $p < 0.001$) has a positively significant effect on innovation success in the IT sector of Pakistan. However, *Hypothesis-3a* has been rejected proposing that people aspects of project management best practices ($\beta = 0.100$, $p > 0.05$) has no effect on innovation success in the IT sector of Pakistan.

Moderation Analysis

In regards to the moderation analysis of human capital on the effects of CEO transformational leadership, technical and people aspects of project management best practices on innovation success, the study has used PLS path modeling as recommended (Hair *et al.*, 2016; Henseler & Fassott, 2010).

Table 6:

Moderation Analysis

	Estimate	Std. Dev.	T-Stats	Prob.
HC x CTL -> Innovation Success	0.030	0.113	0.264	0.396
HC x PMBPT -> Innovation Success	0.011	0.099	0.108	0.457
HC x PMBPP -> Innovation Success	0.037	0.250	0.150	0.441

HC = Human Capital; CTL = CEO Transformational Leadership; PMBPP = Project Management Best Practice (People); PMBPP = Project Management Best Practice (Technical)

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

It has been shown in the above table that human capital does (β = 0.030, p > 0.05) not have moderating effect on the relationship between CEO transformational leadership and innovation success; therefore, *Hypothesis-1b* has been rejected. Moreover, human capital does (β = 0.011, p > 0.05) not have moderating effect on the relationship between technical aspects of project management best practices and innovation success; thus, *Hypothesis-2b* has also been rejected. Lastly, human capital does (β = 0.037, p > 0.05) not have moderating effect on the relationship between people aspects of project management best practices and innovation success; thereby, *Hypothesis-3b* has also been rejected.

