Analysis of the Influence of Information Sharing, Long-Term Relationships

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Analysis of the Influence of Information Sharing, Long-Term Relationships, Cooperation, and Integration Processes on Supply Chain Performance

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Abstract : The goal of this study is to examine how supply chain management, namely information exchange, sustained connections, collaboration, and integration processes, affects supply chain performance in MSME actors. This study employs a quantitative associative methodology with a sample of 100 respondents from MSME producers and distributors of rice bran in Banten Province, Indonesia. Structural Equation Model (SEM) data analysis was done in this study utilizing SmartPLS 3.0.m3 software. The study's findings show that: (1) Information exchange has a positive and significant impact on supply chain performance; (2) Long-term relationships have a positive and significant impact on supply chain performance; (3) Collaboration has a positive and significant impact on supply chain performance; and (4) The study's findings are significant.

Keywords : Information sharing, long term relationship, cooperation, process integration, and supply chain performance.

1. Introduction

One way to meet consumer needs regarding how items are delivered to consumers is through the performance of the supply chain, which focuses on factors like product integrity, durability, and order response time. Munir and Dwiyanto (2019) define supply chain performance as the efficiency of processes involving the transfer of commodities, information, and capital from suppliers to consumers. According to (Hasan, 2019), performance measurement is significant since it is used to assess supply chain performance based on profitability and supply chain systems. According to (Zaroni, 2017), efficient supply chain management can help businesses gain a competitive edge by reducing production and distribution costs and improving the accuracy of their product inventory.

According to (Karuntu, 2021), a number of elements, including as information exchange, long-term partnerships, collaboration, and process integration, can affect how well the supply chain performs. Sharing information, according to (Test et al., n.d.), is the degree to which businesses connect with their partners to exchange information related to business strategy and to enable supply chain participants to keep and transmit information necessary for decision-making. Then (Articles, 2021) opinion, which explained that information exchange can also improve the responsiveness of the supply chain process, was supported. This led to a more dynamic supply chain and lower storage costs for both raw materials and finished goods. (Gebisa, 2023) further contends that information sharing plays a crucial role in the functioning of the supply chain. By exchanging company information, information gathered from parties from members of the supply chain can then be examined to help make better decisions.

Hilmawati, Daulay, & Siregar, 2023) explain that long-term relationships are a company's ability to establish long-term relationships through trust and interdependence with suppliers so that it will bring benefits. Long-term relationships are also factors that can improve supply chain performance in addition to information sharing. Long-term partnerships will result in long-term benefits and long-term

cooperative ties with one another, according to (Gebisa, 2023) argument. Additionally, (Mukhsin, 2020) thinks that with a long-lasting, mutually beneficial connection, the company's supply chain performance can be enhanced.

Cooperation variables play a role in enhancing supply chain performance relationships in addition to long-term relationship aspects. According to (Deng & Liu, 2017), (Sukati, Bakar, Baharun, & Yusoff, 2012); (Danese, Molinaro, & Romano, 2020); (Al-Tit, 2017); (Sinaga, Anggraeni, & Slamet, 2021) working with suppliers leads to more reliable requirements and a better understanding of each party's needs, which boosts profitability. (Sapa & Awaluddin, 2022), asserts that collaboration is a process or action where multiple partners between providers work toward a same goal.

Additionally, there are process integration aspects that boost the efficiency of the supply chain (Reza, Mar, Ja, & Kumar, 2023), with supplier integration serving as one of the key drivers of performance improvement (Ivanov, 2021). Supplier integration is a component of supply chain integration, which can be characterized as a close, long-term cooperative relationship established between a company and its supply chain partners (Prajogo & Olhager, 2012). Suppliers who participate in supply chain integration share information about estimated demand, production, and supply levels as well as participate in the company's key decision-making processes. The greatest approach to establishing dependable supply chain performance is supplier integration, which can be used as a synonym for terms like buyer and supplier interaction, supplier engagement, and supplier collaboration (Ivanov, 2021).

Micro, Small, and Medium-Sized Enterprises (MSMEs) make up the largest business segment in the Indonesian economy. Additionally, this group has demonstrated its ability to withstand severe economic crises shocks. Therefore, it is crucial to strengthen MSME groups that include a variety of groups. MSMEs play a significant part in Indonesia's economy. In Indonesia, MSMEs make up 99.99% of all business actors and account for over 60% of GDP. The GDP is made up of several MSME economic sectors, including: building (1.57%), mining and quarrying (0.53%), electricity, gas, and clean water (0.03%), as well as agriculture, livestock, forestry, and fisheries (48.85%), trade, hotels, and restaurants (28.83%), transportation and communication (6.88%), processing industry (6.41%), and services (4.52%).

