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***“Relationship between SCM Strategies and Firm's Performance
with the Mediating Role of Organizational Competence in
Manufacturing Sector of Pakistan”***



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Abstract

Purpose of the Study: This study was aimed to observe the impact of supply chain management strategies i.e. Warehouse Management System, Enterprise Resource Planning and Outsourcing, on Firm Performance with the mediating role of Organizational Competence in manufacturing sector of Pakistan.

Design/Methodology/Approach: This study is quantitative in nature, for which the data has been collected through a structured questionnaire of 28 items, which were mainly filled by the personnel from different firms of textile, pharmaceutical, steel and fertilizer sectors of Pakistan. About 500 questionnaires were sent through official websites, email and business communication-based platforms, out of which 307 responses were received with response rate of 61.4% without any missing or incomplete response. The collected data was then analyzed through SPSS (Statistical Package for Social Sciences) Software, using a number of statistical analysis i.e. reliability, correlation, regression, mediation analysis to test the study hypotheses.

Findings: Findings of the study revealed that all the three independent variables namely “Warehouse Management System, Enterprise Resource Planning and Outsourcing” (three Supply Chain Management Strategies) have a significant direct impact on the dependent variable which is “Firm Performance”. Study results also have revealed that mediating variable “Organizational Competence” also has a significant impact on Firm Performance. Furthermore, it was concluded that Organizational Competence significantly mediates the relationship among all three Supply Chain Management Strategies and Firm Performance among these manufacturing firms.

Originality: This study is the first study of its kind to investigate the relationship of supply chain management strategies i.e. Warehouse Management System, Enterprise Resource

Planning and Outsourcing, on Firm Performance with the mediating role of Organizational Competence in manufacturing sector of Pakistan, which was not examined earlier in Pakistani context.

Key Words: Warehouse Management System, Enterprise Resource Planning, Outsourcing, Firm Performance, Organizational Competence, Textile Sectors, Pharmaceutical Sectors, Steel Sectors, Fertilizer Sectors, Pakistan.

List of Abbreviations

CPS	Cyber-Physical Systems
ERP	Enterprise Resource Planning
FP	Firm Performance
HR	Human Resource
IT	Information Technology
LLCI	Lower Limit of the Confidence Interval
OC	Organizational Competence
OS	Outsourcing
RBV	Resource Based View
SCM	Supply Chain Management
SE	Standard Error
SPSS	Statistical Package for Social Sciences
ULCI	Upper Limit of the Confidence Interval
WMS	Warehouse Management Strategies

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Chapter 1

Introduction

1.1 Background

Nowadays manufacturing organizations are civilizing performance of firm throughout the further competent supply chain management (Hwihanus et al., 2022). These organizations are trying to become more innovative in inside process to make sure the continuous sustainability as well as competitiveness within global surroundings (Chen et al., 2021). However, supply chain uses all the activities and processes of the organizations, from the production to the consumption of goods and services that can affect the performance of the firm as a central factor (Hamidin & Rofaida, 2021). Since for the maximization of performance supply chain management strategies are improving relationships with firms to achieve the peak performance Dossou (2018). So the firm performance can be defines as “it is the display of the complete situation of company during a certain period of time, is an achievement or result that is influenced by utilization of company’s operational actions and its assets” (Hwihanus et al., 2022). Therefore, it is the ability to work as it is indicated by the work results.

The main intend of supply chain management is to improve the organizational competencies and performance by using SCM strategies (Zaridis et al., 2021). In other words, supply chain is a key of success and performance of the organizations by reinforcing the strategies formed in it Dossou (2018). Therefore the development of the national economy depends on the manufacturing organizations and supply chain is vital to support its sustainability (Hwihanus et al., 2022). However, the SMEs ratio is smaller than the larger firm in terms of production efficiency.

Moreover manufacturing organizations must be capable to put together competitiveness in their strategies and they need to create uniqueness as compared to the competitors and other companies within the industry (Z. J. H. Tarigan & Siagian, 2021). It is built by the manufacturing industry that requires an increase in the performance of the organizational operations (Doan, 2020). The modern era of interference has put pressure on the manufacturing organizations to build connection with the suppliers and customers in the visage of unsure ecological change (Raut et al., 2021). These kind of differences and uncertain changes usually resulted in flexibility performance rather than on the financial performance (Z. Tarigan et al., 2021). However, manufacturing industry can build supply chain management strategies quickly and easily. Therefore, manufacturing companies has needed to collaborate with partner companies and can make available benefit for the stability of supply and demand (Yu et al., 2018).

For achieving the organizational competence companies must be able to achieve the competitive advantage to generate the economic values that should be better than from the competitors of the organizations (Raut et al., 2021). Since companies need to implement optimally supply chain management strategies to increase the performance of the organization (Chen et al., 2021). The implication of supply chain management strategies can reduce the effect of competition and help them to generate the competitive advantage for the company (Habib et al., 2021).

There are many strategies of supply chain management that are using by manufacturing firms such as enterprise replenishment planning, vendor managed inventory, forecasting, collaborating planning, warehouse management system, outsourcing and organizational competencies (Tajbakhsh & Hassini, 2015). But in this study, we have used three supply chain management strategies such as warehouse management, enterprise resource planning and outsourcing. Therefore, the preface of supply chain strategies can

create in turn swap amongst the organizations in the sequence well-organized, for instance, the bullwhip outcome, where there is swing in record up the series among organizations beyond detached from the customers.

Furthermore, some researches findings suggest that these strategies can increase the stage of collaboration among distributor and supplier, plummeting show the way era for release on top of the charge of product deficiency. Outsourcing can be defined as an operational delegation by a buyer to a vendor who can perform and do the job better faster and cheaper (Hamidin & Rofaida, 2021). In simple words it is one of the fashionable business strategies to achieve productive efficiency devised by organizations (Hamidin & Rofaida, 2021). Moreover enterprise resource planning can be defined as a system that is used to building company competitiveness because of operational excellence is provided through this technology (Z. J. H. Tarigan et al., 2021). So, this kind of planning is important for the good and efficient performance of firm.

Whereas warehouse management system can be defined as a set of IT software solution that is designed for managing and optimizing warehouse logistic actions and sustaining warehousing procedure mechanization (Happonen & Minashkina, 2021). Since organizational competence is defined by a judgment manner that combine and interrelate resources; as a result, firm's performance is resulting from competence level, that could keep up right of entry to the most wide-ranging market (da Silva Gonçalves Zangiski et al., 2013).

The above discussion has exposed five constructs that researcher considered to examine in this study such as warehouse management system, enterprise resource planning, outsourcing, and organizational competence and firm performance. Therefore, we can say that all parties involved in supply chain management consists of producers and suppliers, distributors, storage places, sellers and consumers. However the researcher Dossou (2018)

show that the application of SCMs strategies are important for companies to improve the industrial competitiveness that has an impact on the firm performance.

Supply Chain Management (SCM) strategies affects manufacturing companies in a variety of ways, including an availability of inputs needed for production processes, costs and profitability of manufactured items, company infrastructure and ways in which companies interact with their suppliers and customers (Tiruneh & Fayek, 2021). Understandings, that supply chain management strategies from both a daily operational perspective and a strategic viewpoint is important for all managers and entrepreneurs in the industry. Useful supply chain management (SCM) has become a potentially important way of securing organizational competence, since competition is no longer between organizations, but among supply chains (Thoma et al., 2021).

Therefore companies need to consider the issues of supply chain management to support the company's strategies that would help them to increase the performance of the organization (Chen et al., 2021). In this way we have used Resource Based View (RBV) Theory to theoretically explain the model of the study. According to this theory supply chain management strategies as a resource can offer a sustainable competitive advantages for a manufacturing organization (Barney, 1991). We proposed that from beginning to end embed IT in a firm supply chain procedure; IT can make easy the growth of higher-order managerial capability, such as supply chain capabilities, which are organization detailed and solid to copy across organization. The in turn advantages achieve from side to side the acceptance of SCMs and the organizational competence achieved through an incorporated system, is the source of continued competitive advantage for an organization (Wu et al., 2006; Manzoor et al., 2021).

1.2 Problem Statement

Firm performance is a fundamental problem for both profit and non-profit organization. Firm performance is the factor that determines the success and failure of any organization and it is associated with the organizational strategy that is always planned and controlled (Hwihanus et al., 2022). After the fourth industrial revolution attaining efficiency and competitive advantage is the ultimate goal of every manufacturing unit, for which companies need a policy review to look up the firm performance by using supply chain management strategies through amalgamation with organizational capabilities. However, organizational performance is an operational capability of the organization which can be done by empowering the workforce, inspiring and motivating people to succeed, maintaining communication with the stakeholders of the organization and implementing supply chain management strategies (Raut et al., 2021). Although lot of research has been done in the domain of supply chain management but in the phenomena of Pakistan, the effectiveness of implementing different supply chain management strategies on firm's performance is yet to be verified. For the fundamental of research, the time has come to review the supply chain management strategies of manufacturing industry. Hence, in this study we investigate the association among supply chain management strategies in addition to firm performance with the mediating role of organizational competence.

1.3 Research Objectives

The research objectives are listed below:

- To examine the impact of warehouse management system on firm performance.
- To examine the impact of enterprise resource planning on firm performance.
- To examine the impact of outsourcing on firm performance.
- To examine the impact of organizational competency on firm performance.

- To examine the impact of warehouse management system on organizational competency.
- To examine the impact of enterprise resource planning on organizational competency.
- To examine the impact of outsourcing and organizational competency.
- To examine the role of organizational competency over warehouse management system and firm performance.
- To examine the role of organizational competency over enterprise resource planning and firm performance.
- To examine the role of organizational competency over outsourcing and firm performance.

1.4 Research Questions

The research leans on the way to respond the following research question:

- How warehouse management system affects the firm performance in manufacturing sector?
- How enterprise resource planning affects the firm performance in manufacturing sector?
- How outsourcing affects the firm performance in manufacturing sector?
- How organizational competency affects the firm performance?
- How warehouse management system affects organizational competency?
- How enterprise resource planning affects the organizational competency?
- How outsourcing affects the organizational competency?
- How organizational competency affects the relationship between warehouse management system and firm performance?

- How organizational competency affects the relationship between enterprise resource planning and firm performance?
- How organizational competency affects the relationship between outsourcing and firm performance?

1.5 Research Contributions

The study has several theoretical and practical contributions. These contributions are as:

1.5.1 Theoretical Contributions

It is complicated to attain the competitive advantage in an organization during interior growth alone. Therefore firm needs to discover behavior to expand and maintain the global competitiveness and organizational competencies with this ecological change and worldwide opposition escalating (Yu et al., 2018). So, in this regard supply chain management strategies help the organizations to boost their firm performance with the adaption of environmental changes and give support to their growth. In this study a new exploration on this issue will focus on the organizational competence and firm performance. Theoretically, this study contributed directly in three ways. Firstly, warehouse management system is positively affecting the firm performance with the mediating position of organizational competences. Second, enterprise resource planning is positively affecting the firm performance by means of the mediating position of organizational competence. However, we can examine through this that how much effective is the resource planning of enterprise. Third, outsourcing is positively affecting the firm performance by way of the mediating responsibility of organizational competence (R. Lee, 2021).

1.5.2 Practical Contributions

This study has also contributed towards practical aspects. Improving the capabilities of the organizations is necessary to continue to exist under this self-motivated environment that require adjusting reactively and proactively to procedures such as product development, manufacturing product, distributing product and purchasing material (Nayal et al., 2022). Therefore, combination of internal and external information can be enhanced by achieving this. The external information may be more effective than the internal one between the two types of information integration (Yu et al., 2018). However, the internal information integration techniques such as enterprise resource planning can strengthen the organizational competencies. The long-term effect of the enterprise resource planning will affect the firm performance. Therefore the performance of the firms still depend on the departments that how effectively they coordinate with each other rather than simply investing in expensive hardware (Habib et al., 2021). Such type of practical contributions may be practically important for the supply chain managers.

However organizations need to pay attention on external information integration to accept the changing environment especially in developing countries industries where there are more issues through investing information integration with channel members (AlMulhim, 2021). Since outsourcing and warehouse managements system will also help to effectively and efficiently enhance performance of the firm. To initiate the good organizational performance, mangers should need to know the factors that will affect the performance of the organization to achieve the goals. However, manager requires defining, conceptualizing and measuring the performance still while it is fairly difficult to do. Therefore resource based view describes that the performance of the company as the ability to achieve the goals by using resources effectively and efficiently (Raut et al., 2021).

1.6 Gap of the Study

Many researchers have looked at SCM strategies in different context and in different industries such as in the context of Malaysia, Indonesia, and Korea etc. (Zaridis et al., 2021; Hwihanus et al., 2022; K. Lee et al., 2022). Some studies analyzed the effect of benefits and challenges of IOT adoption on the firm performance and supply chain performance. However most of them had studied the impact of supply chain complexity and supply chain flexibility on the firm performance(Akın Ateş et al., 2022; Itang et al., 2022). Previously, K. Lee et al. (2022) has studied the role of five supply chain management strategies with the mediating role of competence of research and development, technology, production and marketing on the operational and financial performance of Korean SMEs. But, from the perspective of Pakistan very little work has been done. From the best of author knowledge, no one had studied the impact of supply chain management strategies on firm performance with the mediating role of organizational competence in Pakistani Manufacturing industry. K. Lee et al. (2022); Z. J. H. Tarigan & Siagian (2021); Chen et al. (2021) had suggested also describe to further explore supply chain management strategies in different context. The present study fills this gap and contributes in the field of literature in two ways. Firstly, specially focusing on three SCMs such as outsourcing, warehouse management system and enterprise resource planning that improves the firm performance of manufacturing industry in circumstance of the condition in Pakistan, wherever these organizations plays a critical position in the country. Secondly, organizational competence is incorporated here as a mediating variable to check whether it strengthen or weaken the relationship between SCM strategies and firm performance.