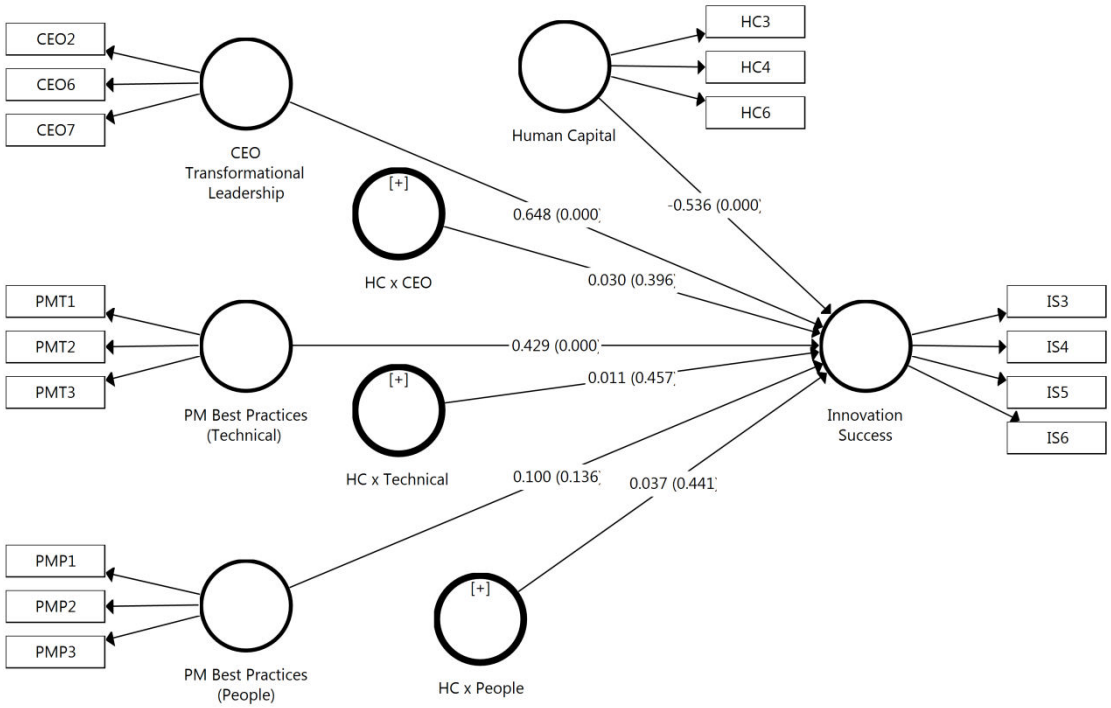

Figure 3: PLS Bootstrapping Illustration

Predictive relevance

It has been recommended by Geisser (1975); Stone (1974) that cross-validation of the endogenous latent construct in the model using PLS blindfolding (Hair *et al.*, 2011). Moreover, PLS algorithm has been used in the study for computing the predictive power of the endogenous construct in the modeling framework to estimate its predictability.

Table 7:

Predictive Relevance

	R Square	R Square Adjusted	Q Square
Innovation Success	0.653	0.645	0.536

It has been shown in the above table that innovation success has been explained upto 65.3 percent (R-Square = 0.653) with the accuracy of 53.6 percent (Q-Square = 0.536) that is

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

higher than zero (Hair *et al.*, 2016)and therein, the endogenous construct has been predicted substantially in the model.

Discussions

The current study identified a significant positive relationship between CTL and innovation success. This finding is also consistent with (Zaman *et al.*, 2019).The results demonstrate continuity with previous research that emphasizes transformational CEOs as motivating and influential in encouraging followers to develop ideal alternatives, embrace risk, and encourage innovative behaviors.

Also, study found that project management best practices (Technical) has a significant positive relationship with innovation success which is also supported by (Beste *et al.*, 2020).The result reveals that the correct choice of tools and techniques leads to innovation, so companies can use PMBP (technical) strategically as catalysts for product and process developments.

Furthermore, the study found an insignificant positive relationship between project management best practices (People) and innovation success. According toMueller (2015)members of the project team are officially asked to split their effort and time between the activities of the immediate project and the information sharing organization-wide learning experiences. In reality, employees concentrate mainly on their project-based tasks and ignore the exchange of cross-border information.

Additionally, the study also identified an insignificant positive relationship between CEO transformational leadership and innovation success with the moderating effect of human capital. The finding indicates that as transformational leadership encourage the innovative behavior of employees and also engage with them with creative ideas innovation success of organization consequently enhance. Therefore, human capital had shown no significant effect moderately between CTL and innovation success. The finding is also consistent with (Michaelis & Markham, 2017).

Likewise, the study also identified an insignificant positive relationship between PMBP (people) and innovation success with the moderating effect of human capital. The finding is also supported by (Fonseca *et al.*, 2019). The finding indicates as previously discussed that employee mainly focus on their own task when assigned with project based task and gave priority and time to their own project not collectively to the organization, the productivity of the organization started to decline. Thus, relying more on human capital in such scenario adversely affect the efficiency of organization as the finding of the study indicated that human capital had also insignificant effect between PMPN and innovation success.

Lastly, the study found an insignificant positive relationship between PMBP (Technical) and innovation success with the moderating effect of human capital. The finding is also consistent with (Zapata-Cantu, 2020). The findings indicates that technological advancement reduces the human effort and provide creative way to improve the efficiency of the organization, hence the human capital had shown insignificant moderating effect between PMPT and innovation success.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

Conclusion

In order to make sound choices that can help promote innovation in their sectors, our results in this report have significant ramifications for practitioners and researchers.Firstly, as the theory of adoption implies that the correct choice of tools and procedures leads to innovation, PMBP can also be used strategically by organizations. It will streamline management actions for the progress of innovation, as well as build invaluable tools for the preparation, implementation, monitoring and assessment of innovative workflows, develop improved connectivity and efficient coordination with clients.

Moreover, the research also lets CEOs understand the fundamental processes within companies that rely on innovation. The results indicate that CEO transformational leadership is essential to the progress of innovation, thus advising organizations to cultivate the potential of transformational leadership for innovation.Transformational leadership is often necessary for individuals and organizations to advance technological innovation, since the results demonstrate that transformational leadership is an important determinant of the success of innovation.

