

Original Article

Supply Chain Management and Sustainable Business Performance in the Textile Industry

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Abstract - This study investigates the relationship between Supply Chain Management (SCM) and sustainable business performance in the Peruvian textile industry from 2018 to 2023. Data were collected from 30 textile companies through structured surveys, and regression analysis was applied to evaluate the association between the variables. The findings confirm a strong positive relationship ($r = 0.837$, $p < 0.001$), suggesting that optimized SCM enhances sustainable business performance. The study underscores the necessity for Peruvian textile companies to implement robust SCM strategies to remain competitive and ensure sustainability in a challenging business environment. To enhance research rigor, methodological improvements are recommended, including a broader sample size, expanded literature review, and a deeper statistical analysis of confounding variables.

Keywords - Supply Chain Management, Sustainable business performance, Textile industry, Business analysis, Management strategies.

1. Introduction

In recent years, many problems have emerged related to the management and performance of textile companies, as significant challenges have arisen in the supply chain regarding the difficulty of ensuring transparency and traceability of the materials used. This lack of visibility in the origin of the inputs led to unethical practices, such as labor exploitation and the use of non-sustainable materials, which negatively impacted the reputation and sustainability of Peruvian textile companies. The textile business sector in Peru has been facing a major problem related to the scarce adoption of responsible practices in environmental and social aspects. Likewise, the lack of effective integration of sustainability criteria in operations has limited the ability to compete commercially, which is very demanding in these aspects. The Peruvian textile industry faces significant challenges in integrating sustainability within SCM. Transparency issues in material sourcing, ethical labor concerns, and inefficient supply chain operations have negatively impacted sustainability and competitiveness. Despite existing studies highlighting SCM's role in business performance, gaps remain in understanding its direct impact on sustainability within the textile sector. This study bridges that gap by analyzing SCM's influence on long-term sustainability. Contextualizing ourselves globally and currently, the textile industry is amid a changing dynamic, always considering the aspect of environmental sustainability. Therefore, acquiring more

socially responsible and environmentally respectful production methods is necessary, generating a significant environmental problem. This paradigm shift is driven not only by social and consumer needs but also by the needs of brands that dominate the global market [1].

A study conducted in Mexico shows problems in the textile industry abroad, as it is one of the most affected countries. It reflects that large and small descriptive records and analyses were carried out during the pandemic related to different countries worldwide. In the current situation, small and micro-enterprises are facing challenges; given the circumstances, the forced closures and layoffs have meant reduced production and poor management of performance in the textile industry [2]. Peru is one of the primary producers of garments, strategically positioning itself in a position of exploitation and transformation of the industry. Gaining great recognition for very good sewing quality raw materials over the years. Cotton is considered the star product of Peru. The challenge lies in adapting companies to the new reality characterized by the search for sustainability and the circulation of the economy while maintaining and improving competitiveness in a globalized market [3][4]. The international background in Ecuador refers to the supply chain systems where multiple actors interact with each other to supply the different industries with raw materials in a percentage that guarantees compliance with production



standards, customer needs and requirements. To this end, they have coordination or articulation in the work and always consider the different external factors that can cause negative alterations and affect their production. All this was based on objectives based on determining the impacts caused by supply chains on business performance. Having as a study sample the different documentary sources of companies in the textile industry. Where a documentary analysis was carried out. Obtaining results based on analyzing the different supply chains, their functions in activities and stages, and the risks for which optimal systems had to be implemented. In general, it should be noted that the supply chain is indispensable in business organizations since their optimal functioning depends on it [5].

Furthermore, in Ecuador, their study diagnosed the supply chain of shirts and proposed common strategies and goals to improve competitiveness. An evaluation tool was created consisting of dimensions such as strategy, information, planning, procurement, and collaborative inventory to integrate 96 participants. The instrument was validated, and descriptive and inferential statistics were used to process the information. As a result, a low level of supply chain integration is reflected. The weakness of the variables is focused on the poor management of strategies and inventory. The contribution of this study is evident in practice, as the results are used to propose strategies to improve business performance in the Ecuadorian textile industry [6].

In Mexico, his research study aimed to develop a model based on multicriteria methods to evaluate the importance and impact of performance criteria for resilient and sustainable supply chains that facilitate performance measurement decision-making. To achieve the proposed objectives, a literature review was conducted to collect scientific articles on solid and sustainable supply chain performance evaluation in a repository to determine the performance criteria used, their relationships, and their impact. Then, an expert panel was formed to identify the operational standards used in the industry and, on the other hand, classify them according to their importance and control the flexible and sustainable supply chain. Expert judgments were then used to determine the criteria' impact conditions, size, and weighting. Finally, the impact relationship between the criteria and dimensions was analyzed, and a ranking was determined based on the levels of impact achieved.

1.1. Contributions and Conclusions

A proposed model identifies impact relationships based on four dimensions of supply chain performance: resilience, economic, environmental, and social. The dimension that has the greatest impact on resilient and sustainable supply chains is the social dimension, which comprises communication, social responsibility, working conditions, and transparency standards. A total of 15 dimensions that make up a stable and sustainable supply chain were identified. The 5 most

important criteria are supply chain visibility, flexibility, management culture and risks, working conditions, and communication [7]. In Mexico, the purpose of the case study of the investigated company was to understand Corporate Social Responsibility (CSR), analyze its value chain based on the 31 supply chain practice models proposed by the World Economic Forum in 2015, and analyze its value chain based on the triple benefit of profitability, environment and local economic development. This is a qualitative study that uses a descriptive case study approach. The objective of the work is to observe the impact of international logistics on Mexican exporting SMEs and analyze whether their economic importance ensures sustainable development in the social, economic and environmental aspects. The results show that product differentiation provides a competitive advantage based on the concept of shared value that Porter and Kramer proposed in 2002 [8].

At the national level, who refers to the fact that the current overproduction of textiles and the rise of fast fashion have caused continuous environmental degradation in Lima. The research was conducted with a sample of 400 workers in the Gamarra emporium. Therefore, this article aims to analyze the impact of the textile industry from the perspective of environmental protection and human rights. To this end, we will focus on the differences between two models of the fashion industry: fast fashion and the alternative slow fashion models. Finally, the role that fashion legislation should play in developing and formulating the necessary regulations to protect the environment and adopt sustainable fashion models was discussed [9].

In addition, they conducted research on a textile company in Trujillo where cost problems were identified in the warehouse and production areas, causing low production and low work performance. The objective of this research was to generate greater business production through the use of a quantitative study. The population was made up of the different areas of a textile organization, managing to identify the implementation of the 5S (Seiri, Seiton, Seiso, Seiketsu and Shitsuke), ABC (the popular technique used by Category Managers to classify products based on their importance and demand) and waste management, reducing costs and optimizing productivity and profitability [10].