1.7 Scope of the Study

The concept and scope for managing the supply chain management strategies in the manufacturing sector vary from the green transaction to incorporated green supply chain

management operations (Moshood et al., 2021). The scope of this study is limited in the context of firm performance in manufacturing industry of Pakistan. The study Chen et al. (2021) shows that the Meta analysis revealed significant empirical evidence in which supply chain management strategies will also affect the performance of the organization regardless of the industry or economic region. Therefore, this research is conducted on Pakistan's manufacturing sector. The study is exploratory in nature rather than empirical. It would be accommodating for future researchers that how supply chain management strategies are important for the firm performance.

1.8 Limitations of the Study

This study is mainly focused on the firm performance of manufacturing industry and cannot be generalized to the other production sector with this scenario. Studies on supply chain management strategies in the context of firm performance are limited (Happonen & Minashkina, 2021). Studies on organizational competence as a mediator are limited (Raut et al., 2021). In Pakistani scenario literature on organizational competence and SCMs needs to be enriched in relation to the firm performance (Nayal et al., 2022). There is no moderator in this study so the future researches can do research by adding moderator in this model such as supply chain performance, supervisor support, coworker support (K. Lee et al., 2022). Due to the limited scope and objective of the study, this study discussed few of the SCMs, however, the future studies could add more variables e.g. collaborating planning, forecasting and replenishment etc. Since this study is in the context of Pakistan but the future researchers can conduct a study on any other country as well. Furthermore the future studies can focus on the comparison between the results of our findings with the empirical evidence of other sectors of Pakistan except manufacturing industry (Raut et al., 2021).

Chapter 2

Literature Review

To develop the understanding of the relevant research body firstly we discussed the review of literature associated with the supply chain management strategies and organizational competency that directly affect the performance of the organization. Supply chain management consists of three strategies such as warehouse management system, enterprise resource planning and outsourcing. After the literature we provide theoretical support to our research. This section is concluded with the hypothesis and theoretical framework.

2.1 Firm Performance

Firms play an important role in the supply chain management strategies which represents the development of the nations (Alnuaimi et al., 2021). The concept of firm performance is very common in academic literature but it is still difficult to identify the correct definition of firm performance due to its different meanings in variety of places (K. Lee et al., 2022). It is crucial to compete in an environment where the firm performance is indicated through the customers, inputs and capital to carry on and accomplish something in modern business environment (Alzoubi & Aziz, 2021). Therefore firm performance can be measure through the contribution of the departments of the company such as HR department, operations and strategy of company (R. Lee, 2021). The research shows that when the performance of firm is measurable it is easy to improve. Since there are few examples to assess the performance of firm such as benchmarking, comprehensive quality management, business process reengineering and balanced scorecard (Alaali et al., 2021).

Whereas one of the study found that firm performance evaluation system should have to be paying attention on the results in which shareholder interest should guide (Kurdi et

al., 2020). In the view of team management, the firm performance is defined as an evaluation action that allows the firms to make assessment and judgments on the goals, past decisions, patterns and other product and process (R. Lee, 2021). Therefore, the formation of value is by the essence of firm performance. As far as the value of assets that are generated from it is more than the expectations, the assets will remain available for the firms.

Therefore the value creation plays an important role in the performance of the firm (Kurdi et al., 2020). Many researches measure the performance of firm by using both the financial and non-financial assets including the criteria of market, for instance, market share, return on investment, growth of sales, profit margin of sales, growth of return on investment and the overall competitive position of the firm (Kurdi et al., 2020). However it is not easy to conceptualize the performance measurement due to the importance of firm performance, whether it is a profit organization or non-profit organization (R. Lee, 2021).

In the line of above literature there are two types of firm performance as adopted in this study, one is the financial and another one is the non-financial (Z. Tarigan et al., 2021). The majority of firm highlighted the requirement of putting and applying non-financial indicator in the firm performance measurement process since the late '80s (Chen et al., 2021). However, it strengthens the reasons of both indicators that we are applying in this study. Therefore change in the financial state is measured by the financial performance of the organization (R. Lee, 2021). It can be denoted as a financial outcome that comes from the decision of management and execution of those decisions by the members of the firm (Chen et al., 2021). For the time being non-financial proceeds to owner managers might be includes lifestyles benefit in the direction of the environment and the employees such as social interaction, work duration and work environment etc. (Z. Tarigan et al., 2021).

The researchers Mofokeng & Chinomona (2019) emphasized in their research that supply chain management strategies have a significant and positive relationship with the

competitive advantage. Therefore effective supply chain management is prejudiced by the supplier relationship strategy, product development, planning and control, information quality, production and distribution and purchasing (Chen et al., 2021). The study of Hwihanus et al. (2022) shows that effective supply chain management strategies have the impending to increase competitive advantage among the rival firms. It is proved by the integrated supply chain management opening from the customers and suppliers, quality and delays can be maintained and achieve the competitiveness to get win-win situation in the market (Hwihanus et al., 2022).

The study indicates that supply chain management strategies outsourcing, enterprise resource planning and warehouse management system is positively related to the firm performance (Chen et al., 2021). However firm performance is the factor that determines the success and failure of the organization and to improve the strategy it is always planned and controlled (Z. Tarigan et al., 2021).

2.2 Organizational Competence

Competencies in supply chain management is mentioned as significant firm's strengths that may maximize the inter and intra-organizational collaborative management processes (Dobrowolski et al., 2021). Therefore they can link external departments with the supply chain management to increase the competitiveness (Babaei & Aghdassi, 2022). In the context of supply chain management there are several studies has been taken organizational competence (Babaei & Aghdassi, 2022). In current years, the internal competencies of the organizations have been conceptualized on three levels such as supplier integration, internal integration and customer integration (Dobrowolski et al., 2021). The study found that organizational competence has a positive impact on the firm performance (Babaei & Aghdassi, 2022). Therefore this study opts to discover the relationship between the organizational competence and firm performance by assessing the firm capabilities for

instance research and development, production, marketing, technology commercialization as an organizational competence (Rahmani et al., 2019).

The concept of competency was firstly anticipated in seminal paper, which argues that future life success is not predicted by traditional intelligence tests (Thoma et al., 2021). The organizational competency can be defined as person fundamental characteristics which results in superior and effective performance in the job. The study McAlearney et al. (2021) view competency as a capability such as the ability of a person to perform a certain task and extent of fineness in the point of a task. The generic set of abilities is reflected by a competency that is implementing a suitable task and assess the development for task performance (Chalutz & Cohen, 2022). It is the combination of knowledge, skills and organization ability to perform a certain task as well as experience to achieve certain goals (Shet et al., 2019). However individuals need to build up enough experience to successfully perform assigned roles to harmonize their competencies (Purba & Ali, 2018).

Basically the literature indicate an extensive misapprehension of firm competency which are frequently perceived only just as person skills and abilities rather than over all core company competencies that derive incorporated company implementation (Tarigan et al., 2018). However, the concept of maturity is used to illustrate the organizational effectiveness to perform a certain task. The maturity verses competence is used to describe the organizational competency for instance ability and development as an aggregation of individual or team development (McAlearney et al., 2021). However, the competency verses maturity fails to achieve or cover the all organizational aspects that go beyond the aggregated individual or team capability or maturity.

However, the study describes that organization competency is the mixture of all aspects not merely related to person ability or maturity but also indicated company processes and systems. Therefore these competencies are remaining in the company still when

individual leave the organizations (McAlearney et al., 2021). According to the research of Tiruneh & Fayek, (2021) competency is a broader sense that is defined as the individual, team or company combine efforts to mobilize the resources in order to implement an action. For instance, to maintain the competency it is the responsibility of the organization to perform certain task to achieve the performance goals.

However many organizations defines essential competencies base on certain goal that are identified inside the perspective of their deliberate plan (Khamphui et al., 2021). Since studies have considered the organizational competencies as an antecedent of organizational act. Thus, organizational competency is the set of practice and process for storing knowledge to form a main organization system to determine the regular operations of organizational function (Khamphui et al., 2021). Moreover the definition used for this study is that organizational competency is an incorporated mixture of capital, a set of exacting skills, technology, essential information and the correct organizational society that facilitate the organizations to attain certain goals, competitive advantage and superior performance in the organization (Tiruneh & Fayek, 2021).

2.3 Supply Chain Management Strategies

It is difficult to achieve the competitive advantage alone in an organization through the internal development. Therefore, the firms need to look out the environmental changes and global competition and find out a way to survive in this competitive environment by adopting and maintaining the competitiveness. The research suggests that firm supply chain management strategies are the key instrument that helps to boost the performance and innovation (R. Lee, 2021). This can also help the organizations to adapt the environmental changes and give support to their growth. Therefore, the current study used three supply chain management strategies as independent variables such as warehouse management

system, enterprise resource planning and outsourcing. The literature of these is discussed below one by one.

2.3.1 Warehouse Management System

It is a system in which warehouses are managed together so that in the supply chain inventory information can decline the inventory effectively (R. Lee, 2021). However space utilization, accuracy of inventory, management process and picking optimization are the main challenges in modern warehouse management system (Assis & Sagawa, 2018). Therefore, in a supply chain network supply chain strategy is important. Moreover in order to maintain the outbound and inbound logistics in such a challenging environment there is a need to increase the flexibility in the challenging environment and reduce the time of supply chain management (R. Lee, 2021).

Warehouse management system try to find, optimize, control and record the flow of information and material, the use of available space is maximized by reducing the routines (Assis & Sagawa, 2018). It helps the company to manage all the tasks related to the logistics, seeks of hardware and software constituent at coordinating the material and information flow (Luo et al., 2019). It directly affect the manpower because they sets and making changes in the processes and routines (Assis & Sagawa, 2018). Moreover every warehouse management system has computers, zebra printers, barcode reader, some peripheral equipment and radio frequently equipment in some cases (Luo et al., 2019). Furthermore there are three main objectives that are associated with the logistic process one is the maximization of space, manpower and equipment resources and the need of the customers (Salee & Chutima, 2021).

However the warehouse management system can fulfill these objectives by reducing rate of errors, inbound logistics improvement, improving labor productivity, and equipment use and customer services and guarantee greater accuracy in the inventory (Assis & Sagawa,

2018). The study shows it reduces management costs and improves the equipment and team usage rate. Study describes that warehouse management system has the ability to plan daily activities and to allocate operators automatically and it is so much accurate than the humans because in this system the technology has been used (Ketchanchai et al., 2021). However, it is a system that is used with other systems such as ERP system.

The study describes the evolution from the conventional warehouse management system to CPS-WMS require the administrative innovations, integration of technology etc., which have become the major challenge in the adaption or design of WMS (Lee et al., 2018). CPS is the technology that is use in the warehouse management system (Luo et al., 2019). This included the proper selection of technologies for timely information, ambient intelligence, timely flow of information and agility(Lee et al., 2018).

In short warehouse management system is beneficial for managers because they can see the working hours of employees and know the volume of man power (Assis & Sagawa, 2018). It is a system with enough technology which is managed and configurable by employees (Luo et al., 2019). To run this system there is a need of training to the employees (Assis & Sagawa, 2018). For this system requires qualified personnel who can easily run this system effectively to increase the organizational competency as well as the performance.

2.3.2 Enterprise Resource Planning

Enterprise resource planning is a lively business challenge and cutting edge (Carpitella et al., 2021). According to the establish program of business model innovation based on the degree of organizational density optimization should be standardizing correct of the precise entity of reference. Companies are moving towards the IT business technology to utilize its resources and competencies effectively (Carpitella et al., 2021). So on the basis of these, companies try to develop a program via the internet along with the flow of relevant

information as a part of its global business strategy (Chofreh et al., 2020). In this regard ERP is the system software that is used effectively to develops the innovative processes in a centralized comprehensive environment and results optimization (Chofreh et al., 2020).

Management functions are integrated by enterprise resource planning with single data base, for instance marketing functions, production functions, quality functions, human resource functions and finance function (Putra et al., 2021). Based on the previous literature the top management commitment is determined by the enterprise resource planning success factors implementations such as project team competencies are acting as a research indicator (Carlsson-Wall et al., 2022). However, with the use of enterprise resource planning technology in real time integrated data can be access. Organizations operational activities linked with the product quality including material acceptance and purchasing, material quality control, product quality control of the production process (Cruz-Torres et al., 2021). According to the research of Cruz-Torres et al. (2021) the ERP implementation in an organization are determined by the project manager's competencies that are tailored to the enterprise resource planning by designing the operational processes.

