



The Impact of Knowledge Management Capabilities, Knowledge-oriented Leadership and Innovation Adoption on the Telecom Business Performance: Moderating Role of Organizational Learning

Dr. Arshia Hashmi, Assistant Professor, The University of Faisalabad, arshia.hashmi@tuf.edu.pk

Dr. Muhammad Azeem Ahmad, Assistant Professor, Barani Institute of Sciences, azeem@baraniinstitute.edu.pk

Dr. Imran Arshad, Assistant Professor, Salim Habib University, Karachi, imran.arshad@shu.edu.pk

Abstract- This study goal is to investigate the impact of knowledge management capabilities, knowledge-oriented leadership and innovation adoption on the business performance of telecom industry in Malaysia. The aim of the current study also includes the examination of moderating impact of organizational learning on the relationships of knowledge management capabilities, knowledge-oriented leadership, innovation adoption and business performance of telecom industry in Malaysia. This research has followed the quantitative method of collecting the data and used questionnaires for this goal and also examined the nexus by using smart-PLS. The results indicated that knowledge management capabilities, knowledge-oriented leadership and innovation adoption have a positive association with business performance. The findings also revealed that organizational learning significantly moderated among the relationships of knowledge-oriented leadership, innovation adoption and business performance of telecom industry in Malaysia. This study is helpful for the upcoming researchers while investigating this area in future and also suitable for the policymakers who want to formulate policies related to the knowledge management and business performance.

Keywords: Knowledge management capabilities, Knowledge-oriented leadership, Innovation adoption, Business performance, Organizational learning

I. INTRODUCTION

Business always requires various essentials to enable significant progress. The dominance of essentials is vital for contributing an eminent portion toward the performance of telecom businesses. In fact, the role of knowledge is positive toward the performance of the business. It is included in the essentials which are the main contributors to telecom business performance. Such essentials may vary upon the fluctuating circumstances but in the sense of more up-gradation and enhanced innovation. These essentials usually include knowledge management capabilities, knowledge-oriented leadership, and innovation adoption. Organizational learning is the dominating element among them that have a significant role among the elements enhancing the telecom business performance. Some mechanisms are important among the contributors to telecom business performance. Therefore, knowledge management capabilities also include the portion of the mechanism that helps in the continuity of business progress. This mechanism usually enlarges the strategies which are important to uplift the telecom business performance. It could be possible through the elements of sharing, support, and sponsor which extends the importance of knowledge management capabilities. While exploring the effects of some capabilities of knowledge management, innovation and development are also important elements. It is the affirmation of knowledge management capabilities that are important in improving the telecom business performance (Ferraris, Santoro, & Dezi, 2017). This could be possible through internal as well as external sources of knowledge management.

Among the elements of telecom business performance, the role of knowledge-oriented leadership also contributes to vital innovation. This innovation may also include plenty of capabilities which are endorsed through knowledge as well as leadership orientation. This inducement of knowledge-oriented leadership involves numerous applications of storage, transfer, and creation. With the understanding of knowledge-oriented leadership, certain other elements also enhance the telecom industry performance (Gürlek & Çemberci, 2020). These elements include innovation, knowledge management capacity, and knowledge learning. These are contributed through the contingency of leadership and social learning which asserts the relationship between knowledge-oriented leadership and business performance. While emphasizing

the role of knowledge capabilities and orientation among the telecom business performance, the innovation adoption is directly linked with these elements. The changing circumstance of telecom businesses is dependent on the innovation models which helps in increasing the performance of the telecom business. It is prevalent on the potential adopters in innovation who could be reluctant in accepting the new ideas, services, and products. With the potency of innovation, the organizations are more focused on the enhanced business performance in the competitive environment (Yun, 2020). Early innovation adoption has also induced a positive role in the encouragement of eliminating poor performance while introducing environment-friendly innovation trends.

For the significant transfer of knowledge into the organization and among the employees, organizational learning plays an important role. Organizational learning states the whole process of contributing changed knowledge with the global world into the telecom business organization. The changes are frequent due to newly introduced technologies that are being adapted with organizational learning due to the competitive environment. With certain effects of knowledge management, organizational learning and organizational culture have inserted a significant role in the telecom industry (Abdi et al., 2018). With this indirect and direct influence, the telecom business performance has been significantly increased. While measuring the performance of the telecom business, the variety of factors prevalent in the competitive world are required to be adapted. This adapted not only helps to enhance the performance of the telecom business but also beneficial for countering the effects caused by technological advancements in the telecom sector. This innovation of capabilities in the telecom business is the major source of measuring the business performance. Various barriers are prevalent in the telecom business which is required to be eluded with the inducement of some positive factors, especially in developing countries (Yusuf et al., 2017). It is upon the tools which are important in highlighting the drivers as well as barriers disrupting the telecom business performance.

Preferably, the telecom industry has spent most of its budget on the access of different capabilities. The below graph significantly illustrates a five-year analysis where the spending of dollars has been increased in 2018 at 1,615 where the capabilities have been gained. While mentioning the spending, the telecom industry spent and forecasted to spend 1,575 billion dollars on innovation during 2019-2022 which is comparatively less than spending in 2018. Although, this spending is more considerable as compared to the spending in 2020 which stood at 1,553. The performance of the telecom business has been asserted in many countries and therefore depicted a significant rise in 2018 at 1,615 where the spending has been bumped. This spending is more considerably compared between the five years analysis with a slight decrease in 2020 at 1,553 billion dollars.

The Malaysian telecom market has experienced rapid growth in recent years and is expected to continue to expand until 2025. The industry's development is largely attributed to the country's growing urban population and the universal adoption of mobile phones that support 3G, 4G, and 5G networks. With the growing adoption of the Internet of Things (IoT) in the sector that communicates with wired and wireless broadband, the telecom sector is expected to expand strongly over the forecast era. Any 2G networks have already been decommissioned, and by the end of 2025, all big 2G/3G systems are expected to be decommissioned. By 2029, 5G will account for the bulk of smartphone connections. The government has issued conclusive 2017 wire line voice and broadband subscription data; hundreds of millions of fixed broadband connections are anticipated by 2025, opposed to tens of millions of wire line voice connections, meaning that mobile will be the primary mode of communication. The Covid-19 pandemic has had little or no effect on the Malaysian telecom industry; however, the telecom sector has agreed to cancel its upcoming spectrum auctions due to the pandemic. As the world adapted to life with Covid-19, business hours broadband usage improved in March 2020. Weekday viewership, movie rentals, and sales have all increased in the telecom market. During the week, as more people are in lockout and sitting at home, live streaming has increased by 15% and free video-on-demand viewing has increased by 25%. Sports viewing has declined as planned as a result of competitions being canceled or delayed. However, growth in News and small viewers has complemented this impact. Broadband is considered as one of the largest contributors in the telecom industry. Malaysian broadband lines by technology are given in Figure 1.

