Journal of Management Practices, Humanities and Social Sciences

Vol 5 Issue 5 pp. 50-59

https://doi.org/10.33152/jmphss-5.5.6

ORIGINAL CONTRIBUTION

National Innovation Capacity and Economic Growth Go Side by Side

Yassir Mahmood [1], Salma Mukhtar [2*], Zulfiqar Hussain Awan [3], Javeria Islam [4], Qurat-ul-Ain [5]

[1] Assistant Professor, Lahore Business School, University of Lahore, Sargodha Campus, Pakistan

[2] Lecturer, Malik Feroz Khan Noon Business School, University of Sargodha, Sargodha, Pakistan

[3] Lecturer, Department of Economics, University of Sargodha, Sargodha, Pakistan

[4] Lecturer, Malik Feroz Khan Noon Business School, University of Sargodha, Sargodha, Pakistan

[5] MS Scholar, Lahore Business School, University of Lahore, Sargodha Campus, Pakistan

Abstract— This research presents an empirical examination of innovation capacity as a source of incentive for economic growth. This work introduces a novel framework by incorporating availability of latest technology, quality of management schools, intellectual property protection and intensity of local competition as the important antecedents of innovation capacity. Furthermore, it is also proposed that innovation capacity results in the outcome of economic growth of a country. Based on the previous literature five hypotheses were posed. The study utilized secondary data for 151 countries from year 2012 t0 2016 extracted from Global Information Technology Reports (GITR). The GITR is a special project of the World Economic Forum (WEF) that is published annually. Descriptive statistics and Fixed Effect Model were used to examine the hypothesized relationships and generate results. Analyses of data concluded that the entire hypotheses were approved. As use of latest technology, quality management schools, protection of intellectual property and healthy local competition enhances the level of national innovation capacity which leads to higher economic growth. These findings have important implications for research and practice as a country can contribute in economic growth by enhancing its innovation capacity.

Index Terms— Corporate Social Responsibility, Innovative Performance, Firm Performance

Received: 06 August 2021 **Accepted:** 20 September 2021 **Published:** 10 November 2021

Introduction

Innovation is often claimed to be an underpinning of competitiveness and in some cases also profitability. Innovation plays an important role in an economy and contributes to competitive advantage and improved national performance (O'Connor, et al., 2007). Numerous benefits of creativity can be seen such as high living standards, improved business operations and procedures and better products and services. These benefits and innovation gains can also be seen on the national level of a country like increase in gross domestic product and per capita income. On the micro level, innovation brings prosperity for businessmen and entrepreneurs; they can enjoy increased productivity and more profits through innovative products and services.

The effects of innovation are not limited to the conceptualization, production, and marketing of new and improved products but also include factors such as employees' motivation, job satisfaction and the general atmosphere in an organization. As a matter of fact, over the

*Email: salma.mukhtar@uos.edu.pk

years innovation has captured attention all over the world in all economies either whether they are developed or underdeveloped nations (Martino & Mangotti, 2018; Khattak et al., 2021). It is hence evident that for an organization to become prosperous innovators is a matter of vital concerns. Traditional research with innovation often had only focused economic or structural factors neglecting other functional areas. Driven by performance and profit considerations, innovation is normally analyzed from the perspective of applying new solutions to problems while minor consideration paid to the idea generation that lead to creativity. Hence to record the performance of innovation it is often judged through straggle measures of outputs and outcomes like return on equity and annual sales.

Innovation helps countries to differentiate themselves. The world of the productivity and prosperity not only rest on the productions in which they compete but also on the dynamics that how they compete (Lundvall, 1992; Fatima, Majeed, & Saeed, 2017). The overall productive contributions of organizations lead to the economic growth of the country. Many contemporary studies choose to investigate the factors which have an influence on the innovativeness of the country. Business operations rely on different resources to attain success. Besides, to focus the driving factors behind the innovative capacity of a country are also very important (Martino & Mangotti, 2018). If a country is lacking behind in use of modern and latest technology, it may be unable to sustain globally. Countries can be more productive if they deploy latest technologies, product intellectual property and higher quality of management institutions (Furman, Porter, & Stern, 2001; Farid et al., 2021).

National innovative capacity refers to a country's ability to build a flux of technology over the longer period of time and to provide a way to gauge invention and innovative potential (Porter and Stern, 2001). Furthermore, innovative capacity can also be used to make comparison between geography of the particular areas to determine the dynamics of their technological leadership and performance (Ndesaulwa & Kikula, 2016). Capacity for innovation can thrive in a society if the local competition, technology, intellectual properties and quality of management schools are widely available in a country (Aghion, 2008; Khan, Saeed, Ali, & Nisar, 2021). Each of these perspectives drastically impacts innovation speed that's why innovation varies from nation to nation.

