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The impact of procurement strategies on supply chain sustainability in the pharmaceutical industry

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ABSTRACT

In today's society, there is a major role that procurement is playing in sustainability because of great requirements and demand for improvement in some supply chain processes and procurement practices. It helps in making rational decisions that encompass economic, social, and environmental parts of society. Corporate sustainability requires such abilities to impact external firms in the process of supply chain. In the Economic advancement markers worldwide, public and neighbourhood levels advance sustainability approaches are advised, as they represent the advancement in the supply chain process. By implementing procurement strategies in the pharmaceutical industry elements of supply chain sustainability can improve environmental, social a financial impact on society. It is a cross-sectional study. The present study was conducted in the urban areas of Karachi, Pakistan. Data collection will be through questionnaires and surveys. It is designed for information collection so it can be used to determine the improvement and impact of sustainability on procurement strategies in supply chain sustainability.

Keywords: *Green purchasing, Sustainability, Sustainable supply chain, Procurement, SPSS, Quantitative research*

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1. Introduction

The pharmaceutical industry plays a major role in the supply of life-saving medicines to this society (Baloch & Rashid, 2022). Pharmaceutical industries can influence the environment and impact society in many ways; mostly patients discard pills or tablets in improper ways, expired and unutilized medicines, pesticides and molecular farming waste exclusion, pharmacies mishandling of drugs, etc. (Kumar, 2018). An ever-increasing request for items and their utilization has put weight on mechanical yield and their supply chains, which has come about with negative environmental and societal consequences. Increased levels of contamination and natural disasters produced by mechanical generation have prompted a few analysts and industry experts to focus on challenges related to maintainable generation and utilization within the context of sustainable supply chain management (Rajeev, 2017). The sustainable flow of goods Management has ended up with a theme of being extraordinarily intrigued and is connected to the suspicion that a more maintainable execution for businesses would be accomplished on its usage. Such execution has to be accomplished in all three measurements of maintainability (Rashid et al., 2024d).

The sudden requirement of an ecological system over a long time in all angles of our lives has made it an unused competitive system for companies that are run with a key administration approach. In a conventional SWOT examination, we might say that the current circumstance is an opportunity vs. a risk, depending on the capacity of the chief who needs to bargain with it. Subsequently, concern about supportability isn't an address of being well-meaning and humanistic, but maybe it is an issue of administrative responsibility and the hunt for productivity (Werbach, 2011).

1.1 Sustainable Growth

Sustainable growth is an act to compose a plan of action incorporating various steps of human action, which was a separate feature previously, based on moral consideration concerning human responsibility for the environment (Rashid et al., 2024b). Sustainable supply chain complexity is a management conception that leads to far-reaching improvements in the performance of the supply chain process. Putting efforts into an environmentally and socially sustainable supply chain benefits current and upcoming generations to a great extent and fills out the lucidity in the management of the supply chain process into right-handed, economic, lawful, social, and technical features of performance (Zimon, 2019). Supply chain administration, which covers the flow of raw materials, finished goods, and data, has become a critical concern in advanced manufacturing and service frameworks. Supply chain management necessitates the effective use of resources and data that extend beyond the fulfilment of a client's request for a stream of goods and services. Within literature and most non-academic assets, sustainability is defined as the ability to support, hone, or prepare, or as a reference to innate awareness (Rashid et al., 2024c). Both interpretations are substantial yet fragmented. Maintainability is directly linked to the idea of feasible improvement, which is characterized as "the innovation that satisfies the wants as in show without affecting the capacity of upcoming eras to suit their claim demands." The writing on the sustainability of supply chains centres on audits and many ideas to join supportability. Be that as it may, most of the existing writing considers the financial and natural perspectives of maintainability (Türkay et al., 2016).

Environmental control of purchasing and the supply chain (specifically green purchasing) is now remarkably commonplace in the middle of larger companies, and it shows that it is also increasingly being used as a corporate practice. Participation in recycling initiatives demands close coordination with all business partners, like alliances with vendors to eliminate waste in raw materials and packaging as well (Rasheed et al., 2024). To build evaluation criteria with vendors, use grading systems for suppliers based on their performance, design questionnaires for supplier evaluation, and set standards for environmental processes in the selection of strategic business partners, evaluation criteria should also apply in the buying process (Rashid et al., 2024a).

Supplier management is a modified process that identifies that all the vendors are different from each other and that diversification is not required in a customer-supplier partnership with many different strategies. When this alternative is achieved, there is a great possibility to get better gain and value from both the offered services and the products procured. This can be achieved by the involvement of the organization with the team and by functioning in an organized way to escape disorganization from the outside. Following the mass manufacturing model of the management of business partners is not so easy for all organizations. Many organizations have distinct needs and varying supply networks, which they use to improve supplier-partner relationships.