Therefore ERP process is in accordance with the project manager (Kirmizi & Kocaoglu, 2021). The implementation of ERP in the organization to day to day operation system has to be used to the key users to successfully set up an ERP process to fit the enterprise processes implementation (Kristianti & Achjari, 2017). Through this implementation the company would be able to develop internal business process and after the collaborating with the external parties it is helpful to enhance the employee's personal skills (Kristianti & Achjari, 2017). However the main aim of using/implementing enterprise resource planning for the organization rely on reducing operations cost and enhancing the efficiency of firm processes increasing the responses of enterprise customers and data integration among departments (Carlsson-Wall et al., 2022).

Some researches argue that enterprise resource planning can make the role of business partner easy because they let loose management accountants from custom actions and endowment them more time for the analysis of business (Carlsson-Wall et al., 2022). Enterprise resource planning allows accountants to see and increase transparency that what is happening in the different departments of the organization which help them to better control the activities of the firm (Cruz-Torres et al., 2021). For example this system helps the account managers by making them more independent through this system (Fauzi, 2021). However the prior studies also outlined the design and functioning of ERP system enhance the organizational competency that may affect the performance of organization positively (Putra et al., 2021).

It is reported that companies practicing enterprise resource planning attain Top 10 ranking in relation to the time of implementation. There are many types of benefits of ERP implementation (Putra et al., 2021). Such as operational costs, customer related costs, in marketing time reducing, knowledge of the process, organizational communication and productivity of the staff (Carlsson-Wall et al., 2022). However when it is implemented there are many reasons of its failure like why its implementation failed in china, due to the monitoring aspects such as tabulation of the physical data and language reporting that feed the system, the compulsory reengineering in the processes of the organization, problems with the human resource, the economic impact of the restructuring (Cruz-Torres et al., 2021) .

2.3.3 Outsourcing

The outsourcing is the topic that is studied by different scholars frequently. Therefore a similar spectrum of outsourcing is examined by few articles as we do (Hamidin & Rofaida, 2021). Many studies have been focusing on production outsourcing by reviewing the outsourcing literature (Raz et al., 2021). The researchers focusing on both design and production of outsourcing which shows that suppliers provide a wide variety of innovation

and it depends on the firm from whom which one is selected to be outsourced (Lahiri et al., 2022). They categorize five key in outsourcing arrangement range on or after straight up addition to situation wherever supplier separately expand product, after that recognize buyer (Awe et al., 2018). However, they describe for additional study on at what time organizations should employ both and linked administrative issue.

In addition the research suggests that outsourcing is used in many firms to cut down the cost of operations to improve the performance of the organization (Munjal et al., 2019). However the study Mageto et al. (2018) describes the pros and cons of outsourcing which require to properly understand and manage the strategy of the organization. Therefore, the study reveals that the companies who are focusing on outsourcing have a cost advantage as compared to the companies using integrate logistics. It also gives a core edge to companies as common benefits (Mageto et al., 2018). Besides the study Ishizaka et al. (2019) find out a relationship between the financial performance and third party service provider which is costly for the company to outsourced the product. However it also implies high cost of transportation (Ishizaka et al., 2019). The in-depth study related to outsourcing is given by Dahlgrün & Bausch (2019), to measure the effectiveness and efficiency. Therefore the various benefits related to outsourcing are well understood (Dahlgrün & Bausch, 2019).

Since the most efficient strategy requires a combination of outsourcing strategy that affect the performance of the organization (Lahiri et al., 2022). However, the best management of the company plays a vital role in the performance of the company. Therefore, every organization strategy has a direct impact on its performance because it is directly linked with the performance.

Existing studies consistently describes that outsourcing should include non-core and peripheral activities, within the boundaries of the firm's core activities are exists (Espino-Rodríguez & Ramírez-Fierro, 2018). This will allow the customer to gain competitive

advantage by lowering the transaction cost associated with the outsourcing (Ndiiri & Kilika, 2021). However it is true that customers are taking advantage of their non-core activities outsource with the hope of taking advantage of provider's expertise by getting substantial improvement in performance (Afum et al., 2021). Such type of outsource activities include for instance new software programming and sensitive aspect of research and development (Afum et al., 2021).

Likewise manufacturing organizations involves the tangible products which are non-perishable and do not always required production and consumption simultaneously (Ndiiri & Kilika, 2021). These are referred to several benefits for the manufacturing outsource such as there should be less complexity of choosing activities which they need to be outsourced and easy to contract service providers with VRIN resources (Afum et al., 2021).

Manufacturing also allow customers to discuss aspire contractual clause and examine the behaviors and presentation of provider based on quantifiable criterion (Kabus et al., 2022). Such as Purposely, excellence, amount, and appropriateness of production can be comparatively with no trouble assess in manufacturing outsourcing (Ndiiri & Kilika, 2021). Still, tangibility's in manufacturing make it comparatively not as much of complex, compare to service, in the direction of assess asset comforting savings complete as a result of the slender provider, but whichever (Espino-Rodríguez & Ramírez-Fierro, 2018). Therefore, it is describing that transaction cost is lower in manufacturing outsourcing as compare to service outsourcing. In addition, manufacturing outsourcing provides more benefits to clients. Therefore manufacturing organizations are capital intensive in nature due to the reduced need of maintaining and developing internal production personnel and infrastructure and it manages outsourcing to service providers enable superior internal services (Espino-Rodríguez & Ramírez-Fierro, 2018). It also allows the client to pay more attention on the sources that create competitive advantage (Ndiiri & Kilika, 2021). However the production

and delivery of services depends on the individual level of knowledge and skills but in manufacturing it depends on the machines (Kabus et al., 2022). In sum we consider that manufacturing outsourcing has involved transaction cost, agency cost and resource-based benefits than the cost it would be more in the former than the latter.

2.4 Relationship among all the Variables

The relationships between the all variables are discussed one by one.

2.4.1 Warehouse Management System and Firm Performance

As warehouse management system is customized to fit business in different segments it may be adopted. Basically WMS and performance of the firm directly linked with each other as described by many studies (Luo et al., 2019). The study shows that there is a positive relationship between the WMS and performance of the firm (Luo et al., 2019; R. Lee, 2021). There are many studies that used WMS in different perspective and in different counties. However there are three aspects of firm performance that strategic management of the company drives such as financial performance, shareholders return and product market performance (Alzoubi & Aziz, 2021). These aspects are important in the context of WMS (Ketchanchai et al., 2021). Based on the previous literature review we hypothesized:

H₁: Warehouse Management System has a significant and positive effect on Firm Performance.

2.4.2 ERP and firm performance

ERP system is a software program and it is implemented in company information system as it is the desire of every company to increase the performance of the company, its effectiveness and efficiency (Putra et al., 2021). It provides a means for firms to process, capture and provide broad direction for performance indicators in the condition of real time. It basically allows the companies to maximize big data sharing by reducing the cost and

increase the customer satisfaction (Putra et al., 2021). However, it helps the organization to process all accessible resources and integrated the information flows. It is implemented to improve the performance of the company.

The findings of the studies indicated that the organizations who are implementing this system, directly have an impact on the performance of the organization (Putra et al., 2021; Carlsson-Wall et al., 2022; Cruz-Torres et al., 2021; Fauzi, 2021; Chofreh et al., 2020). However it is contrast with the findings of study which indicated the implementation of ERP did not increase the profitability of the company there is no difference in the NPM and ROA in the duration which ERP implemented (Kristianti & Achjari, 2017). Hence it is proved that the implementation of ERP did not directly affect the profitability of Indonesian companies (Kristianti & Achjari, 2017). Therefore, it is proved that some says ERP could not improve the performance of the firm but the study show ERP could improve the performance of the firm. Based on previous studies we hypothesized as:

H₂: Enterprise Resource Planning has a significant and positive effect on Firm Performance.

2.4.3 Outsourcing and Firm Performance

The study shows that outsourcing has a positive relationship with the performance of the firm in case of core activities than the non-core activities (Lahiri et al., 2022). Therefore, firms need to increase the transaction cost in managing the strategy of supply chain. Moreover, there are studies that show the relationship between the outsourcing and supply chain strategy (Hamidin & Rofaida, 2021; R. Lee, 2021). It describe instance of assemble organizations so as to contain be extremely effectual in grabbing the advantage of outsourcing by the means of declining expenses, touching onward rapidity and receptiveness, diminishing procedure period, moving ahead in an creative technique, increasing litheness, in

addition to succeeding frontward (Lahiri et al., 2022). Based on the literature we hypothesized that:

H₃: Outsourcing has a significant and positive effect on Firm Performance

2.4.4 Organizational Competency and Firm Performance

Past studies effort to detain managerial capability via a multi-level move toward such as individual, team and organizational level (Rahmani et al., 2019). The research argue that organizational competency is an aggregations of individual, team and organizational competencies (Tiruneh & Fayek, 2021). Past studies show the relationship of competency in different aspects. However there are various studies that show the positive relationship between the organizational competency and the performance of the firm such as (R. Lee, 2021; McAlearney et al., 2021; Khamphui et al., 2021; R. Lee, 2021). However, these studies indicated that supply chain management strategies boost the organizational competency that ultimately affects the performance of the organization. Based on the literature discussed above we hypothesized that:

H₄: Organizational Competency has a significant and positive effect on the Firm Performance.

2.4.5 Warehouse Management System and Organizational Competency

The warehouse management system brought tool that enables the possibility and traceability to perform different task effectively to show the competency of the organization. The study show the impact of WMS on the system logistics (Salee & Chutima, 2021). In general, organizational competency can be defined as traits, motive, self-concept, values or attitudes, content knowledge or cognitive behavioral skills with every individual capacity that make it different from other performers (Tiruneh & Fayek, 2021). There are many studies

that show the linkage between the warehouse management system and organizational competency (R. Lee, 2021; Munkácsi, 2021). Based on the literature we hypothesized as:

H₅: Warehouse Management System has a significant and positive effect on Organizational Competency.

2.4.6 Enterprise Resource Planning and Organizational Competency

Moreover the ERP used by the organizations can provide the speed and agility by redesigning the process of the firm's operational systems (Kirmizi & Kocaoglu, 2021). However, it also changes the manual control system to the enterprise resource planning control system. Furthermore, this can be done by integrating the departments that are customized and available through the process redesign modules which are obtain optimally (Kristianti & Achjari, 2017). Therefore, enterprise resource planning plays a vital role in organizational competency because it directly influences the capabilities of the organization. There are many studies that show the positive relationship among enterprise resource planning and organizational competency (Putra et al., 2021; Fauzi, 2021; R. Lee, 2021). Based on the literature we hypothesize that:

H₆: Enterprise Resource Planning has a significant and positive effect on Organizational Competency.

2.4.7 Outsourcing and Organizational Competency

Outsourcing is basically a valuable strategy for the organizations to gain benefits from the global environment (Franco, 2021). It is a business agreement that a firms usually do with the domestic and international parties by contracting out certain existing parts of the firm business (Franco, 2021). Many researchers had conducted studies to better understand the concept of outsourcing in different aspects with the flower head of outsourcing (Franco, 2021). Whereas, organizational competency is the capabilities of the organizations to

effectively perform the certain function. However, many studies show the relationship between the outsourcing and competency of the organization (R. Lee, 2021). On the basis of the above literature we hypothesized that:

H₇: Outsourcing has a significant and positive effect on the Organizational Competency.

2.4.8 Organizational Competency on Warehouse Management System and Firm Performance

It is difficult to forecast accurately. There are many complexities of dynamic working environment which has been included such as quality, price and technology development. The study indicated that firm performance depends on the competencies which come from the supply chain management strategies such as warehouse management system (R. Lee, 2021). The study of R. Lee (2021) show the significant mediating role of organizational competency between the WMS and firm performance. On the bases of literature, we hypothesized that:

H₈: Organizational Competency mediates the relationship of Warehouse Management System and Firm Performance.

2.4.9 Organizational Competency on ERP and firm performance

The study shows that ERP has a positive and significant impact on the organizational competence and firm performance (Suhendra et al., 2019). Moreover, organizational competency significantly impact on the performance of the firm (Suhendra et al.,2019). Hence, it is proven that organizational competency has a mediating relationship between the enterprise resource planning and organizational performance. Furthermore, the previous documentation shows ERP relationship with firm performance in different context such as Finland, Turkey and US (Putra et al., 2021). However Kristianti & Achjari (2017)

did not find the mediating role of organizational competency between ERP and firm performance whereas the study find the mediating role between ERP and firm performance (Suhendra et al.,2019; R. Lee, 2021). Still there are differences in previous study findings so we need to identify more. Based on the literature, we hypothesized as:

H₉: Organizational Competency mediates the relationship of Enterprise Resource Planning and Firm Performance.

2.4.10 Organizational Competency on Outsourcing and Firm Performance

There are studies that show the relationship between the outsourcing as supply chain management strategy and firm performance in the large corporations (Kurdi et al., 2020). There are various benefits of outsourcing that are well and understood. The press of business is full of case studies. Top management plays a vital role in outsourcing and performance of the firm (Chalutz & Cohen, 2022). As Resource Based View theory argue that organizational competency is the capability of the organization that play a vital role to achieve competitive edge and enhance the performance of the organization (Barney, 1991). Previous studies show organizational competency as a mediators between the outsourcing and firm performance (R. Lee, 2021). In this study organizational competency mediates the relationship between the outsourcing and firm performance. Based on this review we hypothesize as:

H₁₀: Organizational Competency mediates the relationship of Outsourcing and Firm Performance.