It is widely accepted local competition is dynamic and rests on innovation. Building close linkages with suppliers, buyers, and other institutions are very important for innovation. Local Competition affects competitive advantage through its influence on productivity. Local competition drives innovation, inspires perseverance and builds team spirits and increases the overall growth of economy. Zalewski and Skawinska (2009) suggested that technology sector is the most attractive investment destination in any economy as it improves or create new products that will expand global economy and profits. Technological innovation plays a key role in the process of long-run economic growth (Tahir, Rahman, & Saeed, 2019; Shahbaz et al., 2014). Moreover, technology affects the culture, efficacy and a business by attracting new customers in the country toward new products (Khan, Saeed, & Khattak, 2018). The acquisition of latest technology causes reduction in the production or operation costs and it also shorten the product life cycle. (Almeida & Phene, 2004; Altakhayneh, 2022; Ali, Ahmad, & Saeed, 2018).

Intellectual property refers to creative ideas and literary work including patents, symbols and trade secrets (Rahman, Saeed, & Batool, 2019). If a country possesses laws regarding intellectual property protection, then their competitors can't be monopolistic and remains unable to make similar products (Cho & Kim, 2017). The World Intellectual Property Organization (WIPO) also ranks a nation's innovativeness across the globe. It encourages the protection of intellectual property throughout the world. In the contemporary times, universities are playing an important role in the development of technology. Many universities around the globe have dedicated departments for this purpose (Chen & Kenney, 2007; Ullah et al., 2021; Al Hassan, Fatima, & Saeed, 2019). Technology too has a crucial role in promoting innovation capacity of a nation.

Economic growth plays a very important role in the development of a country. Earlier studies (Motohashi & Yun, 2007; Khattak, Saeed, & Tariq, 2018) have pointed the importance of innovation for the economic development of the country. In a country, gearing up the innovation capacity amend the economic growth (Ali et al., 2021). In all the Western countries, economic growth is happening at a rapid speed. It is because these countries are leading in terms of innovation. Economy in those countries is backed by technology. Further, it also makes possible the fusion of innovation and technical advancement to production processes, thereby increasing total factor productivity. Chang and Fan (2017) in their research stressed for technological and scientific advancement and its impact on economic growth.

Innovation ensures that the resources of country are utilized effectively. Therefore, all the economic indicators including per capital income far exceeds that of developing and under developed countries. An endogenous growth theory makes it clear how various factors bear an effect on economic growth. Consequently, countries that avoid transforming are left far behind as compared to developed nations who focus more on innovation and economic growth. Innovation gap represents an innovation challenge that need to be overcome to reach the sustainable development level. The research work highlighted that a highly unique analysis of different set of variables to innovation can be used to highlight the new perspective of competitors and economic growth. This research presents an opportunity to examine the influence of various factors (i.e., intensity of competition, availability of technology, quality management schooling and intellectual property protection) on innovation's capacity of nations. Consequently, the impact of innovation capacity on economic growth of countries is also under consideration in current research.

Literature Review Hypotheses Development

Availability of Latest Technology and Innovation Capacity

Availability of latest technology is defined as any fruitful and useful procedure which brings a remarkable betterment in all the areas of personal, professional and commercial life. (Hao & Song, 2015; Zia, Saeed, & Khan, 2018). The growth of technology is not limited to the development of any country it is also indispensable for the growth of global economy system as well. Economic development with the adequate support of technology might help to address many social and economic challenges (Khan, Kaewsaeng-on, & Saeed, 2019). The effects of technology on both innovation and performance are drastic. The positive impacts of radical and incremental innovation are the by-products of technology (Burki, Khan, & Saeed, 2020). Countries where latest technology is available may achieve higher innovation capacity. It is thus suggested that:

H1: Availability of latest technologies will have positive impact on innovation capacity of a country.

Quality of Management Schools and Innovation Capacity

Etzkowitz (1998) noted that "Cooperation among higher education institutions and policy makers is considered as important factors that facilitate the improvement of innovative capabilities and the economic growth of countries". Friedman and Silberman (2003) examined the relationship between higher education and innovation models and regarded innovation as the main source of creativity and growth. The research conducted by Galindo and Mendez (2014) also accentuated that the role of institutions is vital for the innovation process. Thus a country with more management schools and knowledge stock may have a strong capacity for innovation (Nadeem, Saeed, & Gul, 2020). Therefore, it is proposed that:

H2: Quality of management schools will have positive impact on innovation capacity of a country.