The largest provider of employment opportunities, significant contributors to the growth of local economic activities and community empowerment, developers of new markets, and sources of innovation are just a few of the significant roles played by MSMEs in the Indonesian economy. MSME actors still have to overcome some internal and external challenges, though.

MSMEs made up more than 57,900,000 units between 2014 and 2016, and it is anticipated that they will make up more than 59,000,000 units by 2017. In addition, MSMEs with high resilience will be able to assist the nation's economy even amid a worldwide crisis, according to RI President Ir. Joko Widodo in 2016. The economies of Indonesia and the ASEAN region are now largely supported by MSMEs. The employment ranges from 51.7% to 97.2% while the percentage of MSMEs in ASEAN is between 88.8% and 99.9%. In Indonesia, MSMEs account for 56.54 million units, or 99.99% of all business actors. Cooperation therefore needs to be stressed for the growth and toughness of MSMEs.

In the last five years, MSMEs' share of the gross domestic product climbed from 57.84% to 60.34%. During the same time period, labor absorption in this industry rose from 96.99% to 97.22%. The MSME sector has limited access to global production supply chains, despite increasing indices of its contribution to GDP formation and workforce absorption. MSMEs in Indonesia only make up 0.8% of the global supply chain. In ASEAN, Brunei, Laos, Myanmar, and Cambodia make slightly more of an impact on the global supply chain than do Indonesian MSMEs. The MSME sector's 2.7% contribution to the global supply chain is the greatest.

The huge number of MSMEs reflects the level of competition among MSME players. In addition, in order for MSME actors to have a successful strategy, the environment's level of uncertainty also needs to be taken into consideration. The primary strategy for MSMEs must also involve interactions with suppliers because these interactions, based on effective information sharing, long-term relationships, cooperation, and integration processes, can unquestionably prevent one of the issues, namely performance failure due to raw material constraints that do not match quality or a sudden increase in price. Managers need to be aware of the information gathering and analysis processes given the significance of information in supporting supply chain performance (Gunasekaran, Subramanian, & Rahman, 2017). This research was conducted on SMEs in the production and distribution of rice bran in Banten Province, Indonesia.

A graphic illustrating the flow of raw materials from suppliers to the company is called the flow of raw materials to PD. As a processing business, Simple PD receives raw materials from suppliers, specifically rice milling MSME players, who subsequently deliver them to large suppliers. Simplicity PD will process the raw materials, after which Simple PD will transfer the production output to major corporations such PT Cargill Indonesia, PT Agrico International, PT Cheil Jedang Superfeed, PT Sierad Produce, PT. Bintang Jaya Proteina, and others. However, in reality, there are barriers to communication, long-term partnerships, collaboration, and process integration between raw material suppliers and businesses, such as delays in raw material supply and errors in contract fulfillment, among other issues.

Company performance serves as a high bar for producing good company management, which is evident through successful company performance. Customer satisfaction, which is a component of supply chain performance, is the end outcome of an entire process from upstream to downstream activities that make up performance measurement. Supply chain performance (SCM) is the design and management of the flow of goods, information, and cash throughout the supply chain, according to (Mukhsin & Suryanto, 2022).

The success of top organizations is largely attributed to the supply chain, which is currently the business sector with the quickest growth. Companies now must compete in significantly different ways than they did even a few years ago due to the current business climate. (Karuntu, 2021) assert that supply chain management is the extension and development of the concept and meaning of logistic management, which is expanding in connection to the needs of customers and plays a role in controlling the movement of goods between businesses.

The Council of Supply Chain Professionals (CSCMP) defines supply chain as an activity that includes planning and managing all sourcing, procurement, conversion, and logistics management activities. This includes coordinating and working with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers.

According to (Gebisa, 2023), supply chain performance for small and micro enterprises in Jepara is positively and significantly impacted by information exchange, long-term connections, collaboration, and integration procedures. According to (Hassan & Nasereddin, 2018) research, the performance of the supply chain is favorably and significantly impacted by information exchange, long-term connections, collaboration, and integration procedures. In contrast to (Sapa & Awaluddin, 2022), the study's findings demonstrate that information exchange, long-term connections, and integration procedures have a major positive impact on firm success. The research's findings on the cooperation variable, however, indicate that it has no appreciable impact. Accordingly, the performance of the supply chain will improve the better the relationships between them.