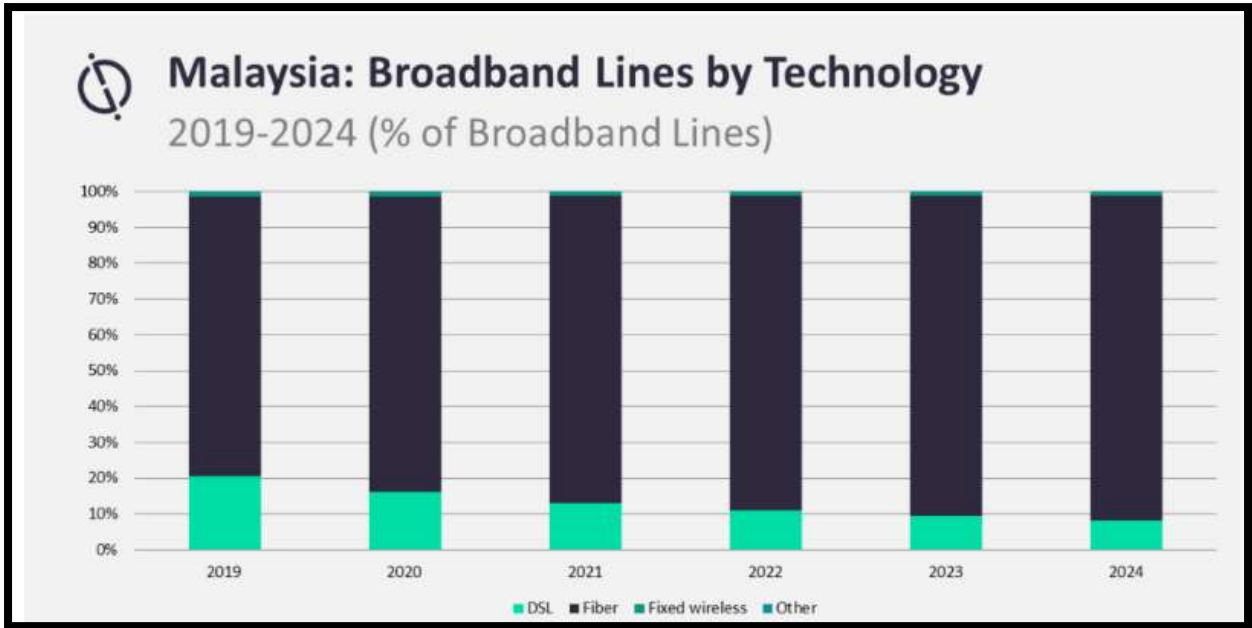


Figure 1: Malaysian broadband lines by technology from 2019 to 2024.

There are number of studies conducted on Malaysian telecom sector with multiple point of view but literature gap does exist regarding the combination of employee, leadership and technology in order to enhance the industry performance. All these three factors plays a vital role towards the betterment in the business performance. This study will try to cover this literature gap. This study is the combination of employee's perspective (Knowledge management capabilities), leadership perspective and technology perspective along with organizational perspective (organizational learning). This study will help the telecom industry to realize the importance of knowledge management. Further, will also help the professionals to implement the knowledge management concept in order to enhance the organizational performance as well as to accrue the maximum benefits from the available resources.

II. LITERATURE REVIEW

Knowledge management capabilities are an essential element in the business which could improve the telecom business performance. It is important to induce the elements which are prevalent in the knowledge management capabilities. These elements are the main supporter of the telecom business process which could be disrupted due to various introduction of structural changes in the global environment. It is the essence of knowledge management capabilities that induces a dual role with the efforts of innovation. While ensuring the internal linkage of knowledge management capabilities, the impact is certain in the business performance. This internal role is depicted by the variation of knowledge management capabilities which are asserted with the fluctuating demands of organizations. Therefore, the open relationship between knowledge management capabilities, dual innovation, and innovation capabilities are improving the performance of various businesses (Sun, Liu, & Ding, 2020). This is enhanced by the partial mediation of knowledge management capabilities with the involvement of innovation and exploration of knowledge management capabilities.

With the improvement of knowledge management capabilities, technological advancements have also induced a positive role. This role of the main contributor to uplifting the business performance of different industries. It is upon the influence of knowledge management capabilities and resources of information technology with the eminent role of organizational culture on business performance (Iqbal, Astuti, Trialih, Arifin, & Aprilian, 2020). Among the quests of organizations in the competitive environment, the role of knowledge management capabilities is stating unfold impact on the business performance. The emerging businesses are more curious about the performances due to uncertain changes in the strategies of businesses. These strategies are mainly introduced by the responsible marketing efforts which assert their importance in the business performance. Mostly in the telecom sector, the improved knowledge management capabilities are knowledge as a significant contributor to

business performance (Mandal & Banerjee, 2019). This is positively stated by the strategic capabilities which are the primary need of businesses.

H1: Knowledge management capabilities significantly influence the telecom business performance.

Knowledge-oriented leadership includes different strategies which are positive for the enhancement of telecom business performance. Although, knowledge-oriented leadership is itself important to uplift the performance of a business. But the inclusion of task orientation and knowledge orientation are joint efforts induced in businesses to improve the experienced performance of telecom businesses. In the examination of certainty of knowledge-oriented leadership effects, the performance of the telecom business is differentiated. This differentiation is due to the involvement of different factors which are related to knowledge-oriented leadership and assert a significant role in raising business performance. It not only underscores the knowledge-oriented leadership but also includes many other factors which increase business performance (Rehman Ubaid & Iqbal, 2020). These factors include innovation, knowledge management, and knowledge-oriented leadership with the dominance of nexus among them.