Intellectual Property Protection and Innovation Capacity

Intellectual Property Protection (IPP) refers to the rights protection of liberty, symbols, titles created by various minds (Cho & Kim, 2017; Gul, Ali, & Saeed, 2021). It also refers to different copyrights. Intellectual property protection also has a great significance for innovation capacity (Cho & Kim 2017). In current era, due to technological advancements, the governments are also paying full attention to the IPP rights. These rights also contribute to the competitiveness of a nation in a particular country. In a global study, Chen and Puttitanun (2005) examined the relationship between the level of IPP rights and innovations. Their research yielded that higher the protection of intellectual rights, the innovativeness also increases in a developing country. Cao and Zhao (2013) also have similar empirical evidences regarding this relationship. It is generally accepted that countries with higher IPP rights may reap higher innovation capacity (Saeed, 2017). It is thus posed that:

H3: Intellectual property protection will have positive impact on innovation capacity of a country.

Intensity of Local Competition and Innovation Capacity

Intensity of Local competition is explained as the degree at which the companies and individuals competing in the same industry within a specific geographic region with the goal of increasing market-shares, revenues and profit margins. Feldman and Audretsch (1999) investigated the effects of the diversity, work specialization and localized competition on innovation. They suggested that knowledge spillovers and diversity and promote innovation in a better way. In addition, their work also affirmed that the degree of local competition within a city as compare to monopoly is more helpful to bring innovation. Nesta, et al. (2014) examined the effects of different policies on national innovation level, they have analyzed how different levels of competition increase innovation potential of a country. Their contribution is motivated by the fact that both competition and environmental policies are important drivers of innovation. The study of Galindo and Mendez (2014) exerted special focus on local competition required for the creative processes. Competitiveness of a society makes sure that every individual and firm get a fair chance to contribute towards the innovation capacity of nation. economic growth. Thus it is hypothesized that:

H4: Intensity of local competition will have positive impact on innovation capacity of a country.

Economic Growth and Innovation Capacity

Economic growth is an important element of the national economy. It not only affects national income but also raises per capital income. As a result, the country becomes more prosperous. Economic growth not only affects income levels at micro and macro level but also affects financial policies of a particular country. The role of innovation and competitiveness in economic growth has become ever more important in the present times. Galindo and Mendez (2014) analyzed the relationship between innovation and economic growth, considering the

entrepreneurial activities. Their research demonstrated that innovation in a country provides the way to economic prosperity. In line with previous studies such as economic models and empirical evidence mentioned above, it is hypothesized that:

H5: Innovation capacity will have positive impact on economic growth of a country.

Conceptual Framework

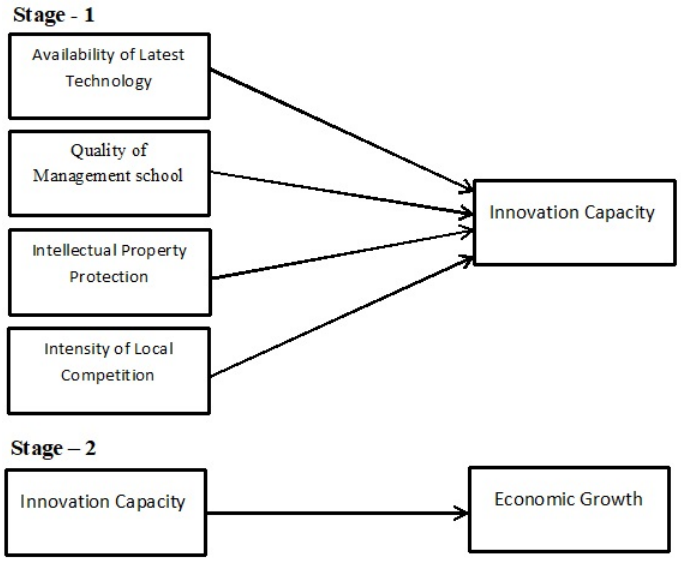

Fig. 1 *Proposed Model of Research*

Research Methodology

To test the hypothesized relationships, this research deployed quantitative approach. Country formed the unit of analysis in this research. To collect data at country level is always constrained by time and financial resources. Hence for country level data secondary data sources were used. In this regard the Global Information Technology Report (GITR) was consulted for data extraction. The GITR is composed by World Economic Forum (WEF) and has been published annually. According to the GITR report a sample of 151 countries' data was available. In GITR, data has been retained against 53 indicators. The research at hand extracted data for the timespan from the year 2012 to 2016. The list of sample countries selected in current research is incorporated in Appendix 1.