2.5 Theory

In order to cope the aim of this study Resource Based View may applied to supply chain management and purchasing function (Bohnenkamp, 2013). Furthermore the accomplishment of competitive advantage can be achieved through the collaboration with the suppliers and the accomplishment of favored customer bust (Bohnenkamp, 2013). The origin

of RBV can be drawn back to the seminal work of the researcher (Penrose & Penrose, 2009), the theory of growth of firm. This person viewed the firm as a set of unique internal resources to differentiate it from others and to excel on others. The Penrose & Penrose (2009) supported a bundle of resources must consist by a firm. Wernerfelt (1984) was the first who completely introduced RBV theory and also supported that firm has a bundle of unique resources. On the other hand, the work of this was not popular unless and until many scholars work was introduced in early 1990s (Barney, 1991).

According to Barney (1991) the resource based view (RBV) theory says that firms can achieve competitive advantage by combining resources and developing capabilities such as VRIN which means the resources should be valuable, rare, imitable and non-substitutable. It is one of the grand theories of economic. The two core constructs of RBV are resources and capabilities (Barney, 1991). According to Barney (1991) firm can achieve competitive advantage by combining, owning and building tangible and intangible resources and developing capabilities. Therefore, organizational competency is one of the resources for the organization to achieve certain goals. Whereas, supply chain management strategies such as warehouse management system, enterprise resource planning and outsourcing is one of the resource for the organization where the buyer and supplier can work in a tandem to achieve the competitive advantage in the context of outsourcing partnership (Ferreira et al., 2020). The researcher defines the resources as physical and financial resources of the firm, firm processes and capabilities, that shows something in which a firm can be able to achieve or perform which stands from routine and resources, ahead which a firm can draw (Ferreira et al., 2020). The study shows that resources and capabilities are two different concepts with capabilities being constraints or even obstacles to the success of organization (Kulangara et al., 2022).

However, when resources are accumulated in a specific way by a firm they are difficult to substitute and imitate and are more closely related to competitive advantage (Filho & Moori, 2019). However, resources are valuable when they help to enable a firm to implement strategies for the effectiveness and efficiency of the organization (Filho & Moori, 2019). Therefore, resources are rare when they are not imitated by a large number of competing firms. If the resources are substitutable it is difficult to get competitive advantage (Chaudhuri et al., 2022).

RBV has drawn considerable interest from the community of supply chain. It insists that there are limited studies that are related to supply chain resources and capabilities (Sharma et al., 2022). Moreover, it examines the linkage between the characteristics and firm performance. Therefore, it enables the firm to determine the organizational core competencies to achieve the competitive advantage which is also critical for the formation of the latter. Therefore, by extending the dynamic capabilities we can attain greater benefits of RBV (Filho & Moori, 2019). The concept Teece & Pisano (1994) of dynamic capabilities was defined as a firm's ability to build, integrate and reconfigure the competency of organization to address rapidly changing working environments. Moreover, RBV theory is used to explain the outsourcing decision and emphasize defining supply chain management strategy. RBV is considered as a main lens in this research (Chaudhuri et al., 2022).

The RBV squabble studying outsourcing, planning of the resources and warehouse management system that have low strategic value that are strategically important to retain in-house resources and the competencies, that are remaining, are to be managed through external contracts (Kamboj & Rana, 2021). However, RBV is important to study the outsourcing to achieve the competitive advantage over the competitors by internalizing the resources (Kamboj & Rana, 2021). However, Company can gain competitive advantage and create value by implementing the strategies effectively and appropriately. Therefore, the

company's values added by implementing ERP system such as using the resource based-view approach for valuable resources by meeting the criteria such as rare resources, imperfectly imitable resources and the non-substitutability to get the better performance of the company (Barney, 1991).

2.6 Hypothesis Development

Total ten hypotheses have been developed for this study, out of which seven Hypotheses are the Direct Relationship Hypotheses, while the remaining three are the Indirect Hypotheses.

H₁: Warehouse Management System has a significant and positive effect on Firm Performance.

H₂: Enterprise Resource Planning has a significant and positive effect on Firm Performance.

H₃: Outsourcing has a significant and positive effect on Firm Performance.

H₄: Organizational Competency has a significant and positive effect on the Firm Performance.

H₅: Warehouse Management System has a significant and positive effect on Organizational Competency.

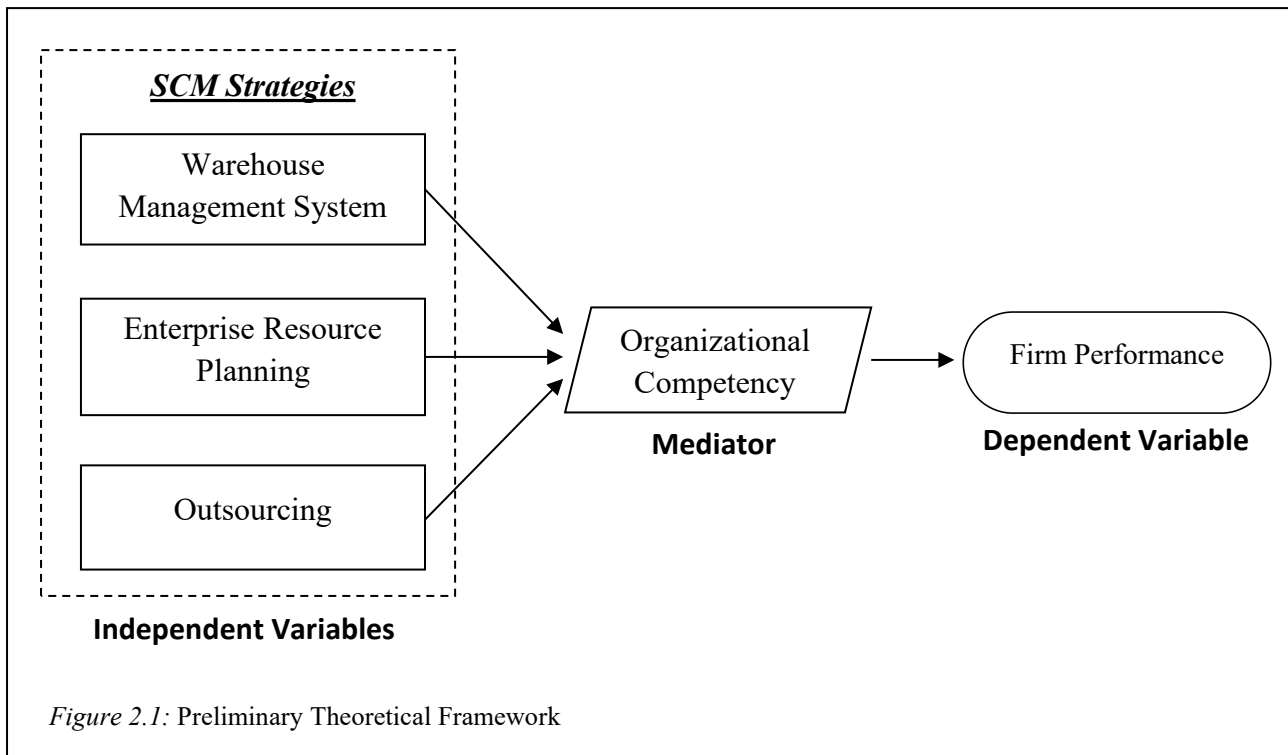
H₆: Enterprise Resource Planning has a significant and positive effect on Organizational Competency.

H₇: Outsourcing has a significant and positive effect on the Organizational Competency.

H₈: Organizational Competency mediates the relationship of Warehouse Management System and Firm Performance.

H₉: Organizational Competency mediates the relationship of Enterprise Resource Planning and Firm Performance.

H₁₀: Organizational Competency mediates the relationship of Outsourcing and Firm Performance.



2.7 Theoretical Framework

In this framework three variables are used as independent variables such as ERP, WMS and outsourcing. Whereas, firm performance is acting as a dependent variables and organizational competency is a mediating variable. The framework shows that WMS has a positive impact on the firm performance. ERP has a positive impact on the firm performance. Outsourcing has a positive impact on the firm performance. At last organizational competency mediate the relationship between the supply chain management strategies and firm performance. The hypothesis H8, H9 and H10 shows the mediating relationship of organizational competency between thrice supply chain management strategies and firm performance.

Chapter 3

Methodology

This chapter deals with the research design and methodological approach of the study. It contains the research strategy, sampling techniques, data collection plan and measurement of variables along with their relevant sources for the constructs of the study.

3.1 Research approach

In research, there are two main approaches, known as qualitative research approach and quantitative research approach. This study is using quantitative research approach. According to Creswell (1994), for studies with clearly structured hypothesis, quantitative research strategy is most suitable. In quantitative research, data collection and analysis are done in order to find correlation between variables. Basically, it's a hypothesis testing approach where data analysis leads towards the confirmation or the rejection of the research hypothesis. Hence, this study is quantitative in nature as it collects and analyzes the data to test clearly defined hypothesis.

3.2 Research Type

This study is explanatory in nature. Explanatory study basically helps to explain a phenomenon. This study explains the untapped or less-discovered research topic of supply chain management strategies in Pakistan's phenomenon. This study also lay the groundwork for future researches.

3.3 Research Design

This study explains the relationship of three supply chain management strategies, i.e. Warehouse Management System, Enterprise Resource Planning and outsourcing with firm performance while considering the mediating role of organizational competence. This study

is using correlational research design. According to Koul (2009) correlational research design deals with the relationship among different variables and confirm the theory which study is presenting. Hence, this study follows the correlational research design as these accesses the association between the constructs of the study.

Research design followed to effectively examine the proposed research model is presented in Table 3.1 given below.

Table 3.1

Research Design

Research Strategy	Quantitative
Research Purpose	Explanatory
Sampling Technique	Convenient
Unit of Analysis	Manufacturing Firms
Sample Size	285
Research Instrument	Structured Questionnaire
Statistical Technique	SPSS (Statistical Package for Social Sciences)

3.4 Sampling Technique

Sampling technique used in this study was convenience based non-probability sampling technique. It is a widely used sampling technique in social sciences researches (Sekaran, 2003). Sample firms were selected on the basis of easy access and availability.

Furthermore, the study was conducted as a cross-sectional study, in non-contrived setting, for which data was collected in a period of fourteen days because of resource and time constraints.

3.4.1 Population

Population of our study comprises of manufacturing firms of Pakistan with SCM strategies. We have selected manufacturing sector of Pakistan because manufacturing sector plays a vital role in the economy of a country. Primarily four key manufacturing industries: Steel, Fertilizer, Textile, and Pharmaceutical Sectors of Pakistan were considered in this study. The reason of selecting these sectors is that they have massive supply chain management mechanisms and practices but they found to be somehow less-efficient. Hence, this study tries to understand the importance of supply chain management strategies for the sustainable firm performance of manufacturing sector. Total number of firms in these manufacturing sectors is 1093, which is used as the population in this study.

3.4.2 Sample Size

Sample size was determined in this study by using Krejcie and Morgan (1970) sampling method which helps to effectively determine the sample size. According to the recommendations of Krejcie and Morgan (1970), sample size of our study was determined to be 285. Sampling technique used in this study is convenient sampling. Convenient sampling technique was chosen for the ease of targeting the sample for collecting responses.

3.5 Data Collection Plan

Both primary and secondary sources were used for data collection. Primary data was collected by using structured questionnaire while for secondary data, different articles and research papers were used from renounce journals and databases.

For the sake of primary data collection, structured questionnaires were distributed in different firms of four manufacturing sectors of Pakistan including textile, pharmaceutical, and steel and fertilizer sectors, with respect to one questionnaire per firm. We approached these firms over their official websites, via emails or through different business communication-based platforms. As in the online arrangement, the response rate is usually very low, so we disseminated our questionnaire to more than approx. 500 firms, out of which we received total 285 responses that were completely responded. The recorded response rate was 61.4% of our questionnaire.

3.6 Measurement Instruments

The constructs of the study have been developed from the literature available on Enterprise Resource Planning, Warehouse Management System, and Outsourcing and Firm performance. All the items adopted in this study were valid and reliable. Constructs of study were measured by using five-point Likert-type scale, as it is the most suggested scale, ranging from “strongly disagree = 1” to “strongly agree = 5”. Target variables named WMS, ERP, outsourcing, organizational competence and firm performance were computed in SPSS with all the items for further testing and analysis.

3.6.1 Enterprise Resource Planning

To measure “Enterprise Resource Planning”, a four-item measurement scale developed by Song (2010) was utilized in this study which is previously used by Lee (2021) in its study. These indicators were partially modified to best fit the purpose of this research. The operational measures of enterprise resource planning were regarding the productivity and efficiency of the firm.

3.6.2 Warehouse Management System

To measure “Warehouse Management System”, a four-item measurement scale developed by Kim (2006) was used in this study. Lee (2021) had utilized these items from Kim (2006) in their study as well. A little bit adjustment was done in items according to the need of study. The operational measures of warehouse management system were to understand the firm’s maintenance and productivity.

3.6.3 Outsourcing

We employed a four-item measurement scale to measure “Outsourcing”, developed by Lee and Lee (2019) which was also utilized by Lee (2021) and proved to be efficient scale to measure the construct of our study. Items were partially modified to fulfill the objective of the study. The operational measures of outsourcing items were to check the efficiency of firms.

