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Lean Manufacturing and Supply Chain Performance

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ABSTRACT

This researcher aimed to identify the relationship between lean production, modern technology, technology integration, and supply chain performance. A quantitative approach was adopted for this study with a multi-item measurement scale adapted from previous studies to collect primary data—a total of 100 responses were collected. Descriptive analysis, along with the correlation examination, was utilized to test the hypothesis. It was observed that hypotheses *H1* and *H2* were supported, whereas hypothesis *H3* was rejected. The findings from the analysis identified that there is a significant relationship between lean manufacturing on the performance of the supply chain in the fertilizer industry. It is found that lean manufacturing can efficiently overcome supply chain challenges and improve efficiency, leading to improved overall performance. Further, the technology integration in SCM processes must be studied and analyzed. The businesses are recommended to develop further strategies to integrate technology into the SCM process and improve productivity and performance.

Keywords: *Lean production, Technology, Integration, Modern technology, Organizational performance, Fertilizer industry*

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1. Introduction

The activities involved in the supply chain of any business depend on the nature of products and services offered to customers. The strength of supply chain management is essential to be noticed and encouraged by the company to achieve the goal of competitive advantage in the intense market (Singh et al., 2019). The importance of supply chain management in a fertilizer company is high due to its operations of production to distribution of products (Baloch & Rashid, 2022). The use of natural resources, including gas, is high in the production function of a fertilizer company. The requirement to strengthen the supply chain in this type of company is essential to reduce the abundant use of natural resources. Waste reduction is mandatory to overcome environmental challenges, as it is the implied responsibility of a company. The protection of the environment is also included in the sustainable objectives of a fertilizer company (Singh et al., 2019). Lean production is the best way to strengthen the supply chain so that unnecessary or waste material can be omitted from it. The lean production process is essential in the fertilizer business as it eliminates the activities that do not add value to the products (Abisourour et al., 2020; Shaheen, 2022). In other words, lean production enables the company to increase its production rather than produce waste. The developments in science and technology have enabled fertilizer companies to strengthen their business operations by ensuring effectiveness in their supply chain (Agrawal et al., 2017; Alam, 2022). The use of advanced technological products is mandatory to reduce waste, which is vital for the sustainability objective of a company. The adoption and implementation of advanced technologies have enabled companies to reduce the time and cost of their operations (Smith et al., 2018; Asif, 2022;). Lean production also an essential role in managing the supply chain management of fertilizer companies as it enables a company to reduce the waste from the whole supply chain process (Avadí et al., 2021; Uddin, 2022). The integration of technologies in the existing supply chain process, along with the factor of lean production, is a critical task that requires the expertise and experience of the organizational leaders. The entire supply chain process requires the leaders' extraordinary attention to minimize the risk of loss.

In the initial stages of globalization, businesses opted for foreign direct investments seeking low-cost manufacturing or production. The researchers have helped to highlight that most cases witnessed disappointments in terms of low quality, issues with sustainability, and productivity challenges. To overcome the challenges and issues, the emergence of lean production is considered to help globalized businesses and local businesses to improve the supply chain and production matters (Mefford, 2010; Ayaz, 2022). The essentiality and importance of lean production and modern technologies can be seen in many studies (Abisourour et al., 2020; Anwar, 2022). The need is to prepare relevant strategies that can improve the fertilizer companies' existing supply chain (Smith et al., 2018; Amjad, 2022;). The research is required to review and analyze the critical factors for bringing the improvements (Baloch & Rashid, 2022). However, the main requirement is to prepare an exploratory study while discussing the impact of moving towards lean production with the support of modern technologies. Comprehensive research is required on this problem or issue to recommend specific changes in the supply chain process. The research is considered to benefit in developing a significant understanding of the subject with relevance to the fertilizer industry in Pakistan. This researcher aimed to identify the relationship between lean production, modern technology, technology integration, and supply chain performance.