Operationalization of Variables

The GITR is employed to operationalize all the variables used in this research. Different indices from GITR were utilized as a proxy measure. The indices availability of latest technology, quality of management schools, intellectual property protection, intensity of local competition, innovation capacity all are present in GITR having data range 1 to 7. Where 1 represent the minimum level and 7 represent the optimum level. For the variable economic growth the proxy of Gross Domestic Product (GDP) per capita (in millions) has been used. Apart from these focal variables, population size of country was used as control variable to test the proposed relationships of the research model.

Data Analysis Tools and Techniques

This research is based on secondary data analysis, so different tools like MS Excel, SPSS and Eviews were used to draw the results and test the hypotheses. Descriptive statistics, graphs, different arithmetic operations and correlations were carried out. At the end data analysis, Fixed Effect Model (FEM) was used to test the hypothesized relationships.

Results and Data Analysis

Descriptive Statistic

The descriptive statistics of all independent variables are demonstrated in graphs below. Availability of technology is demonstrated in Figure 2, intensity of local competition in Figure 3 and intellectual property protection in Figure 4.

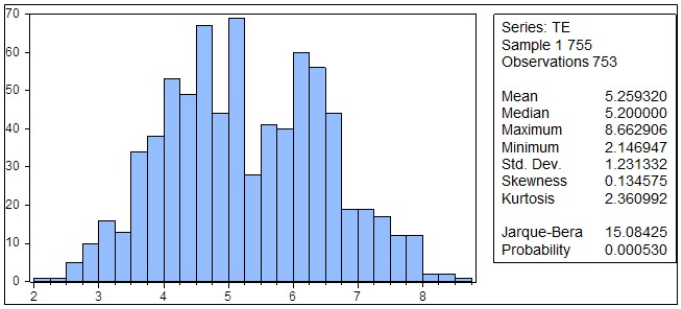

Fig. 2 *Availability of Latest Technology*

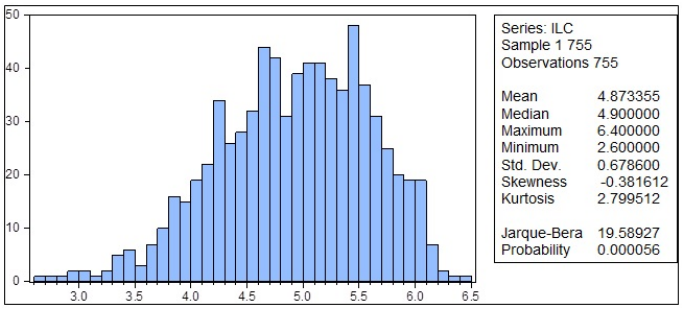

Fig. 3 *Intensity of Local Competition*

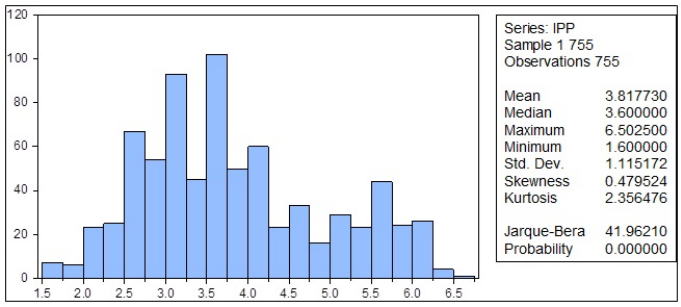

Fig. 4 *Intellectual Property Protection*

Correlation Analysis

According to the GITR reports the data was available against 151 countries. As a sample of 151 countries, the correlations results are drawn in Table I. The correlations are among the six main constructs (excluding the control variables) of the study i.e., availability of latest technology, quality of management schools, intellectual property protection, intensity of local competition, innovation capacity and economic growth. As correlation coefficient (r) is a measure of the strength of the association between the two variables. The results show that availability of technology (r = 0.299), quality of management schools (r = 0.582), intellectual property protection (r = 0.793) and intensity of local competition (r = 0.557) are positively correlated with innovative capacity. On the other hand innovation capacity (r = 0.571) has also positive association with economic growth.

The results indicate that the technology have an impact on innovative capacity in a positive manner. The availability of latest technology in country may upsurge the innovative capacity of a country. From the strong association between quality of management schools and national innovative capacity it is derived that if there is a better quality of management within the country then they tend to perform in a more meaningful manner in term of innovation. Same is the case with intensity of local competition and innovative capacity. The impact of intellectual property on innovative capacity is extremely poignant. A fairly strong positive relationship implies that Intellectual property protection is also highly correlated to national innovative capacity.

