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Editorial Note

I am pleased to introduce the "***South Asian Journal of Social Review***" *(SAJSR)*, a rapid peer-reviewed Journal under SAG Publishing. We have been started in the year 2022 and are growing continuously. We are pleased to announce that our first issue has been published online on time. All published articles in this journal are included in the indexing and abstracting coverage of various scientific databases. The submissions to the journal are subjected to the peer review process by the editorial board members or external subject experts. The complete editorial processing of the manuscript is done through the SAG Publishing submission system for greater transparency and faster article throughout. During this calendar year 2022, Editorial Board and Advisory Board comprise prominent expert Editors and Reviewers who joined *SAJSR* and contributed their valuable services to the journal's quality.

I would like to express my gratitude to all the authors, reviewers, the SAG publishing, Managing Editor, and the Editorial Advisory Board of *SAJSR*. With their support, we have released Vol. 1 and Issue 2 for the calendar year 2022. We look forward to bringing out the next issue in June 2023.

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Effect of Disruptive Factors on Green Supply Chain Management

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ABSTRACT

Businesses have traditionally focused on developing methods to reduce costs and increase revenues; much work is done to achieve this goal. However, a significant and positive step has now been taken by many organizations for the betterment of the environment; thus, they are now focusing on the implementation of green supply chain management practices. Green supply chain management practices allow companies to achieve larger sustainability objectives and boost sustainability awareness. In Pakistan, environmental issues are top of the list for Karachi'. Therefore, this study aims to raise awareness regarding the utilization of GSCM in the FMCG industries in Karachi. This adoption is significant because there will be adverse effects on the environment, operational efficiency, environmental performance, economic output, and social output for these polluting agents. For this purpose, a detailed questionnaire was sent to the FMCs via mail, and the responses were noted and analyzed; meanwhile, considering five critical variables, the five hypotheses were devised to gauge their significance and importance in the implementation of GSCM. This research is useful for the owners of the FMCGs as they develop their strategies and prescribing behaviour for GSCM performance after this study.

Keywords: *Organizational obstacles, technology, working environment, financial barriers, information*

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Effect of Disruptive Factors on Green Supply Chain Management

1. Introduction

Businesses have traditionally focused on devising techniques to reduce costs and increase revenues. They place a high value on this area since it may help the company achieve a competitive edge by reducing costs and increasing profits via efficient "Supply Chain Management" (Rashid et al., 2022; Rashid & Rasheed, 2022). It is also worth noting that many organizations' 20th-century plans focused more on decreasing waste than saving the environment. Green initiatives aim to maintain and enhance an organization's image and have recently gained traction in the twenty-first century (Khan et al., 2018). These practices, such as "Green Supply Chain Management (GSCM)," allow companies to achieve larger sustainability objectives and boost sustainability awareness across their industries and markets. "Fast Moving Consumer Goods (FMCGs)" in Karachi, Pakistan's food and beverage industry, has unique problems when seeking to adopt GSCM. The description of variables and thesis structure are also included. At 85,965 tones, the industrial sector accounts for 2.8 percent of Karachi's overall pollution (Khan et al., 2018).

The Pakistani government emphasizes manufacturing because it recognizes the vital role in building its industrial base. As a result, 2017 saw a 4.2 percent increase in Karachi's industrial production index, with the manufacturing sector seeing the most significant rise at 6.7 percent (RM 60.5 billion) over 2016. As the year advances, Pakistan's industrial sector is flourishing. Moreover, FMCG has a substantial impact on the economies of many countries throughout the world (Sambrani & Pol, 2016). In this regard, environmental issues are top of the list for Karachi, both people and politicians. In 1974, Karachi's ecological quality act was established, and it has since undergone several amendments, including the addition of 18 new laws that allow for projects involving sewage, clean air, and industrial seepage to be carried out. In addition, several further "Non-Governmental Organizations (NGOs)" have been established to keep track of and monitor the country's environmental difficulties and advancements (Mkansi et al., 2019).

Pakistan's economy would not function without the contributions of Karachi's FMCG firms, to which the federal government gives special attention and support. "National Economic Policy (NEP)" is a Karachi government policy established in 1971 to improve the lives of its population and reorganize the ethnic and economic imbalances in this country. In addition, the Karachi government is exhibiting its dedication to the growth of FMCG through the greening plan, a plan that will run from 2006 to 2020. As a result, 94.4 percent of Karachi's businesses are in the manufacturing industry (Khan et al., 2018). At the same time, more than a quarter of Pakistan's manufacturing FMCG is located in Karachi, with 8,314 FMCG. The manufacturing sector's growth is primarily driven by developing food, beverages, and tobacco items, electrical and electronic products, and petroleum, chemical, rubber, and plastic products.

It is projected that the Karachi "Food and Beverage (F&B): sector accounted for 9.8 percent of Karachi's export revenue in 2015. Investors in the "Euro money Institutional Investor Company (EMIIC)" about 17.8 percent of Karachi's manufacturing FMCG are involved in the food and beverage industry. Air pollution in Karachi is increasing due to the country's growing industrial sector (Mkansi et al., 2019). This approach can save lives, save resources, reduce pollution, and conserve energy. However, if an organization wants to reduce its environmental impact, it must boost its productivity and include environmental actions into its strategy. To do this, they must find a balance between serving the demands of their constituents and other stakeholders while still complying with legal regulations and maximizing revenues. However, if a corporation can achieve these goals while also serving the needs of its stakeholders, its value may rise. Yet, despite the rising importance of GSCM, organizations continue to struggle to apply it (Mkansi et al., 2019; Rasheed, 2022). In addition, when converting to GSCM, several hurdles must be addressed, which is why this shift failed. Barriers, as they are known in the business world, must be overcome for companies to succeed. During the early stages of GSCM

implementation, they should be aware of their challenges. Due to Karachi manufacturing, FMCG and F&B sectors make up most of Karachi's manufacturing industry, so understanding the challenges they face in implementing GSCM practices is crucial (Baloch & Rashid, 2022). There is a plethora of research that shows how implementing environmentally friendly practices may help firms. As a result, several European companies have begun to use the GSCM concept in recent years (Sambrani & Pol, 2016).

A rising trend may increase environmental protection expenditure by manufacturing FMCG yearly. For example, manufacturing FMCG's environmental protection expenditures grew consistently from 2014 to 2016. “Environmental Protection Agency (EPA)” figures show that in 2014, the percentage of environmental protection expenditure was 13.9 percent, and in 2015, it was 14.8 percent. As seen by the 15.2% rise in spending in 2016, it seems that the rising trend in spending will continue in 2016. Considering this, in manufacturing FMCG, environmental concerns are becoming more challenging to control, and the rise in expenditures indicates this. According to the projection, the manufacturing FMCG's environmental protection expenditure for 2017 is predicted to be greater than the previous year's spending because of the worsening ecological issues in manufacturing FMCG (Khan, 2020; Anwar, 2022). Data shows that the Karachi government has been increasing expenditure on environmental protection over the years, but progress in the adoption of GSCM in F&B manufacturing FMCG has not been as prominent as it could have been. The government of Karachi has recognized environmental issues and created a Green Technology strategy. Still, theoretically and empirically, the nation has only performed a tiny amount of study on FMCG greening (Sibghatullah et al., 2019; Amjad, 2022; Alam, 2022; Asif, 2022). It is unknown how Karachi F&B manufacturing FMCG is coping with their environmental responsibilities or improving their environmental understanding and behaviour. However, there's no denying that environmental degradation is becoming an increasing concern in Karachi. As of 2016, Karachi accounted for 0.7 percent of the world's CO2 emissions (Sambrani & Pol, 2016).

Karachi's FMCG has commonly been deliberated as the backbone of industrialized expansion and plays an essential role in the growth and development of the country's economy. Karachi's FMCG now accounts for 45% of the country's "Gross Domestic Product (GDP)," up from 33% in 2012, and the great majority of these businesses are dealers to “Multi-National Corporation (MNCs)” all over the globe. It is estimated that in Karachi, Karachi has a total of 8,514 manufacturing FMCG, which accounts for 32% of all manufacturing FMCG in Karachi (Khan, 2020). To raise their earnings and market share, businesses must do more to lessen their negative environmental impacts and expand their market share. Therefore, we need to understand why Karachi FMCG is slow to apply GSCM in their enterprises and devise solutions for this circumstance given local and international stakeholder groups (Shaheen, 2022). There is some evidence of analyzing greening aspects in the study described above. Still, none has mainly investigated the pattern and dimension of "Green Supply Chain (GSC)" adoption among FMCG in the food and beverage manufacturing business. Therefore, a research project on the F&B 6 manufacturing FMCG is worthwhile for several reasons: not only will it help us better understand the green behaviour of FMCG in general and F&B manufacturing FMCG in particular, but it will also help us add new insights into our understanding of the green behaviour of FMCG in general and F&B manufacturing FMCG in particular (Maaz et al., 2022; Victory et al., 2022; Hunaid et al., 2022). This is because environmental issues, including consumer health, "Greenhouse Gases (GHGs),” scarcity of resources, and global warming are causing people to pay greater attention. Consequently, many firms were forced to create goods that reduced pollution, were kind to the environment, and were secure for consumers to use (Sibghatullah et al., 2019; Ali, 2022).

2. Literature Review

2.1. Underpinning and Supporting Theories/Models

The use of the theories as well as models has allowed the researcher to explore the main goal of the research along with meaningful support for the execution of the research issue. In this regard, some of the theories have been represented below in order to develop the flow of the understanding of

these theories, including resources-based theory and stakeholder theory. With these theories, the researcher has explored the relationships with the management and the different function of the organization

2.1.1. Resource-based theory

The resource-based theory is a paradigm that evolved with time which states that if a company has both material and intangible resources, it will have a competitive advantage. All physical and financial assets and reserves are referred to as tangible resources. Information, personnel talents, attributes, reputation, and business culture are intangible resources. According to Younis et al. (2016), if the firm manages these assets appropriately and effectively, it will improve its performance and surpass its competitors. These resources also enable the company to put strategies to fulfil its objectives and vision to gain a competitive edge. Evaluating a company only on its resources is impossible. The interplay of the company's precious assets with the market situation underlines the significance of the company's resources. These variables allow a company to fully exploit potential markets while avoiding competition or dangers to establish a competitive edge (Hashmi et al., 2021a). The study of Saad and Danish (2011) extended the resource-based theory by incorporating dynamic capacities, and Hart added natural resources to the approach. Higher management's capability to alter the firm's assets, such as allocating resources, merging, acquisitions, and designing new organizational strategies, is called dynamic capabilities. It demonstrates the wide range of expenditures that can improve a firm's environmental competency from a resource extraction standpoint.

These expenses include employees, systems, procedures, tactics, and technologies. As an outcome, environmental teaching and practices can consist of dynamic capacities and investment viewpoints in this theory (Younis et al., 2016; Hashmi et al., 2021b). The greening of SCM would be of worth, scarcity, non-substitutability, and individuality with the assistance of these resources and skills. The researcher further emphasizes that these possessions will offer value to the GSCM of the companies. Researchers have used the resource-based view theory to highlight the relevance of environmental elements in achieving competitive advantage. A resource-based approach has motivated earlier GSCM investigations. As an outcome, the purpose of this study is to see if organizational resources, such as perceptions of the firm's ecological effect and administrative, technical, intellectual, and economic resources, are relevant in determining whether they are a barrier to GSCM adoption.

2.1.2. Stakeholder theory

Stakeholders are any group of people who can influence or are influenced by accomplishing an organization's goals. This concept depicts the advantages of integrating and working with other company activities. External stakeholders include customers, shareholders, government, and society; internal stakeholders have employees. As a result, companies must adhere to these environmental standards or face financial penalties, and these constraints and sanctions will harm the firm's reputation and brand image (Karimi & Rahim, 2015). Internal stakeholders necessitate substantial training because employees are both the initiators and recipients of any strategy and actions undertaken by the organization. Managerial perceptions, opinions, beliefs, and leaders influence management decisions about environmental operations. As per the study of Ayuso et al. (2014), this notion is linked to "Corporate Social Responsibility (CSR)," and it helps in the interaction between the corporation and society, as well as providing firm management with guidance. The researcher used a stakeholder approach to understand stakeholder influence and GSCM and discovered a substantial, strong relationship.

Wong et al. (2015) presented a theory that states that enterprises coordinate their environmental organization practices with critical investors to further contribute to green practices. The concept is significant in discussing GSCM difficulties instead of other management activities. As a result, because the stakeholders in the organization are vital in implementing these programs, correct perception, dedication, and awareness are required in implementing new environmental initiatives within the firm. In summary, it is critical to determine whether respondents' and the firm's perceptions of GSCM adoption, particularly their dedication and mindsets, are barriers. The theoretical underpinning for this research is provided by the above-mentioned approaches, resource-based theory, and stakeholder

theory. The following sections will review previous research on the topic and a literature evaluation of each independent and dependent variable (Karimi & Rahim, 2015).

2.2. Empirical Reviews

Green supply chain management has evolved throughout the years and is still growing. Environmental measures for economic growth in industrialized countries were first recognized in the 1960s. According to the researcher, many governments in affluent countries have reacted by emphasizing the environment and enacting legislation to protect it. Nevertheless, large firms with ample resources typically execute these green initiatives, while FMCG is frequently overlooked (Bhatia & Gangwani, 2021). One of the explanations provided by the researcher is that FMCG may be introduced to the concept of environmental management due to a lack of awareness. However, they also emphasized that FMCG should not be overlooked since they are crucial to growth and the environment. FMCG has a considerable effect on ecological systems due to their large quantity.

Furthermore, FMCG is a part of all nations' economic growth, and they are dealing with environmental challenges as globalization continues (Ahmed & Najmi, 2018; Muzammil, 2022). As a result, the FMCG needs more ecological and social management literature effort. However, many countries, including the United Kingdom, Europe, the United States, and Australia, have revealed some of the discoveries of FMCG and environmental activities. Apart from that, for starters, most company owners agree that the environment is essential and that preservation is necessary to maintain the environment. In addition, numerous experts' studies on the usage of GSCM in FMCG were increasing (Ahmed & Najmi, 2018; Basit, 2022). Additionally, Studies have looked at the internal and external challenges to implementing GSCM methods. The researcher explicitly analyses the external barriers, identifying that a lack of external participation will worsen GSCM performance. External hurdles include industry-specific barriers, legislation, and vendor commitment, while internal impediments include a lack of cost and credibility. Moreover, there is a study on ecological management in FMCG and the difficulties for FMCG in increasing environmental performance and the aspects that contribute to the increased adoption of the "Environmental Management System (EMS)" in FMCG. Regarding barriers to GSCM implementation, the research identified four significant challenges that impede GSCM performance among FMCG: technical, informational, resource, and attitudinal and perceptual constraints.

According to the researcher's results, FMCG does not understand that it is their responsibility to maintain the environment green. In addition, FMCG does not have significant and precise knowledge about the environmental advantages of greening its products. The researcher also finds that FMCG cannot develop a solution for green products and discovers difficulties for FMCG vendors to deliver green materials. Furthermore, some customers prefer standard items to green products, which creates a disincentive for businesses to use GSCM (Bhatia & Gangwani, 2021). Therefore, compared to multinational corporations and foreign-based organizations, Karachi enterprises participate in green practices at a lower rate. The report discovered that the most significant impediment to GSCM adoption amongst Karachi FMCG is a lack of resources, followed by a lack of technical expertise. Because study on this area in Karachi is rare, it presents a chance to explore further the connection between FMCG and the constraints to implementing GSCM in Karachi (Ahmed & Najmi, 2018; Uddin, 2022; Ayaz, 2022).

2.3. Hypothesis

- *H1: The organizational obstacles have a significant effect on green supply chain management.*
- *H2: The technological hurdles significantly effect green supply chain management.*
- *H3: The work environment significantly effects green supply chain management.*
- *H4: The financial barriers have a significant effect on green supply chain management.*

- *H5: The informational barriers have a significant effect on green supply chain management.*

3. Research Methodology

The research methodology is considered the central part of the research, which involves identifying the used research approaches, philosophers, data collection and data analysis (Hashmi et al., 2020a; Rashid et al., 2021; Khan et al., 2022a). The main reason for selecting the quantitative research design was based on the recommendation of Bloomfield and Fisher (2019). They indicated that statistical analysis leads to more functional results in testing the hypothesis. The in the past, multiple models, have been identified which tend to explore research methodologies and the combination for the execution of the research issue. Saunders et al. (2015) have represented the research model named a research onion which has been found involved in the formulating the strategies to identify the solution to the research issues. Based on the recommendations of Saunders et al. (2015), strategies have been formulated along with practical outcomes (Khan et al., 2022b, c).

The research strategy is a critical component of the study; it is the procedure by which the research variables are measured, and the research question may be answered successfully. The data gathered must be correct to prevent a negative influence on the study's outcome and the possibility of producing an invalid result. Accurate data collection is also necessary to protect the integrity of the research (Rahmi, 2018; Hashmi et al., 2020b). This research performed a survey to acquire quantitative data to evaluate the hypotheses statistically. To develop the nature of the study, quantitative data is beneficial as a research strategy, and it has shown an extension in recognizing the present nature that is required. The purpose of this research is to determine the effect of variables. In addition, the study is based on a review of existing research and theoretical models, which were used to establish the five hypotheses. Moreover, the study gathers primary data through the delivery of questionnaires to examine the current theory and the hypotheses derived from the conceptual framework. The selection criteria verified that respondents have the necessary expertise to answer their questions. The top executives all have sufficient knowledge and vision of their respective firms. This research relies on data collected from a random sample (Hashmi & Mohd, 2020; Rashid et al., 2021). Then, the final sample size was determined guided by comparative research carried out in a different environment.

Karachi-based FMCG provided the samples for this study (Lee et al., 2012). FMCG that are still in business and make food and beverage products are the primary focus of this study's sample. Karachi was chosen because it has Pakistan's greatest concentration of food and manufacturing FMCG. The food and beverage and tobacco industries account for 17.4 percent of Pakistani manufacturing growth to complicate matters. In comparison, computer / electronic items make up 8.9 percent of that, as petroleum, chemical, rubber, and plastics make up 6.2 percent (4.0 percent). In addition to this, the poll was taken by senior and mid-level managers, supervisors, and non-management personnel. The data included in this research was acquired from people who have a great lot of experience and skills in their respective fields. As in the quantitative study, the use of the maximum sample size helps the researcher to find out more adequate data; the researcher has decided to take 216 sample sizes for this study. Any study must have sufficient participants to draw valid conclusions from. The validity and reliability of the research will be improved if the sample size is large enough. A large enough sample must be used to ensure that the margin of error is kept to a minimum. Selection bias, under-coverage, insufficient data collecting quality, and inaccurate target populations may all come from a lack of sample size, and the sample size was this study was 216 participants.

3.6. Statistical Technique

All questions were coded with numeric values, and primary data was entered into the IBM SPSS (Statistical Package for the Social Science) version 22 statistical program for the study's analysis (Rashid, 2016). The use of the SPSS has helped the researcher to assess the validity of data and to test the hypothesis of the study. In the regression analysis, the use of the SPSS software helps the researcher to inform about the p-value of variables. This study has used different techniques to analyze the collected data via a questionnaire.

4. Data Analysis and Results

In the research, the section on data analysis is considered the central part as it is based on the analysis of the collected data with the selected research techniques. In this research, to raise awareness regarding the utilization of GSCM in the FMCG industries in Karachi, the researcher has used the demographic study and regression analysis has been prioritized for effective outcomes. The developed hypothesis has been tested, and the results of the tested hypothesis have been represented along with the support.

4.1. Demographic Analysis

The participants involved in this research were required to account for their education, age and gender so that their behavioural patterns and demographic background could be evaluated (Rashid & Amirah, 2017; Rashid et al., 2020; Khan et al., 2020). Male participants were found to be in the majority of this research. The numbers reflect that 87% of the total sample population were male for this research; however, only 13% of the female respondents were among the research participants. In the research, 20.4% of the participants were between 41 to 50 years old. 42.6% were in between the age bracket of 31 to 40 years old, while 33.3% were in the age bracket of 21 to 30 years old. The results have displayed that three majorities of the participants were graduates, accounting for 60% of the total population. In addition, 16.7% have responded to being undergraduate, while 14.8% reported having a doctorate. Lastly, individuals who have completed matriculation are only 1.9% out of the total. Following are the generalized demographic analyses presented in table 1.

Table1: Demographic analysis of the participants

Demographic	Group	(N=216) Frequency	Percentage
Gender	Female	13.0	13
	Male	87.0	87
Age	21-30	72.0	66
	30-40	92.0	34
	41-50	44	20
Education	Doctor	32	14
	Masters	136	63
	Graduate	36	16
	Other	12	7

4.2. Reliability Statistics

Based on the 13 items developed and used in this research, the reliability of the variables denoted for this study has reflected the value of Cronbach's Alpha as 0.851. It implies that these variables are reliable as the value to depict reliability through Cronbach’s alpha is above 0.7 (Rashid et al., 2019; Agha et al., 2021; Haque et al., 2021; Das et al., 2021; Alrazehi et al., 2021).

4.3. Regression Analysis

The above table depicts the value of the model summary, the purpose of which is to illustrate the impact of the dependent variable on an independent variable in a relationship. This can be achieved in a quantifiable manner through statistical analysis to analyze the significant relationship between variables. In this case, impulsive buying behaviour is dependent, and the independent variables are floor merchandising, forum display, and window display. In accordance with the findings as presented in the table 2, the variance is only 34%, as depicted by the value of r-square. Moreover, the impact of independent variables is 33% on dependent variables since the adjustment of error and considerations are reflected through the value of the adjusted r-square.

Table2: Regression analysis

Variables	Model Summary		Anova		Standardized Coefficients		
	R	Adjusted R Square	F	Sig.	Beta	T	Sig.
Organizational obstacles	.785a	.524	88.416	.000b	.741	2.979	.003
Technological Hurdles					.143	.992	.326
Work Environment					.652	2.094	.005
Financial Barriers					.671	3.218	.001
Informational Barriers					.123	.800	.542

Dependent Variable: Green supply chain management

ANOVA Analysis is often used as an attempt to determine the reliability of the overall model that is bonded in a relationship, which involves independent and dependent variables. The value of F is noted for this purpose, which in the case of this research is 36.376. Hence, it can be said that the correlation between the Work environment, organizational obstacles, technological hurdles, financial barriers, informational barriers and green supply chain management practices exists. It also indicates that the association between independent and dependent variables is reliable. Moreover, the value of sig is 0.0000, which is above the threshold value of 0.05. The sig value represents whether or not the relationship between variables is significant. Therefore, it implies that the relationships between variables (independent and dependent) are reliable.

Regression analysis is referred to as a statistical tool or a statistical technique that is often performed in studies and research that involve the research testing relationships built through hypotheses using data that is quantifiable. The result obtained through regression analysis implies this research has identified independent variables which are required to be evaluated on the basis of their impact on the dependent variable. For this research work environment, organizational obstacles, technological hurdles, financial barriers, and informational barriers. In accordance with the table above, there are a total number of three independent variables, namely, work environment, organizational obstacles, technological hurdles, financial barriers, and informational barriers. In addition to this, the dependent variable of the research is green supply chain management practices. One of the primary purposes of the above-presented table is to verify if the relationship between these variables mentioned above is significant or not. Moreover, the table also indicates if the nature of these relationships is either positive or negative.

To present the results, the values depicted in the table above have been diagnosed. Therefore, values, there is a significant positive relationship between a window display and impulsive buying behaviour is not only significant but also the impact of the former on the latter is positive. It can be assumed that the t-value is 2.888 (above 0.00), and the sig value is 0.004 (below 0.05) for the relationship between the two variables. In addition, the relationship of forum display with impulsive buying behaviour as the value of sig is 0.062, and therefore, is found to be insignificant. On the other hand, the research has found that the relationship between floor merchandising and impulsive buying behaviour is significant as well as positive, as per the table above. The results indicate that the value of T is 4.496, and the value of sig is 0.000.

4.4. Summary of Hypothesis Testing

Table 3 illustrates hypotheses results, where hypothesis 1 is validated, and there is a statistically crucial helpful association between the adoption of GSCM and the hypothesis. Internal barriers provide a more substantial barrier than external obstacles, and many internal obstacles are related to perceptions and attitudes about the surroundings. GSCM adoption is associated with the endorsement of Hypothesis 2 and has a statistically significant positive connection with that acceptance. According to the study's findings, technology is one of the hurdles to implementing GSCM amongst businesses, which aims to develop hypothesis 3. In conclusion, the results demonstrate a statistically significant positive association between technical hurdles and the application of GSCM, and hypothesis 5 is thus supported.

Table 3: Results of hypothesis

Hypotheses	Results	P-value
H1: The organizational obstacles have a significant effect on implementing green supply chain management practices.	Accepted	0.003
H2: The technological hurdles have a significant effect on implementing green supply chain management practices	Rejected	0.326
H3 The work environment has a significant effect on implementing green supply chain management practices.	Accepted	0.005
H4 The financial barriers have a significant effect on implementing green supply chain management practices.	Accepted	0.001
H5 The informational barriers have a significant effect on implementing green supply chain management practices.	Rejected	0.542

5. Conclusion

The primary purpose of this study was to measure the association between the barriers and acceptance of GSCM amongst FMCG in Karachi, Pakistan. For this purpose, a resource-based model drafted by some scholars and a stakeholder theory was used to achieve the desired research outcome. With the help of these two models and theories, a planned conceptual model was developed. The entire research was evaluated and carried out using five factors: the impression of the firm's environmental impact, Organizational culture resistance to change, Lack of collaboration among supplies, unskilled workforce, financial constraints, Hurdles in Implementation, and Government Policies. The research followed the research strategy by surveying to acquire quantitative data to evaluate the hypotheses statistically. Considering the numerous variables, five hypotheses were developed to figure out the importance of those variables towards the successful implementation of green supply chain management in the fast-moving consumer goods industries of Karachi, Pakistan. Though there are various means to send the questionnaire to the company, the most suited method suggested was to send the questionnaire via email and wait for the responses. It has been developed and discovered through the research that green supply chain management is crucial to be implemented and can lead to a successful future along with numerous environmental barriers; however, few constraints need to be addressed. The results of this study confirm that there is a solid and adequate relationship between the company's environmental effect and green supply chain management practices. The company's environmental effect is defined as the impact created by the company or its production on the environment or, in other words, how it is responsible for polluting or contributing to the improvement of the environment. Numerous scholars carried out the research to identify the severity of environmental effects caused best ha the companies and their impact on the implementation of successful green supply chain management practices; all the studies and our research confirmed that the action of a company's environmental policies does have a significant impact on the implementation of green supply chain management.

The results of this study explored the organizational barriers that have a significant impact on the implementation of supply chain management practices; therefore, the hypothesis related to this assumption is accepted and validated. Organizational barriers are defined as the restrictions or hurdles faced by organizations in the flow of information or ideas from management to the workforce (Luthra et al., 2011). When there is an absence of support in the administration, enthusiasm, and leadership in the new procedures and performance, the organization is a barrier. Barriers, as they are known in the business world, must be overcome for companies to succeed. The assumption created for this variable is accepted, suggesting that the organizational hurdles or barriers significantly impact the implementation of successful green supply chain management practices. The results of this study clarified that technological hurdles do not have a lasting and significant impact on the performance and implementation of green supply chain management practices. Technology here is defined as the use of practical knowledge in the production, consumption, invention, and management of products and services; the full advantage of technology cannot be gained as it is an expensive area to work for. The hypothesis relating to this variable is therefore rejected in our research, confirming that due to the excessive cost associated with the latest technologies, they do not contribute to the implementation of green supply chain management; in fact, there are other variables that are significant contributors.

The results of this study explored that regulatory and financial barriers have a significant impact on the successful implementation of green supply chain management practices. According to business terms, financial barriers are defined as money management, such as budgeting and debt management. Some previous studies have measured that there is a significant relationship present between financial barriers and successful implementation of green supply chain management practices. This study also validated this point and revealed that both factors are strongly correlated and have a direct relationship; therefore, the hypothesis associated with this assumption or study is accepted. The results of this study ensured that there is no strong relationship between informational barriers and the adoption of GSCM. There are numerous sources of information, and according to the previous studies, they affect the adoption of green supply chain management practices; however, the current research negates such observations and concludes that there is a negative or negligible relationship between informational barriers and the adoption of GSCM. Therefore, the hypothesis created for this variable is rejected. This research contributed to relevant literature from various aspects. First, this research examined the possible variables which can contribute to the significant development and implementation of green supply chain practices and then worked on the actual data, which was sent to the companies via mail in the form of a questionnaire.

5.1. Discussion of the Finding

The primary purpose of this research is to figure out the relationship between the possible and relevant hurdles and the acceptance of Green Supply Chain Management among the leading fast-moving consumer goods industries of Pakistan, particularly Karachi, as it is one of the most polluted cities of the country. With the help of a resource-based model devised by some scholars, the findings and analyses have been developed. The research discussed various variables in association with the others in the form of hypotheses. The five variables have been used to evaluate green supply chain management practices in the FMCGs. They are namely: the observation of a company's environmental effect, organizational obstacles, the association between technological hurdles and sustainable supply, Regulatory and financial barriers and informational barriers. For the research purpose, five hypotheses have been developed. A detailed discussion and results of the drafted hypotheses are given below. The results are also compared with the study of famous scholars and researchers, along with the compression of the finding of this research with secondary sources. The difference has been represented as well. To conclude, the finding, as well as the results of this study, has been supported by the prior researcher, and some variables that were not identified as having an insignificant impact on the SCM have been explored in this research. These variables include informational barriers and technological hurdles.

5.1.1. H1: The organizational obstacles have a significant effect on implementing green supply chain management.

The above hypothesis suggesting that the organizational barriers have a significant impact on the implementation of the supply chain management practices is validated in this research. Thus, the above hypothesis is accepted, and the results validate the study of Jayant and Azhar (2014) and Kamaruddin et al. (2013), which proved that the obstacles created by the organization and its workers directly impact the implementation of green supply chain management practices of the firm they can be positive as well as negative thus depends purely over the behaviour and obstacles of organization. The results also validated the study conducted by (Luthra et al., 2011). This revealed that when there is an absence of support in the administration, enthusiasm, and leadership in the new procedures and performance, the organization is a barrier. Thus, organizational barriers play a crucial role in green supply chain management.

5.1.2. H2: The technological hurdles have a significant effect on implementing green supply chain management.

Based on the findings of this research, it has been noted that the hypothesis concerning a significant influence of technological hurdles and sustainable supply chain management adoption results in negative thus, the hypothesis regarding this theory is rejected. This is by the theory and

research of Diabat and Govindan (2011), according to which when it comes to taking full advantage of today's technology, there are several roadblocks in the way; therefore, solely technology can not contribute to sustainable supply chain management adoption as it is expensive and challenging to implement. Therefore, this hypothesis is not validated and is thus rejected.

5.1.3. H3: The work environment has a significant effect on implementing green supply chain management.

The findings indicate a positive relationship between the company's environmental effects on implementing green supply chain management practices; therefore, the above hypothesis is accepted. The results validated the study and research conducted that concluded by highlighting the significance of the company's environmental effect on the implementation of the practices to incorporate green supply chain management practices. This concluded that the environment and practices followed by the company and its workers create a strong relation for green supply chain management practices.