While introducing different paths for business performance, the role of leadership is eminently described by many companies of telecom. The knowledge-oriented leadership suggests the exhibition of knowledge among the employees which could enhance the business performance. Certain telecom industries also illustrated the impact of knowledge management, entrepreneurial orientations, and knowledge-oriented leadership (Latif Khawaja, Afzal, Saqib, Sahibzada Umar, & Alam, 2020). These factors are more important for the organization to achieve success in a project. The combination of the knowledge management process and knowledge management enables are main leaders for the business success. Plenty of approaches have been asserted in organizations for business performance. Knowledge-oriented leadership tends to be one of them and more considerably the major one. There is a significant relationship between business performance and environmental innovation approaches which are extended by the certain effects of knowledge management (Wu, 2017). These effects also include the dominance of resource commitment and environmental regulations contributed by the knowledge-oriented leadership. For the engagement of positive business performance, these elements are major resources bringing the motivations for organizations.

H2: Knowledge-oriented leadership significantly influences the telecom business performance.

There is a sequence of stages in the telecom business process and innovation asserts an important role in sustainability. The significance of curves related to innovation adoption classifies into various categories where willingness is always required for accepting the idea and technology. Both elements are important to progress telecom businesses toward the next stages of performance. While exploring the different businesses, the innovation adoption has positively contributed toward the telecom business performance. It was also important to overcome the effects which were disrupting the business process and performance. Therefore, many factors like digital introduction have contributed to cognitive resistance for overcoming the aftershocks on business performance (Stryja & Satzger, 2019). Digital innovation and its adoption have also increased the likelihood of many other factors which are beneficial for the business performance. Especially, in the telecom business, the role of innovation adoption is dominated as a primary contributor enhancing the business performance.

Innovation adoption is not only important in the organizations but also important for politics (Nawaz et al., 2020). With certain advancements in strategies and new innovation skills in the environment of politics, innovation adoption has profitably benefited many countries (Nawaz et al., 2021). Among the industries of developing countries, the environmental antecedents are more polished by the implementation of innovation adoption (Korac, Saliterer, & Walker, 2017). It is between the public managers and politicians who are more acquainted with the innovation adoption and have increased the performance of various projects. In the analytics of business performance, the potentials of certain systems acquainted with innovation adoption were introduced. These potentials are more consistent with the performance management relevant to the business performance (Raffoni, Visani, Bartolini, & Silvi, 2018). Therefore, the innovation adoption is more consistent with the performance management systems which are important for telecom business.

H3: Innovation adoption significantly influences the telecom business performance.

Many factors like knowledge management and innovation are important for the exploration of business performance. Organizational learning also asserts an important role between the business performance and factors of innovation and knowledge management. Therefore, the culture of organizational learning puts motivational dimensions with moderating effects on knowledge and innovation (Banerjee, Gupta, & Bates, 2017). Different dimensions of organizational learning introduced partial changes with moderating influence on the performance measures. The distance of knowledge management enhanced the capabilities to increase the business performance of the telecom industry. This is due to the involvement of knowledge management capabilities which have eliminated the dominance of exploitation. This certainty of knowledge management capabilities collaborates with the inducement of information technology (Cui, Tong, Teo, & Li, 2020).

With the impact of knowledge-oriented leadership, the encouraging factors are also introduced in the business performance. This is the mechanism introduced by the contribution of knowledge-oriented leadership with the emergent role of emotional intelligence and goal orientation (Shariq Syed, Mukhtar, & Anwar, 2019). This encouragement has significantly enhanced the performance of various telecom businesses. Different pressures are prevalent on business performance (H. Sun et al., 2020). Therefore, the role of innovation adoption has countered the pressures as well as the influences. Business performance of telecom is abandoned by external as well as internal factors. So, the innovation adoption has not only enlarged the scales of improvement but also enhanced the capabilities of businesses with reduction of conformity and political pressure (Andersen & Jakobsen, 2018). With the integration of various market capabilities, business performance has been enhanced in most telecom organizations. The significant inducement of brand equity, market communication in the telecom institutions positively increased the performance of businesses (Anabila, 2020). Delegated strategies in the telecom business are due to the inducement of knowledge management and its leadership with innovation capabilities. For the creation of a competitive advantage, it is mandatory to fulfill the requirements of business performance. Therefore, the moderating role of organizational learning-induced significant links among the social capital, differential strategy, and dynamic capability with shared value (Liu, Horng, Chou, Huang, & Chang, 2018). This vital contribution has bumped the business performance in many industries like telecom.

H4: Organizational learning significantly moderates among the relationship between knowledge management capabilities and business performance.

H5: Organizational learning significantly moderates among the relationship between knowledge-oriented leadership, and business performance.

H6: Organizational learning significantly moderates among the relationship between innovation adoption and business performance.

III. RESEARCH METHODS

This research investigates the impact of knowledge management capabilities, knowledge-oriented leadership and innovation adoption on the business performance and also examines the moderating impact of organizational learning on the relationships of knowledge management capabilities, knowledge-oriented leadership, innovation adoption and business performance of telecom industry in Malaysia. This research has followed the quantitative method of collecting the data and used questionnaires for this goal. The telecom industry employees are the respondents and distributed the surveys by personal visit with using simple random sampling. The researchers have distributed about 540 surveys out of them only 290 received and used for analysis that associated about 53.70 percent rate of response.

This study has also examined the nexus among the constructs by using smart-PLS and also examined the discriminant and convergent validity with it. The smart-PLS has been considered as the best statistical tool when the nature of the study is hypotheses testing and complex framework has been sued by the study (Hair Jr, Babin, & Krey, 2017). This study has adopted the business performance (BP) as the dependent variable with five items and organizational learning (OL) has been taken as the moderating variable with eight items. Finally, three predictors have been used by the study such as knowledge management capabilities (KMC) with four, knowledge-oriented leadership (KOL) with three and innovation adoption (INA) with six items. These variables with links are mentioned in Figure 2.