Logistics management is also a part of the supply chain and plays an important role in supply chain sustainability, implying a system that is designed to move goods physically. Supply chain professionals describe the process of logistic management, which is responsible for planning, designing, implementing, and controlling efficient forward and reverse flows of goods, assistance, and any other alliance details in between production and consumption. The main objective of logistics management is to meet customer requirements. In every firm, there are different logistics operations and different evaluation criteria.

1.2 Background of the Study

Procurement has a vital role in sustainability as there is a demand for improvement in some policies and some practices to enlarge the far-away limitations of firms in incorporating their whole supply chain process. Proper guidelines on sustainability inspire procurement to make rational decisions that encircle the economic, environmental, and social components of society. In corporate sustainability, the part of procurement in handling the process is strenuous and requires great ability to impact external firms in the supply chain. Sustainability ways are being advised by various approaches that started as economic advancement markers at worldwide, public, and neighbourhood levels. These rules represent the expansiveness and intricacy of the subject. Regarding the economic acquisition, such expansiveness and intricacy are probably going to add to uneasiness and disarray at the operational level, prompting dormancy among those answerable for acquisition decision-making. Specialists should build up measures that address this nervousness. Some portion of the essential and strategic advancement cycle could incorporate (1) the foundation of a few pointers that are specific and appropriate to the acquisition and procurement capacity and (2) an emphasis on how these markers coordinate every component of the system, i.e., instead of creating unmistakable and separate natural, financial, and social pointers, they would show how procurement approaches have an impact on each of the three components (Bryde & Meehan, 2011).

1.3 Problem Statement

It is not, at this point, enough for firms to be concerned uniquely with looking for a benefit; they ought to likewise give something back to society everywhere, limit their adverse consequences on the climate, and have some obligation regarding the conduct of their providers on issues, for example, child labour, wellbeing, security, and contamination. Supply chain management (SCM) is the administration of an organization of interconnected associations engaged in the arrangement of items and administrations for end clients. There has been expanding revenue lately in how associations address manageability in their inventory chains, which has been depicted as SCM, which joins the triple main concern of supportability. There has been expanding revenue lately in how associations address manageability in their inventory chains, which has been depicted as sustainability SCM that joins the triple main concern of supportability (Jones & Walker, 2012).

Effective commodity supply chain management processes support environmental sustainability as they have great impacts on environmental changes. The supply chain can cause the emergence of greenhouse gas emissions, harmful and deadly gases, deforestation, etc. Thus, environmental sustainability sets off a main body in the organizations (Albhirat et al., 2024).

Supplier management cannot be applied without a basic change in the procurement process.

Innovations are needed for the cooperation of all business partners in the supply chain network. The supplier and the customer should align together in close coordination. This occurs at the product or service level, which increases the need for an evaluation and the process of sourcing within the framework of the supply chain (Rashid & Rasheed, 2022)**.**

1.4 Purpose of the Study

The study's major goal is to evaluate the effect of different procurement strategies on the supply chain sustainability process. The objective is to minimize hazardous material from the environment and to maintain or sustain the supply chain process environmentally friendly to avoid crucial health issues.

1.5 Research Objective

The key motive of the research is to assess the impact of different procurement strategies on the sustainability of the supply chain process.

1.6 Research Questions

How will procurement strategies impact the sustainable growth of the pharmaceutical industry?

a. The social proportions of sustainability link to the supply chain's human capital process. In terms of social proportions, improvement in sustainability entails establishing and running a company exercise that seems to be supportive as well as advantageous to labour, collectivism, and the supply chain that connects regions. What are your views regarding this statement?
b. By applying environmental management to procurement, what impact and growth does a company show?
c. Is green sourcing helpful in supply chain management?

1.7 Significance of the Study

The purpose of this research is to look into the effects of the green supply chain process. This research investigates the impact of sustainability on procurement strategies in the pharmaceutical industry. Sustainability is the key to a better future. This research can be beneficial for environmental management and social health by implementing reverse logistics in supply chain flow. The green supply chain helps guide the purchasing and sourcing of materials while keeping in mind the health of the environment. If the pharmaceutical industry works in a way that reduces environmental hazards through its raw material purchasing and production, one can achieve sustainable growth. A sustainable supply chain, specifically in imports, can enhance productivity while saving costs as well. By approaching techniques and resources of sustainability firms can build work efficiency.

1.8 Outline of the Study

This report has five sections. In the first section, we have discussed the impact of pharmaceutical industry supply chains on the environment. Supply chain flow through sustainability, the problem statement, the study's importance in designing research questions, and the research's goal and the study's purpose. The following part comprises a theoretical examination that elaborates on sustainability tools, green sourcing globally, sustainability measuring indicators, empirical reviews, and a research framework with variables. The third chapter contains research methodology, which we have discussed regarding data collection and sampling techniques. The fourth part is about analyzing the data and results that were collected through the questionnaire. The last chapter is about the conclusion, discussion, implications of the research, and further studies.