5.1.4. H4: The financial barriers have a significant effect on implementing green supply chain management.

The above hypothesis concerning variables of regulatory and financial barriers is validated, thus proving that these variables do have a significant impact on the successful implementation of green supply chain management practices. They concluded in their study that variables such as a lack of funds, a lack of bank debt, the increased price of hazardous waste management, and costly expenditures in green practices will impede the adoption of GSCM. The results also verify the theory and study (Rajeev et al., 2017). According to him, the inability to get finances or financial assistance is considered a financial impediment. Therefore, it is proven that one of the significant impediments to green production implementation is a company's financial resources.

5.1.5. H5: The informational barriers have a significant effect on implementing green supply chain management.

The above hypothesis regarding the positive and important relationship between informational barriers over the adoption of green supply chain management practices is not accepted in our research and is thus rejected. A previous study stressed over the importance of various sources of information transmission means like training and education to implement GSCM procedures in any organization successfully. However, this requires more money and cost, which can lead to its rejection as it is not affordable for all the companies to meet such expenses. The results also reject the study of (Laosirihongthong et al., 2013); according to him, Decisions, consequences, and behaviour may all be influenced by sustained information.

5.2. Recommendations for the Industry

To the significant results of this study, the FMCGs should work hard to improve the company's environmental impact, organizational barriers, and financial barriers, as these are the key factors contributing to the successful implementation of GSCM. Apart from this, there is a need for top senior management's dedication, advice, assistance, and leadership to substantially impact the performance of the company's environmental management practices because upper executives impact a company's environmental proactivity. Apart from the top management, upper and middle management and every discrete organization must all work together to ensure GSCM's success. Also, there should be a strong comprehension among supply chain stakeholders. Lastly, the training and education for successfully implementing GSCM procedures in any organization should be intensely focused. By following the above implications and recommendations, the FMCGs can ensure the successful implementation of GSCM. Based on the limitation of this research, future researchers are recommended to focus on some of the aspects which would help them to identify the more relevant data for the SCM. Future researchers are recommended to use both qualitative and quantitative research designs, allowing them to incorporate the most compelling studies. As this research was based in Karachi, thus the future researcher is

recommended to explore the scope of the research and to focus on more countries like Lahore and Islamabad as a case study approach.

5.3. Limitations of Study

This research presented several functional theoretical as well as managerial information, but there are some limitations present in this research. This research is limited only to the working and environmental concerns of FMCGs. In contrast, no information was given regarding other industries of the country, so this study covers the FMCGs of the cosmopolitan city Karachi; only no data is drafted for the other cities. This study was conducted from different FMCGs in the city of Karachi. In addition to this, another limitation that has been identified in this research is based on the incorporation of the limited studies in the following research.

Reference

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.

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

Ahmed, W., & Najmi, A. (2018). Developing and analyzing framework for understanding the effects of GSCM on green and economic performance: perspective of a developing country. *Management of Environmental Quality: An International Journal, 29*(4), 740-758. https://doi.org/10.1108/MEQ-11-2017-0140

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

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

Ayuso, S., Rodríguez, M. A., García-Castro, R., & Ariño, M. A. (2014). Maximizing stakeholders' interests: An empirical analysis of the stakeholder approach to corporate governance. *Business & Society, 53*(3), 414-439. https://doi.org/10.1177/0007650311433122

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

Bhatia, M. S., & Gangwani, K. K. (2021). Green supply chain management: Scientometric review and analysis of empirical research. *Journal of Cleaner Production, 284*, 124722. https://doi.org/10.1016/j.jclepro.2020.124722

Bloomfield, J. & Fisher, M. J. (2019). Quantitative research design. *Journal of the Australasian Rehabilitation Nurses Association, 22*(2), 27-30. https://doi.org/10.33235/jarna.22.2.27-30

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.

Diabat, A., & Govindan, K. (2011). An analysis of the drivers affecting the implementation of green supply chain management. *Resources, Conservation, and Recycling, 55*(6), 659-667. https://doi.org/10.1016/j.resconrec.2010.12.002

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). 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. (2021a). 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., & Zaliha, T. N. (2020b). 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. (2021b). 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

Jayant, A., & Azhar, M. (2014). Analysis of the barriers to implementing green supply chain management (GSCM) practices: interpretive structural modelling (ISM) approach. *Procedia Engineering, 97*, 2157-2166. https://doi.org/10.1016/j.proeng.2014.12.459

Kamaruddin, N. K., Kovalan, V., Adi, M., Nazir, M., & Ahmad, A. R. (2013, March). Adoption of green supply chain initiatives among small and medium-sized suppliers. In *Proceedings of the 20th International Business Information Management Association Conference* (pp. 25-26).

Karimi, A., & Rahim, K. A. (2015). Classification of external stakeholders pressures in green supply chain management. *Procedia Environmental Sciences, 30*, 27-32. https://doi.org/10.1016/j.proenv.2015.10.005

Khan, S. A. R. (2020). *Introduction to the Green Supply Chain Management. The Critical Success Factors of Green Supply Chain Management in Emerging Economies* (pp. 1-34). Springer, Cham. https://doi.org/10.1007/978-3-030-42742-9_1

Khan, S. A. R. (2020). *The Critical Success Factors of Green Supply Chain Management in Emerging Economies*. Springer Nature. https://doi.org/10.1007/978-3-030-42742-9

Khan, S. A. R., Zhang, Y., Golpîra, H., & Dong, Q. (2018). The impact of green supply chain practices in business performance: Evidence from Pakistani FMCG firms. *Journal of Advanced Manufacturing Systems, 17*(02), 267-275. https://doi.org/10.1142/S0219686718500166

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. (2022c). 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. (2022b). 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. (2022a). Designing a knowledge-based system (KBS) to study consumer purchase intention: the impact of digital influencers in Pakistan. *Kybernetes, 51*(1). https://doi.org/10.1108/K-06-2021-0497

Laosirihongthong, T., Adebanjo, D., & Tan, K. C. (2013). Green supply chain management practices and performance. *Industrial Management & Data Systems, 113*(8), 1088-1109. https://doi.org/10.1108/IMDS-04-2013-0164

Lee, Sang M.; Tae Kim, Sung; Choi, Donghyun (2012). Green supply chain management and organizational performance. *Industrial Management & Data Systems, 112*(8), 1148-1180. https://doi.org/10.1108/02635571211264609

Luthra, S., Kumar, V., Kumar, S., & Haleem, A. (2011). Barriers to implementing green supply chain management in automobile industry using interpretive structural modelling technique: An Indian perspective. *Journal of Industrial Engineering and Management, 4*(2), 231-257. https://doi.org/10.3926/jiem.2011.v4n2.p231-257

Maaz, M. A. M., Ahmad, R., & Abad, A. (2022). Antecedents and consequences of green supply chain management practices: a study of Indian food processing industry. *Benchmarking: An International Journal, 29*(7), 2245-2273. https://doi.org/10.1108/BIJ-01-2021-0026

Mkansi, M., de Leeuw, S., & Amosun, O. (2019). Mobile application supported urban-township e-grocery distribution. *International Journal of Physical Distribution & Logistics Management, 50*(1), 26-53. https://doi.org/10.1108/IJPDLM-10-2018-0358

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

Rahmi, B. A. K. İ. (2018). Literature Review on Green Supply Chain Management Concept and Problems during Its Implementation. *The Journal of International Scientific Researches, 3*(2), 114-122.

Rajeev, A., Pati, R. K., Padhi, S. S., & Govindan, K. (2017). Evolution of sustainability in supply chain management: A literature review. *Journal of Cleaner Production, 162*, 299-314. https://doi.org/10.1016/j.jclepro.2017.05.026

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. *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., Ali, S. B., Rasheed, R., Amirah, N. A. & Ngah, A. H. (2022). A paradigm of blockchain and supply chain performance: a mediated model using structural equation modeling. *Kybernetes, Vol. ahead-of-print No. ahead-of-print.* https://doi.org/10.1108/K-04-2022-0543

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.

Saad, M., & Siddiqui, D. A. (2019). The impact of green supply chain management on firm performance: a case of manufacturing industry of Karachi. *Social Science and Humanities Journal, 3*(4), 993-105.

Sambrani, V. N., & Pol, N. (2016). Green Supply Chain Management: A Literature Review. *IUP Journal of Supply Chain Management, 13*(4), 7. https://doi.org/10.21863/jscms/2015.4.4.017

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

Sibghatullah, A., Shamshir, M., Siddiqui, K., & Saeed, N. (2019). The Unification of Product and Industry Life-cycle: A Framework for Telecom Sector in Pakistan. *IBT Journal of Business Studies (JBS), 15*(1), 19-32. https://doi.org/10.46745/ilma.jbs.2019.15.01.02

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

Wong, C. Y., Wong, C. W., & Boon-Itt, S. (2015). Integrating environmental management into supply chains: a systematic literature review and theoretical framework. *International Journal of Physical Distribution & Logistics Management, 45*(1/2), 43-68. https://doi.org/10.1108/IJPDLM-05-2013-0110

Younis, H., Sundarakani, B., & Vel, P. (2016). The impact of implementing green supply chain management practices on corporate performance. *Competitiveness Review, 26*(3), 216-245. https://doi.org/10.1108/CR-04-2015-0024

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Impact of Sustainable Supply Chain Management in the Construction Industry

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ABSTRACT

This paper aims to introduce the impact of sustainable supply chain management in the Pakistani construction industry and how it helps with the performance and Development of the construction industry. It aims to elaborate on and emphasize how a sustainable supply chain will be more effective the traditional construction management and its supply chains. A quantitative research method with a deductive approach was used to test research hypotheses. A sample of 154 respondents using a questionnaire responded for data analysis. In Pakistan, the market for a construction company is primarily local based and highly volatile. The assessment is carried out to determine the level of significance and degree of impact of supply chain management (SCM) and sustainability on the construction industry's performance. The results derived from the test show that SCM has a moderate impact leading to leading to increased performance. The lack of time and budget limited the focus to Karachi-based construction businesses, leaving other construction businesses in Pakistan as not relevant. The paper primarily focused on the Pakistan-based construction industry, and the articles that are a source for this study generated knowledge regarding various issues and opportunities associated with supply chain management in the Karachi-based construction industry.

Keywords: *Construction industry, Sustainable supply chain, Pakistan, Resource dependence theory, Theory of sustainability*

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Impact of Sustainable Supply Chain Management in the Construction Industry

1. Introduction

The primary purpose of supply chain management is to maximize customer value and achieve the goal of competitive advantage (Baloch & Rashid, 2022; Ben-Daya et al., 2019; Hashmi & Mohd, 2020). The positive impact or importance of applying various supply chain management techniques cannot be denied in the retail industry (Queiroz et al., 2019; Hashmi et al., 2020a). However, the outcomes of this management do not need to remain the same in all sectors or industries. The dynamics, nature, and way of working differ in other industries, such as construction (Lamba & Singh, 2017; Shaheen, 2022; Hashmi et al., 2020b). The requirement for continuous improvements and reduction in cost also plays a vital role in adopting the appropriate strategies for supply chain management (Wibowo et al., 2018; Anwar, 2022; Hashmi et al., 2021a). To strengthen the supply chain management of the construction industry, the essential elements are time reduction and inventory management.

The application of sustainable supply chain practices is majorly used in dynamic business environments. For such businesses, the complexity of the supply chain remains a significant challenge; therefore, improvements in the processes are considered necessary (Beske, 2012; Amjad, 2022; Hashmi et al., 2021b). The increasing interest of researchers and businesses in resource dependence is raised with growing globalization and the requirement of one organization to rely on other businesses for resources (Beske, 2012; Rasheed, 2022). The different resources may vary from financial to recognition and others. Firms having the resources are considered to influence/ have power over the ones without the resource, and therefore, prices, costs, managerial and other elements can be affected (Denktas-Sakar & Karatas-Cetin, 2012; Victory et al., 2022; Basit, 2022).

The researchers also highlight that numerous restrictions and barriers do not allow effective integration of the processes. However, SMEs, MMEs, and large organizations are required to focus more on integration as it can be beneficial to reduce costs and gain long-term benefits in financial and operational performance. A research study by Ofori (2000) helps to highlight the relevance of the construction industry for the environmental impact. The researchers believe that the construction industry must focus on the green supply chain and other activities to limit or avoid their negative environmental impact (Ofori, 2000; Alam, 2022). The focus of businesses to effectively maintain and manage the supply chain processes is widely required in the current business environment with the majority of businesses having competitive pressure. The top management of the organization plays the most critical role in "Supply Chain Management" activities as the internal as well as external strategies and practices are required to be managed/ balanced and maintained with the organizational goals and objectives for logistics (London & Kenley, 2001; Hunaid et al., 2022; Muzammil, 2022).

The research for businesses to maintain and effectively reduce costs has been carried out for a long. Research studies help to highlight and determine that effective adoption of supply chain management practices is considered necessary for construction businesses. Clients, contractors, and other consultants can lead their businesses to reduce overall costs and maintain a higher efficiency by effectively managing the supply chain practices (Dainty et al., 2001; Ali, 2022). The research will identify and achieve results to know how to use green supply chain management, specifically in the construction industry and what variables will get the best results. This is conducted on a large group of people to know if the independent variable will contribute to the success of construction management and the challenges and risks it will be required**.** The mandatory element is to identify the importance of practising green supply chain management in the construction industry (Ofori, 2000; Asif, 2022). The related factors, including risks and challenges, must be identified to prepare relevant and reliable strategies (Wibowo et al., 2018; Uddin, 2022; Ayaz, 2022). The research explores the areas through which we can achieve sustainable construction practices and how risk can be minimized, and maximum profit can be achieved.

The identified research gap from this study's background represents little discussion on the significance of adopting supply chain management in Pakistan. Therefore, the current research is based on this identified research gap. The primary purpose of the current study is to discuss the importance or significance of Supply Chain Management (SCM) practices in the Pakistani construction industry. Another purpose of the current is to explore the impact of sustainable supply chain management on the performance of the construction industry of Pakistan. It can be represented in the form of objectives that are listed below.

a. *To identify and discuss the significance of supply chain management practices in the Pakistani construction industry.*

b. To examine the impact of sustainable supply chain management of the Pakistani construction industry on their performance.

1.1. Research Questions

The following research questions were derived from gaining an in-depth understanding of the subject further. The questions will be the focus of the research and help identify how the supply chain will be helpful in construction management in the Pakistan business environment.

a. To what extent do the supply chain management practices influence the performance of the construction business?

b. To what extent does sustainable supply chain management influence the performance of the construction business?

2. Literature Review

SCM refers to controlling and managing different activities, from the purchase of materials to finished goods (Abas et al., 2020; Hashmi et al., 2020a). The five main components of supply chain management are plan, source, make, deliver, and return (Dubey et al., 2018). Supply chain management is a flow of services, goods and raw materials, which includes transforming those raw materials and skills into goods and services. A sustainable SC is one that fully interconnects ethical and environmentally responsible practices to gain a competitive and successful model. End-to-end supply chain requires to be transparent is very crucial for success; these sustained supply chain activities must extend from raw materials sourcing to last-mile logistics and even return products and customer services and recycling processes. A supply chain should be ethical to become a greater priority for all businesses and their goals. This marks the benchmark for becoming competitive and better in the market (Ali et al., 2018). COVID-19 delivers a sharp realization of just how outdated and vulnerable simple supply chain operations were. Moreover, knowing many multinationals make fundamental changes to consumer behaviour has been causing global supply chain managers to reevaluate the whole SCM and their operations. One example is a massive rise in demand for next-day shipping. This is known as the Amazon Effect, creating a chain of Re-engineer SCM operations. Organizational performance includes the overall results of an organization measured against its planned results. Organizational performance requires achieving the intended predicted performance the organization has decided to achieve. The performance of an organization includes three areas of organization outcomes: 1. financial performance (profits, return on assets, ROI 2. product market performance (sales, market share and shareholder return).

2.1. Underpinning and Supporting Theories

The assessment of theories linked to the subject is described and effectively discussed to gain a better understanding of the basics of the subject (Ellis & Crookes, 2004; Hashmi et al., 2020b). The section is considered to provide the readers and the researcher with insights into the development of sustainability and supply chain management in detail. The theoretical underpinnings are considered to

benefit in identifying and understanding the subject's basics and can help improve the justification for the subject topic.

2.1.1. Resource dependence theory

The resource dependence theory helps to identify the relevance of the principle that organizations to remain competitive and successful effectively requires engaging with other organizations and actors to fulfil the resource-based requirements (Pfeffer & Salancik, 1978). Pfeffer and Salancik (1978) explain the perspective as a proclamation that organizational success can only be possible with the maximization of power. Previously researchers Pfeffer and Salancik (1978) contributed by stating that the power can be maximized using valuable and scarce resources using a low-cost and stable way (Pfeffer & Salancik, 1978). The researchers put forward a viewpoint that with an increase in dependence on resources, businesses must focus on vertical collaborations (Carter & Rogers, 2008).

2.1.2. Theory of sustainability

The present era requires personal commitment toward sustainable business practices and firms to comply with legal requirements to avoid litigations. Sustainable development is a term that reflects a development fulfilling the needs of the present generation without compromising the demands and ability to fulfil the needs of the future (World Commission on Environment and Development) (WCED, 1987). In relevance to the given definition, organizations are required to ensure that their practices must be able to fulfil the current demands but not compromise or have any impact (negative) on future needs and development. The organizational reaction to increased demand must be facilitated using sustainable practices as there can be government, customers, and other external pressures that can damage the business's image (Garvare & Johansson, 2010). The increasing focus of businesses on sustainability matters has allowed them to efficiently look into improving the supply chain processes and practices that are more likely to contribute positively to the overall performance (both in the short and long run) (Hall & Matos, 2010). The internal capabilities are better managed and enhanced using sustainable business practices (Burgess et al., 2006). The research on the subject helps extract that firms operating in all industries are required to efficiently work on improving and adopting sustainable business practices based on financial, economic, and social. Finally, environmental benefits/ growth can be witnessed.

2.1.3. Stakeholder theory

Stakeholder theory reflects the capitalist viewpoint that helps to identify and express the interconnectivity and relationship between the organization and linked stakeholders. The theory helps to reflect that customers, investors, suppliers, the environment, communities, and others influence the organization. Therefore, it is required for businesses not only to fulfil the requirements and interests of the shareholders instead must concentrate on creating a balance between the interest of shareholders and stakeholders (Hörisch et al., 2014). Applying effective business strategies increases their image, customer engagement, and satisfaction. Researchers have highlighted a gap in the overall literature regarding the effective management of stakeholders within the supply chain management practices (Freeman et al., 2004). The application of stakeholder theory within supply chain management is found to affect performance (Singh & Power, 2009) positively. The theory helps businesses practically devise strategies and activities that are in line with the stakeholder of the business. The businesses can also ask the suppliers, distributors, and other networks to adopt similar strategies and tactics to provide sustainable raw materials, promote green practices, and finally overcome the challenges of reaching more customers using sustainable processes (Lavassani & Movahedi, 2010).

2.2. Empirical Review

2.2.1. Sustainable supply chain management in construction firms

The focus on applying sustainable supply chain management for construction is gaining the researcher's interest. The advent of supply chain management principles and applications toward the extent of sustainability requirements has become the most critical aspect of the construction industry. The country's construction industry is considered a primary industry that affects the economic, social, as well as environment and therefore, the focus of businesses on sustainability-related aspects is widely discussed. The supply chain practices and procedures are required to address the sustainability challenges and issues that can help improve their operations. The term sustainable supply chain management for construction businesses is not new. Instead, the focus in the current times has shifted severely. For construction businesses, the application/ implementation of sustainable supply chain management is found to be a very difficult undertaking with vast and complex supply chain activities (Adetunji et al., 2008; Rashid et al., 2019).

With the increase in social, economic, and environmental concerns from different stakeholders, the construction businesses and the industry have witnessed the demand and respective adoption of sustainable construction. The challenges with the external and internal construction activities and outcomes are the reasons for adopting a sustainable supply chain (Garson, 1999; Rashid, 2016). The researchers have helped to identify that the environmental impact of the construction industry is paramount (as the activities have been found to influence the overall environment). Different parties' involvement in the construction business activities is also noticeable, making the processes more fragmented and complex. The stakeholders involved in the construction processes do not find them/ accept their opposing roles. Therefore, the application of sustainability procedures is required and adopted by businesses to ensure that negative environmental impact can be lowered. The requirements and business's focus on integrating the procedures and processes are found to be the most critical. The application of sustainable supply chain management in construction is not majorly applicable and studied (Ofori, 2000; Rashid & Amirah, 2017; Rashid et al., 2020).

2.2.2. Supply chain management and performance in construction

The supply chain for construction (project and process-based construction) has always specified the application of specific product supply chain practices and policies (Behera et al., 2015; Hashmi et al., 2021a). Authors have helped to highlight that supply chain management and construction purchasing are beneficial in providing strategic guidance for construction businesses. Research helps to identify that the construction industry's risk-to-reward function is counterintuitive because higher risks involved in construction can lead to higher rewards. The risks involved for businesses are spread to all sources (Supply chain partners), architects, project owners, subcontractors, prime contractors, and supplies and suppliers. The application of effective risk management and supply chain practices, and strategic development helps to provide alternatives for the business (Benton & McHenry, 2010). Supply chain management initiatives have been evident since the end of the 1980s (Akintoye et al., 2000; Hashmi et al., 2021b). The businesses are focused on enhancing the effectiveness and efficiency of their operations and ensuring that the goals and objectives of the organization are well maintained. The supply chain management activities and initiatives are developed to manage the supply chain-related matters for firms. The effectiveness of supply chain management (SCM) is not considerably known and dealt with in the construction industry like in other industries; therefore, a significant focus is required on the application of supply chain management in construction businesses (Aloini et al., 2012; Rashid et al., 2022).

The construction businesses are found to be highly volatile and are focused on internal or local development projects. The project's duration and durability of the construction-related product are considered to contribute to the volatility. The construction businesses require the establishment of new and more specific concepts and their application to enhance the engineering and outputs. The research studies help to identify that construction businesses are not solely responsible or liable for building a

project. Rather architects, suppliers, and other stakeholders are also a part of the process. Therefore, efficient and effective strategies are required to be devised to enhance the outcome of the development. The application of supply chain management is considered to add to the overall short and long-term outcomes (Segerstedt & Olofsson, 2010; Rashid & Rasheed, 2022). Several research studies have helped to identify the importance and significance of supply chain management for all major industries. Improvements in the construction businesses are considered essential, and supply impacts the performance of the businesses (construction businesses). The application of the lean approach to chain collaborations and effective strategic development is found to have a potentially positive, sustainable supply chain management, and other strategies are long discussed. The specific focus on supply chain management practices must be dealt with to make the best out of the practices.

2.2.3. Sustainable supply chain management and performance in construction

It requires knowledge and understanding of different management principles, theories, and their real-life application. The researchers help to extract the information that sustainable supply chain management and dynamic capabilities of the organization go hand in and can be considered necessary for the survival of the businesses (Beske, 2012). The research on determining the impact of sustainable supply chain practices specifically focused on enhancing the social and environmental supply chain activities, and their impact on financial performance is majorly carried out in various industries. A research study by Wang & Sarkis (2013) helps identify a positive relationship between firm financial performance and sustainable supply chain management (SSCM) practices. The researchers found that the ROA (Return on Asset) and the ROE (Return on Equity increased over the period after the application of SSCM (Wang & Sarkis, 2013).

The concept of collaborative supply chain management has gained exceptional importance and is considered supportive of sustainable business operations. The increasing demand from customers for sustainable products on the shelf has resulted in businesses enhancing their efforts toward such practices. Viewpoints represent a positive competitive advantage for businesses adopting sustainable supply chain practices (Attaran & Attaran, 2007). The results of the research studies help to identify that the impact of sustainable supply chain management on firm performance is relatively unambiguous. As the operational performance and customer needs are efficiently fulfilled with the application of a sustainable supply chain instead, the financial performance of businesses in the short -and in some instances for the long run is not positively impacted (Ortas et al., 2014). The research studies also help to highlight the importance of sustainable supply chain management for the effective utilization of resources and how firms can efficiently identify and establish a competitive advantage over competing firms. The resource-based view helps to identify those businesses that can improve the core supply chain practice within the operations to gain a practical advantage over the competitors; it may be in the form of production efficiency, distributional advantage, effective management of resources, and others (Gold et al., 2010).

2.3. Research Framework

The researcher devised the following conceptual framework to explain the motive of the research and what aims to be determined. There are two independent variables and one dependent variable, which shows that the performance of the construction business is highly dependent on these two factors. The conceptual framework allows expressing the motive of the researcher, which is to carry out extensive and comprehensive research, focusing on firstly highlighting the relevance of supply chain management in the construction industry and the extent to which a sustainable supply chain applies to Pakistani construction businesses and their impact on firm/ business performance. This will allow us to understand what can be done to achieve maximum growth and achievement in performance by applying the proper practices. Figure 1 illustrates the conceptual framework.

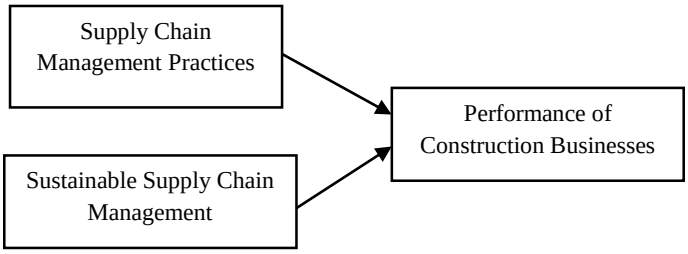

Figure 2: Conceptual framework

2.4. Research Hypothesis

The hypothesis of the research study is derived from a detailed assessment of the literature review and significant findings highlighted in the findings. The study is focused on determining the impact of supply chain management and sustainable supply chain practices on the performance of construction firms operating in Karachi, Pakistan. Hypothesis analysis will determine if the supply chain has a positive or negative impact on the construction industry. The main emphasis of this research is on how to be beneficial to the construction market of Karachi to increase their performance, and in what way a green supply chain such as non-wastage of raw materials can be achieved and this will impact the performance directly.

H_1: Supply chain management practices significantly impact the performance of construction businesses.

H_2: Sustainable supply chain management practices have a significant effect on the performance of the construction business.

3. Research Methodology

The literature assessment helps to identify a significant discussion on the complexity of supply chain management for the construction industry; more focus is not evident on the application of sustainable supply chain practices (Wibowo et al., 2018; Khan et al., 2022a). The results from the assessment help to extract the gap that research on the subject is limited; a study with a focus on supply chain management and sustainable supply chain management in one is also found extinct (Beske, 2012; Rashid et al., 2021). Also, the subject is not discussed or studied in Pakistan in an industry/ region. Therefore, the research is considered to benefit in several ways, including adding to the literature and carrying out comprehensive research, which will provide evidence and future implications for the construction industry.

3.1. Research Approach

The overall plan and procedures adopted to carry out the research are presented under the research approach. These portray the assumptions related to the collection, methods applied for analysis, and finally how the results are interpreted (Singh, 2006; Khan et al., 2022b). The two globally applicable research approaches include deductive and inductive approaches to methodology. The deductive approach is the procedure or reasoning initiated from a particular subject and explores the applicability/ impact in a given situation. Deductive studies use reasoning and conditionals to reach conclusions (Dźwigoł, 2018). However, the Inductive approach for research starts with observations and applies the systematic approach to derive knowledge and reach a conclusion. Such studies are focused on evaluating the observations to build new theories (Hammersley, 2017; Rashid et al., 2021; Khan et al., 2022c). Based on the nature of the current research (i.e.,) focusing on determining the relevance and impact of supply chain practices and sustainable supply chain practices on construction firms and their impact on overall performance (is an existing theory), the researcher wants to test the theory/ phenomenon to a current situation and therefore, adopts the deductive approach to methodology

development. So as it is established that the research will use a deductive approach, the researcher will study what previously has been done, existing theories of different phenomena related to supply chain in the construction industry and then test the hypotheses that have been concluded from those theories. The research design denotes the strategy and approach used to incorporate different components like supply chain, and sustainable supply chain practices used logically and coherently, ensuring the research problem is effectively addressed, which constitutes the proposal for the collection, measurement and data analysis.

3.2. Sampling Technique and Data Collection

The sampling technique adopted for the current research is "Convenience sampling". The researcher is an engineer by profession and has contacts in the construction sector and therefore, selects the participants from a large population (all the construction companies in Karachi) that are easily approachable and willing to contribute to the research (Etikan et al., 2016; Khan et al., 2021). The researcher's focus is to collect a survey questionnaire as it is considered the most convenient for the researcher (Rahi, 2017; Agha et al., 2021; Haque et al., 2021). The researcher plans to devise the questionnaire having two major sections, including demographic detailing, which includes questions for age, gender, the experience of the participants, position in the business and others. Whereas, the second portion includes questions (5 for each independent variable and 4 for the dependent variable). This part will be highly impactful for our research, and therefore careful consideration will be given to ensure the participants easily understand the questions and provide answers accordingly.

The data collection is carried out using a one-to-one questionnaire meaning that the researcher would collect the data by himself and punch the data collected on the questionnaire into Excel and SPSS for further data analysis of the data is carried out on SPSS as this is a globally renowned quantitative analysis software allowing the researcher to various a variety of tools/ statistical tests (Cleff, 2019; Das et al., 2021; Alrazehi et al., 2021). Through various tests from SPSS, the researcher will achieve the desired result. The procedure is to gather the data from all the known participants in the Karachi construction industry and then organize it to reach the results through Reliability statistics, Descriptive statistics, Correlation analysis, and Regression analysis. The target population for the current research are the employees, managers, and executives in the construction industry in Karachi, Pakistan. The sample size of the human participants relevant to the current research is 154 (154 complete questionnaires are used to analyze the data). The research aims to collect the responses to the self-administered questionnaire from more than 200 employees, managers, and other executives from the procurement department in the construction businesses in Karachi out of which 154 complete questionnaires were received.

4. Analysis Results

The results help to provide a detail of the outcomes derived from the statistical analysis including reliability, descriptive statistics, hypothesis testing, and a summary of the outcomes. Are carried out on the total questionnaire filled (i.e., 154) by the participants. The focus is to derive insight into whether the responses are consistent and reliable so that further assessment and analysis can be carried out. The value of Cronbach's Alpha is critical and should be greater than 0.70 (Kiliç, 2016; Rashid et al., 2021). The reliability statistics for the 12 questions are presented under Cronbach's Alpha of 0.919. The value is more significant than .70; therefore, based on the confirmation from Kiliç (2016), the responses can be concluded to be reliable and consistent.

4.1. Demographic Profiles

The demographic profile allows for the discussion of the group details for respective demographic questions, including gender, age, level of education, and experience in the sector. Graphical representations using bar charts are also provided for a better outlook ad deriving insights at a glimpse. Table 1 shows the demographic profile of respondents.