2. Literature Review

2.1 Lean Manufacturing and SC Performance

Researchers have focused on determining the relevance and significance of lean production in the current competitive business environment and on the extent to which the application of lean production can benefit to achieve efficiency in the Supply Chain practices of a business. The findings of the research by Agus and Hajinoor (2012) help to identify a positive relationship between the application of lean production, the performance of businesses, and the quality of products. The time required to adopt and implement lean manufacturing is considered to significantly impact the relationship between the mentioned aspects/ elements of the businesses. Also, the researchers share that to enhance performance, the efficiency of lean production is required (Agus & Hajinoor, 2012; Muzammil, 2022). Research studies also help identify that the application of lean-based supplier integration can be critical for improvements in competitiveness, profitability, and enhancing customer satisfaction (Basit, 2022; Huq et al., 2016). The step towards offshoring of production to avail cost benefits has shown an increasing trend in the global market. An offshore decision's outcomes are majorly disappointing regarding sustainability, quality of products and services, and production inefficiencies (Jorgensen & Knudsen, 2006). The businesses are focused on making strategic developments and decisions to ensure that significant challenges can be overcome and enhance their brand reputation and performance. Implementing lean production is also a significant step towards prosperity as businesses can effectively maintain the supply chain processes. Implementing lean manufacturing and supply chain processes is also found to reach sustainable and economic performance benchmarks (Mefford, 2010).

2.2 Modern Technology, Technology Integration, and SC Performance

The role of supply chain management as a competitive benefit and production improvement has long been discussed. The businesses consider effective management of supply chain management as a strategic initiative that is found to have a significant positive impact on operational performance and profitability. The adoption of strategic and technological to efficiently manage the supply chain is long discussed and is found to be positively correlated (Rashid & Rasheed, 2022). Businesses in the current times are focused on maintaining effective, collaborative, technologically improved, and more innovative relationships with suppliers. The relationship and working have helped businesses improve SCM's scope, leading to the integration of suppliers and the business. The role of technological advancement is more strategic and has shifted from being passive and general to a more controlling and monitoring process. The application of technologies has helped to assess the overall processes and can be considered beneficial to identify and highlight the activities that are efficient and others that require improvements. In recent times, the most applicable and known benefit of technology in the supply chain is that it offers timely, reliable information, accurate results, and more efficient integration of the processes (Gunasekaran et al., 2001). Literature analysis helps to extract that adoption of information systems and supply chain management are majorly interlinked and merged with the latest technologies. The findings help to extract the viewpoint that both the performance and sustainability of the processes are improved (Shee et al., 2018; Hunaid et al., 2022). The recent application of cloud-based technology to the supply chain affects the SCI and positively adds to sustainable performance. The outcomes of the research help to identify that the top management has a significant role in understanding and putting their efforts into the proper execution of the plans to adopt technology; furthermore, their role is essential in integrating the supplier, as well as inter-organizational supply chain processes to avail better outcomes. The role of adequate supply and demand synchronization through inventory replenishment is a significant step toward improvements (Coyle et al., 2016; Victory et al., 2022). The researchers Coyle et al. (2016) proclaim that the advancement in technology and its efficient adoption is considered to improve the global supply chain management challenges for customer demands and needs. Researchers help to highlight the effectiveness of adopting technology and supply; chain improvements are not majorly discussed in the literature. The researchers state that e-Business technologies can benefit the overall performance of businesses with effective management of customer relationships, supply chain, and supplier integration (Ali, 2022; Devaraj et al., 2007; Rasheed, 2022).