In Lima, in his research on the use of information technology in textile manufacturing companies, focuses on understanding the limitations in supply chain optimization. The study was conducted at one of Peru's most important textile manufacturing companies in Lima and one of the country's top five exporters. The main objective was to measure the relationship between a company's use of information technology and supply chain optimization. The interest group has 161 employees on the payroll, not counting those who decided not to participate on their own initiative. Data collection is carried out through surveys using

instruments validated by experts covering key dimensions such as textile performance management, supply chain management, and sustainability and circular management. The results show that, according to the surveyed employees, the use of information technologies (IT) has not led to improvements in supply chain optimization. In this sense, there is even a slight decrease ($r_{hs} = -0.007$; $p = 0.940 > 0.05$), contradicting previous studies that used companies as the unit of study and emphasized the positive impact of IT investments on profitability and sustainable operations.

The differences between the results indicate possible limitations of the perspective, as this study highlights the importance of considering human factors in technology implementation. It has been suggested that the failure to consider partner readiness in areas such as resilience, interpersonal skills, and workforce preparation may explain this discrepancy, and this study opens new debates on the importance of assessing partner readiness during deployment [11]. In Lima, his study achieved the objectives of identifying the competitive level of SMEs (Small and Medium Enterprises) that export dresses or garments in international markets. Identifying essential export factors that influence their textile business sustainability, analyzing the operation and management of Peruvian textile companies.

The statistical analysis results showed a significant positive correlation between product quality and the competitiveness of small and medium-sized garment exporting companies. Product quality, export efficiency, and adaptation to the international market contribute 35% to competitiveness. These results support the management recommendations for the global development of SMEs [12]. At the regional level, conducted research at a textile manufacturing company, where an analysis of the company's situation was generated. The study they conducted was descriptive in nature with a non-experimental design. The sample was representative of all the company's workers and was obtained through non-probabilistic sampling, considering 15 workers.

The objective was to improve quality management by increasing productivity, and this study also provided quarterly training to the company's personnel on regulations and quality management [13]. The general objective of this study was to establish public management guidelines to increase the efficiency of the basic product delivery system in the municipality of the Lambayeque Region. Methodologically, it was a basic, descriptive, proposition-oriented research with a non-experimental design. We tested a random sample of 31 employees. A 22-item questionnaire and a literature analysis manual were used to collect information. The results indicated poor demand preparation, poor demand planning management, deficiencies in the acquisition of goods identified in the annual contract plan, and poor management

of the storage of purchased goods. On the other hand, employees of the structural unit do not always follow the established rules in performing their duties due to a lack of knowledge. It was concluded that the current product delivery system is incomplete because technical and legal standards are not respected. In this way, the general hypothesis that state management guidelines will increase the efficiency of the goods delivery system in the districts and municipalities of the Lambayeque region can be accepted.

At a specific level, in Chiclayo, whose purpose of his study was to determine the relationship between procurement management and the supply chain at Grupo Bonnett Oriente SAC Pucallpa - 2023. His population and sample were 65 associates. The collection technique is a survey, and the instrument is a questionnaire. The results determined that 29% had a low level of procurement management, 48% had a medium level, 23% had a high level of supply chain management, and 49% had a medium level, high level. It is concluded that there is a correlation between procurement management and the supply chain at Grupo Bonnett Oriente SAC, Pucallpa - 2023, thus accepting the research hypothesis, and the correlation coefficient between the variables is 58.55%.

The management of the supply chain and sustainable business performance in the textile industry faced challenges of non-conformity, such as labor exploitation and the use of unsustainable materials, which negatively impacted the reputation and sustainability of Peruvian textile companies, causing companies to lose credibility, decreasing revenues and leading to poor management and business performance. Consequently, the following problem was raised: i) to determine if there is a relationship between supply chain management and sustainable business performance in the Textile Industry; analysis in Peruvian companies 2018-2023?

In addition, the following specific problems were addressed: ii) to define if there is a relationship between the sustainable business performance of the textile industry and the perception of Peruvian companies 2018-2023? iii) to identify if there is a relationship between the sustainable business performance of the textile industry and the expectations of Peruvian companies 2018-2023? iv) to compare if there is a relationship between the sustainable business performance of the textile industry and the satisfaction of Peruvian companies 2018-2023. From a practical justification, who highlighted that the textile sector and the garment sector are the most important within the Peruvian economy; therefore, it is important to maintain good performance and good management within the Peruvian population. Regarding the theoretical justification, this study is based on a very important factor, which is the quality of the product provided to the general public; therefore, the author emphasizes reinforcing and improving the practices of good finishing in textile garments, including all the processes

carried out in the manufacture of a garment. Regarding methodological justification, research methods are a systematic and controlled set of methods responsible for advancing the solution of a problem. This research project took a study as a correlational design where it allowed to propose the existence of a relationship between both study variables. Likewise, correlation analysis was carried out to determine if there was a link between two or more variables. Through this methodological approach, the relationship between business performance and the management of Peruvian companies was evaluated [14] [15].

The general objective was: (1) To determine the relationship between supply chain management and sustainable business performance in the Textile Industry; analysis in Peruvian companies 2018-2023. In turn, the specific objectives were: (2) To define the relationship between the sustainable business performance of the textile industry and the perception of Peruvian companies 2018-2023 (3). To identify the relationship between the sustainable business performance of the textile industry and the expectations of Peruvian companies 2018-2023 (4). To compare if there is a relationship between the sustainable business performance of the textile industry and the satisfaction of Peruvian companies 2018-2023.

1.2. Conceptual Theories

1.2.1. Integration of Sustainability in the Supply Chain

They argue that integrating sustainability into the supply chain requires ensuring that suppliers improve their products and processes to align with sustainable practices. Additionally, they mentioned that the adoption of eco-innovative practices is one of the main variables that affect the sustainability of companies and their supply chains. Through an exhaustive review of the literature, they analyzed the most appropriate strategies for implementing sustainable supply chains, including the adoption of eco-innovative practices. Therefore, these authors stated that integrating sustainability into the supply chain means that suppliers continuously improve their products and processes, including implementing eco-innovative practices to promote sustainability throughout the supply chain and reduce negative environmental impacts [17].

1.2.2. Impact of Supply Chain Management on Business Performance

SCM is essential for enhancing business performance and sustainability. Effective SCM practices, including eco-innovation, resource optimization, and circular economy principles, contribute to cost efficiency and environmental preservation. Studies in Ecuador and Mexico indicate poor SCM integration leads to inefficiencies, reinforcing the need for structured frameworks. The significant impact of effective supply chain management on the competitiveness of companies is referred to. This type of management contributes to the value of the manufactured products, which in turn

positively affects the organization's overall performance, improving competitiveness and efficiency in the market. Furthermore, internal knowledge management is a tool that affects the company's performance, emphasizing the importance of the company's sustainability in business development and integration. Knowledge-based organizations have the opportunity to improve their strategic processes and, therefore, their results. In summary, effective supply chain management drives value creation and is supported by knowledge management and sustainability, which can significantly impact a company's long-term performance and competitiveness [18].