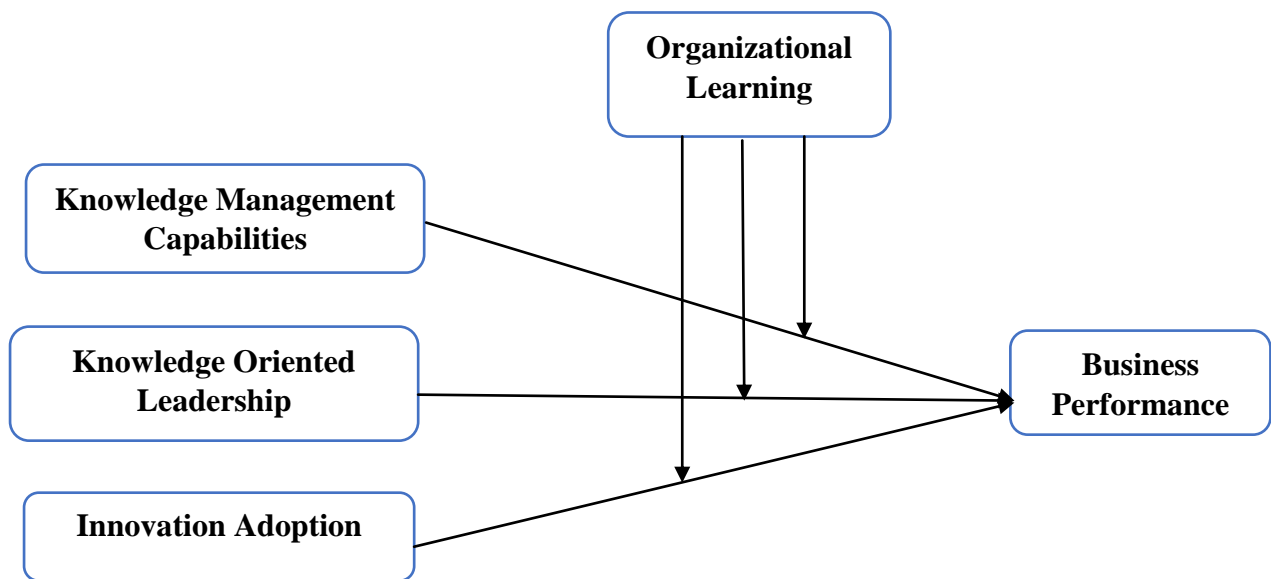


Figure 2: Theoretical Model

IV. FINDINGS

This study has test the measurement model assessment with the help of convergent validity that is about the association between the items. The statistics are shown that the Alpha and CR vales are not lower than 0.70 and the loadings and AVE values are not smaller than 0.50. These values are highlighted the high correlation between items and valid convergent validity. These values are shown in Table 1.

Table 1: Convergent Validity

Constructs	Items	Loadings	Alpha	CR	AVE
Business Performance	BP2	0.821	0.852	0.900	0.693
	BP3	0.830			
	BP4	0.855			
	BP5	0.822			
Innovation Adoption	INA1	0.828	0.919	0.937	0.712
	INA2	0.864			
	INA3	0.815			
	INA4	0.879			
	INA5	0.871			
	INA6	0.802			
Knowledge Management Capabilities	KMC1	0.901	0.923	0.945	0.812
	KMC2	0.901			
	KMC3	0.900			
	KMC4	0.903			
Knowledge-oriented Leadership	KOL1	0.747	0.755	0.859	0.671
	KOL2	0.801			
	KOL3	0.901			
Organizational Learning	OL1	0.484	0.883	0.910	0.645
	OL2	0.911			

OL4	0.946
OL5	0.486
OL7	0.883
OL8	0.945

This study has also test the measurement model assessment with the help of discriminant validity that is about the association between the variables. The statistics are shown that the Heterotrait Monotrait ratios are lower than 0.85. These values are highlighted the low correlation between variables and valid discriminant validity. These values are shown in Table 2.