Table 1: Demographic profile of respondents

Demographics	Group	N=154	Percentage
Gender	Male	121	78.6
	Female	33	21.4
Age	20-26 Years	16	10.4
	27-33 Years	56	36.4
	34-40 Years	59	38.3
	41 Years or Over	23	14.9
Level of Education	Matric	2	1.3
	Intermediate	4	2.6
	Graduate	72	46.8
	Postgraduate	76	49.4
Experience in Sector	0-2 Years	25	16.2
	3-6 Years	27	17.5
	7-12 Years	48	31.2
	13 Years and Above	54	35.1

The results derived from the demographic details allow deriving an insight that the majority of male participants contributed to the research (121) female participation in the research is 33 respondents (i.e., 21.4% of the data). The results from the bar chart reflect that a total of 78.57% of the male contribution is identified, showing that men from the construction industry are a significant portion and are selected to respond to the questionnaire. The results from table 1 help to identify that the age group distribution for the participants is lowest at the edges meaning 10.39% are 20-26 years old (a total of 16 participants), whereas 14.94% are aged 41 years and over (23 participants). Moreover, the majority of participants (i.e. 38.31%) are 34-40 years of age (59 respondents), whereas 36.36% are aged between 27 and 33 years (56 respondents). The details provided in table 1 and the bar chart allow determining that the participants contacted at minimum have matriculation as a base education (two participants = 1.3%) and 4 with an intermediate level of education (2.6%). The highest number of individual respondents have post-graduation as their education (76 respondents), followed by graduates (72 participants). The results derived from the demographic insights allow determining that majority of the respondents taking part in the research have an experience of over 13 years (total of 54 participants – 35.1%), followed by participants with 7 to 12 years of experience in the construction industry (48 participants – 31.2%) followed by 25% of the participants (27 respondents) with 3-6 years' experience and 25 participants with 0 to 2 years of experience in the industry. Figure 2 illustrates a graphical representation of the demographic attributes of the respondents.

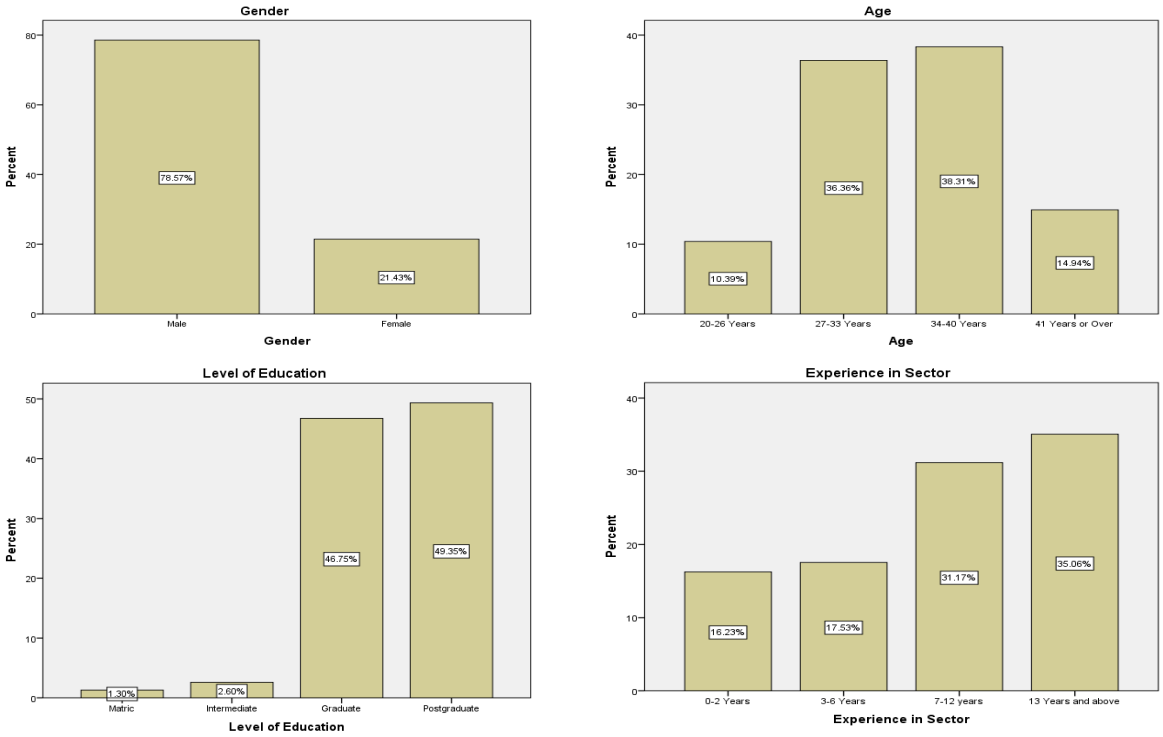

Figure 2: Bar chart representation of demographic profiles

4.2. Hypothesis Testing

The test of the hypothesis for the research is carried out using the Regression analysis. The regression analysis allows determining the impact of the independent variables, including SSCM and SCM, on the performance of the construction businesses. The results from table 2 show that the total observations for all the variables are 154 (total responses collected and analyzed to reach the findings). Furthermore, table 2 represents the results for hypothesis testing, where the Mean (μ) value for respective variables is 4.12 showing that most of the respondents agree (option 4) with all the questions for supply chain management, sustainable supply chain management, and business performance. The value of the standard deviation ranges between 0.50 – 0.70. Therefore, it can be stated that the variation and difference between the mean values for respective variables are on the higher side since values are greater than .50. The model summary, ANOVA, and Coefficient values are derived from the regression table, which allows for determining the relationship between the variables tested in the regression model. The value of R and R^2 is .781 and .610 respectively. The relationship is explained by the R^2 value, which helps identify a moderate relationship between the variables tested under the regression model. The results help to identify that supply chain management (SCM) and sustainable supply chain management (SSCM) has a moderate impact on the construction industry's performance. It further highlights that the increase in SCM and SSCM practices adopted by construction businesses lead to a positively impact/ increase in the performance of the businesses.

Table 2: Hypothesis testing

				Model Summary		ANOVA		Coefficient		
Variables	N	μ	Std Dev	R	R^2	F	Sig.	Std. Beta Coefficient	T	Sig.
SCM		4.12	.696					.317	4.351	.000
SSCM	154	4.09	.650	.781	.610	118.06	.000	.522	7.175	.000
Performance		4.15	.657							

The assessment is carried out to determine the level of significance and degree of impact of supply chain management (SCM) and sustainability (SCM) on the construction industry's performance.

The results derived from the regression analysis are interpreted to justify the outcomes of the research hypothesis. The focused analysis of the coefficient table (from the regression model/ analysis) is beneficial in identifying the relationship or impact of the independent variables (SCM and SSCM) on the deponent variable (performance). The results show that SSCM is found to have a moderately positive impact (since the Beta value is 0.317 (i.e., 31.7%), which is identified to be significant (.000 Sig. value). The results help to identify a positive sign and moderate impact of SCM on the performance of construction businesses. On the other hand, the independent variable SSCM is also found to present a positive moderate, and significant impact on the performance of the construction businesses (Beta value = 0.522 (representing a 52.2% incline) and Sig. value is .000). Based on the analysis, the study hypothesis for the study are accepted.

5. Conclusion

The focus of the study is to identify the importance of applying and adopting green supply chain management in construction businesses. The researcher ensures to research the importance of supply chain management (SCM) and sustainable supply chain management (SSCM) with a focus on the construction industry. The importance and relevance of the two factors, SCM and SSCM, to the performance of construction businesses are determined using a systematic methodology. The philosophy of positivism is adopted as observations/ data are collected from human participants, including managers, employees, and executives from the procurement department in construction businesses. The questionnaire used by the researcher is derived from the studies by Karunasena and Sanjeewa, (2010), and Vrijhoef and Koskela, (2011). The questions related to demographics and supply chain management, sustainable supply chain management, and performance of businesses (construction) are inquired from the participants.

The results derived from the statistical analysis help to identify that supply chain management and sustainable supply chain management within the Pakistani construction industry are effective in improving performance. The conclusion can be presented that an improvement in the performance of businesses can be identified; SCM and its practical application are found to have a moderate impact leading to increased performance. Moreover, sustainable supply chain management and its application in the construction industry moderately affect performance. Both the elements (i.e., SCM and SSCM) in the construction industry are essential, and therefore, Pakistani-based construction businesses are required to manage supply chain activities effectively. Also, the industry-level application of SSCM is recommended to improve the overall performance.

5.1. Discussion

The section allows detailed and in-depth insights into the findings derived from quantitative assessment and further comparison of findings from the literature review. The section allows for a better comparison of the findings and is considered critical to provide managerial implications and future recommendations to the industry. The statistical analysis findings help derive a positive and significant moderate impact of applying SCM on the performance of construction businesses. The findings derived from the literature review also support the findings as the study by Dainty et al. (2001) helped to identify that the application of effective supply chain practices is considered critical for construction businesses and is found to improve efficiency, cost reduction, and effective management of different stakeholders leading to improved performance. Moreover, the literature review allows deriving information that the role of top management in supply chain management is most critical as their role in providing a focus and direction to SCM is critical. To ensure effectiveness and efficiency in the SCM processes, a focus on maintaining an effective balance between the SCM strategies and the business's objectives and goals (Behera, Mohanty, & Prakash, 2015). Research studies show that the application of SCM can lead to short and long-term performance, as supported by the current findings (Segerstedt & Olofsson, 2010).

The findings derived from the study using statistical analysis help to determine that Paksitani construction businesses significantly influence sustainable supply chain management (SSCM). The increase in performance of the businesses is evident with a moderate and significant impact. Past

research shows that sustainability in supply chain management reflects the purchases of green and sustainable raw products, the promotion of sustainable practices, and applying more focused strategies to overcome the challenges faced by businesses and other stakeholders (Lavassani & Movahedi, 2010). Furthermore, the focus of businesses on sustainable supply chain management and the application of dynamic capabilities are likely to go hand in hand to reach better organizational performance and allow them to achieve a higher competitive position (Beske, 2012). Research studies also help to determine the positive impact of sustainable SCM on the improved environmental and social performance and financial performance of businesses (Wang & Sarkis, 2013). Wang and Sarkis (2013) further highlight that customers and other business stakeholders are positively influenced, which leads to increasing the return on assets and equity for the business. The customer's increasing demand for sustainable products and services is found to majorly influence businesses to shift their interest to more productive and sustainable activities (Attaran & Attaran, 2007). The study by Ortas et al. (2014) also supports the view that businesses' organizational operations and financial performance are positively impacted by increasing focus on sustainability. Sustainable supply chain management is found to have short-term and long-term impacts (Ortas et al., 2014).

5.2. Research Implications

The outcomes derived from the detailed analysis of SCM and SSCM (Sustainable Supply Chain Management) help to identify that firms in the construction industry can derive positive performance-related outcomes. The outcomes have led to the understanding that sustainable supply chain management is considered to improve the environmental, social, and economic performance of businesses (especially) in the construction industry. There is a higher possibility that the firm's performance would increase in the short and long run. The focus on sustainable supply chain management must be focused more as it can allow offering better performance-related outcomes. The results help to add to the literature that from a Pakistani perspective, the requirement of effectively focusing on SSCM (Sustainable SCM) is a significant role player in improving performance. Based on the findings, future studies can be more detailed to highlight and specify more in-depth findings. The research focuses on identifying and achieving a little and a better understanding of sustainable supply chain management and its relevance to businesses in the Pakistani construction industry. The lack of time and budget limited the focus to Karachi-based construction businesses, leaving other construction businesses in Pakistan as not relevant. Furthermore, the researcher reached eight construction businesses and their respective employees, managers, and executives from the procurement department. The focus was to identify and reach the businesses that were easily reachable and available to allow the research. The sample of 154 respondents was achieved compared to the plan of 200 participants, which is also termed a limitation. However, the researcher made sure to apply the possible steps and ways to ensure that the data is authentic and the outcomes derived to represent a better representation of the population (i.e., construction businesses in Karachi, Pakistan).

5.3. Recommendations

Based on the outcomes derived from the research, the following recommendations are provided to the construction industry. The focus on strategic upgrades is essential for all Pakistani (Karachi) construction businesses as there is a positive impact. According to the analysis and past research findings, the application and adoption allow for deriving better environmental and social outcomes and positive financial outcomes (Wang & Sarkis, 2013). Furthermore, more focused research on other industries in Pakistan, including the manufacturing and servicing industries, is required to be undertaken to highlight the relevance of the elements (SSCM) on the performance

References

Abas, M., Khattak, S.B., H. T., & Nadir, U. (2020). Assessment of critical risk and success factors in construction supply chain: a case of Pakistan. *International Journal of Construction Management, 1*(1), 1-9. https://doi.org/10.1080/15623599.2020.1783597

Adetunji, I., Price, A., & Fleming, P. (2008). September. Achieving sustainability in the construction supply chain.

In *Proceedings of the Institution of Civil Engineers-Engineering Sustainability* (Vol. 161, No. 3, pp. 161-172). London, England: Thomas Telford Ltd. https://doi.org/10.1680/ensu.2008.161.3.161

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.

Akintoye, A., McIntosh, G., & Fitzgerald, E. (2000). A survey of supply chain collaboration and management in the UK construction industry. *European Journal of Purchasing & Supply Management, 6*(2000), 159-68. https://doi.org/10.1016/S0969-7012(00)00012-5

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

Ali, Y., Saad, T., Sabir, M., Muhammad, N., Salman, A., & Zeb, K. (2018). Integration of green supply chain management practices in construction supply chain of CPEC. *Management of Environmental Quality: An International Journal, 31*(1), 185-200. https://doi.org/10.1108/MEQ-12-2018-0211

Aloini, D., Dulmin, R., Mininno, V., & Ponticelli, S. (2012). Supply chain management: a review of implementation risks in the construction industry. *Business Process Management Journal, 18*(5), 735-761. https://doi.org/10.1108/14637151211270135

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

Attaran, M., & Attaran, S. (2007). Collaborative supply chain management: the most promising practice for building efficient and sustainable supply chains. *Business Process Management Journal, 13*(3), 390-404. https://doi.org/10.1108/14637150710752308

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

Behera, P., Mohanty, R., & Prakash, A. (2015). Understanding construction supply chain management. *Production Planning & Control, 26*(16), 1332-1350. https://doi.org/10.1080/09537287.2015.1045953

Ben-Daya, M., Hassini, E., & Bahroun, Z. (2019). Internet of things and supply chain management: a literature review. *International Journal of Production Research, 57*(16), 4719-4742. https://doi.org/10.1080/00207543.2017.1402140

Benton, W., & McHenry, L. (2010). *Construction purchasing & supply chain management.* New York: McGraw-

Hill.

Beske, P. (2012). Dynamic capabilities and sustainable supply chain management. *International Journal of Physical Distribution & Logistics Management, 42*(4), 372-387. https://doi.org/10.1108/09600031211231344

Burgess, K., Singh, P. J., & Koroglu, R. (2006). Supply chain management: a structured literature review and implications for future research. *International Journal of Operations & Production Management, 26*(7), 703-729. https://doi.org/10.1108/01443570610672202

Carter, C., & Rogers, D. (2008). A framework of sustainable supply chain management: moving toward new theory. *International Journal of Physical Distribution & Logistics Management, 38*(5), 360-387. https://doi.org/10.1108/09600030810882816

Cleff, T. (2019). *Applied statistics and multivariate data analysis for business and economics: A modern approach using SPSS, Stata, and Excel.* Berlin, Germany: Springer. https://doi.org/10.1007/978-3-030-17767-6

Dainty, A., Millett, S., & Briscoe, G. (2001). New perspectives on construction supply chain integration. *Supply Chain Management, 6*(4), 163-173. https://doi.org/10.1108/13598540110402700

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.

Denktas-Sakar, G., & Karatas-Cetin, C. (2012). Port sustainability and stakeholder management in supply chains: A framework on resource dependence theory. *The Asian Journal of Shipping and Logistics, 28*(3), 301-319. https://doi.org/10.1016/j.ajsl.2013.01.002

Dubey, R., Altay, N., Gunasekaran, A., Blome, C., Papadopoulos, T., & Childe, S. (2018). Supply chain agility, adaptability and alignment: empirical evidence from the Indian auto components industry. *International Journal of Operations & Production Management., 38*(1), 129-148. https://doi.org/10.1108/IJOPM-04-2016-0173

Dźwigoł, H. (2018). Scientific research methodology in management sciences. *Фінансово-кредитна діяльність: проблеми теорії та практики*, *2*(2018), 424-437. https://doi.org/10.18371/fcaptp.v2i25.136508

Ellis, L., & Crookes, P. (2004). *Philosophical and theoretical underpinnings of research.* Wollongong, Australia: University of Wollongong.

Etikan, I., Musa, S., & Alkassim, R. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), 1-4. https://doi.org/10.11648/j.ajtas.20160501.11

Freeman, R., Wicks, A., & Parmar, B. (2004). Stakeholder theory and "the corporate objective revisited. *Organization Science, 15*(3), 364-369. https://doi.org/10.1287/orsc.1040.0066

Garson, P. (1999). *Review of Civil Procurement in Central Government*. London: Office of Government Commerce.

Garvare, R., & Johansson, P. (2010). Management for sustainability - A stakeholder theory. *Total Quality Management, 21*(7), 737 -744. https://doi.org/10.1080/14783363.2010.483095

Gold, S., Seuring, S., & Beske, P. (2010). Sustainable supply chain management and inter-organizational resources: a literature review. *Corporate Social Responsibility and Environmental Management, 17*(4), 230-245. https://doi.org/10.1002/csr.207

Hall, J., & Matos, S. (2010). Incorporating impoverished communities in sustainable supply chains. International *Journal of Physical Distribution & Logistics Management, 40*(1/2), 124-147. https://doi.org/10.1108/09600031011020368

Hammersley, M. (2017). *Deconstructing the qualitative-quantitative divide 1. In Mixing methods: Qualitative and quantitative research* (pp. 39-55). London: Routledge. https://doi.org/10.4324/9781315248813-2

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). 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. (2021a). 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., & Zaliha, T. N. (2020b). 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. (2021b). 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

Hörisch, J., Freeman, R., & Schaltegger, S. (2014). Applying stakeholder theory in sustainability management: Links, similarities, dissimilarities, and a conceptual framework. *Organization & Environment, 27*(4), 328-346. https://doi.org/10.1177/1086026614535786

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

Karunasena, G., & Sanjeewa, B. (2010). Application of supply chain management in building construction process. *Institutional Repository, 1*(2010), 167 - 174.

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., Benham, A., Rashid, A., Rasheed, R., & Huma, Z. (2022c). 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. (2022b). The Effect of Demographic Characteristics on Job Performance: An Empirical Study from Pakistan. *Journal of Asian Finance, Economics and Business, 9*(2), 283-294.

Khan, S., Rashid, A., Rasheed, R., & Amirah, N. A. (2022a). Designing a knowledge-based system (KBS) to study consumer purchase intention: the impact of digital influencers in Pakistan. *Kybernetes, 51*(1). https://doi.org/10.1108/K-06-2021-0497

Kiliç, S. (2016). Cronbach's alpha reliability coefficient. *Psychiatry and Behavioral Sciences, 6*(1), 47-48. https://doi.org/10.5455/jmood.20160307122823

Lamba, K., & Singh, S. (2017). Big data in operations and supply chain management: current trends and future perspectives. *Production Planning & Control, 28*(11), 877-890. https://doi.org/10.1080/09537287.2017.1336787

Lavassani, K., & Movahedi, B. (2010). *Critical analysis of the supply chain management theories: toward the stakeholder theory. Vancouver, Canada: POMS 21st Annu. Conference*.

London, K. A., & Kenley, R. (2001). An Industrial Organization Economic Supply Chain Approach for the

Construction Industry: A Review. *Construction Management & Economics, 19*(8), 777-788. https://doi.org/10.1080/01446190110081699

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

Ofori, G. (2000). Greening the construction supply chain in Singapore. *European Journal of Purchasing & Supply Management, 6*(3-4), 195-206. https://doi.org/10.1016/S0969-7012(00)00015-0

Ortas, E. M., Moneva, J., & Álvarez, I. (2014). Sustainable supply chain and company performance: A global examination. *Supply Chain Management, 19*(3), 332-350. https://doi.org/10.1108/SCM-12-2013-0444

Pfeffer, J., & Salancik, G. (1978). *The External Control of Organizations: A Resource Dependence Perspective*. New York: Harper & Row

Queiroz, M., Telles, R., & Bonilla, S. (2019). Blockchain and supply chain management integration: a systematic review of the literature. *Supply Chain Management: An International Journal, 1*(1), 1-10. https://doi.org/10.1108/SCM-03-2018-0143

Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences, 6*(2), 1-5. https://doi.org/10.4172/2162-6359.1000403

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. *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., Ali, S. B., Rasheed, R., Amirah, N. A. & Ngah, A. H. (2022). A paradigm of blockchain and supply chain performance: a mediated model using structural equation modeling. *Kybernetes, Vol. ahead-of-print No. ahead-of-print.* https://doi.org/10.1108/K-04-2022-0543

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.

Segerstedt, A., & Olofsson, T. (2010). Supply chains in the construction industry. *Supply Chain Management, 15*(5), 347-353. https://doi.org/10.1108/13598541011068260

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

Singh, P. J., & Power, D. (2009). The nature and effectiveness of collaboration between firms, their customers and suppliers: a supply chain perspective. *Supply Chain Management: An International Journal, 14/3*(2009), 189-200. https://doi.org/10.1108/13598540910954539

Singh. (2006). *Fundamental of research methodology and statistics*. Delhi, India: New Age International.

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

Vrijhoef, R., & Koskela, L. (2011). *Roles of Supply Chain Management*. Berkeley, California: Proceedings IGLC-7.

Wang, Z., & Sarkis, J. (2013). Investigating the relationship of sustainable supply chain management with corporate financial performance. *International Journal of Productivity and Performance Management, 62*(8), 871-888. https://doi.org/10.1108/IJPPM-03-2013-0033

WCED. (1987). *Our common future*. Nairobi: United Nations Environment Programme.

Wibowo, M., Handayani, N., & Mustikasari, A. (2018). Factors for implementing green supply chain management in the construction industry. *Journal of Industrial Engineering and Management, 11*(4), 651-679. https://doi.org/10.3926/jiem.2637

Appendix: Questionnaire

Part 1 – Demographic Profile

a) Gender

Male	Female

b) Age

20-26 Years	27-33 Years
34-40 Years	41 Years or Over

c) Level of Education

Matric	Intermediate
Graduate	Postgraduate

d) Experience in Dairy Sector

0-2 Years	3-6 Years
7-12 years	13 Years and above

Part 2 –Please rate strongly agrees or strongly disagrees on the basis of options mentioned below of the dependent and independent variables.

1) Strongly disagree
2) Disagree
3) Neutral
4) Agree
5) Strongly agree

Supply Chain Management in the Construction Industry	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1) Supply Chain Management					
1.1. Supply chain management allows effective information sharing and monitoring. (Karunasena & Sanjeewa, 2010)					
1.2. It allows effective coordination at different levels. (Karunasena & Sanjeewa, 2010)					
1.3. Effective integration of process is effectively carried out. (Karunasena & Sanjeewa, 2010)					
1.4. The use of Information and Communication Technology allows businesses to more effectively carry out the processes. (Karunasena & Sanjeewa, 2010)					
2) Sustainable Supply Chain Management					
2.1. Sustainable supply chain management leads to effective cost control. (Karunasena & Sanjeewa, 2010)					
2.2. SSCM can effectively allow economic progress to construction businesses.					
2.3. Socially and environmental prospects of SSCM allows businesses to develop a positive image.					
2.4. The effective use of best policies leads to effective supply chain planning through SSCM.					
3) Performance of Construction Businesses					
3.1. Performance of businesses are improved due to continuous improvements. (Karunasena & Sanjeewa, 2010)					
3.2. Practical SCM application leads to joint reduction of channel inventories. (Vrijhoef & Koskela, 2011)					
3.3. The performance of the business improves using the planning and monitoring process. (Vrijhoef & Koskela, 2011)					
3.4. The application of SCM and SSCM allows construction businesses to improve performance.					

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Measuring Student Satisfaction through Overall Quality at Business Schools: A Structural Equation Modeling

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ABSTRACT

In the higher education sector, academic and service quality are the main factors that need to be focused on. Academic quality is mainly focused on learning abilities and knowledge outcomes, while service quality is focused on administrative services. The research bases its theoretical background on the service quality model (SQM) and expectancy disconfirmation model (EDM). The research follows a quantitative approach where the data was collected using a survey questionnaire based on semi-structured questions. The research reviewed female student satisfaction at business schools based on several factors derived from two underpinning theories. The variables derived from the theories and literature were Information quality, the efficiency of service, teaching quality, overall quality, student satisfaction, disconfirmation and word of mouth. The findings suggested that the university should focus more on teachers' satisfaction which would result in a positive attitude towards their students and that would result in better satisfaction. In addition, the course syllabus and quality deliverance can be better regulated by providing teachers training and workshops to help them improve their teaching style and course syllabus if needed.

Keywords: *Satisfaction, PLS study, Karachi, Business School, SmartPLS, Word of Mouth*

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Measuring Student Satisfaction through Overall Quality at Business Schools: A Structural Equation Modeling

1. Introduction

The Quality of Service is one of the essential attributes that can capture and satisfy the valuable customer for extended periods. Several organizations emphasize service quality because of their strategic contribution to improving competitiveness, mainly in attracting new customers and improving relationships with existing customers. Addressing good quality in higher academic institutions is a complicated phenomenon. In the higher education sector, academic and service quality are the main factors that must be focused on. Academic quality is mainly focused on learning abilities and knowledge outcomes, while service quality is focused on administrative services. Services can be both tangible and intangible. Service quality is achieved when it meets or surpasses the Expectation of customers (Parasuraman et al., 1988). When an entity shows the ability to deal with some particular needs of customers, they try to satisfy customers (American Council on Education, 2015). Service quality has become crucial while finding an organization's current position, sustaining a competitive edge, or achieving pre-eminence. In this modernized era where competition has become so high, the company that fails to achieve high service quality struggles more in the industry (Alnsour et al., 2014). Customer satisfaction is an important performance measure for regulators and providers of services in a firm. As high customer satisfaction makes customers more loyal, they act less subtle about prices, and they have very few complaints against the company's service delivery (Olatokun & Ojo, 2016). Service quality is vital to success in the current competitive higher educational environment (Sandhu & Bala, 2011).

Service quality is an initiator to achieving satisfaction. So the proper understanding of the related determinant and variables of achieving service quality will be seen as having an extraordinarily high monetary cost for service-oriented organizations in the competitive setting. Many views about the meaning of quality vary from person to person. From the view of the quality dimension (input, process and output) and the view of the stakeholder, there are several views of quality. Education at the higher or tertiary level has been mainly linked to commercial service. The university's administration must consider that students are the primary customers of any academic institute in terms of providing services. In Pakistan, tertiary education refers to the higher level of education above grade 12, which generally corresponds to the age of 17-23 years. The tertiary education system in Pakistan is divided into two sectors: the incorporated college sector and the affiliated university sector. The higher education commission (HEC) is an apex autonomous body responsible for allocating general public funds to universities in Pakistan and recognizing their degree programs. Student satisfaction mainly relies on the service elements that higher educational institutes provide. For achieving success in the academic sector, student satisfaction is an important measure and institutes still reimburse attention to service quality elements. The academic sector needs to improve the academic service quality and always pay attention to find out the gap between the services provided by the institutes and the services obtained by customers, i.e. students (Qomariah, 2012; Mulyawan & Sidharta, 2014).

Despite the dearth of accord over the conception of quality, service quality has become one of the central elements of reform and policy instruments to adapt in educational institutions to increase the Expectation from each internal and external stakeholder everywhere around the globe. To create the institution's progressive and practical clients' expectations, their preferences and quality perception regarding the overall surroundings of the establishment ought to be unbroken by the upper authorities of the institute. Service quality is an evaluation in which one can quickly identify how magnificent a service approves student's/client Expectations. Service quality significantly impacts student satisfaction along with the physical facilities provided by the institutes, which are mainly considered the most dominant tangible element (Mansori et al., 2014). Service quality and student satisfaction are interlinked, as service quality affects the satisfaction of students the most.

Perceived quality is an antecedent to customer satisfaction. Therefore, the proper study of

determinants and forerunners of customer satisfaction might be seen to have extraordinarily excessive monetary estimates for service-providing organizations in a highly competitive environment. Khan et al. (2014) developed that tangibility and assurance are the two main significant factors for improving the quality of service in a higher educational institute. Researchers also found a practical and valid relationship between student satisfaction and these dimensions. Students feel satisfied with RATER service, i.e. reliability, assurance, tangibility, empathy, and responsiveness (Afridi et al., 2016; Arambewela & Hall, 2006; Calvo-Porral et al., 2013; Kanakana, 2014; Yousapronpaiboon, 2014). The organizations that provide better service quality would result in profitability and get more benefits in the overall market (Anderson et al., 1994). In the commercial sector, the study on service quality is considered new. Hence, service quality has become a national priority. Clients/students prefer those educational institutes that give better satisfaction levels and service quality, which gradually influences student loyalty. The more the students feel satisfied, the more they will be loyal to the selected institution (Alves & Raposo, 2009).

It was observed and noted that females in the country are treated differently, for better or worse. This behavior was also noted in universities hence the motivation to conduct this research. The research aims to identify the factors that affect female students' satisfaction in a business university in Karachi, Pakistan. Word of mouth is considered the most effective marketing strategy in higher educational institutions, which mainly relies on student satisfaction and service quality. Service quality has five dimensions widely applied to measure and evaluate service quality in higher education (Afridi et al., 2016; Arambewela & Hall, 2006; Calvo-Porral et al., 2013; Kanakana, 2014; Yousapronpaiboon, 2014). Senthilkumar and Arulraj (2011) offered another model named SQM-HEI (service quality measurement in higher education in India), which consists of three dimensions mainly including methodology and teaching, environmental changes in education, and disciplinary action as a mediator in service quality. Student satisfaction varies continually to reiterated experiences in the institute. Recent research studies revealed that satisfied students might fascinate new students by capturing positive word-of-mouth interaction.

Several variables were identified that impacted satisfaction after several research papers the expectancy disconfirmation model (EDM) and the service quality model (SQM). The research objectives were not just to identify the factors that affect students' satisfaction but also if the satisfaction differed based on the university's education duration and age. The primary purpose of this study is to evaluate the satisfaction level of female students studying in business universities. In Pakistan, HEI higher educational institutions have been immensely pressurized since the higher education commission HEC established. The proportion and number of female students are comparatively low in business universities in Karachi, Pakistan. The factors affecting female students' academic performance and competency are interconnected to the female students' university, background, environment, family, behavioral and socio-cultural settings, and commitment. In Karachi, these factors influence female students the most. Mersha et al. (2013) stated that factors off and within the university and its facility's related issues such as administrative and academic rules, lack of role model female teachers, peer pressure, and lack of several pieces of training and seminars and workshops are the mains among all others.

The paper is based on five main sections. In the first section, we have discussed the introduction, the aim of this research paper, and dependent and independent variables. Section b is based on the literature review in which each independent and dependent variable will be discussed in detail. Section c is based on this study's theoretical underpinning, methodology, and conceptual framework. Section d is based on the detailed analysis of the results and the conclusion, implication and future recommendations in the final section. There are many studies on student satisfaction and service quality, but this study is significantly different from them as it follows a holistic approach and examines twenty-one hypotheses.