1.2.3. Sustainable Business Performance in the Textile Industry

Sustainable business operations in the textile industry refer to the companies' ability to continue producing goods and avoid extreme imbalances in the industry that could harm production. Specifically, this includes developing manufacturing strategies that eliminate waste and respond quickly to dynamic customer needs to ensure long-term sustainability. During the pandemic, many textile companies have demonstrated their adaptability by creating new products and expanding sales lines in the healthcare sector. This highlights the importance of innovation and flexibility as key factors for industry sustainability in times of crisis. In summary, sustainable business operations in the textile industry require efficient and responsible production and adaptation to changing market demands through innovation. This enables the company to remain competitive and continue creating value.

1.2.4. Theory of the Textile Industry's Approach to the Circular Economy

The theory that the textile industry is moving towards a circular economy means that the textile industry must abandon the linear production system and adopt a circular economy system. This approach aims to close the production and consumption cycle, reduce environmental impact, and create a more sustainable industry. The circular economy of fashion textiles involves the development of production strategies that eliminate waste and respond quickly to dynamic customer demands with the goal of long-term sustainability. Three different models of the textile industry's circular economy were identified: instrumental reasons, relational reasons, and ethical and moral reasons.

Additionally, the importance of environmental, creative, and entrepreneurial education was also emphasized to achieve circular economic change. The typical approaches of the textile industry towards the circular economy aim to develop a model of philosophical interrelation that combines eco-design and the circular economy as the core of the business strategy. In summary, the focus of the circular economy theory in the textile industry is to transform the current business model into a circular production model, reduce environmental

impact, and create a more sustainable industry. The following general hypothesis has been formulated: (1) There is a relationship between supply chain management and sustainable business performance in the Textile Industry; analysis in Peruvian companies 2018-2023. The specific hypotheses are as follows: (2) There is a relationship between the sustainable business performance of the textile industry and the perception of Peruvian companies 2018-2023 (3). There is a relationship between the sustainable business performance of the textile industry and the expectations of Peruvian companies in 2018-2023 (4). There is a relationship between the sustainable business performance of the textile industry and the satisfaction of Peruvian companies 2018-2023.

2. Methodology

2.1. Type and Design of Research

2.1.1. Type of Research

This inquiry is of an applied nature and is defined as exploratory investigations that focus on acquiring knowledge centered on a specific topic [19] with a quantitative approach. It was systematically drafted by collecting and verifying data from various research sources, and the frequencies and correlations were analyzed understandably to determine whether there was a relationship between cause and effect. Additionally, it aimed to confirm theories and hypotheses through inferential statistical analysis [20]. It is descriptive, as it successfully defines the traits, peculiarities, and important complements of the subjects, groups, populations, or different types of phenomena studied.