2. Literature Review

2.1 Review of Sustainability Tools

Organizations are getting further intrigued by manageability on some grounds, some inward and some outer. The main line of assault is to direct 'nearby' problems that is, to chip away at things inside their nearby control. The four different techniques that organizations use to do this are examined below. Maybe center on the ecological effects themselves; other examination centers around instruments to assess expenses and advantages of green practices.

2.2 Green Sourcing

One more major way that organizations have strived to level up growth and their company's long-term viability is by involving environment-related issues and problems in their progressive issues of purchasing. Firms can, for example, collaborate with suppliers to discover raw materials that have a lower environmental impact. Analysts had measured the crucial features of environmentally friendly sourcing as well as the more practical aspects. To be precise, there has been a tremendous amount of progress. Functioning point in terms of the environment; in addition, to a lesser extent, the social environment proportion of the business line's long-term viability. However, the majority of this study observed a single framework or businesses that are solely focused on one parameter. Tasks and works that investigate the great process of the supply chain context are essentially descriptive. Whereas these are major moves towards the mastery of sustainability, there is still a requirement to look beyond the obvious in each relationship throughout the supply chain, as well as in the focus of research that links mixed measures of execution (Rashid et al., 2022a).

In modern years, different organizations have started multiple attempts to ‘green’ their fields and businesses. The impulsion for these attempts comes from external factors and forces, such as high and elevated rules and alterations in consumer behaviour, as well as from internal forces, like the value of authority and the authority of an organization. Like, producers of huge and bulk appliances must follow new rules regarding recovery and maintenance of their product into contemplation as they build the coming peer group of washers and dryers. Manufacturers have re-analyzed the unwanted or excess from their systems to minimize emissions, conserve energy, and find the best substitutes that are productive for breakdown products. Several organizations, citizens, and governments understand today that there is a requirement and impact to move beyond green and have already started observing a sense of growth and long-term viability. Generally, sustainable growth is defined in terms of economic activities that fulfil the requirements of the current situation without understanding the capacity of upcoming generations that encounter their requirements. Amplifying the practice of growth and improvement is a system that is sustainable functioning management. We could explain that a sustainable supply chain functions in ways that bring out innovative profit on its financial assets while taking into account the permissible expectations and needs of internal and external partners, as well as the majority's and the environment's outcomes. Old studies that link to the process of supply chain sustainability could be divided into two immense areas. The initial part links with 'local' efforts and work to develop sustainability. This subject matter surrounds the tools and techniques used by the organizations to develop environmental practices, and struggles were made to provide solid end output to the external partners. The study raises a major query: Does improvement in only one of the parameters of measurement of the maintainability of a specific component in a supply chain eventually increase the comprehensive long-term viability of the complete framework? Another major side of the study links with the ‘global’ functions or performance estimation, which is, in ways one evaluates the results of industries, countries, and economies. Certain parts encircle the progress of many combined parameters: mixed dimensions count the structure that finds critical ideas and logic like human welfare, competition among industries, and the health care system's overall performance. During this time, several worthy learning can be derived that do not approach actual presentation measures as a result of this work, from which team leads could utilize the improvement of the sustainable flow of the supply chain. The motive of that research is to build the conceptual ground for the growth of the target to count the sustainability of the global supply chain with the continuation of chasing the motive, the research

paper creates three benefits: One is an overview of the techniques and treatments recently utilized by companies for the incorporation of sustainability into their business activities; another is to launch a new workflow for consideration and to find out about supply chain sustainability, the third one is to represent three study calculations that link to the worldwide parameters of the sustainability of the flow of the supply chain process, which can be taken as motivation and inspiration for future conceptual and investigational studies (Sloan, 2010). There is fast-floating awareness in the industry that today's supply chains are defective or flawed. Up to the present, different companies, i.e., manufacturing, create waste and pollution, which is fearsome for the existence of life on earth. Therefore, these pressures and challenges push organizations to seriously act on their impact on the environment during their business practices. As the majority of the world enlarges and the availability of resources reduces or minimizes, many firms or companies come to understand that the process of supply chains must also be re-designed in the current scenario. In the views of firms, they must picture the environmentally friendly view of the products, the processes, systems, and technologies, and the process by which business is carried out. Current developments in the economic climate of the world create unreliability in the market environment, which makes it essential for companies to have a view towards reconstruction and restructuring to speed up their plans of action to sustain growth in business and profitability while remaining competitive in the marketplace (Rashid & Rasheed, 2023).

Procurement refers to the act of locating, agreeing to terms, and obtaining items, services, or tasks provided by a third party, most commonly by an offer and a cutthroat offer.' When quality, time, and cost are taken into consideration, that interaction is used to ensure that the purchaser gets the best possible price at the lowest possible cost for a product, service, or work. Financial limits on businesses and mass customization for clients add to the complexity, requiring businesses to use acquisition metrics as a major tool for delivering results advantages within any cost of sourcing and operational cost. As a result, it's becoming increasingly important for procurement chiefs and inventory network heads to figure out ways to make the most of digitalized procurement approaches to stay relevant in the organization (Gupta, 2019).