3.6.4 Organizational Competence

To measure “Organizational Competence” eight items developed by Chun et al., (2011) was adopted in the study. Lee (2021) had utilized eight items from Chun et al., (2011) in their study to measure organizational competence, which seemed an appropriate and efficient scale for our study, thus we utilized these items with a little bit of adjustment as per the need of our study. The operational measures of organizational competence were about the firm’s competitiveness and capabilities.

3.6.5 Firm Performance

Firm performance was measured by utilizing the eight items measurement scale developed by Chun et al., (2011). Lee (2021) utilized these items in their study to measure firm performance and it seemed appropriate scale for our study, thus we adopted the same

items with a little bit of modification. The operational measures of firm performance were related to firm's financial as well as operational performances.

The instrumentation of the variables is presented in table below:

Table 3.2

Relevant sources of Instrument Constructs

Variables	Relevant Source(s)	No. Of items	Scale
Enterprise Resource Planning	Song (2010)	4	1 - 5
Warehouse Management System	Kim (2006)	4	1 - 5
Outsourcing	Lee and Lee (2019)	4	1 - 5
Organizational competence	Chun et al., (2011)	8	1 - 5
Firm performance	Chun et al., (2011)	8	1 - 5

3.7 Statistical Techniques

The data collected for this study was analyzed through different statistical tests and procedures, with the help of an extensively used software of social sciences' researchers, commonly known as SPSS (Statistical Package for Social Sciences).

The statistical analyses performed comprise the descriptive analysis for demographic data of respondents as well as for the study variables to develop a better understanding of the data (Thompson, 2006). Along with descriptive analysis the skewness and kurtosis values were also been checked, that are basically checked to examine the normality of the data,

where we found that all the skewness and kurtosis values fall within the standard cutoff values, i.e. -2 to +2, which is the indication for the normality of data (Hair et al. 2010). Then the reliability analysis was executed, in order to measure the internal consistency of constructs of our study Bryman & Bell (2011), and results showed that all variables had a Cronbach Alpha Coefficient of 0.60 and above. This proves that all questions under study were measuring their intended variables.

Then bivariate correlation analysis was executed, through Karl Pearson's method to examine the strength of variables and the direction of relationship between two quantitative variables. Then to examine the study's first seven direct hypotheses, the simple linear regression analysis was conducted, to predict the relationship between an independent variable and a dependent variable. Regression analysis basically indicates the variation or per unit change brought in the dependent variable because of independent variable (Wetche-Hendricks, 2011).

Then, mediation analysis was conducted to examine the last three indirect hypotheses of the study. We have tested our indirect hypotheses using the bootstrapping method suggested by Hayes (2013). As per the suggestion of Fein et al. (2022) key assumptions were considered and tested before conducting the mediation analysis. These assumptions are stated here:

1. The dependent, independent, and mediator variables (the variables of interest) need to be using a continuous scale.
2. The variables of interest (the dependent variable and the independent and mediator variables) should have a linear relationship.
3. The data must not show multicollinearity.

4. There should be no spurious outliers, and the distribution of the variables should be approximately normal.

After satisfying all the above-mentioned assumptions, we finally executed the mediation analysis. For this purpose, we have executed model no. 4 in SPSS software, via the Process Macro v3.5 by Andrew F. Hayes. The analysis basically embraces four major steps, where first step examines the direct-effect of independent variable(s) on mediating variable, then second step examines the direct effect of mediating variable on dependent variable and the third step examines the direct effect of independent variable(s) on dependent variable while controlling for mediating variable. Finally, the indirect effect of independent variable(s) on dependent variable through the mediating variable was examined in the last step of analysis, the results are reported in the next chapter with complete details.

Chapter 4

Data Analysis

4.1 Introduction

This chapter named “Data Analysis” comprises the results and comprehensive analysis of different statistical tests and procedures that were run over the data which was accumulated from this study’s respondents. These tests were performed with the help of an extensively used software of social sciences’ researchers, commonly known as SPSS (Statistical Package for Social Sciences). The statistical analyses performed comprise the descriptive analysis for demographic data of respondents as well as for study variables along with the skewness and kurtosis. Then the reliability analysis of all the study variables, correlation analysis. Last but not the least we executed regression analysis and the mediation analysis to analyze the direct and indirect hypothesis of our study.

4.2 Descriptive Statistics

Descriptive Statistical Analysis was performed over the demographic data of our study respondents, to get an instant overview or a clear picture of the entire data. Demographic variables of our study included Industry Sector, Designation of Employee in the Firm, Employee’s Experience, No. of Employees in Firm and the Total Revenue of Firm.

4.2.1 Industry Sector

As shown in the table (4.1), out of the total 285 respondents, 104 respondents were from fertilizer industry with highest participation level of 36.5%, 90 respondents from the pharmaceutical industry sector with the participation of level of 31.6%, 49 respondents were from the steel industry with the participation of level of 17.2%, and

the rest 42 were from textile industry with the lowest participation of level of 14.7 percent.

Table 4.1

Industry Sector-wise distribution of Respondents

Characteristics	Frequency	Percent
	(n)	(%)
Industry Sector		
Steel	49	17.2
Fertilizer	104	36.5
Textile	42	14.7
Pharmaceutical	90	31.6
Total	285	100.0

4.2.2 Designation

As shown in the table (4.2), out of the total 285 respondents, 202 respondents reported themselves as the employees of their respective firms, having the highest participation level of 70.9 percent in the study. Then 37 respondents reported themselves as the section head, with the participation level of 13 percent, 19 respondents showed their designation as Deputy Department Head, with the participation level of 6.7 percent, 13 respondents marked their designation as Section Head having participation level of 4.6 percent, while out of the rest 14 respondents, 08

were at the Executive and 06 were at the Chief Executive Officer’s post, with 2.8 and 2.1 percent level of participation respectively.

Table 4.2

Designation-wise distribution of Respondents

Characteristics	Frequency	Percent
	(n)	(%)
Designation		
Employee	202	70.9
Deputy Section Head	13	4.6
Section Head	37	13.0
Deputy Dept. Head	19	6.7
Executive	08	2.8
Chief Executive Officer	06	2.1
Total	285	100.0

4.2.3 Experience

As shown in the table (4.3), there were total 285 respondents, out of which 96 respondents (33.7% of the total) showed up that they are having the experience of less than 2 years, than 87 respondents (having 30.5% level of participation) marked there experience as being from 5 to 8 years, then 66 respondents were having the experience of 2 to 5 years, having the participation level of 23.2% and 26 respondents were having

working experience of 8 to 10 years, with a participation level of 9.1%. While 10 respondents were having the working experience over 10 year, with the least participation lever, that is of 3.5% in this study.

Table 4.3

Experience-wise distribution of Respondents

Characteristics	Frequency	Percent
	(n)	(%)
Experience		
Under 2 years	96	33.7
2 years to 5 years	66	23.2
5 years to 8 years	87	30.5
8 years to 10 years	26	9.1
Over 10 years	10	3.5
Total	285	100.0

4.2.4 No. of Employees

As per the statistics of table (4.4), out of total 285 respondents, 108 respondents were the employees of those firm that have more than 201 employees, having the 37.8% level of participation in the study. 87 respondents represented the firms that consists of 101 to 200 persons, with a level of participation of 30.5%. 60 respondents of our study belong to such firms that consists of 51 to 100 persons while 30 respondents

were representing the firms whose number of employees is less than 50 persons, having a participation level of 21.2% and 10.5%, respectively

Table 4.4

No. of Employees-wise distribution of Respondents

Characteristics	Frequency	Percent
	(n)	(%)
No. of Employees		
Less Than 50 Persons	30	10.5
51 Persons to 100 Persons	60	21.2
101 Persons to 200	87	30.5
More Than 201 Persons	108	37.8
Total	285	100.0

4.2.5 Total Revenue

According to table 4.5, out of total 285 respondents, 106 respondents were the employees of those firms whose total revenue lies between 10 to 20 billion and having the highest participation level of 37.2%. 74 employees belong to the firms having revenue under 5 billion, 56 respondents were employees of firms that have revenue between 5 to 10 billion and 49 respondents were from the firms that were generating revenue over 20 billion, with a participation level of 26%, 19.6% and 17.2, respectively.

Table 4.5*Revenue-wise distribution of Respondents*

Characteristics	Frequency	Percent
	(n)	(%)
Total Revenue		
Under 5 Billion	74	26
5 Billion to 10 Billion	56	19.6
10 Billion to 20 Billion	106	37.2
Over 20 Billion	49	17.2
Total	285	100.0

4.3 Reliability Analysis

The internal consistency of constructs of our study was measured with the help of Reliability Analysis. Bryman & Bell (2011) had defined reliability as a consistency to measure a concept.

As in any quantitative research, maintaining high level of reliability is of great importance, so as per the suggestion of different scholars, Cronbach's alpha coefficient method is employed in this study. According to Leech et al. (2005) Cronbach's alpha method is the most powerful and effective approach to determine internal reliability in social sciences researches. Value of Cronbach's alpha coefficient is usually denoted by α , with a range of 0 to 1. Constructs having a Cronbach's alpha value close to one are considered as highly reliable. According to Campbell (1976), Cronbach's alpha coefficient must be above 0.6 to validate the item's internal reliability while Nunnally (1967); Peterson (1994), also stated that values of Cronbach's alpha coefficient should be between 0.7 to 0.9 as it is assumed to be highly reliable and it also confirms the consistency among the items.

In this study, we have employed the four-cut-off values, benchmark of Cronbach's alpha coefficient declared by Hinton et al. (2004), as following:

1. $0.9 \leq \alpha$ refers to Brilliant-Reliability
2. $0.7 \leq \alpha < 0.8$ refers to High-Reliability
3. $0.5 \leq \alpha < 0.7$ refers to Direct-Reliability
4. $\alpha \geq 0.5$ refers to Low-Reliability

Table 4.6*Reliability Statistics*

Study Variables	No. of items	Cronbach's Alpha
Warehouse Management System	04	.650
Enterprise Resource Planning	04	.820
Outsourcing	04	.678
Firm Performance	08	.787
Organizational Competence	08	.724

As we can see that the above table (4.6) is showing the Cronbach Alpha value for the four-items of Enterprise Resource Planning as .820, which falls under the range of high reliability. Then, the Cronbach Alpha value for the eight-items of Firm Performance is .787, while for the eight-items of Organizational Competence is .724, and both of these values also fall between the range of high reliability. While, alpha coefficient value of four items of Warehouse management system and four items of Outsourcing, found to be .650 and .678, respectively. Both of these coefficients fall in the category of fair reliability. Hence, as all the Cronbach's alpha coefficient are greater than 0.60, meets the criteria set by Campbell (1976), which shows that internal consistency of all variables has been achieved.

4.4 Variable Coding

Variable coding is an important process of any research because variable names are usually long enough, that they do not best fit for conducting analysis in SPSS, so they are shortened by assigning a code. Table below shows all the variable names and their codes, that would be used during our statistical analysis of the study.

Table 4.7

Variables' Coding

Variables	Abbreviations
Warehouse Management System	WMS_IV1
Enterprise Resource Planning	ERP_IV2
Outsourcing	OS_IV3
Firm Performance	FP_DV
Organizational Competence	OC_Med

As shown in the table (4.7) below, the variable “Warehouse Management System” has been coded as “WMS_IV1”, which clearly shows that it is the first variable of this study. Then for “Enterprise Resource Planning” the abbreviation “ERP_IV2” is used which clearly depicts that it is the second independent variable of this study, and for “Outsourcing” the abbreviation “OS_IV3” is used which shows that it is the third independent variable of our study. Furthermore, the variable “Firm Performance” has been coded as “FP_DV” which is

the indication that it is the dependent variable of our study, and finally the variable “Organizational Competence” has been coded as “OC_Med” which indicates that it is the mediating variable of this study.

4.5 Descriptive Statistics, Skewness & Kurtosis

After reliability analysis and variable coding, we have employed descriptive analysis to get an overview of the data of our variables under study so a better understanding could develop (Thompson, 2006). In descriptive analysis, mean, standard deviation, skewness and kurtosis have been computed for all the variables. According to Hair et al. (2010), cut off value of skewness that indicates the normality of data ranges between -2 to +2, hence it is used as the benchmark of normality.

Table 4.8

Descriptive Analysis, Skewness & Kurtosis

Abbreviations	Mean	Standard Deviation (SD)	Skewness	Kurtosis
WMS_IV1	4.293	0.327	1.338	0.604
ERP_IV2	4.221	0.455	0.420	-1.206
OS_IV3	4.087	0.315	-0.409	-0.646
FP_DV	3.807	0.397	-0.893	-0.086
OC_Med	4.020	0.256	0.789	0.383

Note. N = 285

Table 4.5, mentioned above, shows the statistics of the descriptive analysis of our study. Results shows that the mean value of warehouse management system is 4.293, which is highest among all the variables, followed by the mean value of 4.221 of enterprise resource

planning, 4.087 of outsourcing, 4.020 of organizational competence and 3.807 of firm's performance. While the standard deviation was found to be highest in enterprise resource planning with a value of 0.455, which is followed by a standard deviation of 0.397 of firm performance, 0.327 of warehouse management system, 0.315 of outsourcing and 0.256 of organizational competence. All the skewness values are positive, indicating that all the variables are positively skewed and having a long right tail. Results of Kurtosis tell us that warehouse management system with 0.604, enterprise resource planning with -1.206, outsourcing with -0.646, firm performance with -0.086 and organizational competence with a value of 0.383 indicates that all the variables are platykurtic and have a shorter and thinner tail.