2. Literature Review

A person's happiness that he or she has gained by comparing perceived performance to their

Expectation is defined as satisfaction. In the case of higher education, student satisfaction is what they all have thought to gain from their institution to become productive. Some of the essential characteristics of what job givers ask from university graduates are Knowledge, Intellectual abilities, communication skills, interpersonal skills and the ability to work in modern organizations. In the documentation, debates exist between the student expectations before enlisting in a college or university and the experience they get after enrolling in colleges or universities). The satisfaction of the service quality of the institutions covers the stress levels between customers' perceived expectations about their institutions and the reality they get. To prove that students' satisfaction and intention to stay at college or university depends on the student's experience after enrollment. Moreover, a student's practical college experience depends on faculty, advising staff and classroom facilities and should be considered as the paramount satisfaction and retention components. Many firms and organizations now focus on increasing the quality of their service because they think it is crucial for gaining new customers and making existing customers more loyal. An advanced guard of satisfaction is considered to be the quality of the service. To get a more detailed explanation of the factors affecting a customer's satisfaction, it is more likely to look at the fantastic increased monetary value for a service organization in a healthy competitive market. Quality seems different to different people; hence quality is found to be multilateral. Figure 1 illustrates the conceptual model.

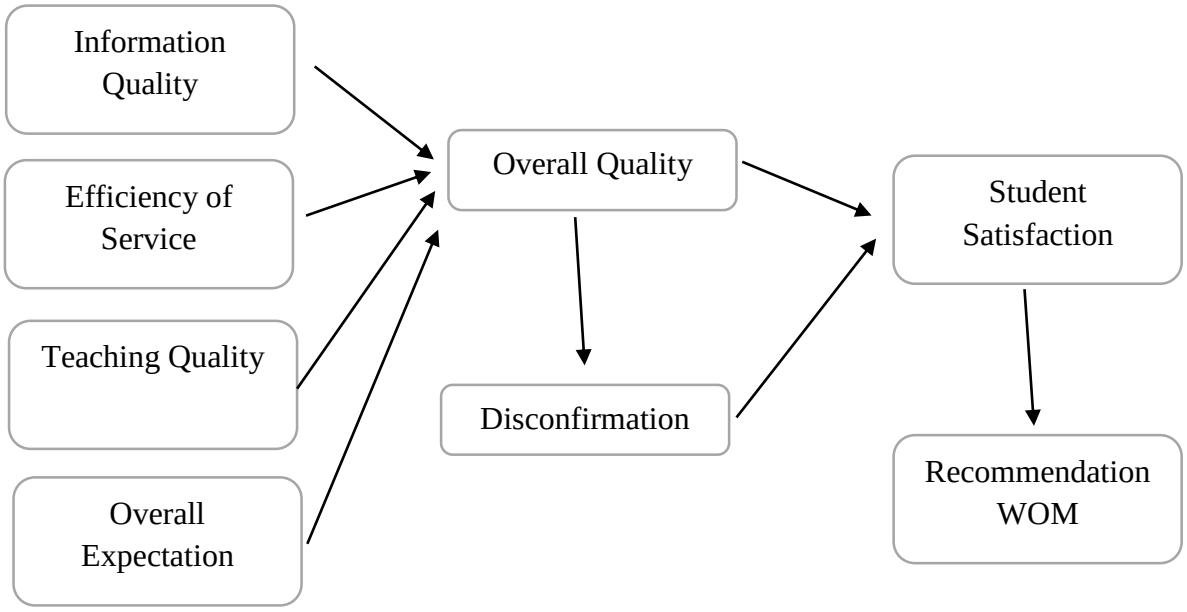

Figure 1: Conceptual framework

2.1. Hypothesis Development

The study has ten direct, eight indirect, and three Specific effect hypotheses. The literature discussed below supports the premises of the research.

Service quality is now becoming the central element of policy reformations to be adapted in the higher institutions that will facilitate the expectations of both internal and external stakeholders. Universities have started realizing that the service quality of universities should also be like any other service business, and they should also focus more on fulfilling students, staff and other external stakeholders' expectations in mind while delivering quality of their service. The critical component of perceived value is how customers perceive our service quality, which is the primary key to a firm's success. Many universities and organizations have realized this component, and now they have begun to track their customer satisfaction by measuring how their customer perceive their service quality. SERVQUAL was the most common method developed for measuring perceived service quality. According to this model, service quality has five dimensions Tangibles, Reliability, Responsiveness, Assurance and Empathy (Parasuraman et al. 1985, 1988).

Nowadays, the constructed idea of service quality and the degree of satisfaction got attention in the private sector as in the public sector. Quality service is one of the most contributing elements in educational institutions that capture and retain customers, particularly students and other stakeholders. The fundamental requirement to achieve service quality in an educational institution doesn't solely associate with its importance. Instead, achieving the best possible excellence at the higher education level is essential. It also had been examined that the universities begin to realize that the service they provide ought to be taken as a business like other service firms, and the universities should consider students, faculty members and other stakeholders' perceived demands while providing service.

2.1.1. Student satisfaction

For the last 30 years, customer satisfaction has been discussed intensively in marketing and consumer research. In this paper, customer satisfaction refers to student satisfaction since students are observed as a consumer of higher academic institutions. In an academic context, student satisfaction is defined as a short-term perspective based on students' educational experiences of students Elliott and Healy (2001). In the higher education system, student satisfaction plays a vital role in evaluating the authenticity and accuracy of the current education system because the more significant the student satisfaction experienced, the better the ability of students to polish their course knowledge, mentality and skill development (Malik et al., 2010). Appleton-Knapp and Krentler (2006) evaluated two components that influence student satisfaction as personal and institutional factors. There is a clear relationship between the level of student satisfaction and the lecturer's quality, the availability of expedients and better use of automation and technology (Wilkins & Balakrishnan, 2013).

An institution can achieve success solely by understanding and fulfilling the needs and wants of the customer. From the total quality management point of view, all strategic decisions should be customer oriented and driven by satisfying customer needs and wants. In other words, institutions need to be constantly sensitive to emerging customer and market needs. One of the essential contributing variables of success is how the customer perceives the resulting services by the firm, as this is often the key driver of perceived success. The perceived value determines the satisfaction of the customer. Many firms, including universities, have started to trace the satisfaction of their customers by measuring their perceived level of service quality. Parasuraman et al. (1985, 1988), known as SERVQUAL, developed the most widely used model for measuring perceived service quality. According to this model, the five determinants of service quality are Tangible, Reliable, Responsive, Assurance and Empathy.

Starting with a brief reconsideration of the older two conceptual models, i.e. expectancy - disconfirmation model (EDM). The EDM implies that citizen satisfaction and its judgment, along with the consequences of satisfaction, are being developed through a person's psychological views concerning past expectations (i.e. the previous experience anticipation), views and opinions about performance or quality (i.e. what an individual experienced), and the Expectation's approval or disconfirmation related to the occurred performance and quality experience (Morgeson, 2013). The EDM was first developed in the early 20th century and has been amended over so many years, relying on the empirical research method in the field of organizational psychology and consumer behavior. Recently, this model has been used by researchers in public administration and political sciences by those who are interested in evaluating the cognitive methods responsible for the formation of satisfaction with government facilities and services in the public sector. These researches have largely approved the value of EDM in explaining the satisfaction level of the public with the government (Van Ryzin, 2004, 2006, 2007; Roch & Poister, 2006; James, 2009; Poister & Thomas, 2011; Morgeson, 2013).

The above expectations are desired to influence the other variable (i.e. a huge range of developing consumer perceptions) directly and indirectly. Initially, the post-experience based on perceived quality judgment should be influenced by the earlier expectations and perceptions of an individual's experience. While the expectations are founded on previous experience, word of mouth, social media, advertising and elders' opinion, and because individuals are so dynamic and usually rely on experience with services and products, there must be a comparatively tiny gap between the estimated

perceived and actual experienced performance.

2.1.2. Expectation confirmation theory (ECT)

The theory of expectation confirmation (ECT) comes from Oliver (1977) and Oliver (1980), in his consumer satisfaction research, in the marketing field (Tao et al., 2009; Jin et al., 2013). ECT demonstrates that happiness is reached when the expectations are met, pessimistic disconfirmation of expectations leads to unrest, and constructive disconfirmation leads to improved satisfaction (Ndubisi, 2012). Likewise, according to Al-Maghrabi et al. (2011), ECT also assists in forecasting purchasing behaviour regarding goods and services before, after and after transactions. In the same way, if international students are happy with services in HEIs, their level of satisfaction will increase, but if they are poor, their level of satisfaction will decrease over time. ECT consists of four constructions: anticipation, results, affirmation and satisfaction (Chou et al., 2012). The primary definition of ECT is satisfaction since satisfaction is a locking theory in consumers (Jung, 2011). The relationship between confirmation and disconfirmation, experience and Expectation positively influence satisfaction. The prior Expectation from a positive starting view for judgment and satisfaction usually relies on the perceived past performance. As the expectation increases, the level of satisfaction is also predicted to increase, so there is a direct relationship between these factors. In the EDM, the satisfaction is taken by both the disconfirmation and confirmation through Expectation which is far from the baseline. Thus, expectations' disconfirmation is intentionally predicted to be positively influenced by satisfaction. There are two aspects: the positive and the negative disconfirmation of expectations. The positive one drives satisfaction from the above baseline level through previous expectations, and the negative one drives satisfaction from the below baseline level. Finally, performance positively (strongly) influences an individual's satisfaction level, along with the previous experience of actual performance.

H_1 = disconfirmation has a significant impact on Student Satisfaction.

Comparatively to the EDM stated above, the service quality models are the latest and imply more widely in conceptualization, empirical specification, and the overall theoretical foundation. However, these models are structured from the naive "performance satisfaction trust" idea and the "SERVQUAL" model in the early 1980s (Parasuraman, 1985). With the revolutionized internet era, the electronic commerce context was introduced through the SERVQUAL model (Loiacono et al., 2002). Afterwards, the same context was implemented in the e-government (Barnes & Vidgen, 2004; Papadomichelaki & Mentzas, 2012; Kaisara & Pather, 2011). Information quality is considered the latent factor that provides ease of accessing relevant information. Once the clarity is accessed, the chances of getting a more positive response have been increased, and, potentially, it will significantly impact overall quality perception and build satisfaction and trust. The relationship between the variables is clear, and it has been theoretically grounded that a primary purpose of E-government is to grant extensive access to consumers' information. The efficiency and accuracy of the service delivered through E-government are hypothesised to significantly and positively impact satisfaction and service quality. E-government was marketed and pursued first as an instrument for making efficient and more accessible government services, and the mentioned hypothesis described it well-supportedly. Finally, the website quality is measured for the usefulness and ease of the E-government website. It is also anticipated to positively and robustly impact quality, trust and satisfaction.

2.1.3. Overall quality

Quality is not just a single thing. It is an atmosphere, a suppressed feeling and an aura that the academic institution tries to perform everything efficiently and excellently. Currently, in the higher education system, quality has already become a standard or a benchmark for the betterment of the nation. The countries which have realized the importance of overall quality and are still taking sufficient measures to intensify the standard of tertiary education are included in the top most ranking education systems. The overall quality of higher education mainly relies on Research and Development (R&D) culture. Arokiasamy and Abdullah (2012) focused on the need to pay attention to service quality to improve the learning environment for targeted students, demonstrate academic effectiveness, meet the

supposition of stakeholders and get a competitive advantage.

H_2 = Overall quality has a significant impact on disconfirmation.

As mentioned earlier, the service quality modeling methods can be gathered into the general quality service paradigm vary more widely and efficiently than what is mentioned regarding the expectancy – disconfirmation model. Papadomichelaki and Mentzas (2012) identified in their study that almost two to three dozen diverse researches and many conceptual models failed under the given general umbrella before focusing on and advancing the single parsimonious form of the service quality model (SQM). The researchers and their assistants continuingly lack practical and more explicit comparative guidance based on the relevant merits of the modeling mentioned above.

2.1.4. Recommendation through WOM

Word-of-mouth WOM marketing is the process in which the knowledge is shared between the person who experienced the product or service and the individual who acts as a potential customer. WOM has attracted the attention of marketers and researchers since the late 1950s (De Bruyn & Lilien, 2008; Lang & Hyde, 2013; Martin & Lueg, 2013) and is widely accepted as the most effective strategy in the concerned marketplace (Bansal & Voyer, 2000). Word-of-mouth messages are conveyed when individuals share feelings and experiences concerning products and services with their friends and family (Chattopadhayay et al., 2010). People first look for word-of-mouth recommendations when they want to buy any product or decide on any academic service. The strength of WOM communication cannot be neglected or underestimated, whether face-to-face or online. People emphasize more on WOM communication rather than relying on other marketing sources because it has more authenticity. WOM communication significantly impacts consumer behavior, especially when selecting an academic institute. According to Lehmann (2015), traditional WOM has a more significant impact on selecting a tertiary institute than electronic WOM.

2.1.5. Information quality

Information is currently becoming an explanatory resource in societies and organizations. For individual and academic purposes, they rely on information, and the quality of information (IQ) is the critical element of their decision and action quality. An individual cannot even manage information quality without meaningfully focusing on IQ measurement (Eppler, 2003; Wang & Strong, 1996).

Information quality is not a new concept for any business community or higher institution, but the concept has obtained increasing consideration throughout the last few years. Insufficient data and information quality is expected and plays a vital role for organizations whose activities are based on information and communication. Poor quality of data and information often generates several adverse effects, which may disrupt different business activities, interfere with the decision, or compromise understanding and communication among people. DeLone & Mclean (2003), referred by (Gorla et al., 2010), stated in their study that Information quality is the performance of outputs produced by the information system, which may be in the format of online screens or reports. There are four elements of information quality: completeness, currency, accuracy, and consistency (Keller et al., 1990). Accuracy is a value saved in the database, an agreement with a specific attribute about reality, or the output of an arithmetic operation. Completeness refers to the specified application with useful, relevant data. While consistency is defined as the absence of conflict between datasets, the currency is related to up-to-date information. Researchers used several elements of information quality. Nelson et al. (2005) have implemented the construct of completeness, currency, and accuracy for information quality; these three authors also used some additional constructs referring to the information outputs.

H_3 = Information Quality has a significant impact on Overall Quality.

In addition, it must be considered that there is a fundamental difference between data quality and information quality. Data quality pertains to the quality based on bare facts that reflect an entity's

or event's attributes. In contrast, information quality refers to the quality of significant data where data is converted into valuable and meaningful context (Detlor et al., 2010). Most information quality measures are derived from the user perspective and the information system. Information quality is a factor that does lead to simplicity of use and results in student satisfaction overall. Data and information measures for desired elements are similar to system output quality attributes, including reliability, completeness, accessibility, precision, meaningfulness, accuracy, adaptability, understandability, relevance and format (DeLone & Mclean, 2003).

H_4 = There is a significant mediated effect of Information Quality on Overall Quality affecting Student Satisfaction that results in Recommendation

2.1.6. efficiency of service

Efficiency is how brilliantly an operation or activity is performed. In the educational sector, productivity enhancement usually means an enhancement in workload, a more excellent student and staff ratio, and reduced wages of employees. Achieving brilliant strategic results is unpredictable and crucial (De Vit & Mayer, 1999). Efficiency refers to the relation between input and output or how effectively the input data have been converted into output data. There are seven dimensions to measure service efficiency: Organizational strategy, motivation of personnel commitment, business and management system building, corporate structure model, personnel skills development, goals and objectives of subordinates, and corporate and employee development style.

H_5 = Efficiency of Service has a significant impact on Overall Quality.

The quality and efficiency of service in higher education are not particularly important, but educational excellence is also essential. The study found that the positive perception of efficiency and service quality influence student satisfaction; therefore, with the help of word-of-mouth communication, satisfied students would attract other students as well (Alves & Raposo, 2010). Students' motivation and inspiration can be achieved by both administrative efficiency and academic performance of the institute. In academic excellence, service efficiency is considered the primary performance measure and is a critical strategic variable for maintaining a strong consumer (student) perception (Ahmad & Iqbal, 2010).

H_6 = There is a significant mediated effect of Efficiency of Service on Overall Quality affecting Student Satisfaction that results in Recommendation

2.1.7. Teaching quality

Practical teaching skills may be defined as the instruction that follows effective learning. The primary motive turns into the lasting and thorough acquisition of skills, values and knowledge the academic instructor or institution set before (Campbell & Smith, 1997). Teachers are also considered the academic managers who control and direct their students, whether in or out of the classroom (Sitra & Sasidhar, 2005). Harris and Rutledge (2007) evaluated that the forecasters of teacher effectiveness and quality are intertwined cognitive skills, educational background, and personality attributes. Teaching includes scientific and practical knowledge surrounding professional awareness that needs cognitive ability and solid expertise.

H_7 = Teaching Quality has a significant impact on Overall Quality.

Higher education should generate a continuous and comprehensive culture of service quality. Thus, improving quality in the learning and teaching process should be integrated into the context of quality. Lecturers' teaching quality varies based on their professional qualifications. The most crucial responsibility of lecturers and staff is to provide effective teaching and service. The priority of all higher educational institutes is to put effort into teaching and learning quality improvement. Learning and teaching quality defines by how well the academic lecturers and staff deliver teaching to students, how

well they interact with students, how well the academic staff entertain the students in classrooms, and how well the staff deliver information from the educational board to the students, how well they provide motivation and facilities to the students during the learning process (Marsh & Hocevar, 1991).

Higher education universities should have leadership effectiveness, professional and knowledgeable educators, outstanding teaching and learning facilities, relevant curriculum and quality students. These attributes would shape and gear the institute to be competitive worldwide. The primary learning institution's role is to produce adequate human capital for the future of its nation. Good quality education refers to the academic system's ability to fulfil the users' needs and expectations (students) through a continuous improvement process. Effective communication would be found when the lecturer manages to make a two-way communication between teacher and students through the lecturer's potential questioning techniques to the students and students' queries to the lecturer. The progress in teaching quality would increase the satisfaction level relatively among students in higher education institutes. Lecturers should maintain an effective relationship with students to enhance student satisfaction, as they are the main clients of the higher education university (Suarman, 2015).

H_8 = There is a significant mediated effect of teacher quality on Overall Quality affecting Student Satisfaction that results in Recommendation

2.1.8. Overall Expectation

The overall Expectation refers to the composite constructions which involve the ideal Expectation (what customers want to happen), normative (evolving via previous experience) and prediction (what customers think to happen), which influence the satisfaction analysis of consumers (Stevenson & Sander, 1998). Research on the overall expectations of the students is relatively limited. More exploration is required to consider, understand and manage the outcomes (Abdullah, 2006; Jillapalli & Jillapalli, 2014). Overall Expectation depends on factors such as age, gender, type of university, culture, and study mode (Headar et al., 2013; Parahoo et al., 2013; Sander et al., 2000; Wardley et al., 2013).

H_9 = Overall Expectation has a significant impact on Overall Quality.

Academic institutes are already utilizing tools to measure the perceived quality and satisfaction based on student expectations (Martínez & Toledo, 2013; Mavondo et al., 2004). There would be a probability of student dissatisfaction if the higher institutions are not concerned about understanding, responding and knowing the students' expectations (Appleton-Knapp & Krentler, 2006). When a learner or student gets admission to higher education institute, he/she is highly motivated; the expectations are high as all the participants' understanding is required, especially the lecturers, who play a vital role in the expectations fulfilment of students (Borghi et al., 2016).

H_{10} = There is a significant mediated effect of Overall Expectation on Overall Quality affecting Student Satisfaction that results in Recommendation

3. Methodology

The research follows a quantitative approach where the data was collected using a survey questionnaire (Hashmi & Mohd, 2020; Hashmi et al., 2020a, b; Rashid et al., 2021). The questions were borrowed from established research papers published (Hashmi et al., 2021a, b). The items for the variables of Information quality, the efficiency of service, teaching quality, overall quality and student satisfaction were borrowed from a paper by Muhammad et al. (2018). Items for disconfirmation were borrowed from a paper by Pratyush et al. (2018), while the items for word of mouth were borrowed from Yoo et al. (2013).

Data was collected using google docs, making it easy to tabulate and screen the data (Rashid, 2016; Rashid & Amirah, 2017; Rashid et al., 2019; Rashid et al., 2020). Students in different classes

were given the link and asked to complete the questionnaire on their mobile phones. A convenient sampling method was followed as the entire university population could not be considered. Not only was the entire population of the students not available at any one time, but all departments were not willing to share names and exact details, not allowing for a proper representation of all the students and restricting the use of any probabilistic sampling method. As a result, a convenience sampling method was used. Even though non-probabilistic sampling methods are not as robust as the probabilistic sampling methods, it was a limitation that had to be dealt with, and the research had to be carried out. The sample size was set to 100 students from a prominent private all-female business university in Karachi, while the population framework was all female universities in the city. Karachi was selected as the population due to its diversity and representation of all the country's people. The research was done using a cross-section design that elicited cross-section data. Data were analyzed using an SEM (structural equational modeling) with the help of SMAR-PLS 3 software (Rashid et al., 2022; Rashid & Rasheed, 2022). The SEM was used to understand better the independent variables' interactive impact on the dependent variable. In addition, the software incorporates techniques that establish dynamic weights making it more practical for such analyses.

3.1. Preliminary Analysis (Descriptive/Demographical)

Most respondents (up to 69%) were between the ages of 21 – 25, while the second largest chunk was between the ages of 16 – 20, comprising 28.3%. About the current education of the respondents, 87.6% were doing their bachelors while only 12.4% were doing their master's. This is not an unproportioned response as the student ratio in the master's program was very low compared to the Bachelor's program. About the time (years) spent at the university. The respondents were very diverse. Even though most of the respondents (41.6%) had spent between 2-3 years at the university, approximately 34.5% had spent 3 – 5 years there. In addition, only 11.5% have spent less than a year at the university, while 10.6% have spent between 1 – 2 years. 1.8% of the respondents had spent more than five years at the university.

4. Results and Discussion

The measurement model results are mentioned in Table 1, in which Cronbach's alpha values are higher than 0.7, which meets the criteria of Hair et al. (2011), who recommended that Cronbach's alpha be more significant than 0.7. According to Hashmi et al. (2021b), composite reliability should be greater than 0.70. Thus, results show that the composite reliability of each construct is more than 0.7 which confirms the criteria. The results of Rho-A present that each construct values are more than 0.7 and meet the standards of Dijkstra and Henseler (2015). Convergent validity of the present study measured through "AVE (average variance extracted)", which is established by Fornell and Larcker (1981) as he is indicated that values of AVE must be higher than 0.5 because it has a threshold value of 0.5. However, results show that all values of AVE of each variable are more than 0.5, which approves the convergent validity of the measurement model. Table 1 shows the summarized results of the measurement model.

Table 1: Measurement model assessment

Variables	Cronbach's alpha	rho-A	Composite reliability	Average variance extracted
DC	0.71	0.70	0.73	0.53
ES	0.81	0.82	0.89	0.72
IQ	0.80	0.86	0.86	0.61
OE	0.78	0.79	0.86	0.60
OQ	0.70	0.72	0.84	0.63
WOM	0.72	0.75	0.70	0.55
SS	0.74	0.78	0.78	0.70
TQ	0.75	0.78	0.73	0.68

DC-disconfirmation, ES-efficiency of service, IQ-information quality, OE-overall Expectation, OQ, overall quality, WOM-recommendation WOM, SS-student satisfaction, TQ-teaching quality.

Table 2 illustrates the Fornell-Larcker Criterion (FLC) results. According to Fornell and

Larcker (1981), the AVE values of individual constructs ought to be higher than construct correlation. As per the results of AVE, square root (diagonal) values approves and confirm the FLC criteria.

Table 2: Fornell-Larcker criterion

Variables	DC	ES	IQ	OE	OQ	WOM	SS	TQ
DC	1.00							
ES	0.64	0.85						
IQ	0.63	0.51	0.78					
OE	0.65	0.77	0.76	0.88				
OQ	0.64	0.69	0.76	0.71	0.84			
WOM	0.34	0.4	0.43	0.42	0.42	0.67		
SS	0.69	0.75	0.63	0.75	0.79	0.38	0.85	
TQ	0.45	0.62	0.68	0.61	0.58	0.46	0.65	0.79

Note: The bold values of diagonal/aslope show AVE (average variance extracted) square root.

In order to check the standard method biases, The VIF values employed Harman's one-factor test (Harman, 1976). The values of VIF were less than 3, supporting the findings of Harman test assumptions. The results of CFA are mentioned in Table 3, in which the factor loadings of all indicator constructs are higher than 0.70, which asserts that they adequately describe the respective variables.

Table 3: Confirmatory factor analysis (CFA)

Items	DC	ES	IQ	OE	OQ	SS	TQ	WOM
ES1		0.76						
ES2		0.88						
ES3		0.83						
IQ1			0.78					
IQ2			0.74					
IQ3			0.83					
IQ4			0.79					
OE1				0.85				
OE2				0.77				
OE3				0.85				
OE4				0.82				
OQ1					0.87			
OQ2					0.77			
OQ3					0.83			
SS1							0.81	
SS2							0.85	
SS3							0.75	
SS4							0.88	
TQ1								0.79
TQ2								0.84
TQ3								0.81
WOM1						0.84		
WOM2						0.79		
WOM3						0.77		

In order to measure the explanatory power of the conceptual model. This study examined the structural model by standardized paths. Hence, every path resembles the hypothesis which is tested. As per the results, the structural model presents the strength of the constructs and the effect of independent variables on dependent constructs through beta coefficient values. Higher beta represents a more substantial effect between independent and dependent variables. According to the model, IQ, TQ, and OE are positively correlated with OQ, but EOS shows a negative association with OQ, which has a lesser effect. However, OQ has a more substantial effect on the satisfaction of students and a lesser effect on DC as it is positively correlated with each other. According to beta values, DC presents a minor connection with SS, whereas Student satisfaction strongly affects recommendation WOM

through a positive correlation.

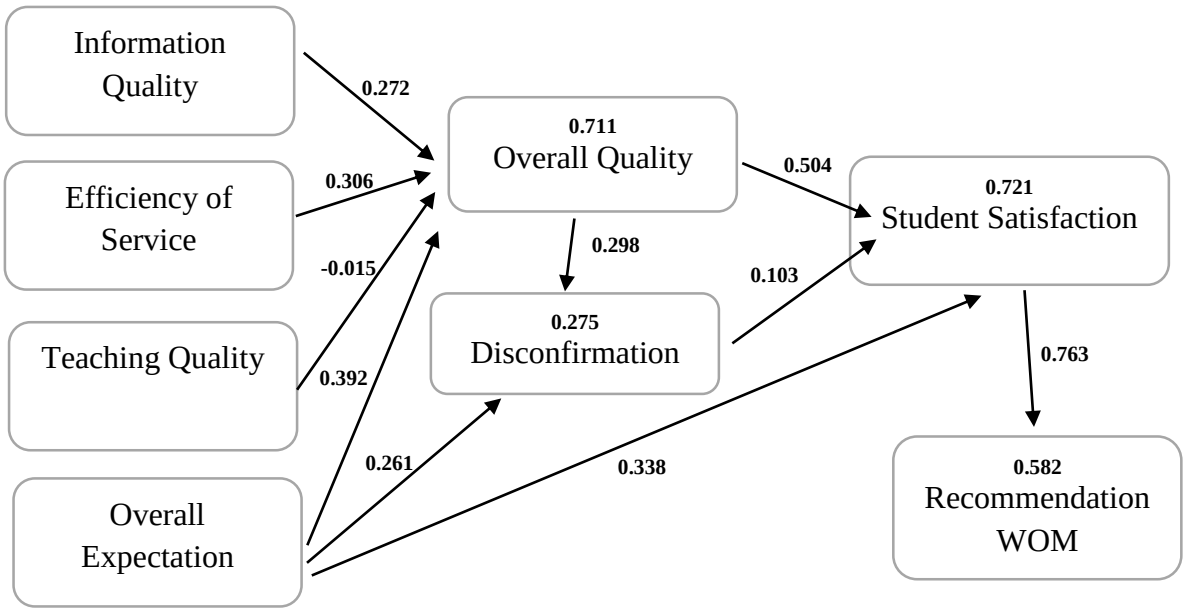

Figure 2: Graphics output of the research model

Figure 2 illustrates the graphics output of the research model showing the path analysis. The path diagram shows that the overall weightage of the items for each variable is sufficiently acceptable, having an average weightage of more than 0.6. This is because the items were borrowed from established research making the items reliable and consistent. The independent variable's path coefficient values affecting the students' overall quality show diversity. The path coefficient value for Information quality (policies and general support) is positive 0.27, while the path coefficient value for service efficiency (support services) is a positive 0.305. The path coefficient value for teaching quality is a negative 0.015, while the path coefficient value for overall Expectation was a positive 0.393. The individual path coefficient shows the weightage of the independent variables' impact on the overall quality. All the variables had a moderate positive impact on the overall quality except teaching quality. Teaching quality has a minor negative impact on the overall quality of the students. The moderate impact of the independent variables shows that the selected variables also needed to be improved as the management was not doing an excellent job of supporting the students. As per the theoretical understanding, the initial expectations are either confirmed or disconfirmed. This was checked via the path model, and it was noted that overall quality and Expectation had path coefficient values of 0.29 and 0.26, respectively, showing no significant contribution and hence no similarity.

The R square for the independent variables teaching quality, Information quality, service efficiency and overall Expectation with the overall satisfaction (as the focus variable) is 0.711. This shows that the variation in the independent variables explains the variation in the focus variable of overall quality of up to 71%. The path coefficient of overall quality towards students' overall satisfaction is 0.504 showing moderate satisfaction. Disconfirmation and overall Expectation have a path coefficient of 0.103 and 0.338, respectively, showing that disconfirmation has a minor contribution to student satisfaction while overall Expectation has a moderate contribution. The R square of student satisfaction is 0.721 showing a high explanation power. This shows that the variation in the independent variables can explain the variations in student satisfaction by up to 72% approximately. The path coefficient of student satisfaction to recommendation (WOM) is 0.763 showing a high contribution towards word of mouth. Keeping the data and results in mind, it can be said that satisfied students at the university will be more likely to recommend the university to their friends. The R square of WOM is 0.582 showing that the variation in student satisfaction explains (affects) WOM by 0.58%. Table 4 illustrates the significance of the path.