2.3 Measuring global Supply Chain Sustainability

This section discusses the development of a quantitative measure of supply chain sustainability. The purpose of this research is to develop a framework for a metric that captures the core of this inherently multi-dimensional and complex idea. However, it also poses a variety of measuring issues. There are five processes involved in the generation of composite indicators, according to the findings: (1) Create a conceptual framework; 2. determine and generate data; 3. standardize data; 4. weight and categorize variables; and 5. conduct a sensitivity analysis. Almost all sectors have their own set of difficulties. The most difficult task is to create a conceptual framework. Several sustainability frameworks have been established, the majority of which are related to country performance.

2.4 Sustainability Measures and Indicators

The linkage between supply chain quality, and large is characterized as the number and quality of the providers and clients in a nation, and the three measurements of feasible improvement specifically, natural execution, corporate natural hones, and social supportability are evaluated. The outcomes demonstrate that supply chain quality is emphatically connected to all three measurements of maintainable improvement (Vachon & Mao, 2008). Environmental, societal, and economic considerations all play a role in sustainability. Some variables related to each dimension are listed below.

2.4.1 Environmental factors

The term "environment" is most commonly used to refer to the natural environment, which comprises all living and non-living items found in nature on Earth, such as land, water, plants, and animals. Lowering the supply chain's ecological footprint is one way to improve the environmental sustainability of the three areas of supply chain management; the environmental aspect has gotten the

most attention. The environmental component plays a vital role in the arrangement of economic improvement in the regions (Glinskiy, 2016). In light of the complex issues involved in sustainable advancement, we require stronger benchmarks for arranging and assessing our natural approaches. Sustainability, as a key point, includes optimizing the intelligent relationship between nature, society, and the economy in agreement with biological criteria. Sustainable improvement looks to reconcile environmental security and improvement; it implies nothing more than utilizing assets faster than they can regenerate themselves and discharging poisons to a lesser degree than normal assets can acclimatize them (Merkel, 1998).

2.4.2 Social factors

In the current era of global, territorial, national, and neighbourhood improvement in all spheres of the economy, different and conflicting changes are taking place, influencing all processes, including administration. Enterprises are effectively included in these processes, looking for drivers of improvement and competitiveness. Consequently, the enhancement of management approaches and apparatuses acts as a critical and vital condition for ensuring sustainable advancement. The urge to shape and actualize a viable administration framework is imperative for business. In this manner, uncommon consideration is paid to applying common standards and strategies of management and carrying out measures to guarantee the steady working of companies that try to reinforce their positions in an environment that's always changing. To progress the forms of guaranteeing and keeping up the sustainable development of an organization, it is vital to utilize the accomplishments of world opinion, develop key approaches, alter methodological approaches, and like that (Hashmi et al., 2021a).

Biological issues caused by human activities (economics) are declining and taking on worldwide dimensions. Climate change, ozone layer consumption, and the misfortune of timberland cover are critical illustrations. At the same time, social conditions continue to compound in numerous newly created nations. It is estimated that more than 1 billion individuals now live in destitution without adequate nourishment, satisfactory instructive openings, or any plausibility of political participation. Even though budgetary and financial markets are getting increasingly interconnected and we like to think in terms of a "worldwide town," our endeavours to cherish natural assurance and improvement as the common assignment and duty of all nations have just started to create progress. On the off chance that we are to move towards sustainable advancement, the industrialized nations ought to acknowledge special responsibility not only because of their past ecological activities but also because of their present technological know-how and budgetary assets. However, one must be beyond doubt that feasible generation and consumption involve not simply specialized advances but also social designs of personal behaviour and values (Hashmi et al., 2021b; Merkel, 1998).

The human capital of the supply chain plays a part in sustainability's social component. Improving social sustainability necessitates the adoption and maintenance of fair and beneficial company practices for workers, communities, and locations impacted by the supply chain. There are three types of social performance indicators. 1. Workplace: Internal human resources, or individuals who operate in the supply chain, are referred to as this phrase. 2. Community: All those who are affected directly or indirectly by the supply chain's performance, including those who are not part of it. 3. Institutions/Systems: This phrase encompasses both internal and external systems, procedures, and structures, as well as the values that tie the social component together. The proper metrics and indicators under each category will be chosen by the industry, geography, cultural norms, and other variables. Because they have both internal and external repercussions, some items, such as healthcare, cross categories.