4.6 Correlation Analysis

Correlation analysis indicates the strength of variables and the direction of relationship between two quantitative variables. In this study, we have employed the bivariate correlation analysis, through Karl Pearson’s method, with the aim to measure the correlation among our study variables. Pearson’s correlation coefficient ranges from -1 to +1, indicating a perfect-negative correlation to a perfect-positive correlation, respectively, and is denoted by “ r ”. According to Zaid (2015), as the correlation coefficient gets closer to -1 or +1, it would indicate a stronger positive or negative correlation among the variables and when the correlation coefficient gets closer to zero, it would point out the weaker correlation among the studied variables.

Table 4.9

Correlation Analysis

	FP_DV	WMS_IV1	ERP_IV2	OS_IV3	OC_Med
FP_DV	1				
WMS_IV1	.727**	1			
ERP_IV2	.308**	.504**	1		
OS_IV3	.331**	.609**	.367**	1	
OC_Med	.455**	.812**	.666**	.519**	1

Note. **. Correlation is significant at the 0.01 level (2-tailed)

In this study, we have employed the cut off value of correlation coefficient introduced by Gupta & Kapoor (2014) as the benchmark which is as following:

1. $.70 \leq r < 1$ refers to Strong-correlation
2. $.40 \leq r < .70$ refers to Moderate-correlation
3. $0 < r \leq .40$ refers to Weak-correlation

The value of 1 in the diagonal line of the above table (4.9) actually refers to the similar variable's perfect variables, while we will discuss the relationship of the rest variables in the section below.

The results from the above-mentioned table showed that first independent variable, Warehouse Management System (WMS) has a significant and moderate positive correlation with Firm Performance (FP) such that ($r = .727, p < 0.01$), that depicts the increase of Warehouse Management System will result in the increase of Firm Performance. Then the second independent variable Enterprise Resource Planning (ERP) is having weak but positive correlation with Firm Performance (FP) such that ($r = .308, p < 0.01$), that depicts that the increase of Enterprise Resource Planning (ERP) will result in the decrease of Firm Performance. Then the third independent variable Outsourcing (OS) is having positive but weak correlation with Firm Performance (FP) such that ($r = .331, p < 0.01$), which demonstrates that the increase of the Outsourcing will result in the decrease of Firm Performance.

Then, the dependent variable Firm Performance (FP) is having positive but moderate correlation with mediating variable Organizational Competence (OC) such that ($r = .455, p < 0.01$), which demonstrates that when Firm Performance (FP) will increase the Organizational Competence (OC) will also increase.

Furthermore, the table also demonstrates that first independent variable Warehouse Management System (WMS) is having positive as well as strong correlation with Organizational Competence (OC) such that ($r = .812, p < 0.01$), which demonstrates that when Warehouse Management System (WMS) will increase the Organizational Competence (OC) will also increase. Then, Enterprise Resource Planning (ERP) is having positive and moderate correlation with Organizational Competence (OC) such that ($r = .666, p < 0.01$), which demonstrates that when Enterprise Resource Planning (ERP) will increase the Organizational Competence (OC) will also increase. Then Outsourcing (OS) is having positive but moderate correlation with Organizational Competence (OC) such that ($r = .519, p < 0.01$), which demonstrates that when Outsourcing (OS) will increase the Organizational Competence (OC) will also increase.

4.7 Direct Hypothesis Testing

To examine the study's first seven research question and the direct hypotheses we have conducted the simple linear regression analysis in the SPSS Software. The results and the complete interpretation of analysis results is mentioned ahead.

4.7.1 Regression Analysis

According to Kafle (2020), regression analysis is such a technique that helps to predict the relationship between an independent variable and a dependent variable. In regression analysis, the dependent variable is classified as the outcome variable and the independent variable is known as the predicting variable.

In regression analysis, the value of R² (R Square) indicates that how much variation in dependent variable is explained because of independent variable (Wetcher-Hendricks, 2011). According to Chin (1998), R square value is also known as the coefficient of determination. While the value of standardized beta is the one that represents the per unit change in dependent variable as per the unit change in independent variable. Whereas, the p-value depicts the significance of the beta value and the t-value determines the acceptance or the rejection of the hypothesis. According to Fukuda & Ohashi (1997), a t-value less than -2 and greater than +2 is generally considered for the acceptance of a hypothesis.

Table 4.10*Direct Hypothesis Results*

	Regression Weights	R ²	F	β	t-value	Sig.
H1	WMS → FP	.528	316.731	.727	17.797	.000
H2	ERP → FP	.095	29.718	.308	5.451	.000
H3	OS → FP	.110	34.853	.331	5.904	.000
H4	OC → FP	.207	73.774	.455	8.589	.000
H5	WMS → OC	.660	549.662	.812	23.445	.000
H6	ERP → OC	.444	226.162	.666	15.039	.000
H7	OS → OC	.269	104.225	.519	10.209	.000

Note. WMS: Warehouse Management System, ERP: Enterprise Resource Planning, OS: Outsourcing, FP: Firm Performance, OC: Organizational Competence

The results according to the above table (4.10) for this study's first direct hypothesis demonstrate that Warehouse management system predicts 52.8% variation in Firm Performance such that ($R^2 = .528$, $F(1,285) = 316.731$, $p < 0.05$). Then the standardized coefficient beta value indicates significantly positive regression between warehouse management system and firm performance such that ($\beta = .727$, $p < .05$), which demonstrates that change of one-unit in warehouse management system will result in .727 unit's positive change in firm performance. Results of t-statistics further declare a positive and significant

effect of warehouse management system on firm performance, such that ($t = 17.797$, $p < 0.05$), which completely accepts the first hypothesis of our study.

H1: Warehouse Management System has a significant and positive effect on Firm Performance (Supported).

The results according to the above table (4.10) for this study's second direct hypothesis demonstrate that enterprise resource planning predicts 9.5% variation in Firm Performance such that ($R^2 = .095$, $F(1,285) = 29.718$, $p < 0.05$). Then the standardized coefficient beta value indicates significantly positive regression between enterprise resource planning and firm performance such that ($\beta = .308$, $p < .05$), which demonstrates that change of one-unit in enterprise resource planning will result in .308 unit's positive change in firm performance. Results of t-statistics further declare a positive and significant effect of enterprise resource planning on firm performance, such that ($t = 5.451$, $p < 0.05$), which completely accepts the second hypothesis of our study.

H2: Enterprise Resource Planning has a significant and positive effect on Firm Performance (Supported).

The results according to the above table (4.10) for this study's third direct hypothesis demonstrate that Outsourcing predicts 11.0% variation in Firm Performance such that ($R^2 = .110$, $F(1,285) = 34.853$, $p < 0.05$). Then the standardized coefficient beta value indicates significantly positive regression between Outsourcing and firm performance such that ($\beta = .331$, $p < .05$), which demonstrates that change of one-unit in Outsourcing will result in .331 unit's positive change in firm performance. Results of t-statistics further declare a positive and significant effect of Outsourcing on firm performance, such that ($t = 5.904$, $p < 0.05$), which completely accepts the third hypothesis of our study.

H3: Outsourcing has a significant and positive effect on Firm Performance.

The results according to the above table (4.10) for this study's fourth direct hypothesis demonstrate that Organizational Competence predicts 20.7% variation in Firm Performance such that ($R^2 = .207$, $F(1,285) = 73.774$, $p < 0.05$). Then the standardized coefficient beta value indicates significantly positive regression between Organizational Competence and firm performance such that ($\beta = .455$, $p < .05$), which demonstrates that change of one-unit in Organizational Competence will result in .455 unit's positive change in firm performance. Results of t-statistics further declare a positive and significant effect of Organizational Competence on firm performance, such that ($t = 8.589$, $p < 0.05$), which completely accepts the fourth hypothesis of our study.

H4: Organizational Competency has a significant and positive effect on the Firm Performance (Supported).

The results according to the above table (4.10) for this study's fifth direct hypothesis demonstrate that Warehouse management system predicts 66.0% variation in Organizational Competency such that ($R^2 = .660$, $F(1,285) = 549.662$, $p < 0.05$). Then the standardized coefficient beta value indicates significantly positive regression between warehouse management system and Organizational Competency such that ($\beta = .812$, $p < .05$), which demonstrates that change of one-unit in warehouse management system will result in .812 unit's positive change in Organizational Competency. Results of t-statistics further declare a positive and significant effect of warehouse management system on Organizational Competency, such that ($t = 23.445$, $p < 0.05$), which completely accepts the fifth hypothesis of our study.

H5: Warehouse Management System has a significant and positive effect on Organizational Competency (Supported).

The results according to the above table (4.10) for this study's sixth direct hypothesis demonstrate that Enterprise Resource Planning predicts 66.0% variation in Organizational Competency such that ($R^2 = .444$, $F(1,285) = 226.162$, $p < 0.05$). Then the standardized coefficient beta value indicates significantly positive regression between Enterprise Resource Planning and Organizational Competency such that ($\beta = .666$, $p < .05$), which demonstrates that change of one-unit in Enterprise Resource Planning will result in .666 unit's positive change in Organizational Competency. Results of t-statistics further declare a positive and significant effect of Enterprise Resource Planning on Organizational Competency, such that ($t = 10.209$, $p < 0.05$), which completely accepts the sixth hypothesis of our study.

H6: Enterprise Resource Planning has a significant and positive effect on Organizational Competency (Supported).

The results according to the above table (4.10) for this study's seventh direct hypothesis demonstrate that Outsourcing predicts 66.0% variation in Organizational Competency such that ($R^2 = .269$, $F(1,285) = 104.225$, $p < 0.05$). Then the standardized coefficient beta value indicates significantly positive regression between Outsourcing and Organizational Competency such that ($\beta = .519$, $p < .05$), which demonstrates that change of one-unit in Outsourcing will result in .519 unit's positive change in Organizational Competency. Results of t-statistics further declare a positive and significant effect of Outsourcing on Organizational Competency, such that ($t = 10.209$, $p < 0.05$), which completely accepts the seventh hypothesis of our study.

H7: Outsourcing has a significant and positive effect on the Organizational Competency (Supported).

4.8 Indirect Hypothesis Testing

To examine the study's eighth, ninth and tenth research question and the indirect hypotheses (related to the mediating impact of Organizational Competency over the relationship of Supply Chain Management Strategies, i.e. "Warehouse Management System, Enterprise Resource Planning and Outsourcing" and Firm Performance), the mediation analysis was run in SPSS Software. The results and the complete interpretation of analysis results is mentioned ahead.

4.8.1 Mediation Analysis

In order to examine the eighth, ninth and tenth indirect hypotheses (H_8 , H_9 , H_{10}) of the study, we have executed the mediation analysis.

4.8.1.1 Mediation Analysis for 8th Hypothesis

First, we have executed mediation analysis for the eighth hypothesis, that is related to the mediating impact of Organizational Competency over the relationship of Warehouse Management System and Firm Performance.

For this purpose, we have executed model no. 4, via the Process Macro v 2.16 from Andrew F. Hayes, in SPSS software. In the software, Firm Performance (FP_DV) was assigned as the study's dependent variable (Y), Warehouse Management System (WMS_IV1) as the first independent variable (X) and Organizational Competence (OC_Med) as the mediator (M).

The table (4.11) holds the results of mediation analysis for 8th hypothesis, these results are further interpreted in the subsequent paragraph.

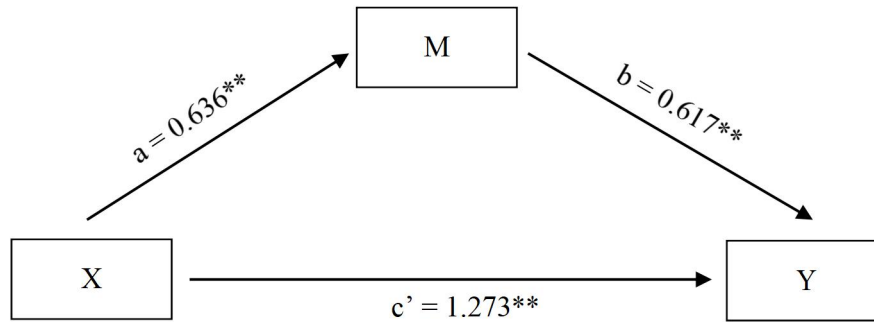


Figure 4.1: Statistical Diagram for 8th Hypothesis

Table 4.11

Results for 8th Hypothesis

Direct Effects	β	SE	t	p	LLCI	ULCI
X on M (a)	0.636	0.027	23.445	.000	0.583	0.689
M on Y (b)	0.617	0.102	6.048	.000	0.417	0.819
X on Y (c')	1.273	0.080	15.922	.000	1.116	1.431
Indirect Effect	β	Boot SE	Boot LLCI	Boot ULCI		
X on Y through M (a*b)	0.393	0.093	0.217	0.580		

Note. X: Warehouse Management System (WMS_IV1), Y: Firm Performance (FP_DV), M: Organizational Competence (OC_Med)

The results of the above table (4.11) hold the statistics of mediation analysis, where it is shown that in the very first-step, the direct-effect of Warehouse Management System (WMS_IV1) was examined on Organizational Competence (OC_Med) and was revealed to be significant and positive, such that ($\beta = 0.636$, 95% CI [0.689, 0.583], $p < 0.01$), where the upper and lower limits of the confidence interval (ULCI & LLCI) carry same signs thus demonstrating that zero doesn't occurs between the values of both boundaries, so we can

conclude that there exists a statistically significant direct effect between the relationship, which is also been confirmed from the t-value such that ($t = 23.445$).