Table I
Correlation Analysis

N = 151	IC	GDP pc	ILC	QM	IPP	AT
IC	1					
GDP pc	0.570**	1				
ILC	0.557**	0.389	1			
QMS	0.582***	0.465***	0.690***	1		
IPP	0.793***	0.642**	0.585***	0.627**	1	
AT	0.299**	0.319**	0.207**	0.189**	0.378***	1

Note: *** Correlation is significant at the 0.01 level
**. Correlation is significant at the 0.05 level
IC = Innovation Capacity, GDP pc = Gross Domestic Product per capita, ILC = Intensity of Local Competition, QMS = Quality of Management Schools, IPP = Intellectual Property Protection, AT = Availability of Technology

Hypotheses Testing

This research tested the hypotheses by applying Fixed Effects Model (FEM). The FEM was deployed in two stages. At stage one, the effects of all independents variables (availability of technology, quality of management schools, intellectual property protection, intensity of local competition) on the dependent variable (innovation capacity) was checked. While at stage two, the impact of innovation capacity on the outcome variable (economic growth) was verified.

Fixed Effect Model Stage - 1

The results of stage 1 are drawn in Table II. The results demonstrate that availability of technology (β = .021, *p* = .001), quality of management schools (β = .108, *p* = .000), intellectual property protection (β = .523, *p* = .000), intensity of local competition (β = .078, *p* =.004) have significant impact on innovation capacity. Thus, these results provide the basis to accept the hypotheses H1, H2, H3 and H4. The *R*-square at stage 1 was recoded as 69 % which summarizes that high variation is caused by all independent variables in innovation capacity.

Table II
Fixed Effect Model Stage - 1

Variable	B	Std. Err	*t*	*p*
ILC	0.078	0.039	1.978	0.004
QMS	0.108051	0.031019	3.48334	0.000
IPP	0.52396	0.02314	22.64346	0.000
AT	0.021428	0.016133	2.328217	0.000
R^2	0.699			
Adj R^2	0.695			

Note: DV = Innovation Capacity
IC = Innovation Capacity, GDP pc = Gross Domestic Product per capita, ILC = Intensity of Local Competition, QMS = Quality of Management Schools, IPP = Intellectual Property Protection, AT = Availability of Technology

Fixed Effect Model Stage – 2

At stage 2, the FEM was ran for the outcome variable i.e., economic growth of countries. The results suggest that innovation capacity (β = .750, *p* = .000) has significant positive impact on economic growth. Hence the last hypothesis i.e., H5 is also accepted.

Table III
Fixed Effect Model Stage - 2

Variable	B	Std. Err	*t*	*p*
IC	0.750	0.174	3.540	0.0003
R^2	0.154			
Adj R^2	0.155			

Note: DV = Economic Growth IC= Innovation Capacity

Discussion and Conclusion

This study integrates research from the intensity of local competition, latest technology availability, intellectual property protection, quality of management schools towards innovation capacity of a country. Furthermore, the role of economic growth as an outcome of innovation capacity is also investigated. The study has added knowledge to the literature in favor of encouraging local competition and making latest technologies a commonplace. Also the role of management schools and intellectual property protection for improving national innovation capacity is crucial. Among the four predictors of innovation capacity, intellectual property protection has been recognized to contribute much higher to the innovation capacity. Analytically, the results come up with active favor for the intellectual property protection. The results show that strong intellectual property protection laws ensure higher innovation which ultimately enhances economic growth of a country. Further, the positive impact of local competition suggests that intense local competition encourages the innovation capacity worldwide. In any specific country, metropolitan cities are expected to give rise to higher amount of innovation. It is simply because of a higher degree of commercial activities. Simultaneously, it is also affirmed that the availability of latest technologies is also an important element for innovation speed. The results show that countries are more innovative in the environment where latest technology is affluent. Availability of latest technology and innovation capacity serve as a critical driving force to increase innovation and refined economic growth. The results also provide support for the relationship of the quality of management schools with innovation capacity. The positive value of the coefficient of quality management schools suggests that it promotes the innovation activities of a country. This is also evident that a country enriched with such assets of strong infrastructure of management institutions there innovation capacity may persist with greater speed and for a prolong period of time. This research work further yields some interesting results regarding the relationship between innovation capacity and economic growth of a country. The positive results show that innovation capacity of a country increase the economic growth. The inferences supported the stance that economic growth of a nation greatly depends on its innovation's capabilities.