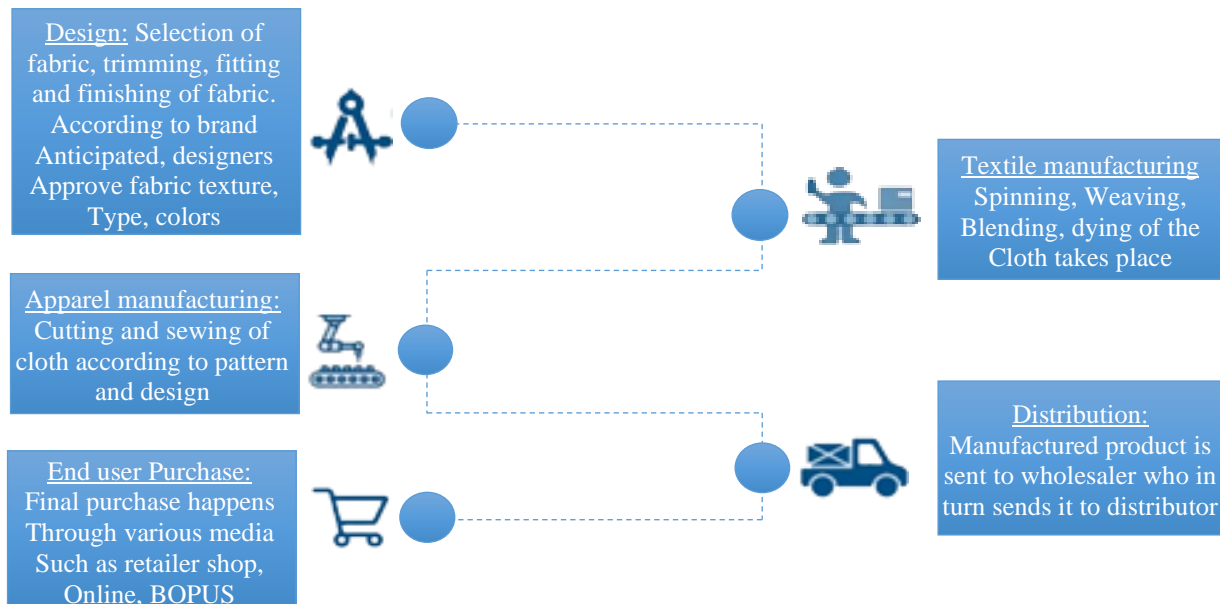


Fig. 1 Break down of the supply chain fashion industry

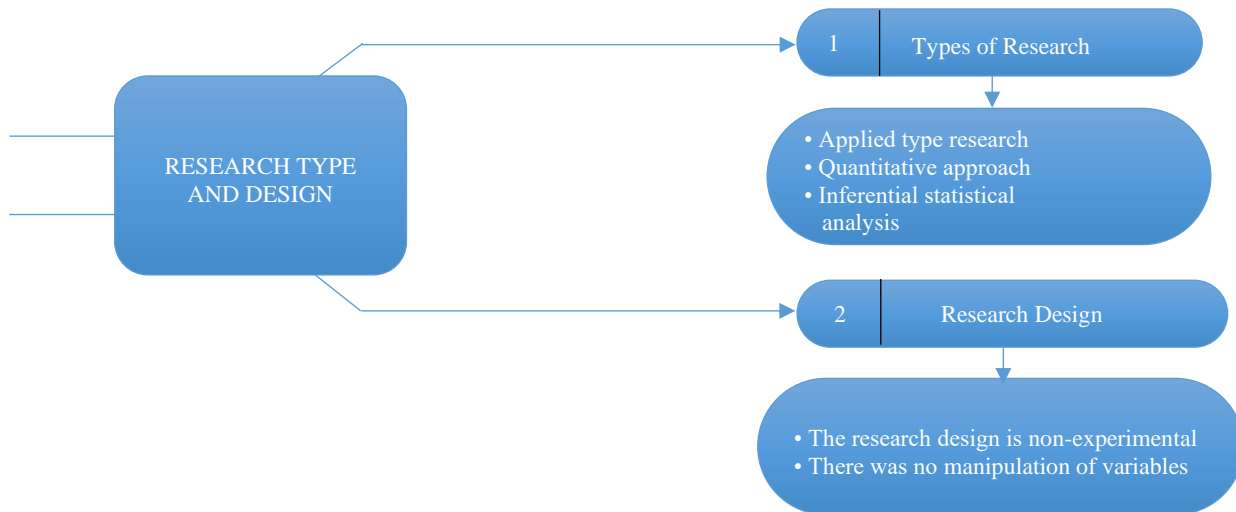


Fig. 2 Research type and design



Fig. 3 Challenges for the sustainable supply chain of textiles

2.1.2. Research Design

The research design is non-experimental, focusing on an investigation in which there was no manipulation of variables, nor were the study contexts controlled; it is cross-sectional and correlational in level, as it is carried out at a level directly aimed at two observable phenomena or situations. Cross-sectional representation begins by identifying one or two variables, whether of a population, environment, action, or situation [21].

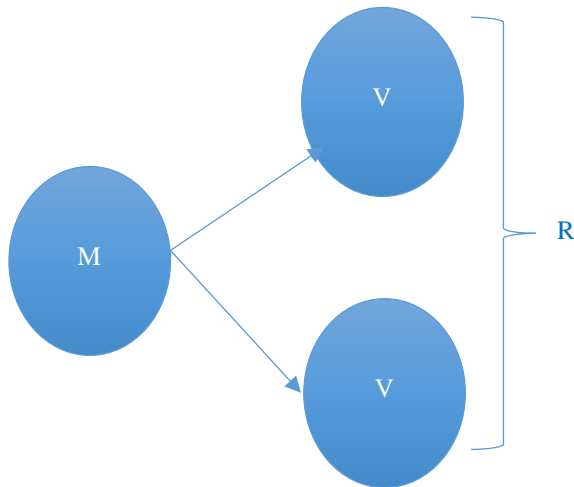


Fig. 4 Research design

Where:

M: Number of companies, V1: Supply Chain Management, V2: Business Performance, R: Relationship between the variables.

Independent variable: Supply Chain Management

CONCEPTUAL THEORIES

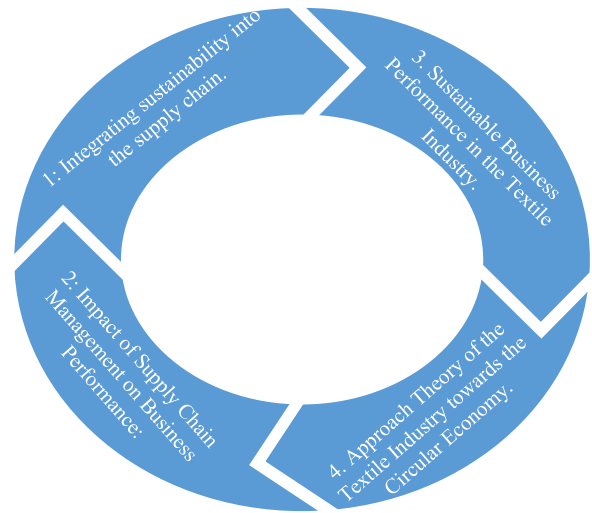


Fig. 5 Conceptual theories

2.1.3. Variables and Operationalization

Independent Variable: defines it as the dissociation of processes by which a material or product is transferred to end up in the hands of the final consumer, meaning it involves the methods that generally combine management, starting with procurement and then continuing with the storage of raw materials [22].

Operational Definition: Within the study variables, a quantitative observation is made in such a way that the measurements were carried out with an Operationalization in 3 dimensions: internally, it can be found:

Dimension 1: aimed at obtaining raw materials, covers, packaging and essential supplies for the procedure, which comply intending to maintain an unbreakable flow with the appropriate quality protocols, avoiding defects, bending and any type of surplus, at the same time placing new materials [23].

Dimension 2: based on the procedure of locating the products in necessary distributions or shelves so that the place where the products are located is more recommendable. Also, storing them in small high areas, a set of materials, being more efficient, taking advantage of free spaces, and facilitating the operations related to storage logistics [24].

Dimension 3: is a procedure where materials are transported from the factory to customers through transport vehicles, as a result providing benefit only to cost control, having a convenient level of inventory, giving greater flexibility in responses, and better customer service, among others, taking into account its indicators [25].

Dependent Variable: Business Performance

Refers to actions executed with certainty and validity throughout a procedure, where it maintains significant preeminence to achieve the objective of what is proposed. This is why, within this measurement process, it is possible to establish a variety of analyses [26].

Operational Definition: the variables are of a quantitative nature, proceeding with their proper measurement of Operationalization in 3 dimensions:

They are divided into:

Dimension 1: Effectiveness - the direction of a company with the feeling of the result of its expectations internally or externally so that it achieves its performance over the period. This means focusing on the expected goals against the desired consequences, considering that the resources they have are fully applied, and using them minimally to achieve the planned goals effectively within the company.

Dimension 2: Efficiency - administratively refers to the execution directed regarding how it is executed in a determined manner and how it is generally focused on its method with which all activities involved in the procedure are carried out.

Dimension 3: Relevance - conceived as the funnel in a specific

market, involving stakeholders through innovation and new, more efficient forms.

2.1.4. Population

For the exploration, the public was estimated to be the workers of Peruvian textile companies (2018-2023). It refers to the group generated by elements or subjects who share specific characteristics and have the need for inquiry in the context.

2.1.5. Sample

It consists of 30 Peruvian textile companies (2018-2023). It is a chosen subgroup from the total quantity to achieve investigation and universally draw conclusions about the population. Thus, the inclusion and exclusion criteria are clearly defined, and appropriate sampling techniques were used to ensure such representation.

Inclusion Criteria: Textile companies located within Peru on the specified days for the survey application. Peruvian textile companies that agreed to participate in the established surveys.

Exclusion Criteria: Textile companies not located within Peru on the specified days for the survey application. Peruvian textile companies that did not agree to participate in the established surveys.