Then at the mediation analysis's second-step, the direct-effect of Organizational Competence (OC_Med) was examined on Firm Performance (FP_DV), while controlling for Warehouse Management System (WMS_IV1) was revealed to be significant and positive, such that ($\beta = 0.617$, 95% CI [0.819, 0.417], $p < 0.01$), where ULCI & LLCI hold the similar signs, thus signifying that both bounds don't embrace zero between them, due to which we can conclude that there exists a statistically significant direct effect, which is also been confirmed from the t-value, which is ($t = 6.048$).

Then at the mediation analysis's third-step, the direct-effect of Warehouse Management System (WMS_IV1) was examined on Firm Performance (FP_DV), while controlling for Organizational Competence (OC_Med) was revealed to be significant and positive, such that ($\beta = 1.273$, 95% CI [1.431, 1.116], $p < 0.01$), where ULCI & LLCI hold the similar signs, thus signifying that both bounds don't embrace zero between them, due to which we can conclude that there exists a statistically significant direct effect, which is also been confirmed from the t-value, which is ($t = 15.922$).

At the last step, the results demonstrate the indirect effect of Warehouse Management System (WMS_IV1) on Firm Performance (FP_DV) through the mediation of Organizational Competence (OC_Med) to be significant, such that ($\beta = 0.393$, 95% CI [0.580, 0.217], where ULCI & LLCI hold the equivalent signs, thus representing that both bounds don't contain zero between them, due to which we can determine that there exists a statistically significant indirect effect. Thus, we conclude that Organizational Competence mediates the relationship between Warehouse Management System and Firm Performance, and these findings support our eighth hypothesis:

H₃: Organizational Competency mediates the relationship of Warehouse Management System and Firm Performance (Supported).

4.8.1.2 Mediation Analysis for 9th Hypothesis

We have executed mediation analysis for the ninth hypothesis, that is related to the mediating impact of Organizational Competency over the relationship of Enterprise Resource Planning and Firm Performance.

For this purpose, we have executed model no. 4, via the Process Macro v 2.16 from Andrew F. Hayes, in SPSS software. In the software, Firm Performance (FP_DV) was entered as the study's dependent variable (Y), Enterprise Resource Planning (ERP_IV2) as the second independent variable (X) and Organizational Competence (OC_Med) as the

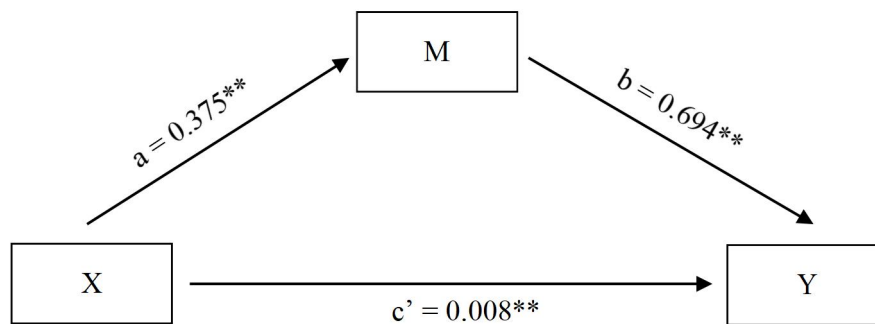


Figure 4.1: Statistical Diagram for 9th Hypothesis

mediator (M).

The table (4.12) holds the results of mediation analysis for 9th hypothesis, these results are further interpreted in the subsequent paragraph.

Table 4.12*Results for 9th Hypothesis*

Direct Effects	β	SE	t	p	LLCI	ULCI
X on M (a)	0.375	0.025	15.039	.000	0.327	0.425
M on Y (b)	0.694	0.110	6.305	.000	0.477	0.910
X on Y (c')	0.008	0.062	0.132	.000	0.114	0.130
Indirect Effect	β	Boot SE	Boot LLCI		Boot ULCI	
X on Y through M (a*b)	0.261	0.049	0.164		0.357	

Note. X: Enterprise Resource Planning (ERP_IV2), Y: Firm Performance (FP_DV), M: Organizational Competence (OC_Med)

The results of the above table (4.12) hold the statistics of mediation analysis, where it is shown that in the very first-step, the direct-effect of Enterprise Resource Planning (ERP_IV2) was examined on Organizational Competence (OC_Med) and was revealed to be significant and positive, such that ($\beta = 0.375$, 95% CI [0.425, 0.327], $p < 0.01$), where the upper and lower limits of the confidence interval (ULCI & LLCI) carry same signs thus demonstrating that zero doesn't occurs between the values of both boundaries, so we can conclude that there exists a statistically significant direct effect between the relationship, which is also been confirmed from the t-value such that ($t = 15.039$).

Then at the mediation analysis's second-step, the direct-effect of Organizational Competence (OC_Med) was examined on Firm Performance (FP_DV), while controlling for Enterprise Resource Planning (ERP_IV2) was revealed to be significant and positive, such that ($\beta = 0.694$, 95% CI [0.910, 0.417], $p < 0.01$), where ULCI & LLCI hold the similar signs,

thus signifying that both bounds don't embrace zero between them, due to which we can conclude that there exists a statistically significant direct effect, which is also been confirmed from the t-value, which is ($t = 6.305$).

Then at the mediation analysis's third-step, the direct-effect of Enterprise Resource Planning (ERP_IV2) was examined on Firm Performance (FP_DV), while controlling for Organizational Competence (OC_Med) was revealed to be significant and positive, such that ($\beta = 0.008$, 95% CI [0.130, 1.114], $p < 0.01$), where ULCI & LLCI hold the similar signs, thus signifying that both bounds don't embrace zero between them, due to which we can conclude that there exists a statistically significant direct effect, which is also been confirmed from the t-value, which is ($t = 6.305$).

At the last step, the results demonstrate the indirect effect of Enterprise Resource Planning (ERP_IV2) on Firm Performance (FP_DV) through the mediation of Organizational Competence (OC_Med) to be significant, such that ($\beta = 0.261$, 95% CI [0.357, 0.164], where ULCI & LLCI hold the equivalent signs, thus representing that both bounds don't contain zero between them, due to which we can determine that there exists a statistically significant indirect effect. Thus, we conclude that Organizational Competence mediates the relationship between Enterprise Resource Planning and Firm Performance, and these findings support our ninth hypothesis:

H₉: Organizational Competency mediates the relationship of Enterprise Resource Planning and Firm Performance (Supported).

4.8.1.3 Mediation Analysis for 10th Hypothesis

We have executed mediation analysis for the tenth hypothesis, that is related to the mediating impact of Organizational Competency over the relationship of Outsourcing and Firm Performance.

For this purpose, we have executed model no. 4, via the Process Macro v 2.16 from Andrew F. Hayes, in SPSS software. In the software, Firm Performance (FP_DV) was assigned as the study's dependent variable (Y), Outsourcing (OS_IV3) as the third independent variable (X) and Organizational Competence (OC_Med) as the mediator (M).

The table (4.11) holds the results of mediation analysis for 8th hypothesis, these results are further interpreted in the subsequent paragraph.

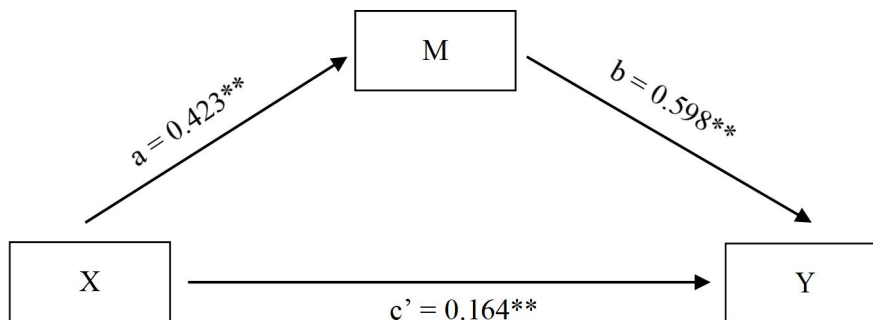


Figure 4.1: Statistical Diagram for 10th Hypothesis

Table 4.13*Results for 10th Hypothesis*

Direct Effects	β	SE	t	p	LLCI	ULCI
X on M (a)	0.423	0.042	10.209	.000	0.342	0.505
M on Y (b)	0.598	0.095	6.289	.000	0.411	0.786
X on Y (c')	0.164	0.077	2.117	.000	0.012	0.317
Indirect Effect	β	Boot SE	Boot LLCI		Boot ULCI	
X on Y through M (a*b)	0.254	0.067	0.137		0.396	

Note. X: Outsourcing (OS_IV1), Y: Firm Performance (FP_DV), M: Organizational Competence (OC_Med)

The results of the above table (4.13) hold the statistics of mediation analysis, where it is shown that in the very first-step, the direct-effect of Outsourcing (OS_IV3) was examined on Organizational Competence (OC_Med) and was revealed to be significant and positive, such that ($\beta = 0.423$, 95% CI [0.505, 0.342], $p < 0.01$), where the upper and lower limits of the confidence interval (ULCI & LLCI) carry same signs thus demonstrating that zero doesn't occurs between the values of both boundaries, so we can conclude that there exists a statistically significant direct effect between the relationship, which is also been confirmed from the t-value such that ($t = 10.209$).

Then at the mediation analysis's second-step, the direct-effect of Organizational Competence (OC_Med) was examined on Firm Performance (FP_DV), while controlling for Outsourcing (OS_IV3) was revealed to be significant and positive, such that ($\beta = 0.598$, 95% CI [0.786, 0.411], $p < 0.01$), where ULCI & LLCI hold the similar signs, thus signifying that both bounds don't embrace zero between them, due to which we can conclude that there

exists a statistically significant direct effect, which is also been confirmed from the t-value, which is ($t = 6.289$).

Then at the mediation analysis's third-step, the direct-effect of Outsourcing (OS_IV3) was examined on Firm Performance (FP_DV), while controlling for Organizational Competence (OC_Med) was revealed to be significant and positive, such that ($\beta = 0.164$, 95% CI [0.317, 0.012], $p < 0.01$), where ULCI & LLCI hold the similar signs, thus signifying that both bounds don't embrace zero between them, due to which we can conclude that there exists a statistically significant direct effect, which is also been confirmed from the t-value, which is ($t = 2.117$).

At the last step, the results demonstrate the indirect effect of Outsourcing (OS_IV3) on Firm Performance (FP_DV) through the mediation of Organizational Competence (OC_Med) to be significant, such that ($\beta = 0.254$, 95% CI [0.396, 0.137], where ULCI & LLCI hold the equivalent signs, thus representing that both bounds don't contain zero between them, due to which we can determine that there exists a statistically significant indirect effect. Thus, we conclude that Organizational Competence mediates the relationship between Outsourcing and Firm Performance, and these findings support our tenth hypothesis:

H₁₀: Organizational Competency mediates the relationship of Outsourcing and Firm Performance (Supported).

4.9 Hypothesis Summary

The complete summary of the results of this study's hypotheses are presented in the table (4.14), which comprise the statements as well as the results of hypotheses. However, we can clearly notice that all of the study results are in support of this study's hypotheses.

Table 4.14

Summary of Hypotheses Results

No.	Hypotheses Statements	Results
H1	Warehouse Management System has a significant and positive effect on Firm Performance	Supported
H2	Enterprise Resource Planning has a significant and positive effect on Firm Performance	Supported
H3	Outsourcing has a significant and positive effect on Firm Performance	Supported
H4	Organizational Competency has a significant and positive effect on the Firm Performance	Supported
H5	Warehouse Management System has a significant and positive effect on Organizational Competency	Supported
H6	Enterprise Resource Planning has a significant and positive effect on Organizational Competency	Supported

H7	Outsourcing has a significant and positive effect on the Organizational Competency	Supported
H8	Organizational Competency mediates the relationship of Warehouse Management System and Firm Performance	Supported
H9	Organizational Competency mediates the relationship of Enterprise Resource Planning and Firm Performance.	Supported
H10	Organizational Competency mediates the relationship of Outsourcing and Firm Performance.	Supported

Chapter 5

Conclusion and Discussion

This chapter presents the detailed discussion of the statistical analysis done in previous section. After the discussion, limitations of the study, future recommendations and practical implications were explored, followed by the conclusion of the study.

5.1 Discussion

This study was aimed to investigate the research framework inclusive of mediation effect, where the effect of different supply chain management strategies as an independent variable was observed on firm's performance which is the dependent variable, while the role of organizational competence was tested as a mediating variable between the relationship of supply chain management strategies and firm performance.