Table 4: Significant path contribution

Path Diagram	T- Statistics	P Values	Significant
Disconfirmation -> Student Satisfaction	1.567	0.118	No
Efficiency of Service-> Overall Quality	4.393	0.000	Yes
Information Quality-> Overall Quality	3.322	0.001	Yes
Overall Expectation-> Disconfirmation	1.792	0.074	No
Overall Expectation ->Overall Quality	4.874	0.000	Yes
Overall Expectation->Student Satisfaction	4.270	0.000	Yes
Overall Quality -> Disconfirmation	2.213	0.027	Yes
Overall Quality -> Student Satisfaction	6.343	0.000	Yes
Student Satisfaction-> Recommendation	17.713	0.000	Yes
Teaching Quality-> Overall Quality	0.248	0.804	No

Bootstrapping was done in SmartPLS to identify the significance of the variables' contribution to the path diagram. This was done to identify if the path coefficient were significant or not. Table 5 indicates the path coefficient for disconfirmation -> Student Satisfaction does not have a significant contribution as the sig value is greater than 0.05 and the T-value is less than 2. The path coefficient for Efficiency of Service-> Overall Quality has a significant contribution as the sig value is less than 0.05 and the T-value is more than 2. The path coefficient for Information Quality-> Overall Quality has a significant contribution as the sig value is less than 0.05 and the T-value is more than 2. The path coefficient for Overall Expectation-> Disconfirmation does not have a significant contribution as the sig value is greater than 0.05 and the T-value is less than 2. The path coefficient for Overall Expectation->Overall Quality has a significant contribution as the sig value is less than 0.05 and the T-value is more than 2. The path coefficient for Overall Expectation->Student Satisfaction has a significant contribution as the sig value is less than 0.05 and the T-value is more than 2. The path coefficient for Overall Quality -> Disconfirmation has a significant contribution as the sig value is less than 0.05 and the T-value is more than 2. The path coefficient for Overall Quality -> Student Satisfaction has a significant contribution as the sig value is less than 0.05 and the T-value is more than 2. The path coefficient for Student Satisfaction-> Recommendation has a significant contribution as the sig value is less than 0.05 and the T-value is more than 2. The path coefficient for teaching Quality-> Overall Quality does not have a significant contribution as the sig value is greater than 0.05 and the T-value is less than 2.

Table 5: Indirect effect

Path Diagram	T- Statistics	P Values	Significant
The efficiency of Service-> Student Satisfaction	3.714	0.000	Significant
Teaching Quality -> Student Satisfaction	0.240	0.810	No
Information Quality -> Student Satisfaction	2.606	0.009	Significant
Overall Expectation -> Student Satisfaction	4.623	0.000	Significant
The efficiency of Service-> Recommendation	3.578	0.000	Significant
Teaching Quality -> Recommendation	0.240	0.810	No
Information Quality -> Recommendation	2.584	0.010	Significant
Overall Expectation-> Recommendation	7.219	0.000	Significant

Table 6 presents specific indirect effect results where other than Teaching Quality -> Student Satisfaction and Teaching Quality -> Recommendation, all indirect effect paths have a significant contribution to the respective variable. The path coefficient shows that teaching does not significantly impact students' satisfaction or lead to further recommendations.

Table 6: Specific indirect effect

Path Diagram	T- Statistics	P Values	Significant
Information Quality -> Overall Quality-> Student Satisfaction-> Recommendation	2.588	0.010	Significant
Overall Expectation -> Overall Quality-> Student Satisfaction-> Recommendation	3.844	0.000	Significant
Efficiency of Service-> Overall Quality-> Student Satisfaction-> Recommendation	3.481	0.001	Significant
Efficiency of Service-> Overall Quality-> Student Satisfaction-> Recommendation	0.330	0.899	No

The specific indirect effect was tested on the path analysis using the SMART PLS, which identified all relations that were significant and not significant. The research is reporting those complete path flows that have a significant impact. The results showed that Information Quality -> Overall

Quality-> Student Satisfaction-> Recommendation path had a significant impact as its P value was less than 0.05. This shows that information quality contributes to the overall quality of the university, which results in overall student satisfaction, which leads to recommendations (WOM). The validity of the research was checked and was found acceptable. Discriminant validity was acceptable as HTMT (Heterotrait Monotrait Ratio) were under .09.

5. Conclusion

The research reviews the satisfaction female students experience at an all-female university based on several different factors derived from two theoretical underpinnings. The variables derived from the theories and literature were Information quality, the efficiency of service, teaching quality, Overall quality, Student satisfaction, disconfirmation and word of mouth. Unlike other studies in a similar domain that showed other factors having a significant impact on causing dissatisfaction, the research being conducted showed that teaching quality had the most significant impact on reducing student satisfaction. In line with other researchers, the study validates that other factors like Efficiency of Service, Information Quality and Overall Expectation as having a significant impact (direct) on student satisfaction. Keeping in mind that teaching quality had an inverse impact on student satisfaction, it is worth noting that the teaching quality variable is reflected as a broader domain that includes the teaching quality, course, the attitude of the teacher and much more. The university can focus more on ensuring that the teachers are happy and have a positive attitude towards their students, which may result in better satisfaction. In addition, the course syllabus and delivery quality can be better regulated by providing teachers training and workshops to help them improve their teaching style and course syllabus if needed.

5.1. Limitations and Future Research

The research shows the different variables which significantly contribute to the satisfaction of students considering the evidence from the research. The research shows that information quality and efficiency of service; in addition to the overall Expectation, are half-relevant contributions towards the word equality. In addition, the most crucial understanding here is that student satisfaction is vital through word of mouth. Keeping this in mind, we are unable to understand the importance of student satisfaction and its role in future recommendations made by the students. Evidence from the research makes it clear that encouraging positive word of mouth is essential to satisfy the students in an academic institution. This simple goal can be achieved by understanding the critical factors' role in this research. Academicians should keep in mind the results of this research and understand that efficiency of service and information quality has a significant role in the overall education quality. In addition to this, a student is for the signs relating to the scum formation. Additionally, Expectation also contributes significantly to the overall satisfaction and quality of the student.

5.2. Limitations and Recommendations

One of the limitations of the study was that the research was conducted in one of the female universities in Pakistan. Even though there is more than one university that caters to only the female student population, it was difficult to approach other institutions considering the Covid Crisis. in addition to this, the research followed a quantitative Research Design which focused on the empirical data it was utterly objective. It is recommended that qualitative research design be used to understand further and explore the different factors which may also be necessary for female University students. Considering the broader academic contribution, a comparative study in the future could bring decent results, which may be better revealed. Taking into account a number of Institutions is not possible because pure female universities are not very common.

References

Abdullah, F. (2006). The development of HEdPERF: A new measuring instrument of service quality for the higher education sector. *International Journal of Consumer Studies, 30*, 569-581.

https://doi.org/10.1111/j.1470-6431.2005.00480.x

Afridi, S. A., Khattak, A., & Khan, A. (2016). Measurement of service quality gap in the selected private universities/institutes of Peshawar using SERVQUAL model. *City University Research Journal, 6*(1), 61-69.

Ahmad, N., & Iqbal, H. (2010). Impact of Service Quality on Customers' Satisfaction: Empirical evidence from telecom sector of Pakistan. *Interdisciplinary Journal of Contemporary Research in Business, 1*(12), 9.

Al-Maghrabi, T., Dennis, C., & Halliday, S. V. (2011). Antecedents of continuance intentions towards e-shopping: The case of Saudi Arabia. *Journal of Enterprise Information Management, 24*(1), 85-111. https://doi.org/10.1108/17410391111097447

Alnsour, M. S., Tayeh, B. A., & Alzyadat, M. A. (2014). Using SERVQUAL to assess the quality of service provided by the Jordanian telecommunications sector. *International Journal of Commerce and Management, 24*(3), 209-218. https://doi.org/10.1108/IJCoMA-03-2012-0021

Alves, & Raposo. (2010). The Influence of University Image on Students' Behavior. *International Journal of Educational Management, 24*, 73-85. https://doi.org/10.1108/09513541011013060

American Council on Education (2015). *International higher education partnerships: A global review of standards and practices.* USA: Washington, DC: Author.

Anderson, E. W., Fornell, C., & Lehmann, D. R. (1994). Customer satisfaction, market share, and profitability: Findings from Sweden. *Journal of Marketing, 58*(3), 53-66. https://doi.org/10.1177/002224299405800304

Appleton-Knapp, S. L., & Krentler, K. A. (2006). Measuring student expectations and their effects on satisfaction; The importance of managing student expectations. *Journal of Marketing Education, 28*, 254-264. https://doi.org/10.1177/0273475306293359

Arambewela, R., & Hall, J. (2006). A comparative analysis of international education satisfaction using SERVQUAL. *Journal of services research, 6*(Special), 141-163.

Arokiasamy, A. & Abdullah, A. (2012). Service quality and students' satisfaction at higher learning institutions: A case study of Malaysian university competitiveness. *International Journal of Management and Strategy, 3*(5), 1-16.

Bansal, H. S., & Voyer, P. A. (2000). Word-of-mouth processes within a services purchase decision context. *Journal of Service Research, 3*(2), 166-177. https://doi.org/10.1177/109467050032005

Barnes, S. J., & Vidgen, R. (2004). Interactive e-government: Evaluating the web site of the UK Inland Revenue. *Journal of Electronic Commerce in Organizations (JECO), 2*(1), 42-63. https://doi.org/10.4018/jeco.2004010104

Borghi, S., Mainardes, E., & Silva, É. (2016). Expectations of higher education students: a comparison between the perception of student and teachers. *Tertiary Education and Management, 22*(2), 171-188. https://doi.org/10.1080/13583883.2016.1188326

Calvo-Porral, C., Lévy-Mangin, J. P., & Novo-Corti, I. (2013). Perceived quality in higher education: an empirical study. *Marketing Intelligence & Planning, 31*(6), 601-619. https://doi.org/10.1108/MIP-11-2012-0136

Campbell, W. E., & Smith, K. A. (Eds.). (1997). *New paradigms for college teaching*. Interaction Book Company.

Chattopadhayay, R., Ganesh, A., Samanta, J., Jana, S. K., Chakravarty, B. N., & Chaudhury, K. (2010). Effect of follicular fluid oxidative stress on meiotic spindle formation in infertile women with polycystic ovarian syndrome. *Gynecologic and Obstetric Investigation, 69*(3), 197-202. https://doi.org/10.1159/000270900

Chou, H. K., Lin, I. C., Woung, L. C., & Tsai, M. T. (2012). Engagement in e-learning opportunities: An empirical study on patient education using expectation confirmation theory. *Journal of Medical Systems, 36*(3), 1697-1706. https://doi.org/10.1007/s10916-010-9630-9

De Bruyn, A., & Lilien, G. L. (2008). A multi-stage model of word-of-mouth influence through viral marketing. *International Journal of Research in Marketing, 25*(3), 151-163. https://doi.org/10.1016/j.ijresmar.2008.03.004

De Vit, B., & Mayer, R. (1999). *Strategy Synthesis. Resolving Strategy Paradoxes to Create Competitive Advantage.* International Thomson Business Press, London.

Delone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-

year update. *Journal of Management Information Systems*, *19*(4), 9-30. https://doi.org/10.1080/07421222.2003.11045748

Detlor, B., Hupfer, M., & Ruhi, U. (2010). *Tips for Tracking Web Information Seeking Behavior. In Web Technologies: Concepts, Methodologies, Tools, and Applications* (pp. 89-118). IGI Global. https://doi.org/10.4018/978-1-60566-982-3.ch007

Dijkstra, T. K., & Henseler, J. (2015). Consistent partial least squares path modeling. *MIS Quarterly*, *39*(2). https://doi.org/10.25300/MISQ/2015/39.2.02

Elliott, K. & Healy, M. (2001). Key factors influencing student satisfaction related to recruitment and retention. *Journal of Marketing for Higher Education, 10*(4), 1-11. https://doi.org/10.1300/J050v10n04_01

Eppler, M. J. (2006). *Managing information quality: Increasing the value of information in knowledge-intensive products and processes*. Springer Science & Business Media. https://doi.org/10.1007/3-540-32225-6

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, *18*(1), 39-50. https://doi.org/10.1177/002224378101800104

Gorla, N., Somers, T. M., & Wong, B. (2010). Organizational impact of system quality, information quality, and service quality. *The Journal of Strategic Information Systems*, *19*(3), 207-228. (n.d.). https://doi.org/10.1016/j.jsis.2010.05.001

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice, 19*(2), 139-152. https://doi.org/10.2753/MTP1069-6679190202

Harman, H. H. (1976). Modern factor analysis: University of Chicago Press.

Harris, D. N., & Rutledge, S. A. (2007). *Models and predictors of teacher effectiveness: A review of the literature with lessons from (and for) other occupations.* Unpublished manuscript, University of Wisconsin at Madison.

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). 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. (2021a). 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., & Zaliha, T. N. (2020b). 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. (2021b). 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

Headar, M. M., Elaref, N., & Yacout, O. M. (2013). Antecedents and consequences of student satisfaction with e-learning: The case of private universities in Egypt. *Journal of Marketing for Higher Education, 23*(2), 226-257. https://doi.org/10.1080/08841241.2013.867919

James, O. (2009). Evaluating the expectations disconfirmation and expectations anchoring approaches to citizen satisfaction with local public services. *Journal of Public Administration Research and Theory, 19*(1), 107-123. https://doi.org/10.1093/jopart/mum034

Jillapalli, R. K., & Jillapalli, R. (2014). Do professors have customer-based brand equity?. *Journal of Marketing for Higher Education, 24*(1), 22-40. https://doi.org/10.1080/08841241.2014.909556

Jin, X.-L., Zhou, Z., Lee, M. K., & Cheung, C. M. (2013). Why users keep answering questions in online question answering communities: A theoretical and empirical investigation. *International Journal of Information Management, 33*(1), 93-104. https://doi.org/10.1016/j.ijinfomgt.2012.07.007

Jung, Y. (2011). Understanding the role of sense of presence and perceived autonomy in users' continued use of social virtual worlds. *Journal of Computer-Mediated Communication, 16*(4), 492-510. https://doi.org/10.1111/j.1083-6101.2011.01540.x

Kaisara, G., & Pather, S. (2011). The e-government evaluation challenge: A south African Batho Pele-aligned service quality approach. *Government Information Quarterly, 28*(2), 211-221. https://doi.org/10.1016/j.giq.2010.07.008

Kanakana, M. G. (2014). Assessing service quality in higher education using the SERVQUAL tool. In *International Conference on Industrial Engineering and Operations Management* (Vol. 1, pp. 68-74).

Keller, Redman, Watkins, & Huh. (1990). Huh, Y. U., Keller, F. R., Redman, T. C., & Watkins, A. R. (1990). Data quality. *Information and Software Technology, 32*(8), 559-565. https://doi.org/10.1016/0950-5849(90)90146-I

Kundi, G. M., Khan, M. S., Qureshi, Q., Khan, Y., & Akhtar, R. (2014). Impact of service quality on customer satisfaction in higher education institutions. *Industrial Engineering Letters, 4*(3), 23-28.

Lang, B., & Hyde, K. (2013). Word of mouth: What we know and what we have yet to learn. *The Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior, 26*, 1-18.

Lehmann, W. S. (2015). *The influence of electronic word-of-mouth (EWOM) on college search and choice* (Doctoral dissertation, University of Miami).

Loiacono, E. T., Watson, R. T., & Goodhue, D. L. (2002). WebQual: A measure of website quality. *Marketing Theory and Applications, 13*(3), 432-438.

Malik, M. E., Danish, R. Q., & Usman, A. (2010). The impact of service quality on students' satisfaction in higher education institutes of Punjab. *Journal of Management Research, 2*(2), 1-11. https://doi.org/10.5296/jmr.v2i2.418

Mansori, S., Vaz, A. F., & Ismail, Z. (2014). Service quality, satisfaction and student loyalty in Malaysian private education. *Asian Social Science, 10*(7), 57-66. https://doi.org/10.5539/ass.v10n7p57

Marsh, H. W., & Hocevar, D. (1991). The multidimensionality of students' evaluations of teaching effectiveness: The generality of factor structures across academic discipline, instructor level, and course level. *Teaching and teacher education, 7*(1), 9-18. https://doi.org/10.1016/0742-051X(91)90054-S

Martin, W. C., & Lueg, J. E. (2013). Modeling word-of-mouth usage. *Journal of Business Research, 66*(7), 801-808. https://doi.org/10.1016/j.jbusres.2011.06.004

Martínez, T. L., & Toledo, L. D. (2013). What do graduates think? An analysis of intention to repeat the same studies and university. *Journal of Marketing for Higher Education, 23*(1), 62-89. https://doi.org/10.1080/08841241.2013.812589

Mavondo, F. T., Tsarenko, Y., & Gabbott, M. (2004). International and local student satisfaction: Resources and capabilities perspective. *Journal of Marketing for Higher Education, 14*(1), 41-60. https://doi.org/10.1300/J050v14n01_03

Mersha, Y., Bishaw, A., & Tegegne, F. (2013). Factors affecting female students' academic achievement at Bahir Dar University. *Journal of International Cooperation in Education, 15*(3), 135-148.

Morgeson, F. V. (2013). Expectations, disconfirmation, and citizen satisfaction with the US federal government: Testing and expanding the model. *Journal of Public Administration Research and Theory, 23*(2), 289-305. https://doi.org/10.1093/jopart/mus012

Muhammad, N., Kakakhel, S. J., Baloch, Q. B., & Ali, F. (2018). Service quality the road ahead for student's satisfaction. *Review of Public Administration and Management, 6*(2), 1-6. https://doi.org/10.4172/2315-7844.1000250

Mulyawan, A., & Sidharta, I. (2014). Determinan Kualitas Layanan Akademik Di STMIK Mardira Indonesia Bandung. *Jurnal Computech & Bisnis, 8*(1), 13.

Ndubisi, N. O. (2012). Relationship quality: Upshot of mindfulness-based marketing strategy in small organizations. *International Journal of Quality & Reliability Management, 29*(6), 626-641. https://doi.org/10.1108/02656711211245638

Nelson, R. R., Todd, P. A., & Wixom, B. H. (2005). Antecedents of information and system quality: an empirical examination within the context of data warehousing. *Journal of Management Information Systems, 21*(4),

199-235. (n.d.). https://doi.org/10.1080/07421222.2005.11045823

Olatokun, W. M., & Ojo, F. O. (2016). Influence of service quality on consumers' satisfaction with mobile telecommunication services in Nigeria. *Information Development, 32*(3), 398-408. https://doi.org/10.1177/0266666914553316

Oliver, R. L. (1977). Effect of Expectation and disconfirmation on postexposure product evaluations: An alternative interpretation. *Journal of Applied Psychology, 62*(4), 480-486. https://doi.org/10.1037/0021-9010.62.4.480

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research, 17*,460-469. https://doi.org/10.1177/002224378001700405

Papadomichelaki, X., & Mentzas, G. (2012). e-GovQual: A multiple-item scale for assessing e-government service quality. *Government Information Quarterly, 29*(1), 98-109. https://doi.org/10.1016/j.giq.2011.08.011

Parahoo, S. K., Harvey, H. L., & Tamim, R. M. (2013). Factors influencing student satisfaction in universities in the Gulf region: does gender of students matter?. *Journal of Marketing for Higher Education, 23*(2), 135-154. https://doi.org/10.1080/08841241.2013.860940

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing, 49*(4), 41-50. https://doi.org/10.1177/002224298504900403

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*(1), 12-40.

Poister, T. H., & Thomas, J. C. (2011). The effect of expectations and expectancy confirmation/disconfirmation on motorists' satisfaction with state highways. *Journal of Public Administration Research and Theory, 21*(4), 601-617. https://doi.org/10.1093/jopart/mur004

Pratyush, N. S., Forrest V. M. III, Sunil, M., & Salman, A. (2018). An empirical and comparative analysis of E-government performance measurement models: Model selection via explanation, prediction, and parsimony. *Government Information Quarterly, 35*, 515-535. https://doi.org/10.1016/j.giq.2018.07.003

Qomariah, N. (2012). Pengaruh Kualitas Layanan dan Citra Institusi terhadap Kepuasan dan Loyalitas Pelanggan (Studi pada Universitas Muhammadiyah di Jawa Timur). *Jurnal Aplikasi Manajemen, 10*(1), 177-187.

Rashid, A. & Rasheed, R. (2022). A Paradigm for Measuring Sustainable Performance Through Big Data Analytics-Artificial Intelligence in Manufacturing Firms. *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., Ali, S. B., Rasheed, R., Amirah, N. A. & Ngah, A. H. (2022). A paradigm of blockchain and supply chain performance: a mediated model using structural equation modeling. *Kybernetes, Vol. ahead-of-print No. ahead-of-print.* https://doi.org/10.1108/K-04-2022-0543

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.

Roch, C. H., & Poister, T. H. (2006). Citizens, accountability, and service satisfaction: The influence of expectations. *Urban Affairs Review, 41*(3), 292-308. https://doi.org/10.1177/1078087405281124

Sander, P., Stevenson, K., King, M., & Coates, D. (2000). University students' expectations of teaching. *Studies in Higher Education, 25*, 309-323. https://doi.org/10.1080/03075070050193433

Sandhu, H. S., & Bala, N. (2011). Customers' perception towards service quality of Life Insurance Corporation of India: A factor analytic approach. *International Journal of Business and Social Science, 2*(18), 219-231.

Senthilkumar, N., & Arulraj, A. (2011). SQM-HEI-determination of service quality measurement of higher education in India. *Journal of Modelling in Management, 6*(1), 60-78. https://doi.org/10.1108/17465661111112502

Sitra, A. R. A., & Sasidhar, B. (2005). Teachers' perception on the effectiveness of co-curricular activities: A case study of Malaysian schools. *UNITAR e-Journal, 1*(1), 32-44.

Stevenson, K., Sander, & P. (1998). Stevenson, K., & Sander, P. (1998). How do open university students expect to be taught at tutorials? *Open Learning: The Journal of Open and Distance Learning, 13*, 42-46. https://doi.org/10.1080/0268051980130208

Suarman, F. (2015). Teaching Quality and Students Satisfaction: The Intermediary Role of Relationship between lecturers and Students of the Higher Learning Institutes. *Mediterranean Journal of Social Sciences, 6*(2), 626-632. https://doi.org/10.5901/mjss.2015.v6n2p626

Tao, Y. H., Cheng, C. J., & Sun, S. Y. (2009). What influences college students to continue using business simulation games? The Taiwan experience. *Computers & Education, 53*(3), 929-939. https://doi.org/10.1016/j.compedu.2009.05.009

Van Ryzin, G. G. (2004). Expectations, performance, and citizen satisfaction with urban services. *Journal of Policy Analysis and Management, 23*(3), 433-448. https://doi.org/10.1002/pam.20020

Van Ryzin, G. G. (2006). Testing the expectancy disconfirmation model of citizen satisfaction with local government. *Journal of Public Administration Research and Theory, 16*(4), 599-611. https://doi.org/10.1093/jopart/mui058

Van Ryzin, G. G. (2007). Pieces of a puzzle: Linking government performance, citizen satisfaction, and trust. *Public Performance & Management Review, 30*(4), 521-535. https://doi.org/10.2753/PMR1530-9576300403

Wang, R. & Strong, D. (1996). Beyond accuracy: What data quality means to data consumers. *Journal of Management Information Systems, 12*(4), 5-35. https://doi.org/10.1080/07421222.1996.11518099

Wardley, L. J., Bélanger, C. H., & Leonard, V. M. (2013). Institutional commitment of traditional and non-traditional-aged students: a potential brand measurement?. *Journal of Marketing for Higher Education, 23*(1), 90-112. https://doi.org/10.1080/08841241.2013.810691

Wilkins, S. & Balakrishnan, M. S. (2013), Assessing student satisfaction in transnational higher education. *International Journal of Educational Management, 27*(2), 146-153. https://doi.org/10.1108/09513541311297568

Yoo, C. W., Sanders, G. L., & Moon, J. (2013). Exploring the effect of e-WOM participation on e-Loyalty in e-commerce. *Decision Support Systems, 55*(3), 669-678. https://doi.org/10.1016/j.dss.2013.02.001

Yousapronpaiboon, K. (2014). SERVQUAL: Measuring higher education service quality in Thailand. *Procedia-Social and Behavioral Sciences, 116,* 1088-1095. https://doi.org/10.1016/j.sbspro.2014.01.350

Appendix: Questionnaire

1. Gender a) Male b) Female
2. Age a) 16-20, b) 21-25, c)26-30, d)30-35, e)36+
3. University a) Public b) Private
4. Type of Education a) Bachelor b) Master c) MS/M.Phil. d) PhD
5. Years in the university a) Less than a year b) 1-2 Year c) 3-4 Year d) 4-5

Directions: The following set of statements relate to your feeling and opinions about university. For each statement, please show the extent to which you believe that the university has the features described by the statement. Once again, ticking a 5 means that you consider that university has features you strongly agree, and ticking a 1 means that you consider the features strongly disagree. There is no right or wrong answers- all we are interested in a number that best shows your expectations and perceptions about the university offering services.

Section A: Service Quality

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

			Expected					Experience/ Perceived				
Tangibility	1	University has state-of-the-art computer lab	1	2	3	4	5	1	2	3	4	5
	2	University has modern library with sufficient collection	1	2	3	4	5	1	2	3	4	5
	3	Physical facilities of the university are visually appealing	1	2	3	4	5	1	2	3	4	5
	4	Employees of university appear smart and neat	1	2	3	4	5	1	2	3	4	5
Reliability	1	University has qualified teaching staff	1	2	3	4	5	1	2	3	4	5
	2	University provide their services at promises to do so	1	2	3	4	5	1	2	3	4	5
	3	Administrative services at university provide error-free record	1	2	3	4	5	1	2	3	4	5
	4	Employees competence and ability to solve students problems	1	2	3	4	5	1	2	3	4	5
	5	University staff show interest in solving students problems	1	2	3	4	5	1	2	3	4	5
Responsiveness	1	Employee of university provide quick and prompt services	1	2	3	4	5	1	2	3	4	5
	2	Employees of university ready to help the students										
	3	Employees of university are never too busy to respond to requests	1	2	3	4	5	1	2	3	4	5
	4	University gives individual attention to students	1	2	3	4	5	1	2	3	4	5
Assurance	1	University applies uniform discipline to everybody	1	2	3	4	5	1	2	3	4	5
	2	University provides accurate and timely information	1	2	3	4	5	1	2	3	4	5
	3	University creates harmonious relationship among staff and students	1	2	3	4	5	1	2	3	4	5
	4	University develops democratic campus regulation	1	2	3	4	5	1	2	3	4	5
Empathy	1	University staff understand students' needs	1	2	3	4	5	1	2	3	4	5
	2	University staff treats students equally and with respect	1	2	3	4	5	1	2	3	4	5
	3	University staff is polite, kind and professional in communication with students	1	2	3	4	5	1	2	3	4	5
	4	University staff show positive attitude towards students	1	2	3	4	5	1	2	3	4	5
	5	University staff is available for consultations and is forthcoming towards students	1	2	3	4	5	1	2	3	4	5

Section B: Assessment of Student Satisfaction

Please indicate your degree of SATISFACTION with respect to each of the following items in relation to the overall services provided by your university, by placing a checkmark √ or circling a number in the relevant box below.

Highly Dissatisfied	Dissatisfied	Neither Satisfied nor Dissatisfied	Satisfied	Highly Satisfied
1	2	3	4	5

1	Most students feel a sense of belonging here

2	The campus staff are caring and helpful
3	Faculty care about me as an individual
4	Admissions staff are knowledgeable
5	Financial aid counselors are helpful
6	My academic advisor is approachable
7	The campus is safe and secure for all students
8	The contents of the courses within my major is valuable
9	A variety of extra-curricular activities are offered
10	Administrators are approachable to students
11	Fee policies are reasonable
12	Financial aid awards are announced to students in time to be helpful in university planning

Section C: Competitiveness

Service Quality	1	The university has enlighten building
	2	The university labs are equipped with the state of the art technology
	3	The university library is rich in collection
	4	University teachers are accessible off the class hours
	5	The university staff is responsive to questions
	6	University provide excellent service quality
Knowledge	1	Lecturers have extensive knowledge of their subjects
	2	The curriculum helped to developed my analytical and logical thinking
	3	Developed by writing and speaking skills
	4	Had an excellent learning experience at university
Image & Reputation	1	The university has a good image in the mind of students
	2	Adequate number of students proper admission in university
	3	The university has a good reputation because of its past performance
	4	Community ranks the university at reasonably good position amongst the other
Cost/Fee	1	The tuition fee is reasonable, given the quality of education
	2	The university charging lower tuition fee
	3	The university is offering grants and subsidies to attract students
	4	The university charging reasonable hostel fee
	5	The university charging reasonable examination fee
Location	1	The university is located as accessible through public transport
	2	The university is close to civic centers of the city
	3	The university is close to other universities
Marketing	1	University students often do mouth marketing
	2	University is well known to the markets & potential students
	3	University news in often public through media mix
	4	University has mass media coverage of university events
Employability / Job Placement	1	My senior students have been employed within short time period
	2	The university facilitates job search and job hunt through its placement office
	3	The university educate about job application exercise
	4	I have gained some knowledge and skills to enter a particular career

(Thank you so much for your kindness and your help in filling out this questionnaire)

Construct	Item	Question wording (abbreviated)	Scale
Age	Age	What is your age, please?	18–99
Education	Education	What is the highest level of formal education you completed?	1–5
Gender	Gender	[Gender measured by observation/interviewer recognition]	1–2
Race	Race	Primary Race	1–6
Political ideology	Political Ideology	Extremely Liberal…Extremely Conservative	1–8
Political identification	Political Identification	Democrat…Republican	1–4
Government agency experienced	Agency	SSA/IRS/Census(HHS)	
Overall quality	Overall Quality	How would you rate the overall quality of the (AGENCY/DEPARTMENT)?	

Overall expectation	Overall Expectation	How would you rate your expectations of the overall quality of services from the (AGENCY/ DEPARTMENT)?	1–10
Information quality	InformationQuality1	How difficult or easy was it to get information about the (AGENCY/ DEPARTMENT)'s services?	1–10
	InformationQuality2	Was the information about (AGENCY/DEPARTMENT)'s services clear and understandable?	1–10
Efficiency of service	EfficientService1	How timely and efficient was the (AGENCY/DEPARTMENT) in providing the services you wanted?	1–10
	EfficientService2	How difficult or easy was it to obtain services from the (AGENCY/ DEPARTMENT)?	1–10
Website quality	WebsiteQuality1	How difficult or easy was it to use the (AGENCY/DEPARTMENT) website?	1–10
	WebsiteQuality2	How useful was the information on the (AGENCY/DEPARTMENT) website?	1–10
Citizen satisfaction	Satisfaction	First, please consider all your experiences to date with the (AGENCY/ DEPARTMENT)'s services. How satisfied are you with the (AGENCY/DEPARTMENT)'s services?	1–10
Disconfirmation	Disconfirmation	Considering all of your expectations, to what extent have the (AGENCY/ DEPARTMENT)'s services fallen short of your expectations or exceeded your expectations?	1–10
Citizen Trust in Government	Trust	Generally speaking, how much of the time do you think you can trust the government in Washington?	1–10

e-WOM participation

EP1 I frequently write a customer review.

EP2 When I leaving a customer review, I elaborately write it.

EP3 I spend much effort in posting review.