This research work diverted the attention of the innovation's literature to the facts that innovative activities can provide the grounds to a great extent to facilitate the economic growth of a nation. Quality management schooling is accepted as being highly applicable to modify national innovative capacity. It benefits a country in terms of innovation abilities if quality of management schooling is ensured properly. Countries can adopt quality management practices; align it with other resources to build their competence and capabilities including innovation. It is affirmed that by giving special emphasis to technology, management studies, local competition and intellectual property protection can strengthen the creative ideas and innovativeness of societies across the globe. Once a society achieve the status of innovation, its consequences results in higher economic stability. As evident from the result, that there exist a positive correlation between the availability of technology and national innovation capacity. It is observed, however, that with the availability of modern technological system, countries remarkably influence the ability of entrepreneurs to found and expand new businesses, and therefore increase the rate of development for both production and service sectors' industries.

Like literature has pointed a positive relationship between local market competition and innovative output and productivity growth, the same has been asserted from the results of current research. On the other hand, quality of management schools also impacts national innovation capacity in a positive manner. It is observed that country is more likely to innovate if internal knowledge resources are nationally controlled rather than they are controlled by individual experts, or more specifically we can say that if their intellectual property is protected. This research highlighted that protection of the intellectual property have important management implications, which may lead to increased innovative capacity of a country.

This work has important practical contributions for policy makers. This study emphasizes to the relationship between intellectual property protections, quality of management schools, intensity of local competition, availability of latest technology and national innovation capacity. At the macroeconomic level, intellectual property promotes domestic innovation and foreign direct investment that ultimately promote economic development. The system of intellectual property protections provides a structure in which various countries can contribute to economic development. Economic growth is due to technological change all over the world which in return brings prosperity and development. Intellectual property protection provides a frame of laws under which various enterprises can work in accord with the standards set by the governments of developed countries. All these measures ultimately boost up economic growth. The study also throws light on the utility of Schools of management for the economic growth of country. The universities and management schools

are helpful in many ways. These not only provide skilled labor but also improve overall standing of a particular country. If paid proper attention, these institutions can alter the destination of any country. However, on their failing, the entire economic infrastructure may collapse. All the developed countries are the ones who have well-established and have healthy research institutions. The governments equate these institutions with the economic growth and well-being of being of people. Innovations on the other hand would improve overall economic outlook of the country. It would encourage investors from various countries to invest. A well-structured economy is jointly supported by creative ideas and innovations so innovations provide a strong foundation for the structure of stable economy and is the ultimate solution to economic growth.

Conclusion

This research linked the innovation capacity to some of its pre-requisites and affirmed that innovative nations have fair economic growth than their counterpart. The current has focused on innovation capacity as a source of incentive for economic growth. There are important interactions among availability of technology, quality of management schools, local competition and innovation capacity. On the one hand, a non-tangible asset such as intellectual property protection provides better grounds in raising innovative capacity of a country. These factors added better insights to fully understand the dynamics of national innovation capacity and providing the base needed for economic growth. So use of latest technology, quality management, protection of intellectual property and healthy local competition enhance the level of national innovative capacity which lead to economic growth.

Limitations and Future Research Directions

Even though the current research has a significant contribution in highlighting the predictors of innovation and economic growth yet it carries few limitations. This study has used secondary data against countries as a sample to examine the proposed relationships. A future research may enrich the literature by collecting primary data and using an enhanced sample size from sectors and zones at the organizational level i.e., manufacturing and service sectors. This study is conducted by taking the data of fewer countries due to some constraints. A diverse sample in future studies can yield different results if tested. There is a need for further research work in this area in different countries to have deep knowledge of how innovation can be achieved by these concepts and how the concept of the use of latest technology, difference in quality of management, behavior of local competition and protection of intellectual property would impact in different perspectives. Moreover, for measuring economic growth, other factors (like per capita income, poverty level etc.) may be taken as proxy measures in future attempts.

REFERENCES

Almeida, P., & Phene, A. (2004). Subsidiaries and knowledge creation: The influence of the MNC and host country on innovation. *Strategic Management Journal, 25*(8-9), 847-864. https://doi.org/10.1002/smj.388

Altakhayneh, S. K. (2022). Exploring Ambivalent Sexism and Mental Health in Jordanian English Education: Mediating Effects of Self-Esteem, Anger Regulation and Feeling of Shame. *Pakistan Journal of Life & Social Sciences, 20*(2).