The first hypothesis and research question of the study was based on the direct relationship between warehouse management system and firm performance which was tested through correlation and regression analysis. Results of the study revealed a significant impact of warehouse management system on firm performance, which supports our first hypothesis, i.e. "Warehouse management system has significant impact on firm performance". These findings were found to be consistent with the findings of numerous studies. For instance, (Luo et al., 2019; Ketchanchai et al., 2021; R. Lee, 2021) revealed a positive significant impact of warehouse management system on firm performance.

Second research hypothesis and research question were regarding the direct relationship between another supply chain strategy i.e. enterprise resource planning and firm performance, was tested with the help of correlation and regression analysis. Our findings revealed that enterprise resource planning has a significant impact on firm performance. These findings support our second hypothesis i.e. "Enterprise resource planning has

significant impact on firm performance”. These findings were consistent with the resource based view (RBV) theory and also with the findings of numerous studies. Putra et al., 2021; Carlsson-Wall et al., 2022; Fauzi, 2021; Chofreh et al., 2020; revealed a positive and significant relationship between enterprise resource planning and firm performance.

The third research hypothesis and question were based on the direct relationship between outsourcing, one of the supply chain management strategy, and firm performance and this relationship was tested by using correlation and regression analysis. Findings of the study revealed a positive and significant impact of outsourcing on firm performance, thus supporting our third hypothesis i.e. “Outsourcing has significant impact on firm performance”. These findings were also consistent with the previous studies. For instance, Lahiri et al., 2022; Hamidin & Rofaida, 2021; R. Lee, 2021; also revealed the same results that outsourcing has a significant effect on firm performance.

The fourth research hypothesis and research question were based on the direct relationship between organizational competence and firm performance, which was again tested through correlation and regression analysis. Our results revealed that organizational competence and firm performance have a significant relationship which confirms our fourth hypothesis that states “Organizational competence has significant impact on firm performance”. Our findings were also supported by previous studies i.e. Rahmani et al., 2019; R. Lee, 2021; McAlearney et al., 2021; Khamphui et al., 2021; also reported a significant impact of organizational competence on firm performance.

Fifth hypothesis of our study and the research question was based on the direct relationship between warehouse management system and organizational competence and this was tested by using correlation and regression analysis. Results of the study revealed a significant impact of warehouse management system on organizational competence, hence, supporting the fifth hypothesis that “Warehouse management system has significant impact

on organizational competence”. These findings were backed by different researchers i.e. Salee & Chutima, 2021; R. Lee, 2021; Munkácsi, 2021; concluded a positive significant impact of warehouse management system on organizational competence.

Sixth hypothesis and research question were based on the direct relationship between enterprise resource planning and organizational competence, which was tested through correlation and regression analysis. Findings of the study confirms the presence of a significant impact of enterprise resource planning on organizational competence which supports our sixth hypothesis that “Enterprise resource planning has significant impact on organizational competence”. Other studies also confirm our results as Putra et al., 2021; Fauzi, 2021; R. Lee, 2021; also found a significant impact of enterprise resource planning on organizational competence.

Seventh hypothesis and research question of the study was based on the direct relationship between outsourcing and organizational competence and it was again carried out by using correlation and regression analysis. Findings revealed a significant impact of outsourcing on organizational competence that also supports the seventh hypothesis that “Outsourcing has significant impact on organizational competence”. These findings were consistent with different studies. According to Franco, 2021; R. Lee, 2021; there exists a significant impact of outsourcing on organizational competence.

Eighth hypothesis and research question of the study was based on the relationship between warehouse management system and firm performance with the mediating effect of organizational competence. Mediation analysis was carried out by using process macro, model no. 4. Overall results revealed that warehouse management system has a significant direct impact on firm performance, as well as a significant indirect impact on firm performance through the mediation of organizational competence. Hence, organizational competence has a significant mediating effect between the relationship of warehouse

management system and firm performance thus this supports the eighth hypothesis of our study that “Organizational competence mediates the relationship of warehouse management system and firm performance”. These findings were consistent with the study of R. Lee, (2021), whose findings proved that organizational competence significantly mediates the relationship of warehouse management system and firm performance.

Ninth hypothesis and research question were based on the relationship between enterprise resource planning and firm performance with the mediating effect of organizational competence. Analysis was done by using process macro, model no 4. Our findings revealed that enterprise resource planning has a significant direct impact on firm performance as well as a significant indirect impact on firm performance through the mediating effect of organizational competence, hence, this lead to accept the ninth hypothesis that “Organizational competence mediates the relationship of enterprise resource planning and firm performance”. These findings were also consistent with the literature as Suhendra et al., 2019; Putra et al., 2021; R. Lee, 2021; concluded that organizational competence significantly mediates the relationship between enterprise resource planning and firm performance.

Tenth hypothesis and research question were regarding the relationship between outsourcing and firm performance with the mediating effect of organizational competence. Analysis was again done by using process macro, model no 4. Results of the study revealed a significant direct impact of outsourcing on firm performance as well as a significant indirect impact has observed through the mediating effect of organizational competence hence it approves the tenth hypothesis of our study that “Organizational competence mediates the relationship between outsourcing and firm performance”. These findings were found to be consistent with the assumption of resource based view (RBV) theory and with the findings of previous studies i.e. the study of R. Lee, (2021), whose findings proved that organizational

competence significantly mediates the relationship of outsourcing and firm performance. Compared to numerous researches which were directly related to our study, this study is differentiated in contextual terms. This study attempts to fulfill the gap, identified by Lee et al., (2021), to observe the impact of constructs of supply chain management strategies on firm performance in different contexts.

5.2 Limitations

This study focuses on the impact of supply chain management strategies on firm performance of manufacturing industry of Pakistan, specifically the textile, pharmaceutical, steel and fertilizer sectors, hence these findings cannot be generalized for other firms. Secondly, supply chain management is a very complex and broader domain. This study is just limited to observe the impact of three of the supply chain management strategies (warehouse management system, enterprise resource planning and outsourcing) but it is not enough to understand the whole scenario as it cannot cover the overall domain.

5.3 Future recommendations

In the light of limitations of current study, there are following directions for future researchers. Firstly, future researchers are advised to introduce different aspects of supply chain management e.g. collaborating planning, forecasting and replenishment etc. in order to study as much domains as possible. Future researches can also add moderator in this model such as supply chain performance, supervisor support, coworker support. Since this study is in the context of Pakistan but the future researchers can conduct a study on any other country as well. Furthermore, the future studies can focus on the comparison between the results of our findings with the empirical evidence of other sectors of Pakistan except manufacturing industry.

5.4 Implications for Practice

This study is quite beneficial because of its practical implications from theoretical as well as managerial aspects in the field of supply chain management. Theoretical and managerial implications are as following.

5.4.1 Theoretical implications

Theoretically, this study is important as it provides a new exploration on the issue of supply chain management strategies, organizational competence and firm performance in the context of Pakistan. This study contributes in three ways from the theoretical aspects as it confirms that warehouse management system, enterprise resource planning and outsourcing positively affects the firm performance by means of mediating position of organizational competence.

5.4.2 Practical implications

This study also provides some practical implications from managerial aspects as well. This study would help the managers to understand the importance of supply chain management strategies and to enhance their firm's performance. Firm's management is recommended to develop strong relationship with suppliers to attain improved performance. Managers can get insight from this study to understand the effectiveness of enterprise resource planning as it could enhance their organizational competence which ultimately affects their firm's performance. Managers are also advised to focus on the importance of warehouse management system and outsourcing in order to cope up in a highly competitive environment. It is recommended that firms can attain new opportunities in short run by improving their existing supply chain practices but could only attain long run advantages by adopting and developing new supply chain strategies.

5.5 Conclusion

This study was aimed to observe the impact of supply chain management strategies i.e. warehouse management system, enterprise resource planning and outsourcing, on firm performance with the mediating role of organizational competence in manufacturing sector of Pakistan. For this purpose, primary data was gathered with the help of structured questionnaire of 28 items, which were mainly filled by the personnel from different firms of Textile, Pharmaceutical, Steel and Fertilizer Sectors. Pakistan. About 500 questionnaires were sent through official websites, email and business communication-based platforms, out of which 307 responses were received with response rate of 61.4% without any missing or incomplete response. The data was analyzed with the help of SPSS software. Numerous statistical analysis tests i.e. reliability, correlation, regression and mediation analysis were executed to test the hypothesis. Findings of the study revealed that warehouse management system, enterprise resource planning and outsourcing have a significant direct impact on firm performance. Study shows that supply chain management strategies also have a significant impact on organizational competence. Also, it was found that enhancing organizational competence will have a significant impact on firm performance as well. Furthermore, it was concluded that organizational competence significantly mediates the relationship among all the three supply chain management strategies and firm performance among these manufacturing firms. This reveals that firms that practices SCM strategies exhibits relatively higher organizational competence which in return leads toward increased firm performance. So, it can be assumed that enhanced organizational competence causes increase in performance of the firms because of its mediating role. Hence, in such a competitive environment, firms can enhance their performance by implementing supply chain management strategies to improve their competitiveness.

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APPENDIX-A Questionnaire

Dear Respondents,

I am an MBA student at Bahria University Islamabad and I'm inviting you to participate in this research by completing this survey. This questionnaire has been designed for the sole purpose of collecting data regarding "**Relationship between SCM Strategies and Firm's Performance in the Manufacturing Sector of Pakistan**". The data collected will be treated with very high degree confidentiality and it is meant for academic purpose only. You are kindly requested to fill out this questionnaire by choosing appropriate answers.

With regards,

Shiza Dawood (Bahria University)

SECTION 1

Demographic variables

Industry Sector	Designation	Experience	No. of Employees	Total Revenue
1. Steel	1. Employee	1. Under 2 Years	1. Less Than 50 Persons	1. Under 5 Billion
2. Fertilizer	2. Deputy Section Head	2. 2 Years to 5 Years	2. 51 Persons to 100 Persons	2. 5 Billion to 10 Billion
3. Textile	3. Section Head	3. 5 Years to 8 Years	3. 101 Persons to 200 Persons	3. 10 Billion to 20 Billion
4. Pharmaceutical	4. Deputy Department Head	4. 8 Years to 10 Years	4. More Than 201 Persons	4. Over 20 Billion
	5. Executive			
	6. Chief Executive Officer			

SECTION 2

Research/Study variables

Dear respondents, kindly pick your response as given options:

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

Supply Chain Management Strategies

S. No	Warehouse Management System (WMS)	1	2	3	4	5
WMS-1	Your firm has built a WMS system infrastructure for continuous maintenance.					
WMS-2	Your firm is actively using the WMS system after persuading business parties and stakeholders of its importance.					
WMS-3	Your firm has improved work efficiency by using the WMS system.					
WMS-4	Your firm has increased productivity by using the WMS system.					

Enterprise Resource Planning (ERP)

S. No	Enterprise Resource Planning (ERP)	1	2	3	4	5
ERP-1	Your firm has built an ERP system infrastructure for continuous maintenance.					

ERP-2	Your firm is actively using the ERP system after persuading business parties and stakeholders of its importance.	1	2	3	4	5
ERP-3	Your firm has improved work efficiency by using the ERP system.	1	2	3	4	5
ERP-4	Your firm has increased productivity by using the ERP system.	1	2	3	4	5

S. No	Outsourcing (OS)					
OS-1	You have built outsourcing infrastructure for continuous maintenance.	1	2	3	4	5
OS-2	Your firm is actively using outsourcing after persuading business parties and stakeholders of its importance.	1	2	3	4	5
OS-3	Your firm has improved work efficiency by using outsourcing.	1	2	3	4	5
OS-4	Your firm has increased productivity by using outsourcing.	1	2	3	4	5

S. No	Firms Performance (FP)					
FP-1	Your firm has generally reduced manufacturing costs per unit.	1	2	3	4	5
FP-2	Your firm has decreased the defect rate of products.	1	2	3	4	5
FP-3	Your firm has generally shortened the lead time and new product development cycle.	1	2	3	4	5
FP-4	Your firm has improved flexibility in product design changes and production fluctuations.	1	2	3	4	5
FP-5	Your firm has increased its sales.	1	2	3	4	5
FP-6	Your firm has increased its operating profit rate.	1	2	3	4	5
FP-7	Your firm has increased its return on investment.	1	2	3	4	5
FP-8	Your firm has reduced its production and logistics cost.	1	2	3	4	5

S. No	Organizational Competence (OC)					
OC-1	Your firm has a standardized process for new product (service) development.	1	2	3	4	5
OC-2	Your firm integrates and links internal resources closely.	1	2	3	4	5
OC-3	Your firm integrates R&D, production and marketing capabilities.	1	2	3	4	5
OC-4	Your firm works closely with external specialized agencies in connection with technology commercialization.	1	2	3	4	5
OC-5	Your firm learns quickly about external technologies.	1	2	3	4	5
OC-6	Your firm has an excellent learning capability of technologies acquired from the outside.	1	2	3	4	5
OC-7	Your firm is generally superior in product (service) production to other firms in the same industry.	1	2	3	4	5
OC-8	Your firm allocates the effective role of human resources in its organization to support their work.	1	2	3	4	5

“RESEARCH IS TO SEE WHAT EVERYBODY ELSE HAS SEEN, AND TO THINK WHAT NOBODY ELSE HAS THOUGHT”

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