The current study had also provided certain guidance to the future practitioner. Firstly, the current study was conducted in Karachi, future practitioners are recommended to perform the study in different demographic setting to increase the generalizability of the proposed model. The data collected in the current study was from the employees of IT companies operating in Karachi. Future researchers can conduct the research on different sector or industry under which the findings may vary. Lastly, the current study had applied the quantitative research approach, in order to understand the underlying themes among the relation of variables, future practitioner are encouraged to perform the study with qualitative research approach.

References

Abdurakhmanova, G., Shayusupova, N., Irmatova, A., & Rustamov, D. (2020). The role of the digital economy in the development of the human capital market. *Архив научных исследований*(25).

Afsar, B., Badir, Y.F., Saeed, B.B., & Hafeez, S. (2017). Transformational and transactional leadership and employee's entrepreneurial behavior in knowledge–intensive industries. *The International Journal of Human Resource Management, 28*(2), 307-332.

Afthanorhan, W. (2013). A comparison of partial least square structural equation modeling (pls-sem) and covariance based structural equation modeling (cb-sem) for confirmatory factor analysis. *International Journal of Engineering Science and Innovative Technology, 2*(5), 198–205.

Al-Husseini, S.J., & Dosa, T.A. (2016). The effects of transformational leadership on process innovation through knowledge sharing. *International Journal of Economics and Management Engineering, 10*(8), 2752-2759.

Al Ahmad, S., Easa, N.F., & Mostapha, N. (2019). The effect of transformational leadership on innovation: Evidence from lebanese banks.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

Alawamleh, M., Ismail, L.B., Aqeel, D., & Alawamleh, K.J. (2019). The bilateral relationship between human capital investment and innovation in jordan. *Journal of Innovation and Entrepreneurship, 8*(1), 1-17.

Ali, M., & Chin-Hong, P. (2017). Transformational leadership, organizational commitment and innovative success.

Appio, F.P., Lima, M., & Paroutis, S. (2019). Understanding smart cities: Innovation ecosystems, technological advancements, and societal challenges. *Technological Forecasting and Social Change, 142*, 1-14.

Aryee, S., Walumbwa, F.O., Seidu, E.Y., & Otaye, L.E. (2016). Developing and leveraging human capital resource to promote service quality: Testing a theory of performance. *Journal of management, 42*(2), 480-499.

Astrachan, C.B., Patel, V.K., & Wanzenried, G. (2014). A comparative study of cb-sem and pls-sem for theory development in family firm research. *Journal of Family Business Strategy, 5*(1), 116–128.

Bakhshi, J., Ireland, V., & Gorod, A. (2016). Clarifying the project complexity construct: Past, present and future. *International journal of project management, 34*(7), 1199-1213.

Banihashemi, S., Hosseini, M.R., Golizadeh, H., & Sankaran, S. (2017). Critical success factors (csfs) for integration of sustainability into construction project management practices in developing countries. *International Journal of Project Management, 35*(6), 1103-1119.

Begum, S., Xia, E., Mehmood, K., Iftikhar, Y., & Li, Y. (2020). The impact of ceos' transformational leadership on sustainable organizational innovation in smes: A three-wave mediating role of organizational learning and psychological empowerment. *Sustainability, 12*(20), 8620.

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

Beste, C., Welo, T., & Olsson, N. (2020). *Influence of innovation, complexity and newness on success in new product development projects: A survey in norwegian manufacturing industry*. Paper presented at the Proceedings of the Design Society: Design Conference.

Bjorvatn, T., & Wald, A. (2018). Project complexity and team-level absorptive capacity as drivers of project management performance. *International Journal of Project Management, 36*(6), 876-888.

Bond-Barnard, T.J., Fletcher, L., & Steyn, H. (2018). Linking trust and collaboration in project teams to project management success. *International Journal of Managing Projects in Business*.