The detailed assessment of the literature helps to extract helpful information related to the subject. Lean management practices are effective for businesses to maintain a better supply chain image and operational efficiency. Based on the literature, it is also identified that supply chain management practices and their investigation specifically for the fertilizer industry in Pakistan are not evident, which leads to highlighting a research gap. It is also identified that technological advancements and their integration within the processes are found to be most critical for firstly, improving the supply chain practices and providing the opportunity to businesses to effectively manage the control and maintenance of the activities. The research also reveals that a literature gap is evident since no specific research studies deal with innovations and their relevance to the fertilizer industry in improving supply chain aspects. The research framework is highlighted and extracted from the literature findings/ gaps and is beneficial to understanding the overall pathway for carrying out the research. Therefore, the following hypotheses were developed to address the research objectives:

H1: There is a significant relationship between lean manufacturing and supply chain performance.

H2: There is a significant relationship between modern technologies and supply chain performance.

H3: There is a significant relationship between technology integration and supply chain performance.

3. Research Methods

Two main types of approaches, deductive and inductive, have distinct characteristics. Under the inductive approach, a new theory is proposed based on observations for a specific purpose (Rashid et al., 2021; Hashmi et al., 2021). At the same time, the deductive approach involves testing theories presented by different authors (Khan et al., 2022a, b; Agha et al., 2021; Haque et al., 2021; Khan et al., 2021). The selected approach for the current study is deductive based on hypothesis testing. The approach has helped in preparing the design of this comprehensive study. Research may be quantitative, qualitative, or mixed, depending on the objectives and research questions. Under the quantitative study, there is an involvement of numeric data to present the outcomes effectively (Hashmi et al., 2020c). The options are provided to participants to select the most appropriate one according to their knowledge and experience. The data transformation is the main benefit of a quantitative study to achieve the outcomes without having complexities. On the other hand, qualitative research is based on opinion in a narrative form while collecting responses. The population decided for the current study are managers working in fertilizers companies located in Karachi. The rationale for selecting this population is that they can provide relevant and reliable information regarding the impact of lean production and the use of advanced technology in the existing supply chain. The sample size finalized for the current study is 100 to ensure the reliability and acceptability of the current research. The rationale for selecting 100 participants for the current study is that it is quantitative research, which contains outcomes in numbers. The sample size helps test the hypothesis and achieve the objective of the current research. Random sampling is used to collect information from managers in the Karachi fertilizers companies (Hashmi et al., 2020a; Alrazehi et al., 2021; Das et al., 2021). The main benefit of this sampling technique is that it reduces the time and cost of the author finding relevant participants (Hashmi et al., 2020b; Rashid et al., 2020).

The data collection process is critical in exploratory research as the conclusions will be based on the gathered information. It has been decided that the author will use a survey questionnaire to gather the information for this comprehensive study (Hashmi & Mohd, 2020; Rashid et al., 2021). The collected information was evaluated in SPSS for testing the impact of variables. The first step was to check whether the data was reliable or not (Agha et al., 2021; Haque et al., 2021; Khan et al., 2021). The value of the reliability test was more than 0.7, indicating that the data is reliable and can be used. Descriptive testing is carried out by finding the data's mean, median, and mode. The correlation analysis was also used to determine the relationship between independent variables and dependent variables

(Rashid, 2016; Rashid & Amirah, 2017; Rashid et al., 2019).

4. Data Analysis

For gender, the results showed that male participants were significantly higher than female participants. The values help to determine that 91 (out of 100) male participants participated in the survey questionnaire, whereas nine female respondents participated. It shows that the management of fertilizer businesses comprises male domination. The values predict that majority of the respondents were aged between 31 to 40 years (a total of 54 participants), 23 with aged 20 to 30 years, 20 participants with age between 41 to 50 years, and finally, 3 participants aged above 50 years (51 to 60 years). The responses help identify a significant contribution from mature individuals, and the experience of the individuals is expressed in the table below. The participants' educational background is essential to identify the capability of the participants to answer the questions effectively. Seventy participants had bachelor's degrees, 24 with master's level education, and 6 completed their postgraduate degrees. The results help to identify that most bachelor's level education holders are part of the fertilizer business's management, followed by Masters' and Postgraduate degree holders.