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Impact of Information Sharing on Supply Chain Performance with Mediation of Trust

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ABSTRACT

This paper investigates the impact of information sharing with suppliers on supply chain performance while mediating the effect of trust. In this descriptive study, quantitative research will involve a questionnaire as a research instrument with boundary-spanning managers involved in sharing information with suppliers. Multiple research papers in different industries are used to see the impact of information sharing. In this study, information sharing with suppliers is integral in improving supply chain performance, impacting the overall business performance. Trust as a mediating factor improves sharing of information, but it will not directly influence the enhancement of supply chain performance. The findings will help managers understand and evaluate the importance of information sharing with a supplier and its effect on supply chain performance and enable them to make better decisions that enhance supply chain performance. The study is conducted in a specified time frame which bound the research to a particular period. Geographical boundaries also limit the study as it determines the impact of the research on the pharmaceutical industry of Pakistan, located in Karachi. Organizations need to develop a system that promotes information sharing by investing in technologies that support exchanging information between partners. Building trust and forming collaborative ties will ensure progression in the results of the supply chain network.

Keywords: *Supplier, Procurement, Logistics, Information sharing, Supplier trust, Pharmaceutical*

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Impact of Information Sharing on Supply Chain Performance with Mediation of Trust

1. Introduction

A supply chain is an emerging field in terms of theory and its execution. This management field has one of the most researched topics on mathematical methods for supply chain optimization or specific issues. Today, the challenge for firms is to carry out supply chain practices and implement them to accomplish the desired objectives. Performance measurement is a systematic process that efficiently quantifies any concept (Neely et al., 1997). Improving supply chain performance is a continuous process, which can be done by the set of variables determined through different supply chain practices (Ramdas & Spekman, 2000; Hashmi et al., 2021a). Supply chain performance is the target for all firms, and different have dealt with the issue differently. Some firms have completely transferred the logistics and supply to third parties, while others have made it an integral part of their production processes. Different organizations have their distinct objectives to achieve when it comes to performance. These objectives can further divide into long and short-term objectives like enhanced productivity, minimized inventory and improved lead time, increased market share and integrated operations (Lyons et al., 2004; Li et al., 2006; Hashmi et al., 2021b). These objectives are highly interdependent and cannot achieve alone. Therefore, any business entity's performance depends upon its supply chain partners' performance and willingness and ability to align business activities in the SC network.

Information flow is essential to SC because it helps direct the material flow. The literature reveals that better information sharing between the channel members can mitigate various deficiencies. Although information sharing can be significant, it will not be enough to lessen uncertainty's effect. In addition, the nature of information depends upon the advantage of exchanging information. The performance of the supply chain can be improved if closer information-based linkages form, which help to manage resources and capabilities in a way that will produce improved results (Ding et al., 2011; Baloch & Rashid, 2022). The effort that companies make to satisfy their customers' needs can go all in vain if their partners are not aligned and responsive to the rapidly changing needs of the customers (Li & Lin, 2006). By sharing information, each member receives accurate, up-to-date and correct data for timely decisions regarding production and inventory (Bargshady et al., 2016; Shaheen, 2022). Data integration with channel members provides an equal opportunity to enjoy the experience gained by offering extra value to customers (Kwon & Suh, 2005). There is a discernible benefit of information sharing on the bullwhip effect (Levary, 2000; Zhang & Chen, 2013).

Information sharing is essential, and the performance of the SC also depends on it, so it is essential to know what information we are sharing, how we are sharing and to whom we are sharing (Holmberg, 2000). Suppliers are essential to channel members for any organization because they provide the desired raw material for the product. Information sharing with a supplier is integral to supplier integration and collaboration. When companies want to cater to the changing demands of the customers, suppliers are one of those partners who help to meet the changing demand and try to produce at the lowest possible cost. Nevertheless, organizations are reluctant to provide information to suppliers as they want to maintain secrecy, which ultimately impacts on final execution of the supply chain. Information sharing would be accurate, secure and ready so that it provides its benefits. If not undertaken adequately, these characteristics of information sharing, companies aiming to improve their performance can face numerous challenges.

The implementation rate of information sharing is low because of the risks in the quality of information and outflow of private information (Shaheen, 2022; Madenas et al., 2015). If supply chain partners cannot hold or maintain privacy between inter-organizational information sharing, this can lead to mistrust between partners and eventually impact competitiveness (Zhang & Chen, 2013). When partners lose trust and faith in each other, they hold buffer inventories to safeguard themselves from demand uncertainty. Trust is the concept which relies on the entity and to whom have confidence. Building a relationship between the SC partners requires a certain level of trust and commitment, and

without that, any effort is likely to be unfruitful (Handfield & Nichols, 2004; Anwar, 2022). Quality of information across the whole supply chain network impacts the overall supply chain performance and can help develop strategies that motivate the seamless flow of information. Trust is an essential factor influencing information sharing and will enhance the relationship between information sharing and SCP.

A supply chain is now difficult to manage with the increasing number of alternatives. Competition is not only limited between products and services, but it is now between supply networks. Companies need to organize relationships with their partners well so that all can make a joint effort to compete as a unified entity. The dilemma is that companies still do not understand that their supply chain performance depends upon their integration and collaboration with their supply chain partners. The supply chain performance can improve and enhance by sharing information necessary to put minds on the same page. Information sharing is an essential part of any SC network. Sharing information impacts the cost, order fulfilment, and shorter cycle time (Badia, 2021; Baloch & Rashid, 2022). Companies need to consider the whole supply chain as an integrated entity, where each member of the supply chain network is interdependent's performance. Customer responsiveness is the strategic aim of any organization, which can be achieved through better alignment and integration of SC activities. Information sharing plays a vital role in increasing the operational efficiency of the supply chain, through better integration with the partners, especially with suppliers. Information sharing can be done if the organizations have a trust factor to foster performance. Trust helps to understand the capability of reaching the desired destination.

Although much research has been done to determine the impact of information sharing, less attention has been paid to trust as mediating variable between information sharing and SCP. Trust delivers ease in a business transaction and boosts customer satisfaction (Eckerd et al., 2022; Amjad, 2022). It helps to solve problems mutually and promotes a cooperative environment. Trust reduces the complexities in negotiation and allows partners to think for mutual gains. Trust allows open information sharing, as buyer suppliers are reluctant to share required information, and this behaviour leads to inefficient performance. To enhance the performance of supply chain operations of any organization, firms need to change this unsatisfactory relationship and develop an atmosphere of trust. It also helps to share challenges and compete as a unified body (Rasheed, 2022; Saikouk et al., 2021).

Moreover, trust is the factor which helps us to know the degree of variation between information sharing and SCP. Hence there is a need to conduct the current study to deal with the problems manufacturers and suppliers face regarding information sharing and trusting partners. The research conducted before on this topic has different geographic coverage. This research has been conducted in Karachi, Pakistan, to analyze the effect of information sharing on supply chain performance with the mediation of supplier trust. Based on the research purpose following research questions will be investigated:

a. *To what extent does information sharing with suppliers influence SCP?*

b. *To what extent does trust will influence information sharing with a supplier?*

c. *To what extent does trust influence supply chain performance?*

d. *To what extent does trust mediate the relationship between information sharing and supply chain performance?*

2. Literature Review

2.1. Information Sharing

Information sharing is transferring helpful information to help drive the desired results (Sun et al., 2005). Information sharing is the method of distributing the desired information within the SC network, and the level of information sharing will determine the level of integration (Monczka et at.,

1998). The intensity of communication and cooperative behaviour will allow better information flow (Klein et al., 2007). The conducive environment between the inter-organizational levels will provide a better opportunity to perform as a unified body. Information sharing enables dependable deliveries and new product markets in time with better coordination between supply chain members (Sezen, 2008; Hunaid et al., 2022).

Information sharing helps organizations integrate with their partners through better communication channels and delivers desired outcomes cost-effectively. The main aim of the firms is to maximize profit by satisfying and retaining customers; information sharing is one of the ways that make it easier to understand the end user requirement, and each member of the supply network will work accordingly (Ding et al., 2011). Knowledge sharing enhances relationships; whether personal or professional, it benefits both the parties, who receives the information and who shares it. It gives an impression of giving value and welcoming partners to harmonize their inter-organizational Relationships (Cheng et at., 2008). Information sharing includes different information such as consumer demand, order status, sales forecast, inventory level, manufacturing capabilities, quality and lead time (Stevenson & Spring, 2007; Ali, 2022).

Companies are now becoming more customer-oriented in running their businesses (Bullinger et al., 2002; Alam, 2022). Firms want to serve their customers what they want, when they want and how they want to have their product and make their presence in the customers' minds by being available and accessible. In this environment, being stuck out is the worst situation to deal with as many competitors out there who can simply replace by substitute products. IS plays an essential role in reducing the effect of bullwhip but cannot eliminate it (Bullinger et al., 2002). The significant impact of bullwhip can put companies in danger because of the increased cost of holding inventory. Firms do not want to diminish their presence, which makes them keep safety stocks to maintain their service level (Chen et al., 2000).

2.1.1 Information asymmetry

Information asymmetry means unequal distribution of knowledge and information between two parties; it would be unevenness in quality or quantity. These inequalities will lead to inadequate decision-making and resentfully influence bargaining power. Information asymmetry can occur because of different asymmetrical types, such as size asymmetry, power asymmetry, knowledge asymmetry, and cost asymmetry. The leadership role defines size asymmetry, as larger organizations cannot accept others to rule over them, distorting partners from integrating and sharing information (Rashid, 2016). Power asymmetry defines by the difference in the authority of a party, which dictates terms to comply with operational guidelines. In knowledge asymmetry, organizations do not share adequate information required by other channel members (Sarkis & Talluri, 2004; Asif, 2022). Asymmetries impact the long run and distort the supply network, as decisions rely on adequate information, which can seriously harm any organization. Asymmetries can link with the zero-sum game, where one player wins at the cost of another. Information asymmetry can be harmful because it influences decision-making, hinders benefits, and creates inefficiencies in improving supply chain performance.

2.1.2 Information technology

Advancement in information technology has made information sharing more significant because of the ease of transferring the required information. It provides interactive ways to be integrated with supply chain partners operating far away from each other (Ray et al., 2005). EDI (electronic data interchange) is a system that helps transmit information and data along the supply network so that anyone can access it at any time, maintaining privacy and security simultaneously (Uddin, 2022). Vendor-managed inventory technology would be feasible enough to support the concept of sharing data regarding inventory levels with the suppliers so that they would automatically refill it by managing it electronically. The effect of bullwhip influences the whole supply chain widely in terms of the cost of holding inventory and backorders. The chances of going stock out or holding excess inventory can be minimized if information technology is utilized in the information sharing process (Kelle & Akbulut, 2005)

2.1.3 Information sharing with supplier

Information sharing provides better management of production scheduling, the structure of the price and managing consumer demand (Ganesh et al., 2014). Information sharing enables firms to integrate with suppliers and make steadfast commitments in supply chain management operations (Sezen, 2008). As the supplier is the one who supplies the raw material, which will be further furnished to form a finished product, so it means that the supplier has a direct connection with the performance of the SC, so sharing information with the supplier is essential (Lascelles & Dale, 1989). If firms do not invest in the supplier relationship, it will eventually impact the cost of inspection, rework, delays and overproduction. So sharing of information will make the firm efficient in cost reduction but also make the firm's presence competent (Garvin, 1987; Giunipero & Brewer, 1993). Sharing information with suppliers allows the firm to respond to consumer demand promptly (Ganesh et al., 2014). It improves the inventory cost, replenishment of the inventory, and material flow and reduces demand forecast errors (Sezen, 2008; Ayaz, 2022).

2.1.4 Bullwhip effect

Many industries and institutions have now considered bullwhip an essential factor in understanding the variation in supply and demand. The bullwhip effect is that the slight change in the downstream demand results in a significant change in the supply upstream. Information sharing helps reduce bullwhip's effect by sharing the demand information (Lee et al., 1997). Lee et al. (1997), the bullwhip effect lies between the retailer-supplier relationships and flows throughout the supply network. The bullwhip effect impacts the forecasting as well. It balanced out the result and made the lead time even longer Chen et al. (2000). Costantino et al. (2014) identify that poor information quality and lack of significant information sharing become the root cause of the bullwhip effect. The bullwhip effect leads to higher safety stocks and holding inventory cost and show the mismanagement between the partners in the supply network (Costantino et al. (2014). The holding of inventory will project the buffer, which will smooth the flow of the goods in response to the demand fluctuation. However, holding excess inventory in terms of not losing the revenue opportunity will lead to the bullwhip effect and increase the cost (Blinder, 1986).

2.1.5 Benefits of information sharing

Sharing information between the SC partners brings many benefits to the industries. Among these benefits, a manufacturer or a firm will gain two most important benefits: cost reduction and inventory reduction (Lee et al., 2000). The information sharing will benefit the manufacturer in such a way that it reduces the inventory cost by 5 to 35 per cent while maintaining the product availability in the market (Zhao et al., 2002). There are other benefits in terms of reducing lead time, reducing the bullwhip effect, reducing lead time, meeting customer expectations and reducing complaints (Lee et al., 2000). The information sharing will ensure visibility and help to alter the existing plan and improve future operations and approaches (Fiala, 2005; Muzammil, 2022). Sharing information related to demand or customer orders will provide close anticipation of the consumer's actual demand (Basit, 2022).

2.2 Trust

Trust is a multidimensional construct which binds the other construct with one another (Handfield & Bechtel, 2002; Kwon & Suh, 2004, 2005). Trust is confidence in honesty and integrity in one's personality or ways of doing things (Rousseau et al., 1998; Rashid et al., 2022). The relationship theory states that trust and commitment are a relational exchange between the partners and develop a direct or mediating relationship (Morgan & Hunt, 1994). As the supply chain involves different fragments of ownership and in this kind of complex relation, trust is the factor which plays a vital role in the long-term partnership (Wilson & Eckel, 2006). Trust ensures the partners' willingness to share important information and maintain relationship-based resources (Morgan & Hunt, 1994). The difficulty in coordination among the network and barriers to cooperation because of mistrust will impact the strategic performance of the firms (Gao et al., 2005). A company needs to unify its goals and integrate them with its partners to achieve them efficiently (Gao et al., 2005). The atmosphere of trust will open the ways to integrate freely and reduce hesitation in the buyer-supplier relationship, which will enhance the long-term commitments and improve future operations (Paulraj et al. (2008). Trust is

the factor that binds the inter-organizational relationship. When it comes to the supply network then, it fosters the commitment through which operations are performed efficiently (Kwon & Suh, 2004). Trust constitutes fair dealing with its partners, a sense of reciprocity and partners' reliability (Morgan & Hunt, 1994; Hart & Saunders, 1997). As trust is not a temporary engagement, it helps to grow and strengthen the bond between the partners and helps to make steadfast commitments for a more extended period (Sahay, 2003). Trust is a mediating factor that will raise the supply chain's performance bar (Sahay, 2003; Hashmi & Mohd, 2020).

Trust is the factor that is not only present in practice, but theories also emphasize a lot on the significance of it. Trust opens up new dimensions with its domain: commitment, integrity, honesty and many more (Das & Teng, 2001). Trust develops the integrated perspective of inter-organizational relationships, which is now needed in today's competitive world (Manu et al., 2015). Trust is the confidence gained mutually that no party will be deceitful with each other and could not be able to exploit others' weaknesses in the name of it (Table 1993). Other researchers have defined trust as the subjective factor in which one can be prejudiced while taking actions or performing any activity, irrespective of the level of the objectiveness of the situation (Gambetta, 2000). Trust is the psychological stimulus through which the person will respond to it, and so is the organization that works on a similar pattern (Rousseau et al., 1998; Das & Teng, 2001; Costa & Bijlsma-Frankema, 2007). Trust has some relation to the cost. A lack of trust impacts the operational cost, including other costs like verification, inspections, monitoring and certification costs between the supply partners (Beccerra & Gupta, 1999; Kwon & Suh, 2004). Trust comprises different aspects, which entails different ways of projecting trust, like integrity, faith, loyalty, consistency and dependability (Morgan & Hunt, 1994; Kumar et al., 1995; Beccerra & Gupta, 1999; Kwon & Suh, 2005). In trust, decisions are made mutually for the benefit of both parties to show the affirmative behaviour of each other. Trust is a commitment in a relationship to have positive expectations and trigger actions that persuade mutual gains. In today's world, trust between organizations is essential for sustainability and survival (Zaheer et al., 1998).

The depth of a relationship can be determined through the level of trust between the parties, which is why trust is a crucial factor in measuring the significance of relationships. The global competition has put organizations into collaborations with supply chain partners to meet the customer needs on time by mutually identifying their needs and gaining an advantage from them. Without trust, the integration will not be possible between the partners. Joint operations must ensure the process of building customer perception about the company and its relationship with its supplier. If trust exists between such integration, it will surely pop up through the efforts both parties put in to fulfil the customer's needs (Gounaris, 2005).

2.3 Supply Chain Performance

SC management is the network of businesses, mainly suppliers, manufacturers, distributors, wholesalers and retailers. Many researchers have defined SCP as delivering the right product at the right time, in the correct quantity, and at the lowest cost to the right customers (Green et al., 2005). SCP depends upon the potential of the supply chain network and the efforts that SC partners put in to achieve the desired outcome (Hashmi et al., 2020a). Organizations alone cannot achieve a competitive advantage. The whole supply chain network is responsible for it, which will, in turn, impact the overall business performance (Chen & Paulraj, 2004). Now firms should have some kind of competitive advantage over their competitors to survive in this globally competitive world. To sustain a competitive edge, companies need to improve their supply chain performance (Rashid et al., 2022). Several studies have identified different performance measurements for supply chain performance, including operational cost, lead time and customer order responsiveness (Lee & Billington, 1993; Pyke & Cohen, 1994).

SC is an enormous field in which many concepts help determine operational efficiency and deliver essential services to build a competitive edge through SCM practices. Different organizations work for a unified goal in a supply chain network. If one firm is not able or willing to cooperate or coordinate in the whole supply network, then operational inefficiencies, lack of delivery of required

services and unfulfilled customer needs would result (Hall & Saygin, 2012). Supply chain performance has multiple dimensions to measure its performance. However, by reducing excess inventory and providing improved products, the whole network can serve its customers on time with enhanced product quality by decreasing set-up time and altering capacity (Wang et al., 2004; Vonderembse et al., 2006). Customer satisfaction is one of the main aims of any organization or supply chain network. Every customer has different levels or priorities of satisfaction concerning their choices, with some focusing on quality and others on price and on-time delivery (Fawcett et al., 2007). Now companies have to vary vigilant while choosing the performance metrics for measuring SCP because the chosen metrics would be insufficient to cater to the umbrella term, SCM (Hausman, 2004). Supply chain performance can be measured in short and long-term objectives, which include decreasing inventory level and reducing lead. In contrast, long-term objectives would be increased market share and integrated activities, which determine organizations to evaluate their supply chain performance concerning the objectives (Li et al., 2006b; Lyons et al., 2004; Hashmi et al., 2020b). As the supply chain is linked with overall organizational performance, it has a direct and significant positive relationship with one another, whether small, medium enterprises or large organizations.

2.4. Relevant Theory

2.4.1. Transaction cost theory

Transaction cost theory is the theory in which a firm will experience high transaction costs due to a lack of information or information asymmetry (Williamson, 1981). The transaction cost incurs due to the lack of IS ability and experiencing a high level of uncertainty. The transaction cost will be higher if the organization's behaviour is opportunistic because it includes different costs, such as monitoring and inspection (Kwon & Suh, 2004). Building a trust-based relationship is essential because it will minimize the behaviour's opportunism and increase the performance's effectiveness. Organizations must facilitate integration and collaboration between the supply chain channel members to avoid uncertainty and lower the transaction cost. As different businesses have different goals and objectives, to achieve them, it is essential to build strong ties between the partners, which will help to align the goals of the supply chain. Through better-informed partners, the supply chain would experience a reduction in uncertainty, more accurate forecasting and lowers transaction costs.

2.4.2. Resource-based view theory

The resource-based view is how organizations utilize their resources to gain a competitive advantage over their competitors (Conner, 1991; Fawcett et al., 2007). Resources can be physical or intangible in terms of machinery, equipment, supplies and knowledge, and innovativeness, which can become a competency for a firm which is difficult to imitate (Wernerfelt, 1984). Organizational resources are utilized to achieve efficient results, which is impossible if companies do not have trusted relationships (Grant, 1991; Varadarajan & Cunningham, 1995). The beauty of integration and collaboration is that the lack of resources is shared based on trust and mutual benefits with those who do not have that particular competency (Paulraj et al., 2008). This view helps to understand the importance of building a relationship through trust and information sharing, which will then lead to gaining a competitive edge over others and making higher profits through efficient supply chain performance.

2.5. Hypothesis Development

2.5.1. Information sharing and supply chain performance

Much research has been done to link information sharing and SCP. Researchers like Lee et al. (2000) empirically conclude the benefits of these variables in terms of cost minimization and reducing excess inventory, which will impact the overall performance of the businesses. Information sharing is being persuaded by two things which are connectivity and willingness, which helps to smoothen the flow of information and improves the overall SCP practices (Fawcett et al., 2007). Information sharing

has a substantial impact on the supplier's activities because supply chain management is an integrated business where every business cannot work solely, as a supplier is one of the significant channel members of the supply network, so collaborating with them is necessary to establish a position in the market (Rashed et al., 2010). Information sharing is a prerequisite for a close bond between the supply chain partners, affecting the supply chain operations. The integrated supply chain now becomes a need for survival, and integration gives higher responsiveness to customer demand through which market share would increase (Lee, 2000). Effective integration would give a higher market share, provide a shorter cycle time, reduce logistics costs, and increase workforce effectiveness. Integration can be a source to open ways to collaborate on operations and work on a unified goal.

Information sharing can be a factor in improving or initiating the integration between organizations (Lummus & Vokurka, 1999). When firms give more importance to the flow of information than the flow of material, companies will experience better resource utilization and efficient flow of operations (Graham & Hardaker, 2000; Rashid & Rasheed, 2022). Eventually, customer service level determines the kind of efforts a company want to put in if they believe in higher customer service, so for long-term survival, companies need to cooperate and coordinate with their supplier through information sharing (Lai et al., 2010). So it can be determined that a higher level of information sharing would result in higher customer responsiveness which fulfils the aim of supply chain management (Forslund & Jonsson, 2007). Information sharing mitigates the bullwhip effect's impact, which helps improve supply chain performance. Sharing information is not an easy task. Suppose organizations want to benefit from it by sharing the correct information with the right quality and adequacy at the right time. In that case, it will reduce the impact of specific ineffective outcomes (Flynn et al., 2010). Supply chain management uses such kinds of remedies as sharing of information to improve the performance of different interlinked businesses (Flynn et al., 2010; Rashid, 2016).

Simatupang and Sridharan (2002) draw attention to the example of Walmart. This retailing firm shares its information with its main dealers, which shows that information sharing has a significant positive impact on the SCP. Customer satisfaction is the ultimate goal of any company. If they successfully satisfy their customers, they could have a competitive advantage over others, and information sharing can play a significant role in gaining a competitive edge (Nyaga et al., 2010). Information sharing between the supply chain channel members has a practical impact on the supply chain performance. In business, decision-making is an important task, and companies will bear huge losses if it is not correctly done. Information sharing plays a significant role in decision-making regarding inventory, forecasting and costing (Li et al., 2006; Iyer et al., 2009). Lack of adequate information sharing with partners results in poor decision-making (Du et al., 2012). In this competitive environment, customer orientation has become mandatory for companies to lead in the market over their competitor's chain (Bullinger et al., 2002). Information sharing helps compete in the market with customers' changing needs and demands (Swafford et al., 2008). The dynamic environment of the supply chain makes channel members inclined toward transmitting information (Malhotra et al., 2005). As information sharing in the dynamic supply chain is not a simple task, if information processing does not benefit the informed member of the supply chain in terms of profit, it is arguable whether it is sufficient to provide information. Information processing is used to maximize the network of supply chain performance (Baloch & Rashid, 2022). The shared information will help reduce decision-making errors and promote accuracy and persistence, which help to plan and act accordingly. In this way, SCP is optimized (Lee et al., 1997; Cachon& Fisher, 2000).

H1. Information sharing has a significant influence on SCM.

2.5.2. Information sharing and trust

The source of information is used to define the accuracy and authenticity of the information. The information will be considered vague if it does not conform to reality (Fu et al., 2016). The authenticity of the information can be judged by the level of trust both parties have in each other and their confidence in it (Simatupang & Sridharan, 2001). Trust shows that one party is willing to believe in the other party's verdict about something. The same happens within organizations where one party

does not represent an individual but a whole organization (Simatupang & Sridharan, 2001). Integration in the supply chain provides ways to implement trust-based relationships between the parties. It helps to increase the bond, improves the overall performance and is responsive to the customer demand. Relationships that form based on trust show willingness to share. Trust-based relationships will last longer and benefit the supply chain's long-term objective, positively impacting its execution. Trust is formed through different factors, including honesty, integrity and faithfulness, which result in the long-term stability of the relationship or inter-organizational Relationship (Flynn et al., 2010). The confidence level defines the degree of trust in the relationship. In SC, it is essential to have trust in partners so that company's operations will perform smoothly (Lee, 2005). As customers have the power to influence the decisions based on the company's operations, so to be responsive to the market needs, companies must build a strong relationship with their supply chain partners through trust by making transparent policies and procedures, operations, requirements and fairness in dealing (Zhao et al., 2008). Trust can build indefinite boundaries through which utilization of resources and flow of information is at their fullest (Li & Lin, 2006). Some relationships required arm's length distance through which they would be able to build a network and share benefits with each member of the supply chain. Trust will ensure that others' loopholes will be covered through sharing competencies and expertise, which will strengthen the relationship even more (Cheng et at., 2008)

H2. Information sharing has a significant impact on trust.

2.5.3. Trust and supply chain performance

Trust plays an accelerating factor which binds the relations between the people; that is why trust is essential in relationships. The value of a relationship will determine by the level of trust each party possesses for the other. Trust in the supply chain is crucial, as to access the customers, companies need to collaborate with multiple organizations; without trust, no real integration would exist (Saban & Luchs, 2011). Trust higher the value of the relationship between the inter-organizational partnerships. It will impact the operations between the organizations and, in turn, the performance (Saban & Luchs, 2011). Trust exists in two forms reliability-based trust and character-based trust. Character-based trust is defined as trust based on the organization's culture and philosophy, and reliability-based trust is the ability that one party will fulfil his promise. Both forms of trust are needed in organizations to incorporate a conducive environment. Trust will ensure the supply chain performance as organizations work for mutual interest and seek the best results between the supply chain partners, especially with the suppliers. Seeking mutual benefit is not only an outcome but will protect each other's interests through a strong relationship bound by trust. Trust can result in flexibility, continuous improvement, learning and gaining advantage through reducing costs (Saban & Luchs, 2011; Rashid & Amirah, 2017). Trust satisfies the primary goal of the supply chain, which is customer service level, as trust enhances the relationship, which in turn impacts the SCP and ultimately impacts customer satisfaction (Gounaris, 2005). Now organizations are more inclined to build trust-oriented relations, which will impact long-term and mitigate control and command approaches, diminishing their potential to work together (Saban & Luchs, 2011; Rashid et al., 2019). The command approach tends to be more control centric, where one party dictates to another, eventually decreasing productivity and innovativeness. In contrast, trust-oriented relationships energize operations and are more accurate, leading to long-term success as both partners are willing to take part in each other operations in terms of time, cost and productivity (Saban & Luchs, 2011).

H3. Trust has a significant impact on supply chain performance.

2.5.4. Information sharing, trust, and supply chain performance

Many researchers have analyzed the impact of trust in business relations. Trust enhances the negotiation power when sharing information with critical business partners (Thompson, 1991). Trust also improves supply chain performance by increasing responsiveness and efficiency to potential market changes (Handfield & Bechtel, 2002). Many economists have used trust games to examine the part of a trust, in which two player plays anonymously with an experimenter. Player A sends some money to which the experimenter triple that amount and sends to player B. Then player B decides how

much money he has to return to player A. In this theory, the author explains the trusting behaviour toward its partners to understand human psychology and its nature to counter. So trust increases the impact of sharing and exchanging information between partners and, thus, affects the performance of SC. The trust between buyer and supplier in deciding the supplier's manufacturing capabilities based on the buyer's forecast for demand ensures stable future operations (Taylor & Plambeck, 2007). In the supply chain, trust is crucial, as to access the customers, companies need to collaborate with multiple organizations, and without trust, no real integration would exist (Saban & Luchs, 2011). Trust satisfies the supply chain's main aim, customer satisfaction, as trust enhances the relationship, which impacts the supply chain performance and ultimately impacts customer satisfaction (Gounaris, 2005; Rashid, 2016). Figure 1 illustrates the conceptual framework of this study.

H4: Trust mediates the relationship between information sharing and SCP.

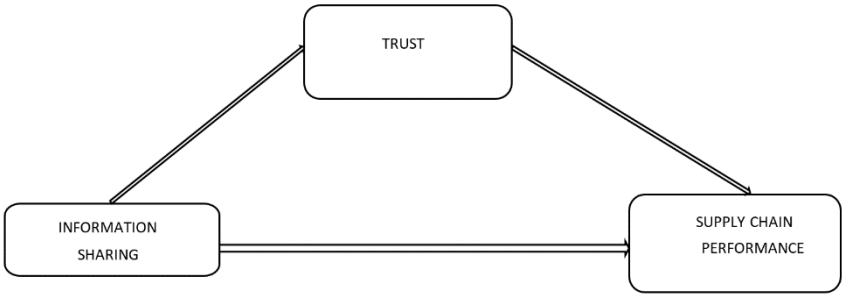

Figure 1: Conceptual framework

3. Research Methodology

This quantitative research uses numerical data to analyze the effect of variables. According to Rashid et al. (2021), the deductive approach relies on existing and proven theories. This approach is recommended for those studies where test assumptions are based on a conceptual and theoretical framework. It uses to test theories and assumptions regarding these variables. The role of quantitative research is to prove the point that lies between the construct and its hypotheses. Quantitative research establishes realistic results through statistical data and testing. The research approach is deductive, as it observed phenomena and is used to test a theory already developed. This approach relies on data collection from a large population. Besides this method, measure the objectives through actions and opinions to help describe the data rather than interpret it (Rashid et al., 2021). The variables of this research have already been identified, which are now tested by generating hypotheses. The study starts by analyzing the relationship between the variables and testing it in the manufacturing sector of Pakistan, which means the research goes from generalization toward specific data to analyzing the causal impact of the variables.

The purpose of the research is explanatory. The explanatory research finds those problems which were not catered to before or were not studied in depth (Khan et al., 2022a, b, c). Rashid et al. (2021) argued that explanatory research helps determine the cause of the occurrence of a specific phenomenon. This research usually explains a situation or problem in casual relationships and is relevant to the quantitative method. This study will identify the causal relationship between the constructs and explain the significance by testing the hypotheses (Agha et al., 2021; Khan et al., 2021; Alrazehi et al., 2021; Dar et al., 2021; Haque et al., 2021). The variables, which are information sharing with suppliers, trust is used to define the impact on supply chain performance in the manufacturing sector of Pakistan. This research strategy is a survey used to examine the impact of information with suppliers on SCP. This study determines the causal relationship between the constructs by empirical testing. This study is conducted in a particular time frame that analyzes the effect of information sharing with suppliers on SCP.