Table 2: Discriminant Validity

	BP	INA	KMC	KOL	OL
BP					
INA	0.476				
KMC	0.573	0.449			
KOL	0.600	0.383	0.452		
OL	0.482	0.681	0.527	0.506	

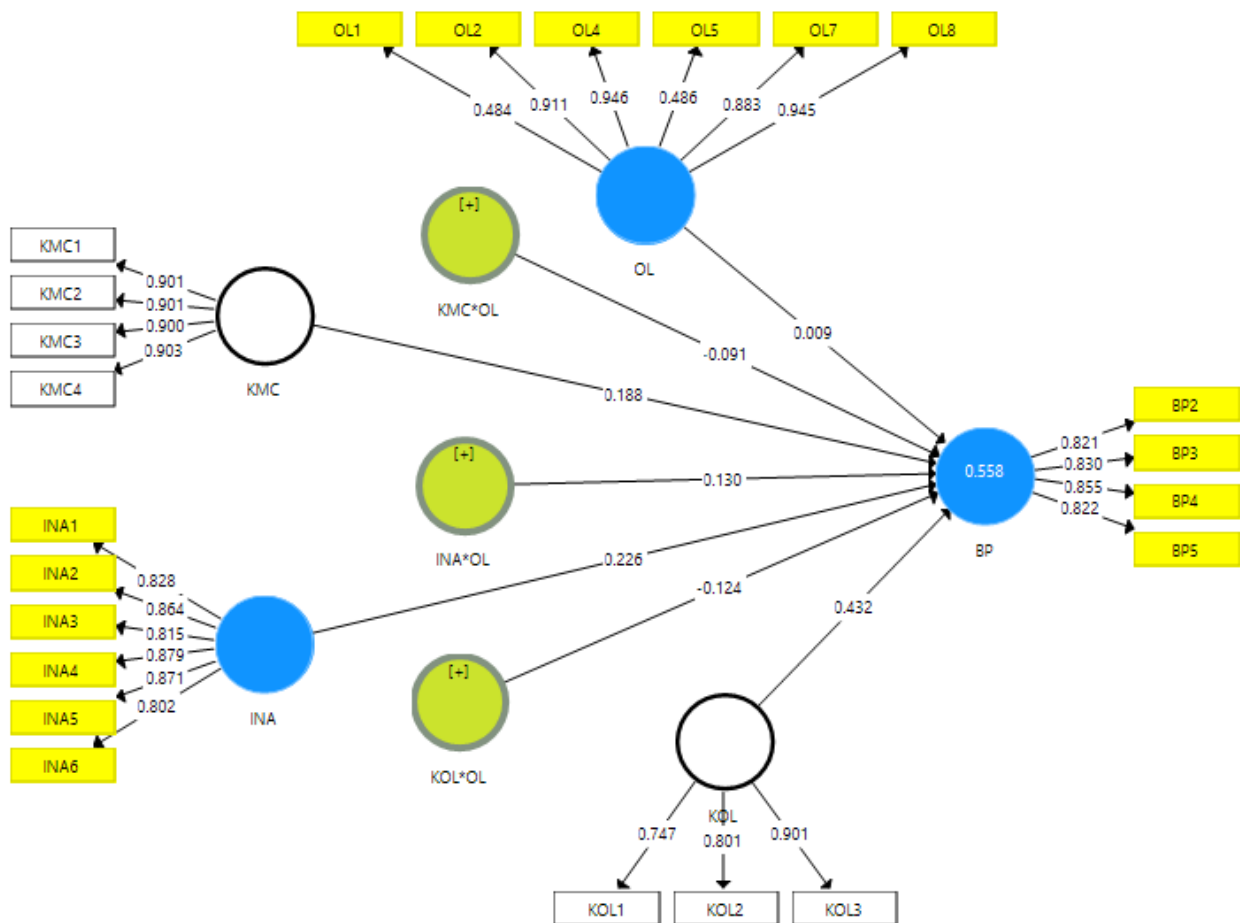


Figure 3: Measurement Model Assessment

Finally, the structural model assessment has been made and the results indicated that knowledge management capabilities, knowledge-oriented leadership and innovation adoption have positive association with business performance and accept H1, H2 and H2. In addition, the findings also revealed that organizational learning significantly moderated among the relationships of knowledge-oriented leadership, innovation adoption and business performance of telecom industry in Malaysia and accept H5 and H6. However, the findings also revealed that organizational learning insignificantly moderated among

the relationships of knowledge management capabilities and business performance of telecom industry in Malaysia and reject H4. These links are shown in Table 3.

Table 3: Path Analysis

Relationships	Beta	S.D.	T Statistics	P Values	L.L.	U.L.
INA -> BP	0.226	0.053	4.257	0.000	0.100	0.315
INA*OL -> BP	0.130	0.044	2.964	0.005	0.044	0.196
KMC -> BP	0.188	0.050	3.781	0.000	0.059	0.277
KMC*OL -> BP	-0.091	0.053	1.694	0.097	-0.193	0.014
KOL -> BP	0.432	0.045	9.534	0.000	0.343	0.520
KOL*OL -> BP	-0.124	0.044	2.828	0.007	-0.190	-0.040