Buenechea-Elberdin, M., Sáenz, J., & Kianto, A. (2017). Exploring the role of human capital, renewal capital and entrepreneurial capital in innovation performance in high-tech and low-tech firms. *Knowledge Management Research & Practice, 15*(3), 369-379.

Chan, S.W., Ang, S.F., Andleeb, N., Ahmad, M., & Zaman, I. (2019). The influence of transformational leadership on organization innovation in malaysian manufacturing industry. *International Journal of Supply Chain Management, 8*(2), 971-976.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

Chen, J.-X., Sharma, P., Zhan, W., & Liu, L. (2019). Demystifying the impact of ceo transformational leadership on firm performance: Interactive roles of exploratory innovation and environmental uncertainty. *Journal of Business Research, 96*, 85-96.

Cortes, A.F., & Herrmann, P. (2020). Ceo transformational leadership and sme innovation: The mediating role of social capital and employee participation. *International Journal of Innovation Management, 24*(03), 2050024.

Danquah, M., & Amankwah-Amoah, J. (2017). Assessing the relationships between human capital, innovation and technology adoption: Evidence from sub-saharan africa. *Technological Forecasting and Social Change, 122*, 24-33.

Davies, A., Manning, S., & Söderlund, J. (2018). When neighboring disciplines fail to learn from each other: The case of innovation and project management research. *Research Policy, 47*(5), 965-979.

De Guimarães, J.C.F., Severo, E.A., Dorion, E.C.H., Coallier, F., & Olea, P.M. (2016). The use of organisational resources for product innovation and organisational performance: A survey of the brazilian furniture industry. *International Journal of Production Economics, 180*, 135-147.

Demirkesen, S., & Ozorhon, B. (2017). Impact of integration management on construction project management performance. *International Journal of Project Management, 35*(8), 1639-1654.

Demirkiran, M., Taskaya, S., & Dinc, M. (2016). A study on the relationship between organizational justice and organizational citizenship behavior in hospitals. *Int. J. Bus. Manage. Econ. Res, 7*, 547-554.

Farrell, A.M., & Rudd, J.M. (2009). *Factor analysis and discriminant validity: A brief review of some practical issues*.

Fasaghandis, H.S., & Wilkinson, S. (2019). A review on leadership styles and innovation and their impact on productivity. *43RD AUBEA*, 246.

Ferrer, M., & Santa, R. (2017). The mediating role of outsourcing in the relationship between speed, flexibility and performance: A saudi arabian study. *International Journal of Productivity and Quality Management, 22*(3), 395-412.

Fonseca, T., de Faria, P., & Lima, F. (2019). Human capital and innovation: The importance of the optimal organizational task structure. *Research policy, 48*(3), 616-627.

Fornell, C., & Larcker, D.F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of marketing research, 18*(3), 382-388.

Galleli, B., Hourneaux Jr, F., & Munck, L. (2019). Sustainability and human competences: A systematic literature review. *Benchmarking: An International Journal*.

Gashema, B., & Mokua, J.K. (2019). Trickle-down effect of ceo transformational leadership on employee's innovative work behaviors. *International Journal of Business Ecosystem & Strategy (2687-2293), 1*(2), 01-14.

Geisser, S. (1975). The predictive sample reuse method with applications. *Journal of the American statistical Association, 70*(350), 320-328.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

Grošelj, M., Černe, M., Penger, S., & Grah, B. (2020). Authentic and transformational leadership and innovative work behaviour: The moderating role of psychological empowerment. *European Journal of Innovation Management*.

Guertler, M.R., & Sick, N. (2020). Exploring the enabling effects of project management for smes in adopting open innovation–a framework for partner search and selection in open innovation projects. *International Journal of Project Management*.

Hair, J.F., Hult, G.T.M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (pls-sem)*: Sage Publications.

Hair, J.F., Matthews, L.M., Matthews, R.L., & Sarstedt, M. (2017). Pls-sem or cb-sem: Updated guidelines on which method to use. *International Journal of Multivariate Data Analysis, 1*(2), 107-123.