2.4.3 Economic factors

The economic dimension of the supply chain refers to the profit earned by supply chain members as well as the economic benefits obtained by host nations, regions, and communities of those members. As a result, this dimension goes beyond a company's internal profit, and some of the traits that belong within this category may be difficult to measure in terms of money. Economic

considerations are classified into four groups. 1. Performance of the economy: This alludes to a company's capability to conduct business as well as its market value. (2) Financial health refers to the firm's overall well-being and long-term viability in terms of monetary resources. 3. Market and organizational structure: This relates to the state of the market. as well as the supply chain's configuration. 4. Entities and Processes: refers to the internal and external processes, procedures, and values of the economic dimension (Hashmi et al., 2020a).

Today, sustainability is attracting more attention at both the local and global levels, prompting issues about ways to make sustainability a priority in corporate strategy and operations. Sustainable construction flow has the potential to be a beneficial way for businesses to transition from being reactive in terms of pollution, waste reduction, and other sustainable activities to being proactive in terms of taking full responsibility for their products from raw material acquisition to ultimate disposal from a sustainability standpoint. This report investigates Malaysian manufacturing organization's sustainable supply chain management methods. The confirmation of the effects of SSCM methodologies on the firm's sustainable supply chain performance is the paper's main contribution. Environmental purchasing and sustainable packaging have been found to have a direct impact on a company's performance, particularly in terms of economic performance (Rashid et al., 2023).

Companies face a problem in the marketplace when it comes to competing with other businesses. This predicament arose as a result of rising customer expectations and complicated supplier connections. Supply chain management (SCM) has grown in importance as a key problem for most firms as a result of intense competition. The goal of supply chain management is to improve an organization's operational efficiency. The supply chain is also beneficial in operational cost-efficiency. This will automatically make a significant contribution to the organization's overall success. The function of information systems (IS) in catalyzing the phases in the entire supply chain becomes critical. Information systems enabled by advanced technology aim to speed up corporate processes by providing reliable data and quick access to data from one system to the next (Hashmi, 2022).

Cost-effectiveness can be accomplished by having a well-functioning supply chain. In SCM research, time and speed are valued, with the motive of achieving speedy delivery at its most basic potential price. SCM requires flexibility to respond to market and customer needs as well as speed to market. Many authors have concentrated on an organization's financial performance, which is crucial; however, non-financial measurements are frequently utilized to address strategic challenges and day-to-day operations. The pharmaceutical sector plays a vital role in the economy and the lives of individuals. Pharmaceuticals and their formulations are two types of pharmaceutical goods that are developed. Pharmaceutical items (drugs) begin their journey from raw ingredients to the end user via the producer. As a result, in terms of value creation, a manufacturing plant is critical to the supply chain. In the pharmaceutical industry, operational effectiveness has an impact on product quality, cost, delivery, and flexibility. The Indian pharmaceutical industry serves both domestic and international markets in diverse capacities (Hashmi, 2023).

2.5 Procurement Management

Numerous creators concur that the taking-after components make the provider-choice-making system complex. The variables follow 1. Mixed and varied criteria: Both subjective and quantitative 2. Criteria conflict: Clashing targets for scenarios 3. Inclusion of the numerous choices: Due to increased level of competition 4. Inside and outside obliges are forced about purchasing. In any case, it takes a lot of work and persistence to create this organization. Since the correct provider choice includes several roles like acquiring, within the company, quality, and so forth, there may be several objective issues, spanning a large number of substantial and also metaphysical variables in a very progressive way. Compelling providers means vendors that are capable of supplying the right sum of items or administrations at the right time, at the right price, and with the right quality (Rasheed et al., 2024).

In the last two decades, the significance of procurement as a strategic concern for businesses has expanded. This is attributable to several causes, including rising purchasing costs, globalization,

and a surge in outsourcing tactics. As a result, there seems to be a change from one-time transactions to long-haul relationships that place a greater emphasis on suppliers as a primary source of revenue. Developing a tight relationship with suppliers allows you to gain access to their resources, which can help you expand your organizational operations. This method also emphasizes that the purchaser must control the entire supply process, not just the flow of merchandise and services to the organization. Environmental and societal issues lead to the complexity of today's purchase decisions and processes. According to this viewpoint, today's shoppers must consider factors other than the financial matrix when making a purchase. Purchasers must also keep an eye on brand new batches of hazards, like workers, safety, resource pollution, and waste, as well as the possibility of a bad impact on their company's image and the societal influence on purchasing actions. Because today's rivalry is centred on supply chains rather than organizations, the focus is on how to provide a reliable supply chain with plenty of redundancy, reliability, efficiency, and response. Nobody can afford expenditures that exceed profit; this is attainable with the assistance of real-time descriptions and data at various supply chain nodes and accurate information transmission to the next level and speed. ISs aid in the attainment of operational benefits across the whole flow of products. To begin, as well as the cost reductions arising from fewer paper transactions, a reduction in order processing duration, and the achievement of inventory that is only available when it is needed lower cumulative inventory-sustaining expenses and keep an eye on stock levels at the raw materials, work in process (WIP), and finished product levels. Through a web-based network of communications, information systems assist organizations in developing strategic partnerships with suppliers (Sharma & Modgil, 2017).