Burki, F. N., Khan, N. U., & Saeed, I. (2020). The impact of job stress on turnover intentions-the moderating role of emotional intelligence. *NICE Research Journal,* 100-121. https://doi.org/10.51239/nrjss.v0i0.157

Cao, Y., & Zhao, L. (2013). Analysis of patent management effects on technological innovation performance. *Baltic Journal of Management, 8*(3), 286-305. https://doi.org/10.1108/BJOM-May-2012-0033

Chang, S. H., & Fan, C. Y. (2017). Scientific or technological driving force? Constructing a system of national innovation capacity. *International Journal of Innovation Science, 9*(2), 170-183. https://doi.org/10.1108/IJIS-01-2017-0001

Chen, K., & Kenney, M. (2007). Universities/research institutes and regional innovation systems: the cases of Beijing and Shenzhen. *World Development, 35*(6), 1056-1074. https://doi.org/10.1016/j.worlddev.2006.05.013

Chen, Y., & Puttitanun, T. (2005). Intellectual property rights and innovation in developing countries. *Journal of Development Economics, 78*(2), 474-493. https://doi.org/10.1016/j.jdeveco.2004.11.005

Cho, S. H., & Kim, H. G. (2017). Intellectual property rights protection and technological innovation. *Multinational Business Review, 25*(4), 350-368. https://doi.org/10.1108/MBR-04-2017-0019

De Martino, M., & Magnotti, F. (2018). The innovation capacity of small food firms in Italy. *European Journal of Innovation Management, 21*(3), 362-383. https://doi.org/10.1108/EJIM-04-2017-0041

Etzkowitz, H. (1998). The norms of entrepreneurial science: cognitive effects of the new university-industry linkages. *Research Policy, 27*(8), 823-833. https://doi.org/10.1016/S0048-7333(98)00093-6

Farid, T., Iqbal, S., Saeed, I., Irfan, S., & Akhtar, T. (2021). Impact of supportive leadership during Covid-19 on nurses' well-being: The mediating role of psychological capital. *Frontiers in Psychology, 12,* 695091. https://doi.org/10.3389/fpsyg.2021.695091

Fatima, T., Majeed, M., & Saeed, I. (2017). Does participative leadership promote innovative work behavior: the moderated mediation model. *Business & Economic Review, 9*(4), 139-156. https://doi.org/10.22547/BER/9.4.7

Feldman, M. P., & Audretsch, D. B. (1999). Innovation in cities: Science-based diversity, specialization and localized competition. *European Economic Review, 43*(2), 409-429. https://doi.org/10.1016/S0014-2921(98)00047-6

Friedman, J., & Silberman, J. (2003). University technology transfer: do incentives, management, and location matter?. *The Journal of Technology Transfer, 28*(1), 17-30. https://doi.org/10.1023/A:1021674618658

Furman, J.L., Porter, M. E, & Stern, S. (2001). The determinants of national innovative capacity. *Research Policy, 31*(6), 899-933. https://doi.org/10.1016/S0048-7333(01)00152-4

Galindo, M. A., & Mendez, M. T. (2014). Entrepreneurship, economic growth, and innovation: Are feedback effects at work?. *Journal of Business Research, 67*(5), 825-829. https://doi.org/10.1016/j.jbusres.2013.11.052

Galindo, M. A., & Mendez-Picazo, M. T. (2013). Innovation, entrepreneurship and economic growth. *Management Decision, 51*(3), 501-514. https://doi.org/10.1108/00251741311309625

Godfrey, N. (2008). *Why is competition important for growth and poverty reduction.*

Gul, S., Ali, A., & Saeed, I. (2021). Revisiting Organizational Justice and Employees Job Satisfaction: A Stakeholders Perspectiveof NGOs In Khyber Pakhtunkhwa. *Journal of Managerial Sciences, 15.*

Hao, S., & Song, M. (2016). Technology-driven strategy and firm performance: Are strategic capabilities missing links?. *Journal of Business Research, 69*(2), 751-759. https://doi.org/10.1016/j.jbusres.2015.07.043

Jin, J., Wu, S., & Chen, J. (2011). International university-industry collaboration to bridge R&D globalization and national innovation system in China. *Journal of Knowledge- based Innovation in China, 3*(1), 5-14. https://doi.org/10.1108/17561411111120837

Khan, J., Saeed, I., Ali, A., & Nisar, H. G. (2021). The mediating role of emotional exhaustion in the relationship between abusive supervision and employee cyberloafing behaviour. *Journal of Management and Research,* 160-178.