2. Literature review

2.1 Supply Chain Manaement

Supply chain management comprises the purchasing function connected to suppliers and distributors. It involves the action of converting raw materials into semi-finished or finished commodities and then delivering products to clients through the distribution system. Merlyn Mourah Karuntu asserts that firms employing supply chain management (SCM) do so in an effort to boost competitiveness, which manifests itself in better operational performance. Supply chain management (Supply Chain Management), according to (Mukhsin, 2020), refers to the coordination of all supply chain activities, beginning with raw materials and ending with customer satisfaction.
A supply chain is a mechanism that a business uses to transfer the products and services it produces to its clients, according to (Tyagi & Agarwal, 2020). The best possible acquisition and distribution of these items is the main objective of this chain, which is also a network or collection of numerous related entities. In order to be responsive to client requests and reduce overall costs, supply chain management focuses on integrating and regulating the flow of goods, services, and information via the supply chain. (Articles, 2021) states that traditionally, each supply chain section is managed as a distinct (stand-alone) company with an own set of objectives. However, the combined efforts of every link in the supply chain define a company's capacity to compete in today's global market. For supply chains to be effective, participants must work closely together, cooperate, and communicate. Customers and suppliers must exchange information. Today's supply chain management is characterized by the quick exchange of information between buyers, sellers, distributors, and producers. Customers and suppliers must share the same objective.
All parties involved in directly or indirectly completing a consumer request are included in a supply chain. Along with manufacturers and suppliers, the supply chain also consists of transporters, warehouses, retailers, and even the actual customers. The entire process of receiving and meeting client demands is included in the supply chain in every company, including manufacturers. New product creation, marketing, operations, distribution, finance, and customer support are only a few of these duties (Agus, 2015).

2.2 Performance of Supply Chain Management

Performance is an accomplishment in carrying out an organization's tasks in accordance with its goals, vision, and mission. According to (Gebisa, 2023), the ability of a corporation to establish standards that customers want to see is measured by factors like low production and maintenance costs, improved product quality, decreased work-in-progress inventory, lower material handling expenses, and delivery deadlines. All client demand fulfillment actions are measured quantitatively as supply chain performance.The outcomes of the company's client request fulfillment efforts, expressed as numbers or percentages.
A performance measurement system is required to monitor and control, communicate organizational goals to supply chain functions, know where an organization stands in relation to competitors and the goals to be achieved, and determine improvements that can be made to give an organization a competitive advantage (Mukhsin & Suryanto, 2022). A series of activities in the supply chain, including approach with suppliers that includes not only purchasing but a holistic approach to develop maximum value of t, include integration of activities for the procurement of materials and services, conversion into semi-finished goods and final products, and delivery to customers. All of these activities include purchasing and outsourcing, plus other functions that are important to the relationship between suppliers and distributors. Managing a successful supply chain according to (Hassan & Nasereddin, 2018).

2.3 Information Sharing

Decisions are based on information sharing, which calls for timely, accurate, and high-quality information to be gathered (Karuntu, 2021). Supply chain processes are implemented on the basis of information. (Mufadhol, Warsito, Wibowo, Mustafid, & Suryono, 2022)asserts that for information to be valuable in supply chain decision-making, it needs to possess a number of qualities; Accessible when needed, namely to be able to use when needed, information must be accessible properly and right, so that it can aid in making decisions. Accurate, namely to make good decisions, information must describe actual conditions and be trusted. Precise, namely considering what information is appropriate and needed by the company.

Information sharing refers to the willingness and ability of businesses to exchange information with partners on shared business strategies. The existence of information sharing, (Articles, 2021) can reduce industrial bottlenecks by enabling supply chain members to obtain, maintain, and communicate the information required to ensure effective decision making. Information sharing can also strengthen the elements of collaboration as a whole.

By strengthening the elements of collaboration overall, information sharing also enables supply chain participants to obtain, maintain, and communicate the information necessary to ensure effective decision making, which reduces industrial bottlenecks (Karuntu, 2021). Information sharing has a favorable and considerable impact on supply chain performance, according to research by (Abdallah, Obeidat, & Aqqad, 2014) Other researches have discovered that information sharing throughout the supply chain improves the performance of the chain (Zhao, Xie, & Zhang, 2002); (Chin, Hamid, Raslic, & Heng, 2014); (de Sousa Jabbour, Frascareli, & Jabbour, 2015).