The study was conducted one time with a defined population and sample size. The time horizon indicates that this research is cross-sectional. The research population entails those individuals whom the research has been generalized. The target population is used to aim for a specific population which meets the criteria according to the requirements of the study. The target population of this research is the manufacturing sector of Pakistan, in which supply chain performance can be measured through sharing of information with them, mediating the effect of trust. This study narrows down the population in terms of accessibility of the population. The accessible population through which the research gathers data is the manufacturing sector of Pakistan, which has one of its facilities in Karachi. It is feasible to gather data from the Karachi region and determine the effect of these variables in this metropolitan city.

3.1. Sampling

Sampling is considered for the research data collection (Traat et al., 2004). As the study is quantitative, sampling would be based on a larger size to generalize the study to a broader population. The sampling frame lies under the population. It helps to define the sample size for the research. In this study, the sampling frame would be the pharmaceutical industry of Pakistan, which has its facility in Karachi. A list of licensed pharmaceutical companies would approach the data collection in this research. The supply chain personnel are respondents to this research, as the nature of the research is related to the supply chain field. The sample size can be determined through a sample frame of the pharmaceutical industry in Karachi, Pakistan. The sample size can be assessed through certain factors, such as the nature of the research, the number of variables, analysis, and sample size used in related research. A sample size of 50 is inferior, 100 is poor, 200 reasonable, 300 is good, 500 is very good, and 1000 is excellent. However, the sample size of 117 respondents from various pharmaceuticals located in Karachi (Rashid et al., 2021). The sampling technique or method is a process of selecting data from the sample size, which means analyzing the study through the part of the population and generalizing it to the whole. This research is a sampling procedure where each population unit has the same chance of being randomly included in the sample. Random sampling is used (Rashid et al., 2021). In convenience sampling, the study targets the supply chain personnel. Because of the method mentioned above, the target population symbolized the whole pharmaceutical industry of Pakistan.

The research instrument is the most critical component of the research, because it defines how researchers get their data. The questionnaire's questions are well constructed to cover every aspect of the chosen variables. A questionnaire was designed to collect the primary data through closed-ended questions. The questions' measurements are based on a Likert scale: five means strongly agree, and one represents strongly disagree. According to our research requirement, the questionnaire comprises important guidelines that ensure ethical issues and include the title and the characteristic of the respondent. In the data analysis method, the research undergoes various tests according to the particular requirement of the study and responses to the questions. Regression analysis is used in a research study to examine the cause and effect between the variables, i.e. independent and dependent. For the validity of the instruments, Cronbach-alpha was employed to evaluate the validity and to substantiate the relation of variables. Software IBM SPSS version 22.0 and SmartPLS made it much easier to analyze the data and examine the impact of variables.

4. Results and Findings

In this section, techniques of statistics are employed over the data acquired through the instrument. The research findings are obtained using IBM SPSS version 22.0 and SmarPLS software, and obtained findings are interpreted to test the hypotheses for the current research. The main objective is to test the hypotheses. The analysis is conducted here in three stages. Descriptive statistics in the percentage distribution of demographic variables are computed along with the graphs. Reliability and validity of the questionnaire are being done. Finally, the hypotheses are being tested.

4.1. Respondent Profile

This data analysis section entails descriptive statistics of respondent demographics, including frequency and percentage for each demographic element (Rashid et al., 2020). The demographic elements included in the instrument are gender, designation and years of experience. As the research is conducted on the pharmaceutical companies of Pakistan, which are located in Karachi, for the convenience of the collection of data, so the industry that is being catered to through the instrument is the pharmaceutical industry. Table 1 shows that 70.1 % of the respondents are male in the pharmaceutical companies of Pakistan located in Karachi that are accessible for this research. The number of years of age is categorized into four groups. The first one is those who have 20 to 30 years of age, and their percentage is 12.0%, the second are those who lie between 31 to 40 years of age, and they are 45.3%, third are those who lie between 41 to 50 years of age, and they are 24.8% in the respondents and the last, people who have lain between 51-60 years of age are 17.9% in the respondents. The number of years of education is categorized into four groups. The first one is those who have a Matric of education. Their percentage is 0.00%, second are those who lie between Intermediate of education, 4.3%, third are those who lie between Graduate of education. They are 55.6% of the respondents, and last, people who have Postgraduate education are 40.0% of the respondents. The number of years of experience is categorized into four groups. The first one is those who have 0-5 Years of experience and their percentage is 16.2%, second are those who lie between 6-10 Years of experience and they are 20.5%, third are those who lie between 11-15 years of experience, and they are 33.3% in the respondents. In the last, people who have more than 16 Years and above of experience are 29.9% of the respondents.

Table 1: Demographic distribution

Gender	Frequency	Per cent
Male	82	70.1
female	35	29.9
Total	117	100.0
Age		
20-30 Years	14	12.0
31-40 Years	53	45.3
41-50 Years	29	24.8
51-60 Years	21	17.9
Total	117	100.0
Education		
Ric	0	0
Intermediate	5	4.3
Graduate	65	55.6
Postgraduate	47	40.0
Total	117	100.0
Education		
0-5 Years	19	16.2
6-10 Years	24	20.5
11-15 years	39	33.3
16 Years and above	35	29.9
Total	117	100.0

4.2. Validation of Model

Smart PLS 4 was used as a statistical tool to analyze the hypotheses. Smart PLS is a Partial least squares (PLS) SEM software that enables users to use the PLS path modeling method. It is a variance-based software that uses a two-step data analysis approach. The measurement model is the first step in evaluating the SEM, including discriminant and convergent validity (Hashmi et al., 2021).

4.2.1. Reliability and validity analysis.

The reliability test is conducted to analyze the reliability of the instruments present in the questionnaire in the form of questions. Before SEM, the discriminant and convergent validity were considered for the conformity of the measurement model. Convergent validity is said to be established when composite reliability (CR) > 0.70, average variance extracted (AVE) > 0.50 and factor loadings >0.50 (Khan et

al., 2022a, b, c). The Cronbach's alpha and Composite Reliability test is carried out to ensure whether items are reliable to this study, and the value of Cronbach's alpha and Composite Reliability should be greater than 0.7, which indicates that the instruments used in this study are reliable to proceed with the research. If the value is less than 0.7, then we must make changes in the instrument to make our research reliable to analyze. AVE greater than 0.5 indicates convergent validity exists.

Table 2 describes factor loading and the items' correlation with its construct. It should be equal to greater than 0.70, which indicates a strong relationship between the item and its construct. The above table displays the factor loading of the items present in the research instrument. The value of the items of information sharing displays that there is a strong association between them. The values of the outer loading of trust are also above 0.7, indicating a strong correlation between items and their construct. Table 2 depicts the reliability of the instruments present in this study. There are three constructs in which information sharing is an independent variable with six items. The value of Cronbach's alpha and Composite Reliability is higher than 0.7. All three constructs have a more significant than 0.7 value of Cronbach's alpha and Composite Reliability which shows that the instrument used in this research is reliable and valid. The value of AVE for all variables is more significant than 0.05, which shows that convergent validity exists.

Table 2: Reliability and validity of the constructs

Construct	Items	Factor Loading	Cronbach's Alpha	Composite Reliability	AVE	No. Of Items
Information Sharing	IS1	0.746	0.844	0.849	0.561	6
	IS2	0.736				
	IS3	0.710				
	IS4	0.799				
	IS5	0.773				
	IS6	0.752				
SC Performance	SCP1	0.839	0.870	0.871	0.657	5
	SCP2	0.804				
	SCP3	0.823				
	SCP4	0.802				
	SCP5	0.785				
Trust	TR1	0.829	0.827	0.830	0.659	4
	TR2	0.855				
	TR3	0.816				
	TR4	0.743				

4.2.2. R^2

R^2 is the coefficient of determination used in the linear regression model to estimate the goodness of fit measure. R square explains the variation in the dependent variable explained by the independent variable. The value of r square should be more significant or close to 1, which indicates that the overall model is fit to explain the dependent variable. In this study, the value of R square is 0.529, which means that 52.9 % of the variation in SCP is explained by information sharing with suppliers.

4.3 Hypotheses testing

In SEM, all the hypotheses were tested based on beta values, p-values, t-values and the direction of the hypothesis (Hair et al., 2019). In addition to the path coefficient analysis, Hair et al. (2017) suggested that the predictive factor of SmartPLS is one of the significant reasons for which the software is used and suggested the bootstrapping of the indirect effect to run the mediation test.

Table 3: Hypotheses testing

Relationship	Path Coefficient	Standard Deviation	T Statistics	P Values
Information Sharing -> SC Performance	0.248	0.129	1.917	0.055
Information Sharing -> Trust	0.737	0.050	14.827	0.000
Trust -> SC Performance	0.531	0.130	4.089	0.000

Information Sharing -> Trust -> SC Performance	0.039	0.095	4.107	0.000

The tables 3 shows that at a 5% significance level, the data provide enough evidence to conclude that information sharing with the supplier has a positive relationship with SCP. The value of p is more significant than 0.05, and the value of t statistics is less than 2, indicating that information sharing with suppliers is not a significant estimate of supply chain performance. Thus, the null hypothesis is accepted. Table 3 shows that at a 5% significance level, the data provide sufficient evidence to conclude that information sharing with suppliers has a positive relationship with trust. The value of p is less than 0.05, and the value of t statistics is more significant than two, which indicates that IS with supplier significantly explains trust. Thus, the null hypothesis is rejected. Table 3 shows that at a 5% significance level, the data provide sufficient evidence to conclude that trust with SC Performance has a positive relationship with trust. The value of p is less than 0.05, and the value of t statistics is more significant than two, indicating that IS with SC Performance explains trust. Thus, the null hypothesis is rejected. Table 3 indicates the indirect effect of information sharing on SCP mediated through trust. At a 5% significance level, data does provide ample evidence to conclude that trust mediates between information sharing and SCP. The value of the t statistic is also greater than 2, which means that the null hypothesis is being rejected.

5. Conclusion

The research aims to investigate the impact of information sharing with suppliers on supply chain performance with the mediating effect of trust. The study conforms to the fact that this study does not support information sharing with its supplier, where competition is not solely based on company to company. However, they are competing with the whole supply chain network. Supply chain performance significantly impacts the company's success and brings competitive differentiation. In the operating environment of Pakistan, where the supply chain is still developing in comparison to other countries of the world, there is a strong need to focus on developing collaborative ties among supply chain partners.

On the other hand, trust is a critical factor when dealing with the exchange of information. Organizations might not allow themselves to share the information with their suppliers because of the fear of losing the competitive edge in the market. But the study concludes that trust has a positive influence on information sharing because trust enhances the intensity of willingness to share information with supply partners. Although trust impacts information sharing, it does impact and mediates the supply chain performance. The pharmaceutical companies of Pakistan located in Karachi, as the research respondents, concluded that trust is sufficient to mediate between information sharing and supply chain performance. Sometimes companies need to step out from their known partners to gain more penetration and exposure, which will help grow their supply chain network.

5.1. Discussion

The result of the research showed that information sharing with suppliers reasonably explained a significant impact on supply chain performance. Trust is also essential when SC partners are willing to share information with suppliers. However, regarding supply chain performance, trust does not impact or mediate between information sharing with suppliers and supply chain performance.

H1. Information sharing has a significant influence on SCM.

Information sharing with a supplier does not significantly impact supply chain performance. The finding of this study is not as per previous studies as IS impacts the cost, delivery, quality and flexibility of the supply chain performance as mentioned in the expected outcomes of the research. Some previous researches also have consistent findings that the benefits of sharing information with a supplier can impact cost reduction, reduce excess inventory and minimize customer complaints, which will affect the overall business and supply chain performance (Zhao, 2002; Lee et al., 2000). Collaborating and integrating with a supplier now becomes necessary as companies need to align with

their partners to bring a competitive edge from their sides (Rashed et al., 2010). Companies trying to be on the top of the competition now focus on customers and their changing preferences, which require a customer-centric approach and willingness to serve what customers actually want within time (Nyaga et al., 2010). This customer orientation can be fulfilled with the desired customer service level, achievable through integrating with suppliers. Suggest with his survey that information sharing not only improves the performance of the supply chain but also it impacts high-profit margins with close bonds between companies. Lee and Wang (2000) stated that sharing information is the only way to gain supply chain efficiency. Pharmaceutical companies of Pakistan could not deny that the exchange of information is an essential part of improving the supply chain performance, as suppliers are the key partners of any manufacturing sector, and so is pharma.

H2. Information sharing has a significant impact on trust.

The influence is positive and significant of information sharing on suppliers and trust. The result does not differ from the existing empirical evidence. Trust is now a need in the competitive world, which gives an integrated perspective of inter-organizational relationships (Manu et al., 2015). Trust increases the authenticity of information that partners are willing to exchange. Trust in different forms, like honesty, integrity and faithfulness, ensure the relationship's stability, which impacts the intensity of the information being shared (Flynn et al., 2010). The level of trust can open ways or make relations boundless, easing the flow of information and thus impacting resource utilization. Information sharing requires inter-organizational relationships, which will be possible if companies make transparent policies and procedures, operations, requirements and fairness in dealing. This will only be achievable if there is trust between the partners (Zhao et at., 2008). The respondents' response projects that Pakistan's pharmaceutical industry believes that trust is an essential factor when dealing with partners in terms of sharing information.

H3. Trust has a significant impact on supply chain performance.

Trust does have a significant positive impact on supply chain performance. Trust is identified to be a significant predictor of supply chain performance. This result establishes a positive effect that may be mediated and directly impacts supply chain performance. This is perhaps because although SC partners in the pharmaceutical industry of Pakistan consider trust to be very significant, they do consider it a sufficient condition to impact SCP. Previous research concludes that business development and growth would be stagnant if companies will not go beyond their comfort of trusted and known business partners (Rashid et al., 2022). Business performance of companies with rich resources of the network have better exposure and bring innovation and cost efficiency. Overreliance on trusted partners can only contribute to the lock-in effect, eventually obstructing business development at the macro level.

H4: Trust mediates the relationship between information sharing and SCP.

As the research analysis suggests that there is a significant relationship between trust and supply chain performance, trust directly affects the supply chain performance, which in turn enhances the indirect effect of mediation between information sharing and supply chain performance. Information sharing plays a crucial role in improving the results of SC, but trust is ample to mediate between them. Trust provides interdependence to one another and does give control over each other. Trust creates dependency and limits partners' actions to act of their own will due to the over-reliance on a trusted and known partner (Rousseau et al., 1998).

5.2. Implications

The Implications could be helpful if they were fully implemented and applied to all Pakistan manufacturing sectors. However, the study is based on the pharmaceutical companies of Pakistan as the research population, so the pharma industry would be more considerate in this regard.

5.2.1. Practical implications

Organizations need to invest in upgraded information technologies to respond to the rapid changes in the market. Investing time and money in new technology will reduce the inefficiency caused by incompatible software and legacy systems and eliminate barriers to collaboration between partners. The collaborative relationship with the supplier helps respond quickly to the uncertainty caused by the supplier's future plans and mitigate the risk of not delivering to the customer promptly. Trusting supply chain partners helps form a collaborative relationship, which promotes long-term cooperation and fairness in dealing and increases the level of comfort. The transparency of information will no longer be beneficial if it implies a single entity only, as sharing of information creates connectivity, a two-way process.

5.2.2. Theoretical implications

The top management must focus on creating an integration between partners and information transparency. Knowledge is the key to supply chain success, which helps to make better decisions, so the quality of the information sharing should be assessed from time to time to make quality decisions. Companies need to be more focused on the supply chain performance and try to find ways to help their network improve rather than only centring their attention on the profits. Trust will improve supply chain performance as sharing information will become more accessible and more reliable when it comes to exchanging with known partners.

5.3. Limitations

This research possesses a few limitations which require attention while analyzing the data for results. Although efforts have been undertaken to minimize many of these, some are inevitable. Firstly, in the context of the year 2020, covid'19 pandemic hit the nation badly, affecting economic growth and reducing social mobility, which hinders data collection by visiting the potential respondents to surge response rate. This research's cross-sectional data was collected in a particular period, although constructs like information sharing and SCP are dynamic and change over time. Large and medium-sized companies are considered in this research for the collection of data because small size firms have limited knowledge about SCM as supply chain and its concepts are still an emerging field among them.

5.4. Recommendations

If the study gets an opportunity to address it again, then a number of changes could be made. Firstly, the researcher will overcome the limitations of the present study that what aspects were limited by the previous researcher, which will be catered to in future research. Concerning the limitations of this research, future research will be on a more extended period. Future research can cater to more than one industry in the manufacturing sector of Pakistan. As manufacturing sectors involve different industries apart from pharma, future research on different industries would be a valuable study for other industries and may find trust a useful predictor for supply chain performance. The geographical limitation will also minimize by crossing the region to collect data. Future research will determine the supply chain performance by adding more variables with information sharing and trust, so more variables remain to be explored. Convenience sampling is used to collect data, so it may not denote all members of Pakistan's pharmaceutical industry's supply chain comprehensively. Small-size firms will then be included in the respondents by framing them in surveys or interviews to get valuable insights from their managers.

References

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.

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

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

Badia, L. (2021). Impact of Transmission Cost on Age of Information at Nash Equilibrium in Slotted ALOHA. *IEEE Networking Letters, 4*(1), 30-33. https://doi.org/10.1109/LNET.2021.3133220

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

Bargshady, G., Zahraee, S. M., Ahmadi, M., & Parto, A. (2016). The effect of information technology on the agility of the supply chain in the Iranian power plant industry. *Journal of Manufacturing Technology Management, 27*(3), 427-442. https://doi.org/10.1108/JMTM-11-2015-0093

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

Beccerra, M., & Gupta, A. K. (1999). Trust within the organization: integrating the trust literature with agency theory and transaction costs economics. *Public Administration Quarterly, 23*(2), 177-203.

Blinder, A. S. (1986). Can the Production Smoothing Model of Inventory Behavior be Saved? *The Quarterly Journal of Economics, 101*(3), 431-453. https://doi.org/10.2307/1885691

Bullinger, H.-J., Kühner, M., & Hoof, A. V. (2002). Analyzing supply chain performance using a balanced measurement method. *International Journal of Production Research, 40*(15), 3533- 3543. https://doi.org/10.1080/00207540210161669

Cachon, G. P., & Fisher, M. (2000). Supply Chain Inventory Management and the Value of Shared Information. *Management Science, 46*(8), 1032-1048. https://doi.org/10.1287/mnsc.46.8.1032.12029

Chen, F., Drezner, Z., Ryan, J. K., & Simchi-Levi, D. (2000). Quantifying the Bullwhip Effect in a Simple Supply Chain: The Impact of Forecasting, Lead Times, and Information. *Management Science, 46*(3), 436-443. https://doi.org/10.1287/mnsc.46.3.436.12069

Cheng, J., Yeh, C., & Tu, C. (2008). Trust and knowledge sharing in green supply chains. *Supply Chain Management: An International Journal, 13*(4), 283-295. https://doi.org/10.1108/13598540810882170

Conner, K. R. (1991). A Historical Comparison of Resource-Based Theory and Five Schools of Thought Within Industrial Organization Economics: Do We Have a New Theory of the Firm? *Journal of Management, 17*(1), 121-154. https://doi.org/10.1177/014920639101700109

Costa, A. C., & Bijlsma-Frankema, K. M. (2007). Trust and control interrelatedness: New perspectives on the trust-control nexus in organizational relations. *Group and Organization Management, 32*(4), 392-406. https://doi.org/10.1177/1059601106293871

Costantino, F., Di Gravio, G., Shaban, A., & Tronci, M. (2014). The impact of information sharing and inventory control coordination on supply chain performances. *Computers & Industrial Engineering, 76*, 292-306. https://doi.org/10.1016/j.cie.2014.08.006

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.

Das, T. K., & Teng, B.-S. (2001). Trust, Control, and Risk in Strategic Alliances: An Integrated Framework. *Organization Studies, 22*(2), 251-283. https://doi.org/10.1177/0170840601222004

Ding, H., Guo, B., & Liu, Z. (2011). Information sharing and profit allotment based on supply chain cooperation. *International Journal of Production Economics, 133*(1), 70-79. https://doi.org/10.1016/j.ijpe.2010.06.015

Du, T. C., Lai, V. S., Cheung, W., & Cui, X. (2012). Willingness to share information in a supply chain: A partnership-data-process perspective. *Information & Management, 49*(2), 89-98. https://doi.org/10.1016/j.im.2011.10.003

Eckerd, S., Handley, S., & Lumineau, F. (2022). Trust violations in buyer-supplier relationships: Spillovers and the contingent role of governance structures. *Journal of Supply Chain Management, 58*(3), 47-70. https://doi.org/10.1111/jscm.12270

Fawcett, S. E., Osterhaus, P., Magnan, G. M., Brau, J. C., & McCarter, M. W. (2007). Information sharing and supply chain performance: The role of connectivity and willingness. *Supply Chain Management: An International Journal, 12*(5), 358-368. https://doi.org/10.1108/13598540710776935

Fiala, P. (2005). Information sharing in supply chains. *Omega, 33*(5), 419-423. https://doi.org/10.1016/j.omega.2004.07.006

Flynn, B. B., Huo, B., & Zhao, X. (2010). The impact of supply chain integration on performance: A contingency and configuration approach. *Journal of Operations Management, 28(*1), 58-71. https://doi.org/10.1016/j.jom.2009.06.001

Forslund, H., & Jonsson, P. (2007). The impact of forecast information quality on supply chain performance. International *Journal of Operations & Production Management, 27*(1), 90-107. https://doi.org/10.1108/01443570710714556

Ganesh, M., Raghunathan, S., & Rajendran, C. (2014). The value of information sharing in a multiproduct, multi-level supply chain: Impact of product substitution, demand correlation, and partial information sharing. *Decision Support Systems, 58*, 79-94. https://doi.org/10.1016/j.dss.2013.01.012

Gao, T., Sirgy, M. J., & Bird, M. M. (2005). Reducing buyer decision-making uncertainty in organizational purchasing: Can supplier trust, commitment, and dependence help? *Journal of Business Research, 58*(4), 397-405. https://doi.org/10.1016/S0148-2963(03)00137-1

Garvin, D. (1987). Competing on the eight dimensions of quality. Harv. Bus. Rev., 101-109.

Giunipero, L. C., & Brewer, D. J. (1993). Performance Based Evaluation Systems Under Total Quality Management. *International Journal of Purchasing and Materials Management, 29*(4), 35-41. https://doi.org/10.1111/j.1745-493X.1993.tb00259.x

Gounaris, S. P. (2005). Trust and commitment influences on customer retention: Insights from business-to-business services. *Journal of Business Research, 58*(2), 126-140. https://doi.org/10.1016/S0148-2963(03)00122-X

Graham, G., & Hardaker, G. (2000). Supply chain management across the Internet. *International Journal of Physical Distribution & Logistics Management, 30*(3/4), 286-295. https://doi.org/10.1108/09600030010326055

Grant, R. M. (1991). The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation. *California Management Review, 33*(3), 114-135. https://doi.org/10.2307/41166664

Green, K. W., Inman, R. A., Brown, G., & Hillman, W. T. (2005). Market orientation: Relation to structure and performance. *Journal of Business & Industrial Marketing, 20*(6), 276-284. https://doi.org/10.1108/08858620510618110

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Thiele, K. O. (2017). Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modeling methods. *Journal of the Academy of Marketing Science, 45*(5), 616-632. https://doi.org/10.1007/s11747-017-0517-x

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 2-24. https://doi.org/10.1108/EBR-11-2018-0203

Hall, D. C., & Saygin, C. (2012). Impact of information sharing on supply chain performance. *The International Journal of Advanced Manufacturing Technology, 58*(1), 397-409. https://doi.org/10.1007/s00170-011-3389-0

Handfield, R. B., & Bechtel, C. (2002). The role of trust and relationship structure in improving supply chain responsiveness. *Industrial Marketing Management, 31*(4), 367-382. https://doi.org/10.1016/S0019-8501(01)00169-9

Handfield, R. B., & Nichols Jr, E. L. (2004). Key issues in global supply base management. *Industrial Marketing Management, 33*(1), 29-35. https://doi.org/10.1016/j.indmarman.2003.08.007

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

Hart, P., & Saunders, C. (1997). Power and Trust: Critical Factors in the Adoption and Use of Electronic Data Interchange. *Organization Science, 8*(1), 23-42. https://doi.org/10.1287/orsc.8.1.23

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). 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. (2021a). 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., & Zaliha, T. N. (2020b). 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. (2021b). 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

Hausman, W. H. (2004). Supply Chain Performance Metrics. In *T. P. Harrison, H. L. Lee, & J. J. Neale (Eds.), The Practice of Supply Chain Management: Where Theory and Application Converge* (pp. 61-73). https://doi.org/10.1007/0-387-27275-5_4

Holmberg, S. (2000). A systems perspective on supply chain measurements. *International Journal of Physical Distribution & Logistics Management, 30*(10), 847-868. https://doi.org/10.1108/09600030010351246

Huang, S. H., Uppal, M., & Shi, J. (2002). A product-driven approach to manufacturing supply chain selection. *Supply Chain Management: An International Journal, 7*(4), 189-199. https://doi.org/10.1108/13598540210438935

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

Iyer, K. N. S., Germain, R., & Claycomb, C. (2009). B2B e-commerce supply chain integration and performance: A contingency fit perspective on the role of environment. *Information & Management, 46*(6), 313-322. https://doi.org/10.1016/j.im.2009.06.002

Kelle, P., & Akbulut, A. (2005). The role of ERP tools in supply chain information sharing, cooperation, and cost optimization. *International Journal of Production Economics, 93-94*, 41-52. https://doi.org/10.1016/j.ijpe.2004.06.004

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., Benham, A., Rashid, A., Rasheed, R., & Huma, Z. (2022c). 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. (2022b). The Effect of Demographic

Characteristics on Job Performance: An Empirical Study from Pakistan. *Journal of Asian Finance, Economics and Business, 9*(2), 283-294.

Khan, S., Rashid, A., Rasheed, R., & Amirah, N. A. (2022a). Designing a knowledge-based system (KBS) to study consumer purchase intention: the impact of digital influencers in Pakistan. *Kybernetes, 51*(1). https://doi.org/10.1108/K-06-2021-0497

Klein, R., Rai, A., & Straub, D. W. (2007). Competitive and cooperative positioning in supply chain logistics relationships. *Decision Sciences, 38*(4), 611-646. https://doi.org/10.1111/j.1540-5915.2007.00172.x

Kwon, I.-W. G., & Suh, T. (2005). Trust, commitment and relationships in supply chain management: A path analysis. *Supply Chain Management: An International Journal, 10*(1), 26-33. https://doi.org/10.1108/13598540510578351

Lascelles, D. M., & Dale, B. G. (1989). The buyer-supplier relationship in total quality management. *Journal of Purchasing and Materials Management, 25*(2), 10-19. https://doi.org/10.1111/j.1745-493X.1989.tb00477.x

Lee, A. S., & Liebenau, J. (1997). Information Systems and Qualitative Research. In Allen S. Lee, J. Liebenau, & J. I. DeGross (Eds.), Information Systems and Qualitative Research: Proceedings of the IFIP TC8 WG 8.2 *International Conference on Information Systems and Qualitative Research, 31st May-3rd June 1997, Philadelphia, Pennsylvania, USA (pp. 1-8)*. https://doi.org/10.1007/978-0-387-35309-8

Lee, H. L., & Billington, C. (1993). Material Management in Decentralized Supply Chains. *Operations Research, 41*(5), 835-847. https://doi.org/10.1287/opre.41.5.835

Lee, H. L., So, K. C., & Tang, C. S. (2000). The Value of Information Sharing in a Two-Level Supply Chain. *Management Science, 46*(5), 626-643. https://doi.org/10.1287/mnsc.46.5.626.12047

Levary, R. R. (2000). Better supply chains through information technology. *Industrial Management, 42*(3), 24-24.

Li, G., Lin, Y., Wang, S., & Yan, H. (2006). Enhancing agility by timely sharing of supply information. *Supply Chain Management: An International Journal, 11*(5), 425-435. https://doi.org/10.1108/13598540610682444

Li, S., & Lin, B. (2006). Accessing information sharing and information quality in supply chain management. *Decision Support Systems, 42*(3), 1641-1656. https://doi.org/10.1016/j.dss.2006.02.011

Li, S., Ragu-Nathan, B., Ragu-Nathan, T. S., & Rao, S. S. (2006). The impact of supply chain management practices on competitive advantage and organizational performance. *Omega, 34*(2), 107-124. https://doi.org/10.1016/j.omega.2004.08.002

Lummus, R. R., & Vokurka, R. J. (1999). Managing the demand chain through managing the information flow: capturing" moments of information". *Production and Inventory Management Journal, 40*(1), 16.

Lyons, A., Coronado, A., & Michaelides, Z. (2006). The relationship between proximate supply and build-to-order capability. *Industrial Management & Data Systems, 106*(8), 1095-1111. https://doi.org/10.1108/02635570610710773

Madenas, N., Tiwari, A., Turner, C., & Peachey, S. (2015). An analysis of supply chain issues relating to information flow during the automotive product development. *Journal of Manufacturing Technology Management, 26*(8), 1158-1176. https://doi.org/10.1108/JMTM-02-2014-0008

Malhotra, A., Gosain, S., & El Sawy, O. A. (2007). Leveraging standard electronic business interfaces to enable adaptive supply chain partnerships. *Information Systems Research, 18*(3), 260-279. https://doi.org/10.1287/isre.1070.0132

Manu, E., Ankrah, N., Chinyio, E., & Proverbs, D. (2015). Trust influencing factors in main contractor and subcontractor relationships during projects. *International Journal of Project Management, 33*(7), 1495-1508. https://doi.org/10.1016/j.ijproman.2015.06.006

Monczka, R. M., Petersen, K. J., Handfield, R. B., & Ragatz, G. L. (1998). Success Factors in Strategic Supplier Alliances: The Buying Company Perspective*. *Decision Sciences, 29*(3), 553-577. https://doi.org/10.1111/j.1540-5915.1998.tb01354.x

Morgan, R. M., & Hunt, S. D. (1994). The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing, 58*(3), 20-38. https://doi.org/10.1177/002224299405800302

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

Neely, A., Richards, H., Mills, J., Platts, K., & Bourne, M. (1997). Designing performance measures: A structured approach. *International Journal of Operations & Production Management, 17*(11), 1131-1152. https://doi.org/10.1108/01443579710177888

Nyaga, G. N., Whipple, J. M., & Lynch, D. F. (2010). Examining supply chain relationships: Do buyer and supplier perspectives on collaborative relationships differ? *Journal of Operations Management, 28*(2), 101-114. https://doi.org/10.1016/j.jom.2009.07.005

Paulraj, A., Lado, A. A., & Chen, I. J. (2008). Inter-organizational communication as a relational competency: Antecedents and performance outcomes in collaborative buyer-supplier relationships. *Journal of Operations Management, 26*(1), 45-64. https://doi.org/10.1016/j.jom.2007.04.001

Pyke, D. F., & Cohen, M. A. (1994). Multiproduct integrated production-Distribution systems. *European Journal of Operational Research, 74*(1), 18-49. https://doi.org/10.1016/0377-2217(94)90201-1

Ramdas, K., & Spekman, R. E. (2000). chain or shackles: Understanding what drives supply-chain performance. *Interfaces, 30*(4), 3-21. https://doi.org/10.1287/inte.30.4.3.11644

Rashed, C. A. A., Azeem, A., & Halim, Z. (2010a). Effect of Information and Knowledge Sharing on Supply Chain Performance: A Survey Based Approach. *Journal of Operations and Supply Chain Management, 3*(2), 61. https://doi.org/10.12660/joscmv3n2p61-77

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. *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., Ali, S. B., Rasheed, R., Amirah, N. A. & Ngah, A. H. (2022). A paradigm of blockchain and supply chain performance: a mediated model using structural equation modeling. *Kybernetes, Vol. ahead-of-print No. ahead-of-print*. https://doi.org/10.1108/K-04-2022-0543

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.