The part of buying in supply administration has gotten and continues to get more consideration as the years go by. Obtaining it boosts productivity and competitiveness, among other things, but to reap these benefits, qualified providers must be chosen and maintained. On the other hand, many variables have an impact on a company's ability to make decisions. There should be a clear understanding of the provider determination criteria. A few of the factors firms consider include belief and commitment, satisfactory back, quality, solid conveyance times, and satisfactory logistical and technological capabilities (Hashmi & Mohd, 2020).

2.6 Changing Conditions for the Pharmaceutical Industry

The pharmaceutical flow of goods is mindful and accountable for impressive natural and product quality influence. Green chemistry may be a frame of reference for the reference for the recycling economy in the pharmaceutical flow of goods. The coordination of a supply chain that is moving forward is significant, including medication invert transportation (Cláudia et al., 2019).The long-running debate about drug industry costs, benefits, and development has resurfaced. In a few key ways, the pharmaceutical industry differs from other businesses. Since the 1930s, the majority of high-intensity medications have only been available via prescription in the United States. The purchaser and the utilization chief (the recommended doctor) are not the same in this regard. During the 1930s and 1940s, there was an uprising in medicine disclosure strategies, resulting in the introduction of over 1,200 new synthetic drugs into the United States, a helpful practice since 1940. Few doctors can fully educate themselves about the other possibilities available because the drug menu is so vast and complex. Disappointments with data thrive. Outside repayment arrangements developed by the government and private guarantors are expected to reimburse 44 per cent of physician-recommended prescription costs in 1987, up from 28 per cent in 1977. As a result, the physician-recommended medicine purchaser is frequently removed from the item dynamic as well as from following through on the whole cost associated with a decision. With these advancements, there has been a second shift in drug disclosure and improvement strategies. The essential logical investigation has begun to enlighten the compound instruments of disease, permitting R&D groups to make medication particles with underlying features that communicate with target receptors in the human body in predictable ways. Hereditary engineering has made it possible to clone freak creatures with desired therapeutic qualities and to replicate difficult-to-select human immune genes. Consequently, during the 1990s, the proportion of novel compounds appealing for regulatory approval skyrocketed. As a result, finding some type of balance among monetary impetuses, rivalry, and restrictions has become even more critical (Scherer, 1993).

There is still a lot of work to be done in developing global supply chain sustainability metrics. One of the most important takeaways from this research is that the flow of building estimation may be even more essential than the actual measurement. For starters, the process requires producers, manufacturers, vendors, governments, and end users to consider sustainability in a wider sense. Furthermore, this then highlights the importance of considering the complete flow of products instead of simply particular components. Currently, decision-makers can concentrate narrowly on the most appealing and maybe most convenient criteria and/or links. An athletic shoe manufacturer can concentrate on minimizing harmful ingredients while overlooking the sweatshop conditions in which the shoes are made. A big shop can concentrate on logistics and transportation. Cost reduction in the meantime, neglecting the influence of consumption patterns on the environment made possible by discarded products. We can just begin to make headway towards true sustainability. Allowing or even forcing managers to notice a problem from a larger point of view (Hashmi et al., 2020b).

The study's objective is to assess the 'Impact of Procurement Strategies on Sustainability of the Supply Chain in the Pharmaceutical Industry'. Environmental management in procurement is a necessity these days. In this study, we work on surveys to find out the impact of different strategies that can be applied by pharmaceutical industries to improve their supply chain and make it environmentally friendly and sustainable.

Below figure 1 represents the research framework.

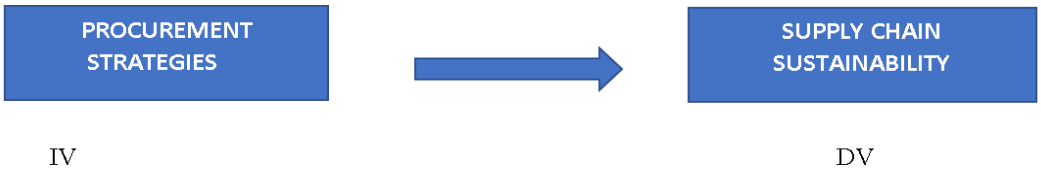

Figure 1: Conceptual framework

Source: With support of literature

3. Research Methods

The wide assortment of circumstances and issues expects analysts to be comfortable with a genuinely wide scope of philosophies. Research and examinations might be a piece of inside-and-out work inside one association, or they might review the scope of foundations more similarly (Amirah et al., 2024; Khan et al., 2023a). The research approach may also include a plan and strategy that includes a wide range of steps, from presumptions to point-by-point information-gathering tactics, examination, and elucidation. That is, subsequently, as a result of the nature of the research, the problem that is being addressed. The approaches of information collection (quantitative and qualitative) and information examination or analysis of data (inductive and deductive). Qualitative to understand information, you must use an inductive method of investigation. Quantitative data, on the other hand, is a different method that utilizes the deductive method. Both inductive and deductive procedures can be used when dealing with mixed data. of examination utilized. In every situation, there should be a lack of balance between strategy and evaluation. Traditionally, it is critical to illustrate an explanation. In this manner, the purpose of the research was formed. For those who read the investigation, it should lead to the discovery of the research. Quantitative exploration encompasses the process of acquiring and analyzing mathematical data objectively (Haq et al., 2023; Khan et al., 2023b). Portray, predict, or exert control over aspects of interest. Quantitative research means establishing broad In several environments, there are norms of behaviour and phenomena. Exploration is used to put a notion to the test and then either support or reject it (Rashid et al., 2022b)