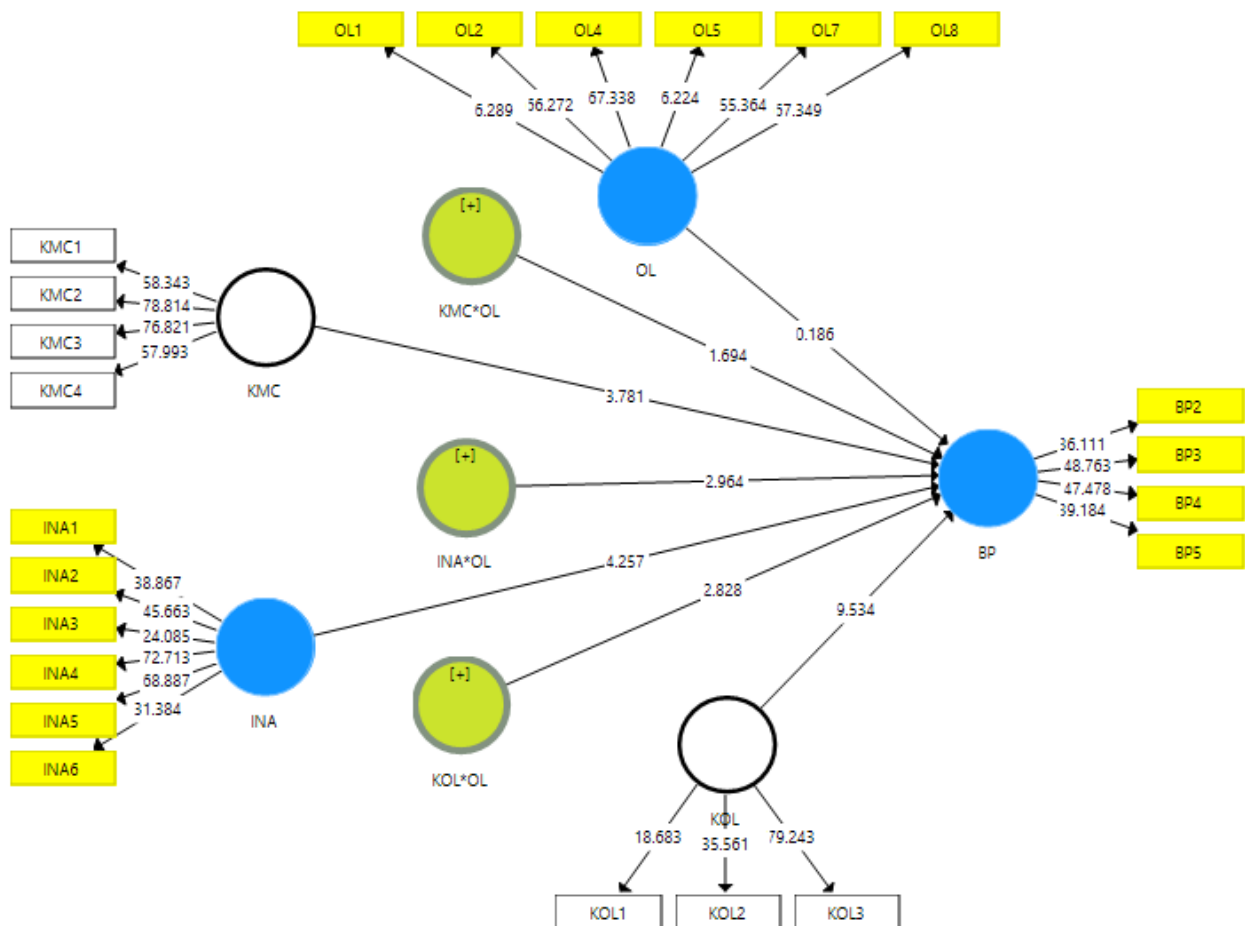


Figure 4: Structural Model Assessment

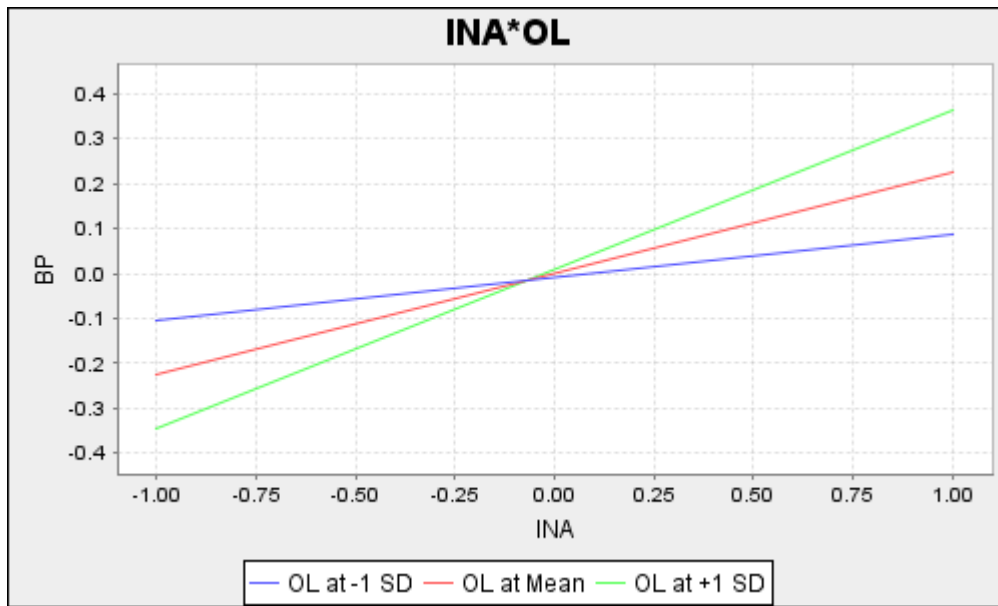


Figure 5:INA*OL

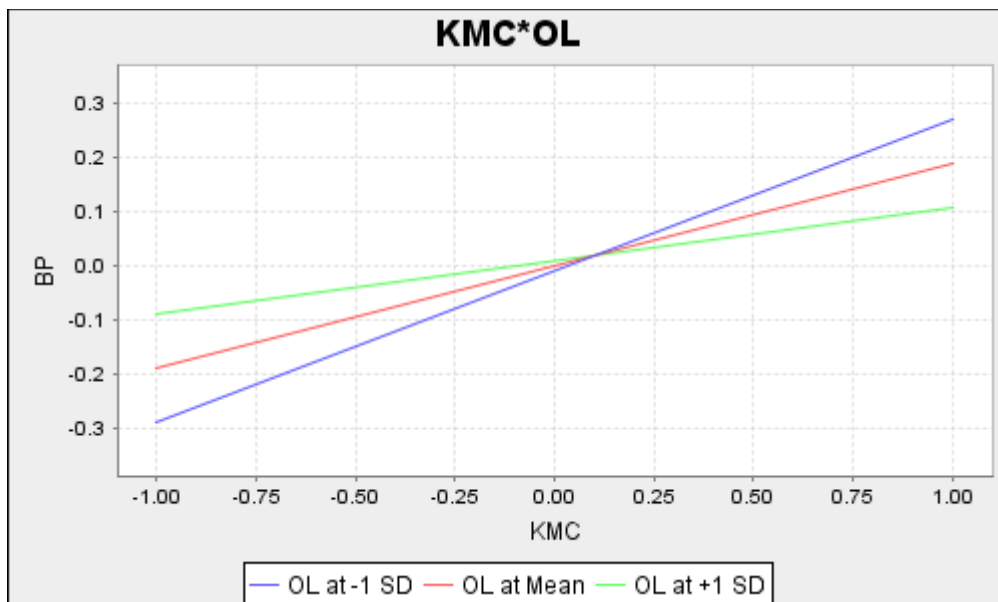


Figure 6:KMC*OL

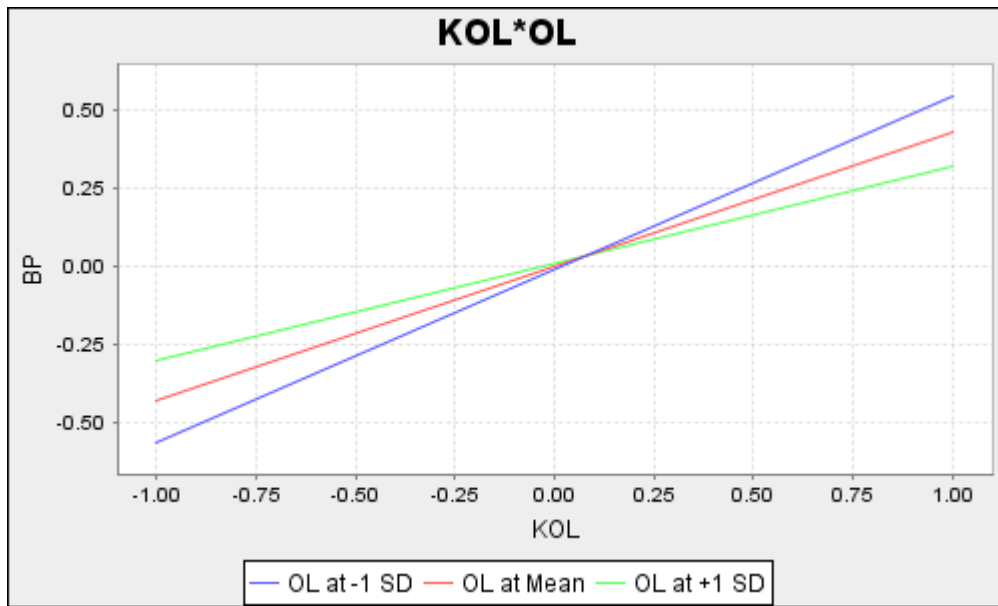


Figure 7:KOL*OL

V. DISCUSSIONS AND IMPLICATIONS

The study results have revealed that knowledge management capabilities have a positive association with business performance. The business organizations which have established knowledge management and there is an effective implementation of knowledge management capabilities are more likely to achieve higher operational and financial development. These results are in line with the past study of Mardani, Nikoosokhan, Moradi, and Doustar (2018), which shows that the proper implementation of knowledge management accelerates the rate of organizational development because it facilitates the business organization in receiving and processing the up-to-date knowledge and information about resources, technologies, and market requirements which raises productivity and marketing. The study results have also revealed that knowledge-oriented leadership has a positive association with business performance. The companies where the leaders have complete and up-to-date knowledge about the resources quality, business operations, production, and marketing and apply this knowledge in passing instructions and making the team perform their activities accordingly have superior business performance. These results are in line with the past study of Zhang and Cheng (2015), which shows that the team members perform their functions in a better up-to-date manner under the guidance of knowledge-oriented leadership. This leads to high business performance. It has also been indicated by the study results that the adoption of innovation has a positive relationship with business performance.