The reliability statistics are carried out, which helped to provide detail and justification on the consistency, validity, and reliability of the responses to the questionnaire. The results from the "reliability statistics" identified the value of Cronbach's Alpha as more significant than 0.70 (0.772) (Khan et al., 2022c). Further, the correlation analysis results were utilized to identify the relationship between a dependent variable and all other independent variables. The results found a significant and weak to strong relationship between the variables (Pearson Correlation value of 0.010 to 0.738 with significance values less than 0.05 for all except one item (LP5=0.920 insignificant value). Additionally, the in-depth analysis of the relationship helps to extract that modern technology has a strong relationship with SCM (Pearson Correlation value of 0.738 at a significance value of .000). It reflects the increase in the adoption of modern technologies leading to improvements in SCM by 73.8%. Also, the moderate relationship between technology integration and SCM is identified (Pearson Correlation value of 0.575 with significance values of .000). It can be reflected/interpreted that the increase in technology integration by businesses is expected to increase SC performance by 57.5%. The application of technology integration by the industry at large is found to have a significant moderate relationship with SC performance (Pearson Correlation value of 0.425 with a significance value of 0.000). It can be stated from the results that the increase in industry-level adoption of technology can provide increased performance for SC performance by 42.5%. Finally, lean production by businesses is found to have a significant and weak to moderate impact on SC performance (Pearson Correlation value of 0.010 to 0.686 with a Significance value less than 0.05 for all except (0.920). From the results, it can be interpreted that the increase in lean production by businesses can improve SC performance.

5. Discussion and Conclusion

The findings from the analysis identified that there is a significant relationship between lean manufacturing on the performance of the supply chain in the fertilizer industry. The literature suggests that lean production in businesses can efficiently overcome supply chain challenges and improve efficiency, which leads to improved overall performance (Singh et al., 2019; Abisourour et al., 2020). Agrawal et al. (2017) added that there is a significant possibility for businesses to improve productivity and enhance the overall efficiency of their business operations. On the other hand, the results from the literature state that the effective adoption of lean production with a focus on modern technologies can help to improve the overall firm performance (Abisourour et al., 2020). Furthermore, technological advancements in supply chain management can help businesses outperform (Gunasekaran et al., 2004). The findings from the current research suggest that adopting modern technology does not have any significant and positive impact on the overall performance of SCM. Therefore, it is stated that firms in the fertilizer and other industries must possibly initiate strategies adoption of modern technologies in a better way to enhance operational and financial benefits as found in the literature. The results indicate an insignificant impact of technology integration on supply chain performance. The findings contradict Huq

et al. (2016), which suggested that supplier-related operations can be improved through integrating technologies and efficiency, competitiveness, and profitability can be enhanced in the short and long run.

It is recommended for businesses to enhance efficiency through the application/adoption of modern technologies and lean production. The results can be further improved for companies if the efficiency level can be enhanced. The technology integration in SCM processes is required to be further studied and analyzed. The businesses are recommended to develop further strategies to integrate technology into the SCM process and improve productivity and performance.

References

Abisourour, J., Hachkar, M., Mounir, B., & Farchi, A. (2020). Methodology for integrated management system improvement: combining costs deployment and value stream mapping. *International Journal of Production Research, 58*(12), 3667-3685. https://doi.org/10.1080/00207543.2019.1633482

Agha, A. A., Rashid, A., Rasheed, R., Khan, S., & Khan, U. (2021). Antecedents of Customer Loyalty at Telecomm Sector. *Turkish Online Journal of Qualitative Inquiry, 12*(9), 1352-1374.