Quantitative information requires factual or statistical examination to test theories. A deductive method is commonly used because it allows the research to deduce from non-specific to certain. Moreover, the analyst constructs a hypothetical system based on common viewpoints. (Hypothesis) and

put it to the test in this way, arriving at a specific conclusion. The deductive method of investigation or thinking comprises the below-mentioned steps:

a. Investigation of theories.
b. Improvement of hypothetical systems or hypotheses.
c. Statistical testing hypothesis.
d. Affirmation of a particular conclusion drawn coherently from premises.

3.1 Data Collection

Sampling is a method (strategy or tool) used by an analyst to deliberately pick a relatively small quantity of delegated objects, and people (a subset) of a predetermined population act as participants (an information hotspot) to perceive or experiment based on the investigation's goals (Rashid et al., 2021). Questionnaires and surveys are designed to collect and record information from a large number of people, groups, or organizations. in a predictable manner. It could be a printed form or one that you fill out on the internet. Polls can be administered from a variety of perspectives. A study, on the other hand, is usually a massive, official undertaking. There are usually three components: an authorized examination procedure that ensures that the study is representative of a larger population and that it follows industry standards. Poll that assures that the information is properly collected, as well as for the collection of examination techniques that allow for outcomes and discoveries to also be made (Rashid et al., 2020). The researcher's technique and analytical approach determine how the data is used and what explanations it can generate; therefore, data-gathering methods are important (Rasheed et al., 2023). The present study was conducted in the urban areas of Karachi, Pakistan. Data was collected through questionnaires and surveys.

4. Results and Findings

4.1 Descriptive Profile of Data

The data was analyzed using a variety of methods, as described in the profile. The first step is the evaluation of the respondent's profile. A sample size of 102 respondents was used in this survey. The size includes both male (52% and female) genders. The age group of respondents is classified as 56.9% are 25–30, 34.3% are aged between 30 and 35, and 8.8% are aged between 40 and 45.

4.2 Validation of the Model

To verify model uniformity, a reliability test was carried out on each variable. The collected data was analyzed by SPSS software.

4.2.1 Findings

Table 1: Reliability Statistics

Cronbach's Alpha	N of Items
.845	12

Source: SPSS output

As you can see in table 1 the Cronbach's alpha value is more than 0.7. This indicates that the scale is reliable (Rashid, 2016; Rashid & Amirah, 2017). Reliability should be > or =to 0.7.

4.2.2 Model Summary

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Standard. Error of the Estimate	Durbin-Watson
1	.676[a]	.457	.452	.49094	1.892

a. Predictors: Constants, Procurement Strategies
b. Dependent Variable: Supply chain Sustainability

Source: SPSS output

The R square represents the percentage change in the dependent variable Supply Chain Sustainability; explanatory variables can be used to predict the R square (Procurement Strategies). This score from Table 2 indicates that 45.2% of the time, the response variable is estimated correctly when it is lighted by independent or explaining variables.

4.2.3 ANOVA

Table 3: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.301	1	20.301	84.226	.000[b]
	Residual	24.103	100	.241		
	Total	44.403	101			

a. Dependent Variable: Supply Chain Sustainability
b. Predictors: Constants, Procurement Strategies

Source: SPSS output

ANOVA stands for Analysis of Variance. The F statistics in the ANOVA table 3 is 84.226; furthermore, the F statistic value suggests that the model is statistically significant, i.e., the significant value is less than 0.05 (Rashid et al., 2019).

4.2.4 Coefficients

Table 4: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.936	.327		2.867	.005
	Procurement Strategies	.770	.084	.676	9.177	.000

a. Dependent Variable: Supply Chain Sustainability

Source: SPSS output

The significant figure of the explanatory variable (Procurement Strategies) is less than 0.05 in Table 4 of coefficients, indicating that it has a positive impact on the response variable (Supply Chain Sustainability).

4.3 Hypothesis Testing

As per below table 5 research hypothesis has been accepted; mean procurement strategies have a substantial impact on the supply chain's long-term viability or sustainability.