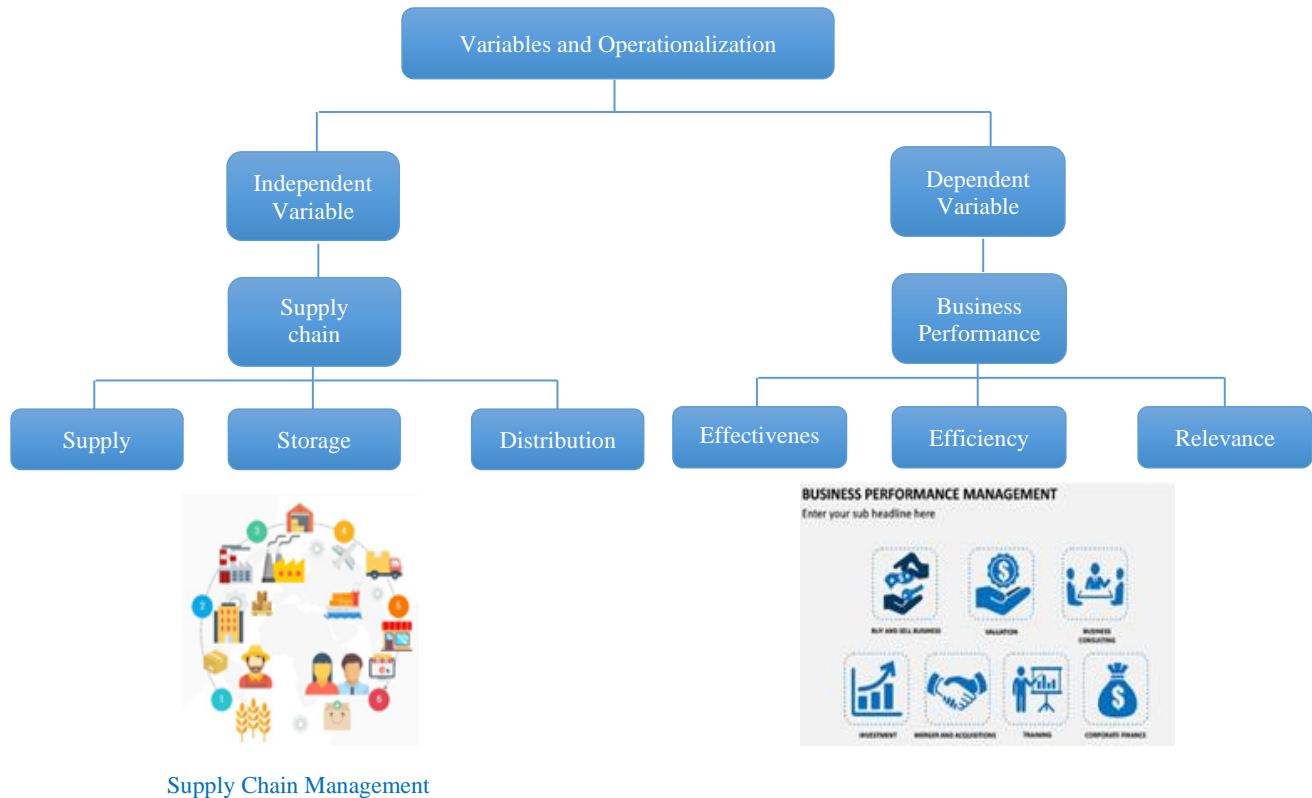


Fig. 6 Variables and Operationalization

2.1.6. Sampling

Therefore, a non-probabilistic sample will be used.

Unit of Analysis: a worker from a Peruvian textile company (2018-2023).

2.2. Data Collection Techniques and instruments

It provides the affiliation of its instrument for timely inquiry to obtain the necessary information. The technique was the survey. Regarding the tool, it is a questionnaire. The

questionnaire included a series of questions related to the topic in such a way that by applying this technique, it was possible to give knowledge and analyze more effectively and vigorously to know how the SCM of Peruvian textile companies (2018-2023) was, as well as how it was related to business performance. The validation of the research instrument was carried out by leading industry professionals (i.e., experts in administrative and accounting sciences), who evaluated each of the questionnaire statements one by one.

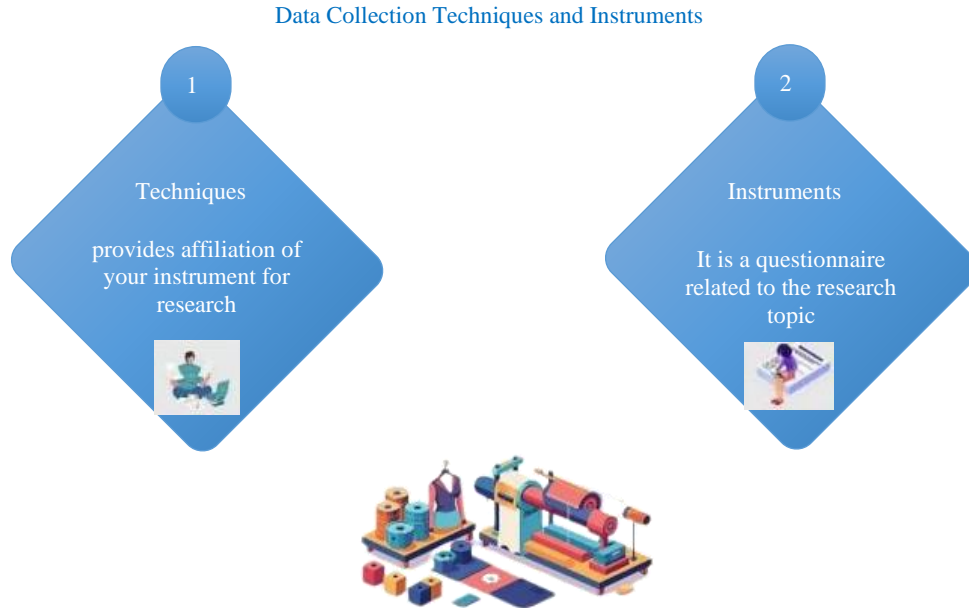


Fig. 7 Data collection techniques and instruments

2.3. Data Analysis Method

Currently, it is carried out through the elaboration of frequencies. In this sense, descriptive statistics aims to study variables with statistical methods, while inferential statistics

suggests trying to reduce assumptions in order to be able to rely on more than what has been done. Parameters are extracted from data to conclude.

Table 1. Technical Specifications of the Measurement Instrument

Technical Specifications of the Instrument	
Name	Questionnaire
Author(s)	Adapted from the research by Castro Mendoza, Francisco Rodríguez Pastor, and Grubert Gianpierre.
Year	2022
Type of Instrument	Questionnaire
Objective	Determine the relationship between the variables
Population	Company personnel
Number of Items	30 total divided into V1: 10 items, V2: 20 items.
Application	Direct.
Administration Time	20 minutes
Scale	Likert: (5) Always, (4) Almost Always, (3) Sometimes, (2) Almost Never, (1) Never
Levels and Ranges	Variable 1: very frequently (1-10), frequently (11-20), occasionally (21-34), rarely, never Variable 2: very frequently (1-10), frequently (11-20), occasionally (21-34), rarely, never
<i>Note. From Supply Chain Management and Business Performance</i>	

2.4. Ethical Aspects

The research seeks the delicate use of ethical aspects corresponding to this type of research since, in the development of the introductory chapters and theoretical framework, citations and information from texts, scientific articles and theses were taken into account.