Hair, J.F., Ringle, C.M., & Sarstedt, M. (2011). Pls-sem: Indeed a silver bullet. *Journal of Marketing theory and Practice, 19*(2), 139–152.

Haneda, S., & Ito, K. (2018). Organizational and human resource management and innovation: Which management practices are linked to product and/or process innovation? *Research Policy, 47*(1), 194-208.

Henseler, J., & Fassott, G. (2010). Testing moderating effects in pls path models: An illustration of available procedures *Handbook of partial least squares* (pp. 713-735): Springer.

Henseler, J., Hubona, G., & Ray, P.A. (2016). Using pls path modeling in new technology research: Updated guidelines. *Industrial management & data systems, 116*(1), 2-20.

Henseler, J., Ringle, C.M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science, 43*(1), 115-135.

Hrůzová, M.H.H. (2017). *Project management in the czech republic: Is it time for innovation?* Paper presented at the Innovation Management, Entrepreneurship and Sustainability (IMES 2017) Prague.

Institute, P.M. (2019). The future of work: Leading the way with

pmtq. *Pulse of the Profession 2019.* Retrieved Jan 2021, 2021, from https://www.pmi.org/-/media/pmi/documents/public/pdf/learning/thought-leadership/pulse/pulse-of-the-profession-2019.pdf?v=ff445571-0b23-4a2b-a989-44eb20df55bd&sc_lang_temp=en

Jaiswal, N.K., & Dhar, R.L. (2015). Transformational leadership, innovation climate, creative self-efficacy and employee creativity: A multilevel study. *International Journal of Hospitality Management, 51*, 30-41.

Jiang, Y., & Chen, C.C. (2018). Integrating knowledge activities for team innovation: Effects of transformational leadership. *Journal of Management, 44*(5), 1819-1847.

Kahveci, R., & Meads, C. (2008). Analysis of strengths, weaknesses, opportunities, and threats in the development of a health technology assessment program in turkey. *International journal of technology assessment in health care, 24*(2), 235.

Kerzner, H. (2018). *Project management best practices: Achieving global excellence*: John Wiley & Sons.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

Krchová, H. (2019). Project tools in relation to the implementation of the ability of innovation companies in slovakia. *Entrepreneurship and Sustainability Issues, 7*(1), 291-302.

Kristiansen, J.N., & Ritala, P. (2018). Measuring radical innovation project success: Typical metrics don't work. *Journal of Business Strategy*.

Kuznetsova, I.G., Bulyga, R., Rakhmatullina, L., Titova, S., Shichiyakh, R., & Zakirov, R. (2019). Problems and prospects of human capital development in modern russia.

Le, P.B., & Lei, H. (2019). Determinants of innovation capability: The roles of transformational leadership, knowledge sharing and perceived organizational support. *Journal of knowledge management*.

Lientz, B., & Rea, K. (2016). *Breakthrough technology project management*: Routledge.

Łukowski, W. (2017). The impact of leadership styles on innovation management. *Marketing of Scientific and Research Organizations, 24*(2), 105-136.

Martinez, B., Reaser, J.K., Dehgan, A., Zamft, B., Baisch, D., McCormick, C., . . . Selbe, S. (2020). Technology innovation: Advancing capacities for the early detection of and rapid response to invasive species. *Biological Invasions, 22*(1), 75-100.

Martinsuo, M. (2020). The management of values in project business: Adjusting beliefs to transform project practices and outcomes. *Project Management Journal*, 8756972820927890.

Michaelis, T.L., & Markham, S.K. (2017). Innovation training: Making innovation a core competency a study of large companies shows that, although managers see human capital as central to innovation success, most aren't providing innovation training. *Research-Technology Management, 60*(2), 36-42.

Mokhber, M., Khairuzzaman, W., & Vakilbashi, A. (2018). Leadership and innovation: The moderator role of organization support for innovative behaviors. *Journal of Management & Organization, 24*(1), 108-128.