Table 5: Hypothesis Testing Summary

Hypothesis	Sig Value	Empirical Conclusion
Procurement strategies have a substantial impact on the supply chain's long-term viability or sustainability.	.000	Accepted

Source: SPSS output

5. Conclusions, Discussion, Limitation, Recommendation

5.1 Conclusion

The leading element of the study is to analyze the influence of different procurement strategies and techniques on the long-term viability of the supply chain process. Today, sustainability is captivating more consciousness at both the local and global levels, pushing concern about ways to incorporate sustainability into corporate strategy and operations. Sustainable supply chain management might well be a practical approach for businesses to adapt from being receptive regarding trash and pollution reduction as well as other long-term solutions activities to show up proactive in respect of

taking complete responsibility for their products and their results from raw material acquisition to ultimate disposal from sustainability perspectives. Operational effectiveness has consequences for the quality of results, cost, delivery, and adaptability in the pharmaceutical industry. The management of the supply chain has evolved into a matter of contention as a result of ruthlessness. The motive of supply chain management is to enhance an organization's operational efficiency. The chain of supplies further assists in making operations convenient and frugal. The OP would impulsively make a remarkable contribution to the organization's overall performance. Environmental, societal, and economic reflection all play a role in sustainability.

5.2 Discussion

The hypothesis of a study shows that procurement strategies have a significant impact on the viability of supply chains. This hypothesis is accepted as a value of.000 in the coefficient table. Implementing sustainability in our procurement process and sourcing of raw materials, reduces the emission of harmful gases and soil, water, and air pollution. Operational effectiveness has significant effects on the quality of the material and environmental health. Cost reduction benefits and increased productivity can be found. It also improves energy efficiency. Environmental control of purchasing and the supply chain (specifically green purchasing) is now remarkably commonplace in the middle of larger companies, and it shows that it is also increasingly being used as a corporate practice. Participation in recycling initiatives demands close coordination with all business partners, like alliances with vendors to eliminate waste in raw materials and packaging as well. To build evaluation criteria with vendors, use grading systems for suppliers based on their performance, design questionnaires for supplier evaluation, and set standards for environmental processes in the selection of strategic business partners, evaluation criteria should also apply in the buying process (Rashid & Rasheed, 2024).

5.3 Implications

Research implications recommend how the discoveries may be vital for arrangements, practices, hypotheses, and consequent inquiries. Research implications inquire about suggestions are essentially the conclusions that you simply draw from your output about and clarify how the discoveries may be vital for policy, practice, or hypothesis. In any case, the suggestions ought to be substantiated by evidence, the study's parameters ought to be clarified, and the impediments should be taken into consideration to avoid overgeneralizing the output. Once you have conducted your study and concluded, you'll be able to state the "Research Implications," which implies simply communicating how your study can influence prospects within the subject region of your investigation and the approaches or controls that could be impacted by your ponder; otherwise, you can hypothesis how the results of your consideration can affect either hypothesizing a specific point beneath consideration or the viable angles of the same. The investigated implications are continuously upheld by solid factual noteworthiness and relationships that come about from your research, keeping in mind the inadequacy of the study. Once you make a "research implications or recommendation," you'll unequivocally state what are the other steps that have to be taken to address an issue, what prompt activities have to be executed to illuminate a specific address, what ought to be addressed and what ought to be dodged to unravel an issue, what is the possibility of your proposed approach, and explanations approximately the type and timing of an evaluation plan that would be used to determine the viability of the proposed strategy. Once more, these suggestions ought to be emphatically upheld by your thoughts. There is plenty of work to be done in the establishment of global supply chain sustainability parameters. This procedure requires the manufacturers, the suppliers, and governments to examine sustainability in a wide range of ways. It should also highlight the necessity of examining the whole supply chain rather than individual components. The only way to set in motion true sustainability is by pushing managers to recognize better approaches.

5.4 Limitations and Recommendations

This study has some limitations, like other research and studies. It has a time limitation as it

was completed in a short period. Second, the study was self-contained with no additional funds engaged in the research work, and we have specifically targeted the manufacturing industry in Karachi. It has geographical constraints as well, as the research was conducted only in one city, i.e., Karachi, Pakistan. The research was conducted on the impact of procurement strategies on supply chain sustainability. Further research may also be conducted by using different variables. This can be done in different regions of Pakistan and outside Pakistan as well. Different areas of the supply chain process for sustainability impact can be focused on to highlight other major issues, improve them, and enhance research possibilities for further learning and awareness in the future. There is still a lot of work to be done in the development of global supply chain sustainability.

Future research can be characterized as an efficient consideration of conceivable future occasions and circumstances. It is distinctive from determining in a way that the previous includes a forward orientation and looks ahead, or maybe that in reverse, and isn't as numerical as estimating. There's a wide range of strategies accessible that can be utilized to conduct prospect research. Future research might use additional approaches to investigate biases in standard methods. As the majority of the world enlarges and the availability of resources reduces or minimizes, many firms or companies come to understand that the process of supply chains must also be redesigned in the current scenario.

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