APA standards and citations take into account the bibliographic references found. Likewise, no information was manipulated or falsified.

3. Results

3.1. Descriptive Analysis

In statistics, this is achieved by collecting, organizing, presenting, analyzing, interpreting and describing one or more research variables a priori in the fastest and simplest possible way, using different types of information (e.g., graphs for the basic characteristics of data sets).

Table 2. Variable supply chain management

Dimension	Frequency	Percentage
Deficient	16	53%
Acceptable	12	40%
Excellent	2	7%
Total	30	100,0

In Table 2, it can be observed that the supply chain management variable is deficient, according to 40% of the respondents. On the other hand, 53% indicated that it is acceptable, and only 7% considered it excellent.

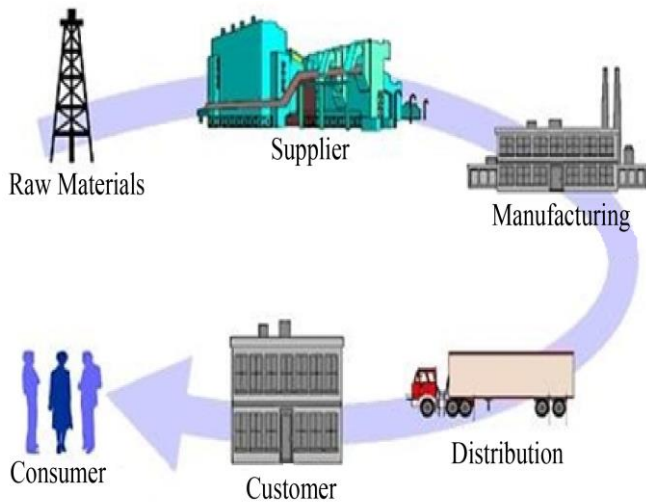


Fig. 8 Supply chain management dimension Supply

Table 3. Supply frequency distribution of storage

Dimension	Frequency	Percentage
Deficient	18	60%
Acceptable	8	27%
Excellent	4	13%
Total	30	100%

In Table 3, it can be observed that the supply is deficient, according to 27% of the respondents. On the other hand, 60% indicated that it is acceptable, and 13% considered it to be excellent.

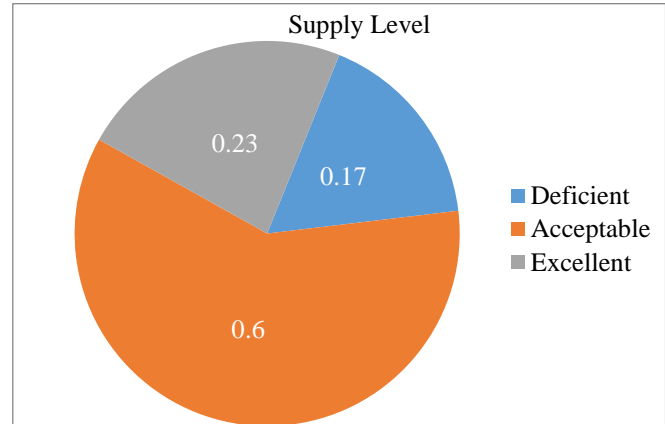


Fig. 9 Bar Chart of the distribution dimension

Table 4. Frequency distribution of storage

Dimension	Frequency	Percentage
Deficient	5	17%
Acceptable	7	23%
Excellent	18	60%
Total	30	100%

In Table 4 and Figure 3, it can be shown that storage, according to 23% of the respondents, is acceptable, while 17% indicated that it is at a deficient level and 60%, it is excellent.

Table 5. Frequency distribution of distribution

Dimension	Frequency	Percentage
Deficient	1	3%
Acceptable	8	27%
Excellent	21	70%
Total	30	100%

Table 5 shows that the distribution is at an acceptable level, according to 27% of the respondents. On the other hand, 3% indicated that it is at the deficient level, and only 70% considered it excellent.

Table 6. Organizational performance variable frequency distribution of business performance

Dimension	Frequency	Percentage
Deficient	3	10%
Acceptable	14	47%
Excellent	13	43%
Total	30	100%

In Table 6, it can be seen that the organizational performance variable, according to 47% of the respondents, has an acceptable level, while 10% indicated that it is at a deficient level, and only 43% said it was excellent.

Table 7. Frequency distribution of dimension effectiveness

Dimension	Frequency	Percentage
Deficient	2	7%
Acceptable	11	37%
Excellent	17	57%
Total	30	100%

In Table 7, it is evident that the effectiveness dimension, according to 37% of the respondents, is at an acceptable level, while 7% mentioned that it has a deficient level, and only 57% indicated that it was excellent.

Table 8. Frequency distribution of dimension efficiency

Dimension	Frequency	Percentage
Deficient	9	30%
Acceptable	8	27%
Excellent	13	43%
Total	30	100%

In Table 8, it is observed that 27% of the surveyed personnel consider efficiency to be deficient. In comparison, 30% indicated that it was acceptable, and only 43% indicated that it was excellent.

Table 9. Frequency distribution of dimension relevance

Dimension	Frequency	Percentage
Deficient	5	20%
Acceptable	5	20%
Excellent	20	60%
Total	30	100%

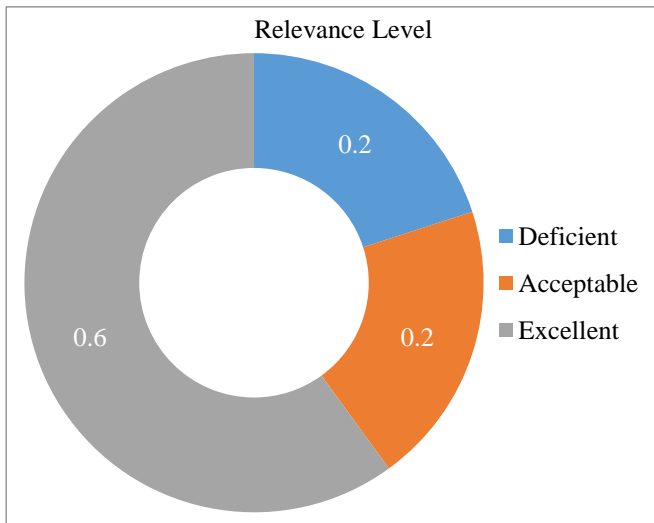


Fig. 10 Bar Chart of the relevance dimension

It can be found in Table 9 and Figure 4 that 20% of the respondents consider that the relevance dimension is at a deficient level, and another 20% indicated that it is at an acceptable level. Additionally, 60% of the respondents considered it to be an excellent level.