The study implies that the intention of business management to keep activities, production, and advertisement innovation-based, and its initiatives in this regard enable the business organization to show higher performance. These results are supported by the past study of Ferreira, Fernandes, and Ferreira (2019), which suggests that for the achievement of superior operation and financial performance, the business management should adopt innovation in the business processes. Moreover, the study findings have revealed that organizational learning plays a significant moderating role between knowledge management capabilities and the achievement of high business performance. These results are approved by the past study of Abubakar, Elrehail, Alatailat, and Elçi (2019), which highlights that organizational learning improves knowledge management capabilities and business performance. Organizational learning improves the influences of knowledge management capabilities on business performance. The results have also indicated that organizational learning is a perfect mediator between knowledge-oriented leadership and business performance. These results agree with the findings of the study of Donate and de Pablo (2015), which shows that under organizational learning, the existence and performance of knowledge-oriented leadership become easy and superior, respectively, which lead to higher business performance. The study results have also revealed that organizational learning is a significant moderator between innovation adoption and business performance. The study implies that when organizational learning is high, the business is in a better position to use innovative resources, technology, and techniques. Thus, the products and services of the organization meet the up-to-date

marketing requirement, and business performance is high. These results are supported by the past study of Naranjo-Valencia, Jiménez-Jiménez, and Sanz-Valle (2016), which shows that organizational learning helps the management in innovation adoption and manufacturing the innovation-based products and services up to the customers' requirement. In this way, the marketing of products and services increases, and the business performance is superior.

Both the theoretical and empirical implication is made by this literary workout. This study has great theoretical significance as it extends to the scope of economic-based literature. This study throws light on the contribution of three learning factors such as knowledge management capabilities, knowledge-oriented leadership, and innovation adoption into the achievement of the superior operational and economic performance of a business organization. This study also initiates to introduce organizational learning as a perfect moderator between the knowledge management capabilities, knowledge-oriented leadership, and innovation adoption, and business performance. This study is significant to a developing economy for provides a guideline to organizational management on how to improve the business performance. This study suggests that with effective knowledge management capabilities, knowledge-oriented leadership, and the management's adoption of innovative techniques. This study also states that under organizational learning, the contribution of knowledge management capabilities, knowledge-oriented leadership, and the innovation adoption into the business performance increases.

VI. CONCLUSION AND LIMITATIONS

The study examines the improvement in business performance due to three learning factors like knowledge management capabilities, knowledge-oriented leadership, and innovation adoption. This study implies that knowledge management capabilities improve business performance. In the business organization where the knowledge management capabilities are being applied effectively, the organizations achieve superior innovation-based performance. The study states that knowledge-oriented leadership contributes a lot to business performance. The companies where the leaders have complete and up-to-date knowledge about the business resources and techniques and apply this knowledge in performing their functions have superior business performance. Similarly, the innovation adoption by the business management drives higher innovation-based business performance. When the management design and applies innovative strategies in the business operations and marketing, the business organization can achieve superior performance, as this organization successfully meets the up-to-date market requirements. Moreover, the study tells that organizational learning intention and techniques improve the application of knowledge management, innovation adoption, and knowledge-oriented leadership and business performance.

Though the study has made both the theoretical as well as an empirical implication, it still carries several limitations. These all limitations are recommended to be removed by the scholars in the future while replicating this study. The data in support of this study has been collected from a single source. So, this data may be limited in both scope and effectiveness. For comprehensive, which comes up with the validity requirements, multiple data sources must be utilized. Moreover, the scope of the study is also limited because it talks only about learning factors like knowledge management capabilities, knowledge-oriented leadership, and innovation adoption in relation to business performance. There are many economic, cultural, and economic factors that also affect the rate of business performance. Unfortunately, the study has neglected these all elements. It is recommended to the authors to expand the scope of the study with the address of more drivers of business performance.

REFERENCES

1. Abdi, K., Mardani, A., Senin, A. A., Tupenaite, L., Naimaviciene, J., Kanapeckiene, L., & Kutut, V. (2018). The effect of knowledge management, organizational culture and organizational learning on innovation in automotive industry. *Journal of Business Economics and Management*, 19(1), 1-19. doi: <https://doi.org/10.3846/jbem.2018.1477>
2. Abubakar, A. M., Elrehail, H., Alatailat, M. A., & Elçi, A. (2019). Knowledge management, decision-making style and organizational performance. *Journal of Innovation & Knowledge*, 4(2), 104-114. doi: <https://doi.org/10.1016/j.jik.2017.07.003>