Agrawal, V., Agrawal, A., & Mohanty, R. (2017). Application of fuzzy MCDM in supplier selection of fertilizer manufacturing industry. *International Journal of Business Performance and Supply Chain Modelling, 9*(2), 133-159. https://doi.org/10.1504/IJBPSCM.2017.085492

Agus, A., & Hajinoor, M. (2012). Lean production supply chain management as driver towards enhancing product quality and business performance: Case study of manufacturing companies in Malaysia. *International Journal of Quality & Reliability Management, 29*(1), 92-121. https://doi.org/10.1108/02656711211190891

Alam, M. (2022). Supply Chain Management Practices and Organizational Performance in Manufacturing Industry. *South Asian Journal of Social Review, 1*(1), 42-52. https://doi.org/10.57044/SAJSR.2022.1.1.2204

Ali, S. B. (2022). Industrial Revolution 4.0 and Supply Chain Digitization. *South Asian Journal of Social Review, 1*(1), 21-41. https://doi.org/10.57044/SAJSR.2022.1.1.2205

Alrazehi, H. A. A. W., Amirah, N. A., Emam, A. S., & Hashmi, A. R. (2021). Proposed model for entrepreneurship, organizational culture and job satisfaction towards organizational performance in International Bank of Yemen. *International Journal of Management and Human Science, 5*(1), 1-9.

Amjad, S. (2022). Role of Logistical Practices in Quality Service Delivery at Supermarkets: A Case Study from Pakistan. *South Asian Journal of Operations and Logistics, 1*(1), 39-56. https://doi.org/10.57044/SAJOL.2022.1.1.2204

Anwar, M. F. A. (2022). The Influence of Inter-Organizational System Use and Supply Chain Capabilities on Supply Chain Performance. *South Asian Journal of Operations and Logistics, 1*(1), 20-38. https://doi.org/10.57044/SAJOL.2022.1.1.2203

Asif, K. (2022). The Impact of Procurement Strategies on Supply Chain Sustainability in the Pharmaceutical Industry. *South Asian Journal of Social Review, 1*(1), 53-64. https://doi.org/10.57044/SAJSR.2022.1.1.2203

Avadí, A., Hodomihou, N., Amadji, G., & Feder, F. (2021). LCA and nutritional assessment of southern Benin market vegetable gardening across the production continuum. The International Journal of Life Cycle Assessment, 1(1), 1-21. https://doi.org/10.1007/s11367-021-01977-z

Ayaz, J. (2022). Relationship between Green Supply Chain Management, Supply Chain Quality Integration, and Environmental Performance. South Asian Management Review, 1(1), 22-38. https://doi.org/10.57044/SAMR.2022.1.1.2203

Baloch, N. & Rashid, A. (2022). Supply Chain Networks, Complexity, and Optimization in Developing Economies: A Systematic Literature Review and Meta-Analysis. South Asian Journal of Operations and Logistics, 1(1), 1-13. https://doi.org/10.57044/SAJOL.2022.1.1.2202

Basit, A. (2022). The Influence of Green Supply Chain Management on Sustainable Performance. South Asian Management Review, 1(1), 49-66. https://doi.org/10.57044/SAMR.2022.1.1.2206

Coyle, J., Langley, C., Novack, R., & Gibson, B. (2016). Supply Chain Management: A Logistics Perspective. Boston, Massachusetts: Cengage.

Das, S., Ghani, M., Rashid, A., Rasheed, R., Manthar, S., & Ahmed, S. (2021). How customer satisfaction and loyalty can be affected by employee's perceived emotional competence: The mediating role of rapport. *International Journal of Management, 12*(3), 1268-1277. DOI: 10.34218/IJM.12.3.2021.119

Devaraj, S., Krajewski, L., & Wei, J. (2007). Impact of eBusiness technologies on operational performance: the role of production information integration in the supply chain. *Journal of operations management*, *25*(6), 1199-1216. https://doi.org/10.1016/j.jom.2007.01.002

Gunasekaran, A., Patel, C., & McGaughey, R. (2004). A framework for supply chain performance measurement. *International Journal of Production Economics*, *87*(3), 333-347. https://doi.org/10.1016/j.ijpe.2003.08.003

Gunasekaran, A., Patel, C., & Tirtiroglu, E. (2001). Performance measure and metrics in a supply chain environment. International *Journal of Operations & Production Management*, *21*(1/2), 71-87. https://doi.org/10.1108/01443570110358468