2.4 Long Term Relationship

According to (Gebisa, 2023), a long term period of time is one that lasts more than a year. A long-term partnership (Long Term partnership), on the other hand, is defined by (Gebisa, 2023) as a perspective of the interdependence of buyers and suppliers in the context of both products or relationships that are anticipated to benefit buyers over the long term. According to (Hilmawati et al., 2023), the ability of a firm to build long-term connections with suppliers because the company believes the ties will be profitable is what is meant by a long-term relationship (Longterm Relationship). According to(Gebisa, 2023), long-term partnerships are necessary for both businesses and customers in the context of both their respective products and relationships with one another because they have a dependency relationship and will result in long-term benefits.

According to (Karuntu, 2021), the company's relationship with its suppliers is the context of a value chain or supply chain's strongest partnership. The supplier's duty in this situation is to give the company with the raw materials or inputs it needs. The supplier's performance affects the quality of the material and the company's capacity to distribute it, which in turn affects the company's success as a whole. According to (Deng & Liu, 2017), managing long-term relationships with the ultimate objective of achieving company profitability—which is continuously attained through relationships that are mutually beneficial—is expected to create consistent and sustainable long-term relationships.

2.5 Cooperation

One of the finest options for implementing the best supply chain management is cooperation. The rationale is that organizations or businesses involved in the supply chain network must have a reliable information system that fosters trust among those involved in the purchase of products and services. Without effective collaboration, nothing of the sort can be done. When numerous parties cooperate to accomplish goals that benefit both parties, the situation is said to be one of cooperation. (Wankmüller & Reiner, 2020) A desire to build relationships that will inspire dedication

and trust is necessary for effective cooperation. In order to have a satisfactory long-term cooperative connection, suppliers and businesses need to understand how partnerships arise and are maintained.

Every business uses cooperative activity as its primary instrument to sustain and enhance results. (Articles, 2021) It is imperative that the two sides work well together in order to achieve good performance. By using the measurement variables, trust and fairness, as the main factors determining the quality of a cooperative relationship, it is possible to quantify relationship quality. A corporation will consider this relationship more as a strategic asset and tool that will bolster the company's competitive capacity if it truly believes in its cooperation partners and treats them honestly. Collaboration with dependable suppliers is anticipated to lead to a thorough grasp of each party's needs and demands. According to (Huo, 2012), if there is no cooperation and integration among the many internal activities of the organization, companies will find it difficult to work with supply chain participants. Internal integration improves supply chain performance, according to research by (Narasimhan & Kim, 2002), and (Abdallah et al., 2014)

2.6 Process Integration

Organizations or businesses that are a part of the supply chain management network and the full procurement chain must accomplish integration. By providing goods, services, and information that add value for customers and other stakeholders, supply chain management aims to integrate the company's primary business processes from upstream and downstream relationships all the way down to end users (Tsinopoulos & Mena, 2015).

Integration, which is the joining of parts or activities to form a whole, can enhance relationships along each value chain, facilitate decision-making, enable value creation, and enable transfer processes from suppliers to final customers to physically operate the flow of information, knowledge, equipment, and assets. According to Cousineau et al. in (Tsinopoulos & Mena, 2015), integration in the supply chain is an intricate process of collaboration between businesses, suppliers, and customers that, if managed, can boost operational efficiency, boost profits, and satisfy all parties. According to (Huo, 2012), if there is no cooperation and integration among the many internal activities of the organization, companies will find it difficult to work with supply chain participants. Internal integration improves supply chain performance, according to research by (Narasimhan & Kim, 2002), and (Abdallah et al., 2014).

2.3 Hypothesis Development

2.3.1 Effect of Information Sharing on Supply Chain Performance

According to (Kembro & Selviaridis, 2015), sharing information can increase the supply chain process' responsiveness, make it more dynamic, and lower the cost of holding raw materials and finished goods. The ability to gather, keep, and communicate the information required to support good decision making is another benefit of information sharing, which also serves to strengthen other aspects of collaboration. Sharing knowledge can help to alleviate industrial bottlenecks (Huda et al. 2018). According to research from (Mufadhol et al., 2022), information sharing improves supply chain performance. Research from (Harjadi & Arraniri, 2022), (Gebisa, 2023) and (Hassan & Nasereddin, 2018) also confirmed the same finding, namely that information sharing improves supply chain effectiveness. So, the following is the hypothesis put forth in this study:

H1: Information sharing has a positive and significant effect on supply chain performance.