3.2. Inferential Analysis

In statistics, it is known as the part responsible for decision-making regarding how a variable behaves within its population through the use of a random sample. In other words, at the moment the sample data is processed, the results obtained for that variable are generalized, measuring the existing risk through probability theory.

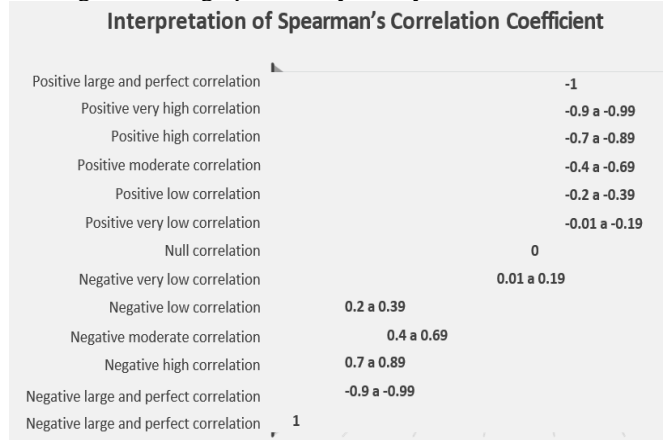


Fig. 11 Degree of relationship according to Rho spearman correlation coefficient

The Null Hypothesis (H0) is rejected, and the Alternative Hypothesis (H1) is accepted if the Bilateral Significance is ≤ 0.05 . While the Null Hypothesis (H0) is accepted and the Alternative Hypothesis (H1) is rejected if the Bilateral Significance is > 0.05 .

General Hypothesis Test

H0: There is no direct relationship between supply chain management and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023)

H1: There is a direct relationship between supply chain management and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023).

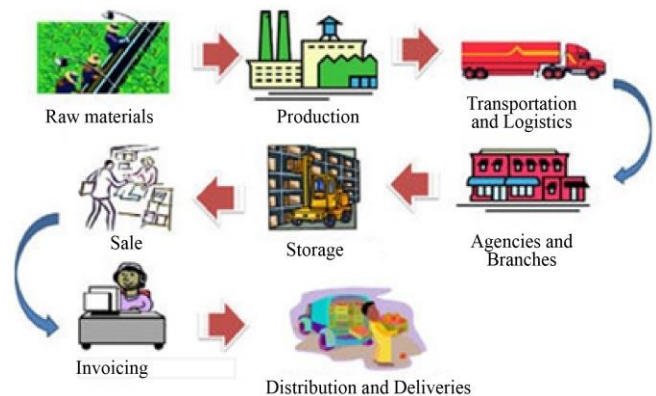


Fig. 12 Complete Supply Chain and Distribution Cycle

Table 10. General hypothesis test

			Supply Chain Management	Business Performance
Spearman's Rho	Supply Chain Management	Correlation Coefficient	1,000	,837**
		Sig. (2-tailed)	.	,000
		N	30	30
	Organizational Performance	Correlation Coefficient	,837**	1,000
		Sig. (2-tailed)	,000	.
		N	30	30

In Table 10, a significance of $0.000 \leq 0.05$ is observed; in this sense, the Null Hypothesis (H0) is rejected, and the Alternative Hypothesis (H1) is accepted; this means that there is a direct relationship between supply chain management and organizational performance in the company Logística Tech S.A.C., Lima, 2022. Likewise, the degree of correlation was 0.837, meaning it has a high positive correlation.

H0: There is no direct relationship between procurement and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023)

H1: There is a direct relationship between procurement and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023).

Specific Hypothesis Test 1

Table 11. Correlation between storage and business performance

			Supply Chain Management	Business Performance
Spearman's Rho	Supply Chain Management	Correlation Coefficient	1,000	,582**
		Sig. (2-tailed)	.	,000
		N	30	30
	Organizational Performance	Correlation Coefficient	,582**	1,000
		Sig. (2-tailed)	,000	.
		N	30	30

In Table 11, a significance of $= 0.000 \leq 0.05$ is observed; in this sense, the Null Hypothesis (H0) is rejected, and the Alternative Hypothesis (H1) is accepted; this means that there is a direct relationship between procurement and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023). Similarly, the degree of correlation was 0.582, meaning it has a moderate positive correlation.

Specific Hypothesis Test 2

H0: There is no direct relationship between storage and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023)

H1: There is a direct relationship between storage and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023)

Table 12. Correlation between storage and business performance

			Supply Chain Management	Business Performance
Spearman's Rho	Supply Chain Management	Correlation Coefficient	1,000	,760**
		Sig. (2-tailed)	.	,000
		N	30	30
	Organizational Performance	Correlation Coefficient	,760**	1,000
		Sig. (2-tailed)	,000	.
		N	30	30

In Table 12, a significance of $= 0.000 \leq 0.05$ is shown, so the Null Hypothesis is rejected, and the Alternative Hypothesis is accepted; that is, there is a direct relationship between the "storage" dimension and the "business performance" variable in Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023). Furthermore, the correlation was 0.760, which is understood as a high positive correlation.

Specific Hypothesis Test 3

H0: There is no direct relationship between distribution and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023)

H1: There is a direct relationship between distribution and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023)

Table 13. Correlation between storage and business performance

			Supply Chain Management	Business Performance
Spearman's Rho	Supply Chain Management	Correlation Coefficient	1,000	,822**
		Sig. (2-tailed)	.	,000
		N	30	30
	Organizational Performance	Correlation Coefficient	,822**	1,000
		Sig. (2-tailed)	,000	.
		N	30	30

In Table 13, a significance of $= 0.000 \leq 0.05$ is reflected, so the Null Hypothesis (H0) is rejected, and the Alternative Hypothesis (H1) is accepted; that is, there is a direct relationship between distribution and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023). On the other hand, the resulting correlation was 0.822, reflecting a high positive correlation.

4. Discussion

The general objective of this study was to determine the relationship between supply chain management and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023). To this end, a hypothesis test was carried out, obtaining a .837 degree of relationship, which reflects a high positive correlation. In addition, a significance level of $= 0.000 \leq 0.05$ was evidenced; for this reason, the null hypothesis was rejected, and in contrast, the alternative hypothesis was accepted. It is in this sense that the existence of the relationship between both variables can be confirmed.