Haque, I., Rashid, A., & Ahmed, S. Z. (2021). The Role of Automobile Sector in Global Business: Case of Pakistan. Pakistan *Journal of International Affairs. 4*(2), 363-383. https://doi.org/10.52337/pjia.v4i2.195

Hashmi, A. R., & Mohd, A. T. (2020). The effect of disruptive factors on inventory control as a mediator and organizational performance in Health Department of Punjab, Pakistan. International *Journal of Sustainable Development & World Policy*, *9*(2), 122-134. https://doi.org/10.18488/journal.26.2020.92.122.134

Hashmi, A. R., Amirah, N. A., & Yusof, Y. (2020a). Organizational performance with disruptive factors and inventory control as a mediator in public healthcare of Punjab, *Pakistan. Management Science Letters, 11*(1), 77-86. https://doi.org/10.5267/j.msl.2020.8.028

Hashmi, A. R., Amirah, N. A., & Yusof, Y. (2020b). Mediating effect of integrated systems on the relationship between supply chain management practices and public healthcare performance: Structural Equation Modeling. International *Journal of Management and Sustainability*, *9*(3), 148-160. https://doi.org/10.18488/journal.11.2020.93.148.160

Hashmi, A. R., Amirah, N. A., Yusof, Y., & Zaliha, T. N. (2020c). Exploring the dimensions using exploratory factor analysis of disruptive factors and inventory control. *The Economics and Finance Letters*, *7*(2), 247-254. https://doi.org/10.18488/journal.29.2020.72.247.254

Hashmi, A. R., Amirah, N. A., Yusof, Y., & Zaliha, T. N. (2021). Mediation of inventory control practices in proficiency and organizational performance: State-funded hospital perspective. *Uncertain Supply Chain Management. 9*(1), 89-98. https://doi.org/10.5267/j.uscm.2020.11.006

Hunaid, M., Bhurgri, A. A., & Shaikh, A. (2022). Supply Chain Visibility in Leading Organizations of the Shipping Industry. South Asian Journal of Social Review, 1(1), 8-20. https://doi.org/10.57044/SAJSR.2022.1.1.2202

Huq, F., Chowdhury, I., & Klassen, R. (2016). Social management capabilities of multinational buying firms and their emerging market suppliers: an exploratory study of the clothing industry. *Journal of Operations Management*, *46*, 19-37. https://doi.org/10.1016/j.jom.2016.07.005

Jorgensen, A., & Knudsen, J. (2006). Sustainable competitiveness in global value chains: how do small Danish firms behave? *Corporate Governance*, *5*(9), 449-462. https://doi.org/10.1108/14720700610689568

Khan, S. K., Ahmed, S., & Rashid, A. (2021). Influence of social media on purchase intention and customer loyalty of generation Y with the mediating effect of conviction: a case of Pakistan. Pakistan *Journal of International Affairs. 4*(2), 526-548. https://doi.org/10.52337/pjia.v4i2.207

Khan, S., Benhamed, A., Rashid, A., Rasheed, R., & Huma, Z. (2022). Effect of leadership styles on employees' performance by considering psychological capital as mediator: evidence from airlines industry in emerging economy. *World Journal of Entrepreneurship, Management and Sustainable Development, 18*(8). https://wasdlibrary.org/publications/journals/wjemsd/

Khan, S., Rasheed., R., & Rashid, A., Abbas, Q., & Mahboob, F. (2022). The Effect of Demographic Characteristics on Job Performance: An Empirical Study from Pakistan. *Journal of Asian Finance, Economics and Business, 9*(2), 283-294. https://doi.org/10.13106/jafeb.2022.vol9.no2.0283