Khan, T. I., Kaewsaeng-on, R., & Saeed, I. (2019). Impact of workload on innovative performance: Moderating role of extrovert. *Humanities & Social Sciences Reviews, 7*(5), 123-133. https://doi.org/10.18510/hssr.2019.7516

Khan, T. I., Saeed, I., & Khattak, S. R. (2018). Impact of Time Pressure on Organizational Citizenship Behavior: Moderating Role of Conscientiousness. *Global Social Sciences Review, 3*(3), 317-331. https://doi.org/10.31703/gssr.2018(III-III).18

Khattak, S. R., Saeed, I., & Tariq, B. (2018). Corporate sustainability practices and organizational economic performance. *Global Social Sciences Review, 3*(4), 343-355. https://doi.org/10.31703/gssr.2018(III-IV).22

Khattak, S. R., Saeed, I., Rehman, S. U., & Fayaz, M. (2021). Impact of fear of COVID-19 pandemic on the mental health of nurses in Pakistan. *Journal of Loss and Trauma, 26*(5), 421-435. https://doi.org/10.1080/15325024.2020.1814580

Lundvall, B. Å. (1992). User-producer relationships, national systems of innovation and internationalisation. In *National systems of innovation: Towards a theory of innovation and interactive learning,* 45-67.

Mathews, J. A., & Hu, M. C. (2007). Enhancing the role of universities in building national innovative capacity in Asia: the case of Taiwan. *World Development, 35*(6), 1005-1020. https://doi.org/10.1016/j.worlddev.2006.05.012

Motohashi, K., & Yun, X. (2007). China's innovation system reform and growing industry and science linkages. *Research Policy, 36*(8), 1251-1260. https://doi.org/10.1016/j.respol.2007.02.023

Nadeem, Q., Saeed, I., & Gul, H. (2020). Effect of destructive leadership on workplace deviance and interpersonal deviance: Mediating role of emotional exhaustion. *International Journal of Business and Economic Affairs, 5*(5), 256-271. https://doi.org/10.24088/IJBEA-2020-55005

Narula, R., & Zanfei, A. (2005). *Globalization of innovation.* Oxford Handbooks.

Ndesaulwa, A. P., & Kikula, J. (2016). The Impact of Technology and Innovation (Technovation) in Developing Countries: A Review of Empirical Evidence. *Journal of Business and Management Sciences, 4*(1) 7-11.

Nesta, L., Vona, F., & Nicolli, F. (2014). Environmental policies, competition and innovation in renewable energy. *Journal of Environmental Economics and Management, 67*(3), 396-411. https://doi.org/10.1016/j.jeem.2014.01.001

O'Connor, A., Roos, G., & Vickers-Willis, T. (2007). Evaluating an Australian public policy organization's innovation capacity. *European Journal of Innovation Management, 10*(4), 532-558. https://doi.org/10.1108/14601060710828817

Porter, M. E., & Stern, S. (2001). *National innovative capacity: The global competitiveness repot.*

Rahman, S., Saeed, I., & Batool, S. (2019). The mediating effect of CSR on the relationship between authentic leadership and organization citizenship behavior. *Glob. Soc. Sci. Rev, 4,* 83-91.

Shahbaz, M., Tiwari, A. K., Jam, F. A., & Ozturk, I. (2014). Are fluctuations in coal consumption per capita temporary? Evidence from developed and developing economies. *Renewable and Sustainable Energy Reviews, 33,* 96-101.

Saeed, I. (2017). To establish the link between aversive leadership and work outcomes: An empirical evidence. *NICE Research Journal,* 161-181. https://doi.org/10.51239/nrjss.v0i0.23

Tahir, M., Rahman, S., & Saeed, I. (2019). The effect of relational coordination on employee creative involvement: A study of public and private hospitals in Peshawar, Pakistan. *Global Regional Review, 4*(3), 103-111. https://doi.org/10.31703/grr.2019(IV-III).12

Ullah, R., Zada, M., Saeed, I., Khan, J., Shahbaz, M., Vega-Mu-oz, A., & Salazar-Sepúlveda, G. (2021). Have you heard that-"GOSSIP"? Gossip spreads rapidly and influences broadly. *International journal of environmental research and public health, 18*(24), 13389. https://doi.org/10.3390/ijerph182413389

Zalewski, R. I., & Skawinska, E. (2009). Impact of technological innovations on economic growth of nations. *Systemic, Cybernetics and Informatics, 7*(6), 35-40.

Zia, S. Y., Saeed, I., & Khan, N. U. (2018). Moderating role of emotional intelligence in conflict resolution strategies and organizational citizenship behavior. *The Journal of Humanities & Social Sciences, 26*(1), 63-82.