Mueller, J. (2015). Formal and informal practices of knowledge sharing between project teams and enacted cultural characteristics. *Project Management Journal, 46*(1), 53-68.

Nieves, J., & Quintana, A. (2018). Human resource practices and innovation in the hotel industry: The mediating role of human capital. *Tourism and Hospitality Research, 18*(1), 72-83.

Pradhan, S., & Jena, L.K. (2019). Does meaningful work explains the relationship between transformational leadership and innovative work behaviour? *Vikalpa, 44*(1), 30-40.

Rajapathirana, R.J., & Hui, Y. (2018). Relationship between innovation capability, innovation type, and firm performance. *Journal of Innovation & Knowledge, 3*(1), 44-55.

Sarstedt, M., Ringle, C.M., Smith, D., Reams, R., & Hair, J.F. (2014). Partial least squares structural equation modeling (pls-sem): A useful tool for family business researchers. *Journal of Family Business Strategy, 5*(1), 105–115.

Severo, E.A., Sbardelotto, B., de Guimarães, J.C.F., & de Vasconcelos, C.R.M. (2020). Project management and innovation practices: Backgrounds of the sustainable

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

competitive advantage in southern brazil enterprises. *Production Planning & Control, 31*(15), 1276-1290.

Shafique, I., & Kalyar, M.N. (2018). Linking transformational leadership, absorptive capacity, and corporate entrepreneurship. *Administrative Sciences, 8*(2), 9.

Sheehan, M., Garavan, T.N., & Morley, M.J. (2020). Transformational leadership and work unit innovation: A dyadic two-wave investigation. *Journal of Business Research, 109*, 399-412.

Shenhar, A., Holzmann, V., Dvir, D., Shabtai, M., Zonnenshain, A., & Orhof, O. (2020). If you need innovation success, make sure you've got the right project. *IEEE Engineering Management Review, 48*(1), 113-126.

Singh, S.K., Del Giudice, M., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technological Forecasting and Social Change, 150*, 119762.

Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the royal statistical society. Series B (Methodological), 36*(2), 111-147.

Strukan, E., Nikolić, M., & Sefić, S. (2017). Impact of tranformational leadership on business performance. *Tehnicki vjesnik/Technical Gazette, 24*.

Suliman, A., Rao, A.S., & Elewa, T. (2019). Ceo transformational leadership and top management team performance: Study from gcc. *Measuring Business Excellence*.

Urbański, M., Haque, A.U., & Oino, I. (2019). The moderating role of risk management in project planning and project success: Evidence from construction businesses of pakistan and the uk. *Engineering Management in Production and Services, 11*(1), 23-35.

Zaman, U., Nadeem, R.D., & Nawaz, S. (2020). Cross-country evidence on project portfolio success in the asia-pacific region: Role of ceo transformational leadership, portfolio governance and strategic innovation orientation. *Cogent Business & Management, 7*(1), 1727681.

Zaman, U., Nawaz, S., & Nadeem, R.D. (2020). Navigating innovation success through projects. Role of ceo transformational leadership, project management best practices, and project management technology quotient. *Journal of Open Innovation: Technology, Market, and Complexity, 6*(4), 168.

Zaman, U., Nawaz, S., Tariq, S., & Humayoun, A.A. (2019). Linking transformational leadership and "multi-dimensions" of project success. *International Journal of Managing Projects in Business*.

Zapata-Cantu, L. (2020). Boosting innovation in emerging markets: The moderating role of human capital. *International Journal of Emerging Markets*.

Zuraik, A. (2017). *A strategic model for innovation leadership: Ambidextrous and transformational leadership within a supportive climate to foster innovation performance.* Alliant International University.

Zuraik, A., & Kelly, L. (2019). The role of ceo transformational leadership and innovation climate in exploration and exploitation. *European Journal of Innovation Management*.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.022

Note: Correspondent Author, Urooj Aijaz
(uroojaijaz.bukc@bahria.edu.pk-----0336-2355313)