Similarly, it is important to note that 48.09% of the surveyed personnel considered that the supply chain was at a regular level; at the same time, 46.07% of respondents believed that the level of organizational performance had been regular. Given the findings, previous research should be mentioned through a correlational study with a quantitative approach and a non-experimental cross-sectional design, verified that SCM is positively related to OD, with a Rho Spearman value of 0.700 and a significance of 0.000, based on Goldratt's theory of constraints, who contextualizes those decisions made in logical management has a direct impact on staff performance productivity.

From another point of view, in the study carried out through his research study and supported by Ludwig's General Systems Theory, he established the domain of SCM in the OD of the company Blog Aduanas SAC, which had a quantitative approach with a non-experimental and correlational design; obtaining through a survey, that 22.2% of people affirmed that there was a deficiency in SCM and only 11.1% affirmed that OD was also efficient despite the difficulties in the process. It was concluded that there is a significant influence between the two variables reviewed. The purpose of the 1st specific objective was to establish the existence of the relationship between procurement and Sustainable Business Performance

in the Textile Industry: Analysis in Peruvian Companies (2018-2023).

Through the hypothesis test, a result of .0582 was obtained, demonstrating a moderate positive correlation. In addition, a significance equal to $0.000 \leq 0.05$ was obtained; consequently, the null hypothesis was rejected, accepting the alternative. Evidencing the existence of the relationship between this dimension and the study variable. It is also necessary to detail that it was possible to know through the results obtained that 53.03% of surveyed people placed the procurement dimension at a regular level.

Considering these findings, it is worth highlighting the analysis where through the situational diagnosis carried out in the company METSO PERÚ S. An Arequipa and based on Federgruen's Game Theory, it was found that the procurement process was well below average, with a rating of 1.75, highlighting various problems such as deficiencies in purchasing management, lack of indicators and little follow-up to purchase orders, which would end up affecting the company's OD. From another point of view, and also taking as a reference Chiavenato's Theory of Organizational Development, concluded a positive relationship between commercial supply and performance of organizational processes in a company in Bilbao, surveying 132 employees, resulting in a significance of 0.05 with a Spearman's Rho value of 0.289.

Regarding the 2nd objective, the aim was to demonstrate the existing relationship between storage and organizational performance in the company Logística Tech S.A.C., Lima, 2022. Through inferential analysis, a high positive correlation of 0.760 was demonstrated, with a sig. $= 0.000 \leq 0.05$; thus accepting the alternative hypothesis and rejecting the null, verifying a direct relationship between them. In addition, for 53.3% of the personnel surveyed, the storage dimension is at a regular level.

In contrast, it is worth mentioning that the study, under the institutional theory proposed by Powell and DiMaggio, analyzed the improvements in the productivity of OD due to proper storage management in the company Industrial Reyes SAC, Carabayllo 2018. In this way, it was evidenced that a 17.46% increase index in the performance of the organization, demonstrating that there was a direct relationship between the

variables. Similarly, based on Systems Theory, it was observed in the company Viza Constructores S.A.C., Juanjui, 2018, that there was no adequate warehouse management within it, which implies deficiencies in the company's OD, affecting stocks and generating delays in the entry and exit of products, concluding with a correlational coefficient of 0.883 the relationship that exists between these variables since the deficit of one directly affected the other.

Regarding the 3rd objective, it was determined to verify the relationship between distribution and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023). For this, through the hypothesis test, it was found that the degree of correlation resulted in 0.822, translating into a high positive level, with a significance equal to $0.001 \leq 0.05$, with which the established null hypothesis was rejected and, in contrast, the alternative was accepted. Thus, a direct relationship between both was corroborated. In addition to the above, it was observed that 48.09% of the survey participants considered the distribution dimension to be in an intermediate state.

These findings can be contrasted with those of "Impact of logistics management on organizational performance (A case study of Dangote Flour Mills PLC, Nigeria)", designed with a descriptive survey that was applied to 115 employees, and it was obtained that there was a very strong relationship between distribution management and OD, with a correlation value of 0.769; because the effectiveness of it depended a lot on the correct planning of the transportation used for the process of deliveries to the final customers. It also supports the conceptualization of this in Chiavenato's Organizational Development Theory.

Similarly, based on Porter's theoretical model of the value chain, studied the Supply Chain in the distribution and transportation of merchandise of the company Dinet Perú S.A.C., Lima, 2020, obtaining a Spearman's Rho of 0.643 through an applied, cross-sectional, non-experimental design methodology, using the survey technique, through a questionnaire of 20 questions that were applied to the workers, with a total of 25 participants, demonstrating the direct correlation that exists, and because of this, it is imperative to correct the deficiencies found through due action plans that allow the implementation of continuous improvements to raise the OD of the company.

5. Conclusion

Supply chain management and sustainable business performance have proven to be crucial to the success of textile companies in Peru from 2018 to 2023. Throughout these years, the textile industry has faced numerous challenges, including fluctuations in the global market, changes in environmental regulations and increasing consumer expectations regarding sustainability. Furthermore, collaboration with suppliers and transparency in the supply

chain have become key factors to ensure sustainable practices. Companies that have promoted open communication and established clear criteria for selecting suppliers have optimized their processes and reduced risks associated with the supply chain.

The analysis of Sustainable Supply Chain Management (SSCM) and its impact on sustainable business performance in the Peruvian textile industry from 2018 to 2023 reveals a significant positive correlation between these two elements. The findings indicate that effective management of procurement, storage, and distribution practices contributes to enhanced business performance, highlighting the importance of sustainability in the supply chain. Despite the strong correlations identified, the perception of respondents suggests that there is considerable room for improvement, with a notable percentage rating the levels of SSCM and organizational performance as merely "regular." This indicates that while companies are on the right path, they must intensify their efforts to adopt and implement more robust sustainable practices. In conclusion, to achieve better sustainable business performance, Peruvian textile companies should prioritize the optimization of their supply chain management strategies.

By focusing on sustainability at every stage-procurement, storage, and distribution-these companies can enhance their operational efficiency and align with growing consumer demand for environmentally and socially responsible practices. Continuous improvement in these areas will be essential for maintaining competitiveness and fostering long-term success in the industry.

Regarding specific objective number three, it was determined that there is a positive relationship between distribution and Sustainable Business Performance in the Textile Industry: Analysis in Peruvian Companies (2018-2023). having a significance of 0.000, and where the resulting correlation was 0.802, reflecting a high positive correlation. Likewise, it was stated that the distribution is at a regular level, according to 48.9% of those surveyed.

Peruvian textile companies must strengthen their SCM strategies to enhance sustainability and long-term performance. This study provides empirical evidence supporting the positive impact of effective SCM on business success. Future research should explore longitudinal analyses and larger datasets for more generalizable insights. Finally, we got a value of 0.000 with a value of 0.898, which means there is a high positive correlation between distribution and sustainable business performance.

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