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.

Ray, G., Muhanna, W. A., & Barney, J. B. (2005). Information Technology and the Performance of the Customer Service Process: A Resource-Based Analysis. *MIS Quarterly, 29*(4), 625-652. https://doi.org/10.2307/25148703

Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not So Different After All: A cross-discipline View Of Trust. *Academy of Management Review, 23*(3), 393-404. https://doi.org/10.5465/amr.1998.926617

Saban, K. A., & Luchs, R. (2011). The Benefits of Governing with a Trust-Centric Strategy. *Journal of*

Leadership, Accountability, and Ethics, 8(3), 43-55.

Sahay, B. S. (2003). Understanding trust in supply chain relationships. *Industrial Management & Data Systems, 103*(8), 553-563. https://doi.org/10.1108/02635570310497602

Saikouk, T., Fattam, N., Angappa, G., & Hamdi, A. (2021). The interplay between interpersonal and inter-organizational relationships in coordinating supply chain activities. *The International Journal of Logistics Management, 32*(3), 898-917. https://doi.org/10.1108/IJLM-11-2020-0443

Sarkis, J., Meade, L. M., & Talluri, S. (2004). Logistics and the natural environment. *Supply Chain Management: An International Journal, 9*(4), 303-312. https://doi.org/10.1108/13598540410550055

Sezen, B. (2008). Relative effects of design, integration and information sharing on supply chain performance. *Supply Chain Management: An International Journal, 13*(3), 233-240. https://doi.org/10.1108/13598540810871271

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

Simatupang, T. M., & Sridharan, R. (2001, November). A characterization of information sharing in supply chains. In *ORSNZ Conference University of Canterbury, New Zealand (pp. 16-25).*

Simatupang, T. M., & Sridharan, R. (2002). The Collaborative Supply Chain. *The International Journal of Logistics Management, 13*(1), 15-30. https://doi.org/10.1108/09574090210806333

Stevenson, M., & Spring, M. (2007). Flexibility from a supply chain perspective: Definition and review. *International Journal of Operations & Production Management, 27*(7), 685-713.

Stock, J. R., & Boyer, S. L. (2009). Developing a consensus definition of supply chain management: A qualitative study. *International Journal of Physical Distribution & Logistics Management, 39*(8), 690-711. https://doi.org/10.1108/01443570710756956

Sun, S., & Yen, J. (2005). Information Supply Chain: A Unified Framework for Information-Sharing. In *P. Kantor, G. Muresan, F. Roberts, D. D. Zeng, F.-Y. Wang, H. Chen, & R. C. Merkle (Eds.), Intelligence and Security Informatics* (pp. 422-428). https://doi.org/10.1007/11427995_38

Swafford, P. M., Ghosh, S., & Murthy, N. (2008). Achieving supply chain agility through IT integration and flexibility. *International Journal of Production Economics, 116*(2), 288-297. https://doi.org/10.1016/j.ijpe.2008.09.002

Taylor, T. A., & Plambeck, E. L. (2007). Supply chain relationships and contracts: The impact of repeated interaction on capacity investment and procurement. *Management Science, 53*(10), 1577-1593. https://doi.org/10.1287/mnsc.1070.0708

Thompson, K. (2007). Reflections on trusting trust. In *ACM Turing award lectures* (p. 1983). https://doi.org/10.1145/102616.102620

Traat, I., Bondesson, L., & Meister, K. (2004). Sampling design and sample selection through distribution theory. *Journal of Statistical Planning and Inference, 123*(2), 395-413. https://doi.org/10.1016/S0378-3758(03)00150-2

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

Varadarajan, P. R., & Cunningham, M. H. (1995). Strategic alliances: A synthesis of conceptual foundations. *Journal of the Academy of Marketing Science, 23*(4), 282. https://doi.org/10.1177/009207039502300408

Vonderembse, M. A., Uppal, M., Huang, S. H., & Dismukes, J. P. (2006). Designing supply chains: Towards theory development. *International Journal of Production Economics, 100*(2), 223-238. https://doi.org/10.1016/j.ijpe.2004.11.014

Wang, G., Huang, S. H., & Dismukes, J. P. (2004). Product-driven supply chain selection using integrated multi-criteria decision-making methodology. *International Journal of Production Economics, 91*(1), 1-15. https://doi.org/10.1016/S0925-5273(03)00221-4

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal, 5*(2), 171- 180. https://doi.org/10.1002/smj.4250050207

Williamson, O. E. (1981). The Economics of Organization: The Transaction Cost Approach. *American Journal of Sociology, 87*(3), 548-577. https://doi.org/10.1086/227496

Wilson, I. (1995). Distribution control systems within the supply chain. *Logistics Information Management, 8*(3), 40-42. https://doi.org/10.1108/09576059510091689

Wilson, R. K., & Eckel, C. C. (2006). Judging a Book by its Cover: Beauty and Expectations in the Trust Game. *Political Research Quarterly, 59*(2), 189-202. https://doi.org/10.1177/106591290605900202

Zaheer, A., McEvily, B., & Perrone, V. (1998). Does trust matter? Exploring the effects of inter-organizational and interpersonal trust on performance. *Organization Science, 9*(2), 141-159. https://doi.org/10.1287/orsc.9.2.141

Zhang, J., & Chen, J. (2013). Coordination of information sharing in a supply chain. *International Journal of Production Economics, 143*(1), 178-187. https://doi.org/10.1016/j.ijpe.2013.01.005

Zhang, M., & Huo, B. (2013). The impact of dependence and trust on supply chain integration. International *Journal of Physical Distribution & Logistics Management, 43*(7), 544-563. https://doi.org/10.1108/IJPDLM-10-2011-0171

Zhang, Q., Vonderembse, M. A., & Lim, J.-S. (2006). Spanning flexibility: Supply chain information dissemination drives strategy development and customer satisfaction. *Supply Chain Management: An International Journal, 11*(5), 390-399. https://doi.org/10.1108/13598540610682408

Zhang, S., Ding, Y., Liu, B., & Chang, C. (2017). Supply and demand of some critical metals and present status of their recycling in WEEE. *Waste Management, 65*, 113-127. https://doi.org/10.1016/j.wasman.2017.04.003

Zhao, X., Huo, B., Flynn, B. B., & Yeung, J. H. Y. (2008). The impact of power and relationship commitment on the integration between manufacturers and customers in a supply chain. *Journal of Operations Management, 26*(3), 368-388. https://doi.org/10.1016/j.jom.2007.08.002

Zhao, X., Xie, J., & Leung, J. (2002). The impact of forecasting model selection on the value of information sharing in a supply chain. *European Journal of Operational Research, 142*(2), 321- 344. https://doi.org/10.1016/S0377-2217(01)00300-9

Appendix: Questionnaire

Questionnaire for "Impact of information sharing with supplier on supply chain performance: the mediating effect of trust"

Part 1 – Demographic Profile

e) Gender	
Male	Female
f) Age	
20-30 Years	31-40 Years
41-50 Years	51-60 Years
g) Level of Education	
Matric	Intermediate
Graduate	Postgraduate
h) Experience	
0-5 Years	6-10 Years
11-15 years	16 Years and above

Part 2 –Please rate strongly agrees or strongly disagrees on the basis of options mentioned below of the dependent and independent variables related to Adoption of blockchain in global supply chain management by placing a checkmark in the suitable box.

6) Strongly disagree
7) Disagree
8) Neutral
9) Agree
10) Strongly agree

Information Sharing
Our firm specify our schedules for delivery of products
Our firm share information of demand forecast with our supplier
Our supplier plays a vital role in designing and development of new product.
Our supplier share complete information
Our supplier share accurate information
Our supplier shares information timely
Trust
Our supplier is trustworthy
Our supplier is honest and fair in dealing
Our supplier keep confidentiality of information
Our supplier share significant level of information
Supply Chain Performance
Our firms on-time delivery performance has improved
Our firms order fulfillment rate has improved
Our company manufacturing lead time improved
Our firm's customer complaints has reduced
Our inventory costs are kept at a minimum level.

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A Conspectus of Strategies Towards Sustainable Floral Resources in the Context of Environmental and Socio-Economic Stability

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ABSTRACT

In the centrepiece of academic discourse, the concept or issue of sustainability leads by the nose. The continuous use of resources will shore up human life and sustenance. As such, sustainability is wrapped around social progress, economic balance, and environmental stewardship aligned with natural resources. Also, on the ground that, for instance, the sustainability of flora resources is an ultimate mechanism to conserve, protect and maintain biological resources. Within this purview and ambience, this paper examines distinct strategies and measures towards achieving sustainable floral resources. These strategies include incorporating the local community; participatory approach of the local community in conservation; authentication of aboriginal knowledge; establishment of a sustainable resource field, and; dissemination capacity building and training, all in the direction of achieving sustainable use of local flora resources. Based on the identified blueprints to attain sustainability, the paper further highlights the leeway of flora resources sustainability in that not only does food security, livelihoods and medicines of the aboriginal hinge on it. It portrays the degree and quality of the environment, but floral resources are an undaunted ample approach when it has to do with environmental compensation and socioeconomic development.

Keywords: *Flora resources, Strategies, Sustainability, Environment, Socio-economic, Stability*

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A Conspectus of Strategies Towards Sustainable Floral Resources in the Context of Environmental and Socio-Economic Stability

1. Introduction

Reaching the goal of a sustainable environment seems to be out of sight and not achievable considering the threat of floral resources exploitation in the nearest future alongside expanding human population and the increase in the rate of urbanization (Tokede & Ahmed, 2021; Rashid & Rasheed, 2022). Recently, there has been exponential demand, usage and exploitation of resources (Tokede & Ahmed, 2021). This may not be unconnected to the fact that there are changing consumption patterns in the international trade as plants (leaves, bark, roots, flowers, among others) and animals (live or parts including skin, meat, ivory, horns, bones, fiber, claws, and lot more) which are precious and high-priced are burgeoning demanded as food, medicinal, ornamental and so on. All this culminated in enlisting these resources in the threatened zone. The involvement in wildlife or biodiversity trade by most African, Asian and South American countries, whereby whole or components of species are traded off, also worsened the situation (Brashares et al., 2004; Rashid et al., 2022b; Victory et al., 2022). However, it is very germane to state that, even though these circumstances are warranted by changing consumption patterns, stakeholders need to drum to ears of stakeholders the essence of sustainable use of flora resources.

Therefore, the world in the post-COVID-19 era must exert effort and put in place a strategy towards getting an atmosphere that will not only be conducive to humans and other creatures. This can be achieved by striving to sustain resources in the domain, which will go along in tackling myriad environmental and socioeconomic challenges. Moreover, this forestry strategy will further mean managing the environment and actualizing its sustainability (Asif, 2022; Rasheed et al., 2022). The pertinence of sustainable use of flora resources as social-ecological systems capable of achieving environmental management, planning, and sustainability have become more visible in recent times and arduous to jettison. Thus safeguarding the floral resources, which, if sustained, will have an unprecedented good fortune to not only human existence as well as survival but also guarantee feasible environmental and socioeconomic stability (Rashid et al., 2022a; Victory et al., 2022). Many plant species, like Berberis, Ginseng, West Indian Mahogany, and Taxus, have witnessed a quantity downturn due to collectors' handiwork. Alongside the reduction and possible extinction of several animal species, both aquatic and wild animals such as whales, Tibetan antelope, elephants, cheetah, vicuna, tiger, and lemur Rhinos all as a result of the growing delicacy of their meat, poaching activities, unrestricted hunting for the pet trade of this species demand and poaching activities in these countries (Ayaz, 2022; Brashares et al., 2004; Hashmi & Mohd, 2020). For example, pointedly, the horns of Rhinos are hunted since they are invaluable, and curiously the black rhinos are sought-after therefore being classified as endangered species. Similarly, elephants are hunted illegally solely for their meat, bones and ivory.

2. Conceptual Issues: Sustainability and Sustainable Flora Resources

The concept ‘of sustainability’ became visible in the 80s. A term which denotes undeletable energy resources and eco-friendly potentiality aims to reinforce human life and sustenance. Consequently, sustainability encompassed social progress, economic balance, and environmental stewardship of natural resources. Further, sustainability is defined as “development which meets the needs of the present without compromising the ability of future generations to meet their own needs”. Sustainability is an agenda or blueprint which outlines that the present generation is meeting their own needs. They must in any way imperil or subvert the needs of the next generations. It connotes the need to use natural resources and social and economic resources judiciously. Furthermore, the issues of economic development and social equity have been a central focus of sustainability (Basit, 2022; Hashmi et al., 2020a).

Environment issues encapsulate joggling between physical, biotic and chemical factors that consider the effect on organisms or habitat or environment and which, in due time, have a hunch on their pattern, arrangement and survival (Islam, 2004). However, indices from global ecological trends show that humanity currently faces the risk of irreversible changes in the ecological community and what it takes to support, upkeep, maintain and sustain livelihood in all its ramifications. Keeping the environment and the world's economy from falling along with sustaining human life in the twenty-first century remains a conundrum. At this moment, human life is plunged into a state of imbalance and pollution not by anything but rather as a consequence of humanely-induced actions and reactions. However, it becomes imperative to exploit locally thought measures regarding knowledge and culture that will show the ropes to sustainability (Hashmi et al., 2020b). The motivations behind sustainability are often complex, personal and diverse. It is unrealistic to create a list of why so many individuals, groups and communities are working towards this goal. However, for most people, sustainability comes down to the kind of future we are leaving for the next generation. Many individuals and organizations who demonstrate this value in their policies, everyday activities and behaviors share sustainability as a value. Individuals have played a significant role in developing our current environmental and social circumstances. The people of today and future generations must create solutions and adapt (Hashmi et al., 2021a).

The environment is the complex of physical, chemical and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival (Islam, 2004). It encompasses natural resources like soil, flora, fauna, water, air and light that affect the living organism. Sadly, the biosphere is now giving us many signals that it is incredibly distressing; that it is struggling to cope with natural resource depletion, ozone depletion, acid rain, ecosystem loss, polluted air, land, river and ocean (Islam, 2004; Hashmi et al., 2021b). Surpassingly, sustainable flora resources are the ultimate mechanism to conserve, protect and maintain biological resources. The sustainable usability of flora resources has become the threshold of biodiversity components in agriculture, forestry, tourism, water management, fisheries and many other sectors. The significance of sustainable use of flora resources and biodiversity encompasses everything at the ecosystem level ranging from landscape management to connectivity to livelihoods and health of present-day and from here to eternity mankind. In 1975 Convention on International Trade on Endangered Species (CITES) put forward threatened and endangered species that need protection from extinction. The above instance summarizes the genuinely sustainable use of flora and fauna. The twelve principles of the convention stated therein the need for robust ecosystem management and its concomitant relation to humans in their various cultural environments. It not only stated integrated management of natural resources (water, land and bioresources). In this case, humans and their cultural diversity are recognized as part and parcels of ecosystems. No wonder Convention on Biological Diversity asserts that the definition of sustainable use of flora resources and the need to uphold such is one of its thrust mandates (Vliet, 2000).

3. Strategies and Measures Towards Achieving Sustainable Floral Resources

Hamilton (2005) asserted that the basic idea behind sustainable utilization is that a floral resource should be utilized while emphasizing environmental conservation. In this manner, Hamilton (2005) posited that sustainable utilization or usability of resources would be tantamount to the rejuvenation of the said resources to affirm availability and continuity for the upcoming generation. In the words of Wong et al., 2001, sustainable utilization of floral resources has a place for the maintenance and continuance of these species regardless of the saturated want of these resources worldwide to give room renewal. Having said that, the following are put forth as strategies, measures or practices to achieve sustainability of flora resources as noted above; the ultimate aim and goal is to conserve, protect and maintain the floral resources that are imminent to cultural, ecological and commercial extinction going by statistical projections. Meanwhile, several strategies have been put forward to explain the essence of strategies employed to achieve sustainability (Rasheed, 2022).

4. Incorporation of Local Community

One of the identified measures to ensure the sustainability of floral resources is incorporating the local community in the evaluation, preparation and value chain assessment of resources. This procedure will provide the means for the indigenous people to be acquitted with the available resources, within what plausible range to gather, the present circumstance, effect and impacts of destructive gathering. Moreover, it will be an eye opener and insightful for the locals in knowing the worth of floral resources gathered through the medium of the value chain process. It will further divulge various benefits accrued to stakeholders participating in the process and their roles and responsibilities in upholding resource conservation. In line with this measure, the native will be able to get an eyeful adverse effect of 'business-as-usual techniques, consequences of destructive gathering, and prevailing value chains. All these moves will prepare the ground for developing an alternate value chain template, executing actions, and a participatory management plan to actualize the sustainable gathering of floral resources (Rashid, 2016).

5. Local Community Participatory Approach in Conservation

The arrangement of this approach is the need to take along and enmesh people of different socio-economic caliber, inaugurate a local institution partnership and essential and impartial orientation, by this roles and responsibilities are assigned, their actual reliance as a human being on these resources for survival are enumerated and by extension the justification to conserve and sustain the use of floral resources. As a step further in order to accomplish sustainability of floral resources, substantive participation of people of different socio-economic caliber is needed in that it will make it possible for the indigenous to identify and select species in addition to the location to earmark for sustainable collection of resources (Rashid & Amirah, 2017). Simultaneously, adopting the paradigm and methodology on the heel of considering traditional know-how in outlining and achieving the desired result. Paradigm and strategy close to hand towards species selection in order for indigenous people to take responsibility in spare heading their sustainability are made up of:

(a) resource-based species providing higher livelihood opportunities;

(b) premium species;

(c) species with different parts harvested;

(d) wilderness species;

(e) regional species.

6. Authentication of Traditional Knowledge

Another prominent measure to achieve sustainable floral resources is the authentication of aboriginal knowledge. The knowledge of the floral resources of the aboriginal is considered as regards cultural and spiritual relevance, medicinal values and traditional uses, phenology of the species, building local and species profiles, harvesting patterns and processing, regeneration, propagation, distribution, animal interaction, climate and productivity (Alrazehi et al., 2021). These measures will result, among others, the foster relationship between the local community and the resources; it will induce documentation of local people's knowledge about gathering resources; a sense of belonging is accorded to the indigenous having not involving external forces in the process and; establishing a coherent between scientific erudition and traditional knowledge on the best practice to gather resources (Rashid et al., 2019).

7. Establishment of a Sustainable Resource Field

Nevertheless, establishing a sustainable floral resource field can be considered a measure to safeguard floral resources. In sustaining floral resources, a distinct site needed to be designated not only to practice holistic and comprehensive sustainable gathering practices but also, in the long run, to make

it possible to grasp an ecological understanding of species, their accumulation, gathering, marketing, as well as its value addition. It could suitably be said that this measure aims at allocating and establishing a designated location that will allow putting sustainable resource harvesting into practice. This will provide an incentive for the excellent gathering of resources and building teamwork approaches on the field using the compass of aboriginal know-how and academic knowledge (Rashid et al., 2020; Rasheed, 2022).

8. Dissemination Capacity Building and Training

This measure epitomizes the need to organize relevant training workshops for various stakeholder entities deemed critical in the process in order for them to have a better understanding of their roles and responsibilities. This unequivocally will build their confidence, achievement and overall performance to the extent of reconsidering the adaptive, sustainable management plan of action. Without mincing words, sharing information, methodology, and related issues concerning sustainable harvesting and gathering floral resources have a far-reaching effect in realizing the goal. For instance, achieving interpersonal communication with the aboriginal is very instrumental. It outlines the importance of training and building capacity, even though other stakeholder groups can also be reached with other communication mechanisms such as mass communication (Haque et al., 2021).

9. Significance of Sustainable Floral Resources

All over, the significance of floral resources are to be considered in point of fact that the food security, livelihoods, and medicines of the aboriginal hinge on it. Thus the promotion, protection and preservation of this resource are as good as preserving the sustenance of the local and indigenous populations. Conventionally, floral resources have been instrumental in making the world's biological diversity. They form their principal constituent and provide vital resources for the planet to be habitable for man and other creatures. It is worth stressing that floral resources are pertinent in supplying or providing humanity with food, fibre and therapeutic but correspondingly subsume socio-cultural and economic importance and potential. Not forgetting that these resources are instrumental in tackling myriads of climate change and environmental challenges. Floral resources of a habitat bring about intrinsic ecosystem stability and environmental balance as well as providing and maintaining an indispensable component for the survival of human and animal communities (Das et al., 2021; Paton et al., 2008; Williams, 2012; Rashid et al., 2021). Handful factors have been put forward to explain the significance of maintaining sustainable floral resources. A few of these are identified and discussed as follows:

10. Beacons' Quality of the Environment

Another benefit of sustainable floral resources is that they depict the environment's degree and quality. It is the best parameter to comprehend the status of the environment. Having floral resources and plant communities around in an environment clearly shows the degree of naturalness of such an area. They are pointers of the excellent state and habitable environment. This is because the floral taxon is a high priority in many instances to be considered in determining the amplitude of a habitat (Rossi et al., 2014). More than that, in carrying out an impact assessment study, these floral resources are best sought after in this respect. Unlike landfills, farmland, edges of the road etc., these are not considered in the context of environmental assessments; at worst, they are only conserved since they are devoid of floristic elements expected to be protected. It is thereupon unequivocally clear that the spotlight for the impact assessment will be the whole traditional agricultural landscape in preference of the natural one (Baloch & Rashid, 2022). It remains a perfect beacon to show the environment's type, state and quality as encompassing floral communities in its domain. According to Pott (2011), a prominent parameter of an environment's state of affairs is considering the plant communities in such a habitat. Such manifestation, no doubt, also harbingers and weights ecological determinants. In the words of Sabella (2015), floral resources are the driving elements and incentives in determining the realm of possibility and condition of the fauna of an area. It is instrumental as an expression of the condition of an ecosystem as a whole. As an illustration, in Italy, credence is given to flora and vegetation in various smaller

territories. For this, scholars underscore this feat as an index and a good omen for environmental impact assessment (Blasi et al., 2011; Blasi & Frondoni, 2011).

11. Environmental Compensations

Making environmental restitution heretofore has been hinged on the use of floral resources. Examples of such approaches and regulations have been adopted in the USA, Germany in the 1970s, and the European Union (EU). The use of floral resources is undaunted a good approach when it has to do with environmental compensation. It is seen as excessive for rebuilding and reconstructing a damaged environment (Persson, 2013; Agha et al., 2021). As earlier said, floral resources are a good yardstick for environmental impact assessments; if the assessment report indicates a fair loss of ecosystems or habitats, an excellent approach to restitute and restore the environment is embarking upon floral resources projects. Emphatically, such activities are a good path for environmental rejuvenation and restoration devoid of sterility (Morelli, 2011; Khan et al., 2022a).

12. Restoration of Socioeconomic Activities

The concept of restoration connotes a situation to recover the socioeconomic habitat resources from decline. In this aspect, the utilization of floral resources for environmental restoration is an avenue not far in mitigating and compensating for the impact of ecological loss. The construction process of the environment can be quickened by considering the vegetation series of floral resources. In the real sense, habitat infrastructure can easily be set in motion by the intervention of these resources. Recently, this particular concept was undertaken in some Europe and North American countries such as Italy, German, and the USA (Persson, 2013; Khan et al., 2022c; Khan et al., 2021). As asserted by Başnou (2009); Domènech et al. (2005); and La Mantia et al. (2012), the presence of these resources, in most cases, depicts the legacy of the past. Therefore, a good course of environmental restoration is the plantation and sustainability of the floral resources (Minissale, 2015; Khan et al., 2022b). Conclusively, this paper has tried to describe various strategies that can be harnessed to achieve sustainable floral resources that will sway good quality environment and restore socio-economic activities. While the paper believes that the significance of floral resources is to be considered in point of fact that the aboriginal food security, livelihoods, and medicines hinge on it. The paper, however, contends that strategies and approaches promoting the sustainability highlighted above must be implemented to achieve friendly resource conservation and environmental and socioeconomic sustainability. This, by extension, will support sustainable development.

References

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.

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.

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

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

Başnou, C. (2009). Cortaderia selloana (Schult. & Schult. f.) Asch. & Graebn., pampas grass (Poaceae, Magnoliophyta).–. *DAISIE: handbook of alien species in Europe.*, 346.

Blasi, C., & Frondoni, R. (2011). Modern perspectives for plant sociology: The case of ecological land classification and the ecoregions of Italy. *Plant Biosystems-An International Journal Dealing with all Aspects of Plant Biology*, *145*(sup1), 30-37. https://doi.org/10.1080/11263504.2011.602747

Blasi, C., Marignani, M., Copiz, R., Fipaldini, M., Bonacquisti, S., Del Vico, E., ... & Zavattero, L. (2011). Important plant areas in Italy: from data to mapping. *Biological Conservation*, *144*(1), 220-226.https://doi.org/10.1016/j.biocon.2010.08.019

Brashares, J. S., Arcese, P., Sam, M. K., Coppolillo, P. B., Sinclair, A. R., & Balmford, A. (2004). Bushmeat hunting, wildlife declines, and fish supply in West Africa. *Science*, *306*(5699), 1180-1183. https://doi.org/10.1126/science.1102425

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

Domènech, R., Vilà, M., Pino, J., & Gesti, J. (2005). Historical land-use legacy and Cortaderia selloana invasion in the Mediterranean region. *Global Change Biology*, *11*(7), 1054-1064. https://doi.org/10.1111/j.1365-2486.2005.00965.x

Hamilton, A. (2005, July). Resource assessment for sustainable harvesting of medicinal plants. In *a side-event at the International Botanical Congress on Source to Shelf: Sustainable Supply Chain Management of Medicinal and Aromatic Plants, Vienna* (pp. 21-22).

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). 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. (2021a). 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., & Zaliha, T. N. (2020b). 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. (2021b). 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

Islam, M. M. (2004). Towards a green earth: An Islamic perspective. *Asian Affairs*, *26*(4), 44-89.

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., Rasheed., R., Rashid, A., Abbas, Q., & Mahboob, F. (2022b). The Effect of Demographic Characteristics on Job Performance: An Empirical Study from Pakistan. *Journal of Asian Finance, Economics and Business*, *9*(2), 283-294.

Khan, S., Rashid, A., Rasheed, R., & Amirah, N. A. (2022a). Designing a knowledge-based system (KBS) to study consumer purchase intention: the impact of digital influencers in Pakistan. *Kybernetes*, *51*(1). https://doi.org/10.1108/K-06-2021-0497

Khan, S.K., Benhamed, A., Rashid, A., Rasheed, R., & Huma, Z. (2022c). 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/

La Mantia, T., Messana, G., Billeci, V., Dimarca, A., Del Signore, M., Leanza, M., ... & Pasta, S. (2012). Combining bioengineering and plant conservation on a Mediterranean islet. *iForest-Biogeosciences and Forestry*, *5*(6), 296.https://doi.org/10.3832/ifor0638-005

Minissale, P. (2015). The use of flora, vegetation and habitats in the studies of Environmental Impact Assessment. *Biodiversity Journal*, *6*(1), 171-174.

Morelli, J. (2011). Environmental sustainability: A definition for environmental professionals. *Journal of environmental sustainability*, *1*(1), 2. https://doi.org/10.14448/jes.01.0002

Paton, A. J., Brummitt, N., Govaerts, R., Harman, K., Hinchcliffe, S., Allkin, B., & Lughadha, E. N. (2008). Towards Target 1 of the Global Strategy for Plant Conservation: a working list of all known plant species—progress and prospects. *Taxon*, *57*(2), 602-611.

Persson, J. (2013). Perceptions of environmental compensation in different scientific fields. *International Journal of Environmental Studies*, *70*(4), 611-628. https://doi.org/10.1080/00207233.2013.835526

Pott, R. (2011). Phytosociology: A modern geobotanical method. *Plant Biosystems-An International Journal Dealing with all Aspects of Plant Biology*, *145*(sup1), 9-18. https://doi.org/10.1080/11263504.2011.602740

Rasheed, R., Rashid., A., Amirah, N. A., & Afthanorhan, A. (2022). Quantifying the Moderating Effect of Servant Leadership between Occupational Stress and Employee In-Role and Extra-Role Performance. *Quality - Access to Success, Vol. ahead-of-print No. ahead-of-print.*

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

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., Ali, S. B., Rasheed, R., Amirah, N. A. & Ngah, A. H. (2022a). A paradigm of blockchain and supply chain performance: a mediated model using structural equation modeling. *Kybernetes, Vol. ahead-of-print No. ahead-of-print*. https://doi.org/10.1108/K-04-2022-0543

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., & Afthanorhan, A. (2022b). Disruptive Factors and Customer Satisfaction at Chain Stores in Karachi, Pakistan. *Journal of Distribution Science, 20*(10), 93-103. https://doi.org/10.15722/jds.20.10.202210.93

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.

Rossi, G., Montagnani, C., Abeli, T., Gargano, D., Peruzzi, L., Fenu, G., ... & Orsenigo, S. (2014). Are Red Lists really useful for plant conservation? The New Red List of the Italian Flora in the perspective of national conservation policies. *Plant Biosystems-An International Journal Dealing with all Aspects of Plant Biology*, *148*(2), 187-190. https://doi.org/10.1080/11263504.2013.868375

Sabella, G., Lisi, O., & Viglianisi, F. M. (2015). The use of the entomofauna in the studies of the Environmen-tal Impact Assessment (EIA) and Assessment of Impact (AI). *Biodiversity Journal*, *6*(1), 175-184.

Tokede A. M. & Ahmed A. O. (2021). Urbanites' Awareness, Perception and Attitudes Towards Urban Forestry as a Panacea for Environmental Sustainability In Ogun State, Nigeria-A Survey Of The Covid-19 Era. In *3rd International Conference on Food, Agriculture and Veterinary 19 - 20 June2021/Izmir Conference Proceedings Book*

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

Vliet, N. V. (2000). *Livelihood alternatives for the unsustainable use of bushmeat*. Secretariat of the Convention on Biological Diversity.

Williams, S. J., Jones, J. P., Clubbe, C., Sharrock, S., & Gibbons, J. M. (2012). Why are some biodiversity policies implemented and others ignored? Lessons from the uptake of the Global Strategy for Plant Conservation by botanic gardens. *Biodiversity and Conservation*, *21*(1), 175-187. https://doi.org/10.1007/s10531-011-0174-1

Wong, J. L. G., Thornber, K., & Baker, N. (2001). *Resource assessment of non-wood forest products: experience and biometric principles* (Vol. 13). Food & Agriculture Org.