3. Anabila, P. (2020). Integrated marketing communications, brand equity, and business performance in micro-finance institutions: An emerging market perspective. *Journal of Marketing Communications*, 26(3), 229-242. doi: 10.1080/13527266.2019.1574868
4. Andersen, S. C., & Jakobsen, M. L. (2018). Political Pressure, Conformity Pressure, and Performance Information as Drivers of Public Sector Innovation Adoption. *International Public Management Journal*, 21(2), 213-242. doi: 10.1080/10967494.2018.1425227
5. Banerjee, P., Gupta, R., & Bates, R. (2017). Influence of Organizational Learning Culture on Knowledge Worker's Motivation to Transfer Training: Testing Moderating Effects of Learning Transfer Climate. *Current Psychology*, 36(3), 606-617. doi: 10.1007/s12144-016-9449-8
6. Cui, T., Tong, Y., Teo, H.-H., & Li, J. (2020). Managing Knowledge Distance: IT-Enabled Inter-Firm Knowledge Capabilities in Collaborative Innovation. *Journal of Management Information Systems*, 37(1), 217-250. doi: 10.1080/07421222.2019.1705504
7. Donate, M. J., & de Pablo, J. D. S. (2015). The role of knowledge-oriented leadership in knowledge management practices and innovation. *Journal of Business Research*, 68(2), 360-370. doi: <https://doi.org/10.1016/j.jbusres.2014.06.022>
8. Ferraris, A., Santoro, G., & Dezi, L. (2017). How MNC's subsidiaries may improve their innovative performance? The role of external sources and knowledge management capabilities. *Journal of Knowledge Management*, 21(3), 540-552. doi: 10.1108/JKM-09-2016-0411
9. Ferreira, J. J., Fernandes, C. I., & Ferreira, F. A. (2019). To be or not to be digital, that is the question: Firm innovation and performance. *Journal of Business research*, 101, 583-590.
10. Gürlek, M., & Çemberci, M. (2020). Understanding the relationships among knowledge-oriented leadership, knowledge management capacity, innovation performance and organizational performance: A serial mediation analysis. *Kybernetes*, 49(11), 2819-2846. doi: 10.1108/K-09-2019-0632
11. Hair Jr, J. F., Babin, B. J., & Krey, N. (2017). Covariance-based structural equation modeling in the Journal of Advertising: Review and recommendations. *Journal of Advertising*, 46(1), 163-177. doi: <https://doi.org/10.1080/00913367.2017.1281777>
12. Iqbal, M., Astuti, E. S., Trialih, R., Arifin, Z., & Aprilian, Y. A. (2020). The influences of information technology resources on Knowledge Management Capabilities: Organizational culture as mediator variable. *Human Systems Management*, 39(2), 129-139. doi: 10.3233/HSM-190562
13. Korac, S., Saliterer, I., & Walker, R. M. (2017). Analysing the environmental antecedents of innovation adoption among politicians and public managers. *Public Management Review*, 19(4), 566-587. doi: 10.1080/14719037.2016.1200119
14. Latif Khawaja, F., Afzal, O., Saqib, A., Sahibzada Umar, F., & Alam, W. (2020). Direct and configurational paths of knowledge-oriented leadership, entrepreneurial orientation, and knowledge management processes to project success. *Journal of Intellectual Capital*, 22(1), 149-170. doi: 10.1108/JIC-09-2019-0228
15. Liu, C.-H., Horng, J.-S., Chou, S.-F., Huang, Y.-C., & Chang, Angela Y. (2018). How to create competitive advantage: the moderate role of organizational learning as a link between shared value, dynamic capability, differential strategy, and social capital. *Asia Pacific Journal of Tourism Research*, 23(8), 747-764. doi: 10.1080/10941665.2018.1492943
16. Mandal, K., & Banerjee, S. (2019). Responsible Marketing and Its Impact on Business Performance: A Longitudinal Study. *Journal of Nonprofit & Public Sector Marketing*, 31(2), 115-138. doi: 10.1080/10495142.2018.1526736
17. Mardani, A., Nikoosokhan, S., Moradi, M., & Doustar, M. (2018). The relationship between knowledge management and innovation performance. *The Journal of High Technology Management Research*, 29(1), 12-26. doi: <https://doi.org/10.1016/j.hitech.2018.04.002>
18. Naranjo-Valencia, J. C., Jiménez-Jiménez, D., & Sanz-Valle, R. (2016). Studying the links between organizational culture, innovation, and performance in Spanish companies. *Revista Latinoamericana de Psicología*, 48(1), 30-41. doi: <https://doi.org/10.1016/j.rlp.2015.09.009>
19. Nawaz, M. A., Hussain, M. S., Kamran, H. W., Ehsanullah, S., Maheen, R., & Shair, F. (2020). Trilemma association of energy consumption, carbon emission, and economic growth of BRICS and OECD regions: quantile regression estimation. *Environmental Science and Pollution Research*, 1-15.
20. Nawaz, M. A., Seshadri, U., Kumar, P., Aqdas, R., Patwary, A. K., & Riaz, M. (2021). Nexus between green finance and climate change mitigation in N-11 and BRICS countries: empirical estimation through difference in differences (DID) approach. *Environmental Science and Pollution Research*, 28(6), 6504-6519. doi: <https://doi.org/10.1007/s11356-020-10920-y>

21. Raffoni, A., Visani, F., Bartolini, M., & Silvi, R. (2018). Business Performance Analytics: exploring the potential for Performance Management Systems. *Production Planning & Control*, 29(1), 51-67. doi: 10.1080/09537287.2017.1381887
22. Rehman Ubaid, U., & Iqbal, A. (2020). Nexus of knowledge-oriented leadership, knowledge management, innovation and organizational performance in higher education. *Business Process Management Journal*, 26(6), 1731-1758. doi: 10.1108/BPMJ-07-2019-0274
23. Shariq Syed, M., Mukhtar, U., & Anwar, S. (2019). Mediating and moderating impact of goal orientation and emotional intelligence on the relationship of knowledge oriented leadership and knowledge sharing. *Journal of Knowledge Management*, 23(2), 332-350. doi: 10.1108/JKM-01-2018-0033
24. Stryja, C., & Satzger, G. (2019). Digital nudging to overcome cognitive resistance in innovation adoption decisions. *The Service Industries Journal*, 39(15-16), 1123-1139. doi: 10.1080/02642069.2018.1534960
25. Sun, H., Awan, R. U., Nawaz, M. A., Mohsin, M., Rasheed, A. K., & Iqbal, N. (2020). Assessing the socio-economic viability of solar commercialization and electrification in south Asian countries. *Environment, Development and Sustainability*, 1-23. doi: <https://doi.org/10.1007/s10668-020-01038-9>
26. Sun, Y., Liu, J., & Ding, Y. (2020). Analysis of the relationship between open innovation, knowledge management capability and dual innovation. *Technology Analysis & Strategic Management*, 32(1), 15-28. doi: 10.1080/09537325.2019.1632431
27. Wu, G.-C. (2017). Environmental innovation approaches and business performance: effects of environmental regulations and resource commitment. *Innovation*, 19(4), 407-427. doi: 10.1080/14479338.2017.1358102
28. Yun, C. (2020). Early Innovation Adoption: Effects of Performance-Based Motivation and Organizational Characteristics. *Public Performance & Management Review*, 43(4), 790-817. doi: 10.1080/15309576.2019.1666725
29. Yusuf, Y. Y., Olaberinjo, A. E., Papadopoulos, T., Gunasekaran, A., Subramanian, N., & Sharifi, H. (2017). Returnable transport packaging in developing countries: drivers, barriers and business performance. *Production Planning & Control*, 28(6-8), 629-658. doi: 10.1080/09537287.2017.1294271
30. Zhang, L., & Cheng, J. (2015). Effect of knowledge leadership on knowledge sharing in engineering project design teams: the role of social capital. *Project Management Journal*, 46(5), 111-124. doi: <https://doi.org/10.1002%2Fpmj.21525>