Khan, S., Rashid, A., Rasheed, R., & Amirah, N. A. (2022). Designing a knowledge-based system (KBS) to study consumer purchase intention: the impact of digital influencers in Pakistan. *Kybernetes, 5*1(1). https://doi.org/10.1108/K-06-2021-0497

Mefford, R. (2010). Offshoring, lean production and a sustainable global supply chain. European *Journal of International Management, 4*(3), 303-315. https://doi.org/10.1504/EJIM.2010.033006

Muzammil, M. (2022). Evaluating the Factors to Improve the Organizational Performance. *South Asian Management Review, 1*(1), 39-48. https://doi.org/10.57044/SAMR.2022.1.1.2204

Rasheed, T. (2022). Supply Chain Sustainability Through Green Practices in Manufacturing: A Case Study from Pakistan. *South Asian Journal of Operations and Logistics, 1*(1), 57-71. https://doi.org/10.57044/SAJOL.2022.1.1.2205

Rashid, A. & Rasheed, R. (2022). A Paradigm for Measuring Sustainable Performance Through Big Data Analytics-Artificial Intelligence in Manufacturing Firms. Available at SSRN 4087758. https://doi.org/10.2139/ssrn.4087758

Rashid, A. (2016). Impact of inventory management in downstream chains on customer satisfaction at manufacturing firms. *International Journal of Management, IT and Engineering, 6*(6), 1-19.

Rashid, A., & Amirah, N. A. (2017). Relationship between poor documentation and efficient inventory control at Provincial Ministry of Health, Lahore. *American Journal of Innovative Research and Applied Sciences, 5*(6), 420-423.

Rashid, A., Amirah, N. A., & Yusof, Y. (2019). Statistical approach in exploring factors of documentation process and hospital performance: a preliminary study. *American Journal of Innovative Research and Applied Sciences, 9*(4), 306-310.

Rashid, A., Amirah, N. A., Yusof, Y., & Mohd, A. T. (2020). Analysis of demographic factors on perceptions of inventory managers towards healthcare performance. *The Economics and Finance Letters, 7*(2), 289-294. https://doi.org/10.18488/journal.29.2020.72.289.294

Rashid, A., Rasheed, R., Amirah, N. A., Yusof, Y., Khan, S., & Agha, A., A. (2021). A Quantitative Perspective of Systematic Research: Easy and Step-by-Step Initial Guidelines. *Turkish Online Journal of Qualitative Inquiry, 12*(9), 2874-2883.

Shaheen, S. (2022). Quality management and operational performance: a case study from Pakistan. *South Asian Journal of Operations and Logistics, 1*(1), 14-19. https://doi.org/10.57044/SAJOL.2022.1.1.2201

Shee, H., Miah, S., Fairfield, L., & Pujawan, N. (2018). The impact of cloud-enabled process integration on supply chain performance and firm sustainability: the moderating role of top management. *Supply Chain Management: An International Journal, 23*(6), 500-517. https://doi.org/10.1108/SCM-09-2017-0309

Singh, M., Jawalkar, C., & Kant, S. (2019). Analysis of drivers for green supply chain management adaptation in a fertilizer industry of Punjab (India). *International Journal of Environmental Science and Technology, 16*(7), 2915-2926. https://doi.org/10.1007/s13762-018-1759-y

Smith, D., Newby, J., Malik, A., Yadav, L., & Cramb, R. (2018). Fertilizer use patterns of smallholder farmers-implications for private sector involvement in technology dissemination. *School of Agriculture and Food Sciences, 1*(1), 1-20.

Uddin, S. Q. (2022). Supply Chain Integration, Flexibility, and Operational Performance. *South Asian Management Review, 1*(1), 1-21. https://doi.org/10.57044/SAMR.2022.1.1.2202

Victory, G. O., Lizzie, O. A. & Olaitan, A. A. (2022). Climate-Smart Agricultural Practices at Oyo State-Nigeria. *South Asian Journal of Social Review, 1*(1), 1-7. https://doi.org/10.57044/SAJSR.2022.1.1.2201