2.2.2 Effect of long-term relationships on supply chain performance

A long-term relationship is defined by Indriani (Gebisa, 2023) as a corporation's capacity to develop long-term connections with suppliers because the company views

these partnerships is profitable. Lestari stated that in the context of a value chain or supply chain, the company's relationship with its suppliers is the strongest form of collaboration. Suppliers provide goods or input materials that are used by the business. The supplier's performance affects the quality of the material and the company's capacity to distribute it, which in turn affects the company's success as a whole. In theory, achieving business profitability is the ultimate objective of managing long-term relationships.

This is attained by ongoing, mutually beneficial partnerships that result in the development of a stable, long-lasting relationship (Huda et al., 2018). According to (Sakir & Kuala, 2021) research, long-term connections have a favorable but negligible impact on supply chain effectiveness. Long-term partnerships improve the performance of the supply chain, according to (Hassan & Nasereddin, 2018). According to Supported by (Afriliyani, Sunarko, & Widuri, 2019), sustained partnerships improve the effectiveness of the supply chain.

H2: Long-term partnerships have a favorable and considerable impact on supply chain performance, hence, is the hypothesis put out in this study.

2.2.3 The Effect of Cooperation on Supply Chain Performance

(Gebisa, 2023) assert that "collaboration between two companies is the same as marriage between two human beings," stressing the importance of reflecting goals, beliefs, and identities in addition to comprehending one another's business models. It anticipated that working with dependable suppliers would lead to a better understanding of the needs and expectations of each party, In 2017, Arizal. Cooperation, according to (Wankmüller & Reiner, 2020), is one of the finest factors for carrying out the best supply chain management. cooperation.

The rationale is that organizations or businesses involved in the supply chain network must have a reliable information system that fosters trust among those involved in the purchase of products and services. Without effective collaboration, nothing of the sort can be done. Cooperation and Information Sharing Increase Supply Chain Performance, (Articles, 2021) journal Both this study, Broil Egg Traders in Regency of Pandeglang Banten, and (Gebisa, 2023) study, Effects of Long-Term Relationship, Information Sharing, Trust, and Process Integration on Supply Chain Performance (Studies in the Dipurbalingga Exhaust Industry), demonstrate that cooperation has a significant positive impact on supply chain performance.

The findings of this study demonstrate that collaboration enhances supply chain performance. In contrast to (Sapa & Awaluddin, 2022), the study's findings demonstrate that information exchange, long-term connections, and integration procedures have a major positive impact on firm success. So, the following is the hypothesis put forth in this study:

H3: Cooperation has a positive and significant effect on supply chain performance.

2.2.4 Effect of integration process on supply chain performance

According to (Tsinopoulos & Mena, 2015), there is a complicated process of collaboration between businesses with suppliers and customers that, properly managed, can boost operational efficiency, boost sales, and make everyone happy. cooperative integration processes that are closely related to end users or customers in the context of supplier logistics activities. Distribution, inventory, transportation, and material flow can be used to quantify this variable.

In order to compete in the business world, the company's supply chain integration pattern reflects its operational focus. The organization must decide during integration whether its supply chain integration pattern is leaning internally or outwards (in the direction of suppliers, consumers, or both) (Tsinopoulos & Mena, 2015). Integration must be defined as cooperation, collaboration, information sharing, trust, partnership, compatibility, sharing risks and benefits, commitment to the same vision,

dependability, and sharing of key processes as a result of the standardization that occurs during integration (Harjadi & Arraniri, 2022).
Productivity needs to be raised in the supply-chain management industry. According to (Cahyaningratri & Naylah, 2023), businesses need a good plan to stay afloat in the market and be prepared to take advantage of opportunities and dangers. Along with improving production and efficiency, businesses must also comprehend and be aware of what customers want. According to (Harjadi & Arraniri, 2022) the importance of the roles played by suppliers, manufacturers, distributors, retailers, and customers in producing affordable, high-quality products quickly gave rise to a new idea known as supply chain management. From the foregoing description, the following hypothesis can be made:
H4: Process Integration has a positive effect on supply chain management performance.

2.7 Coceptual Frame

The framework used by researchers is as follows:

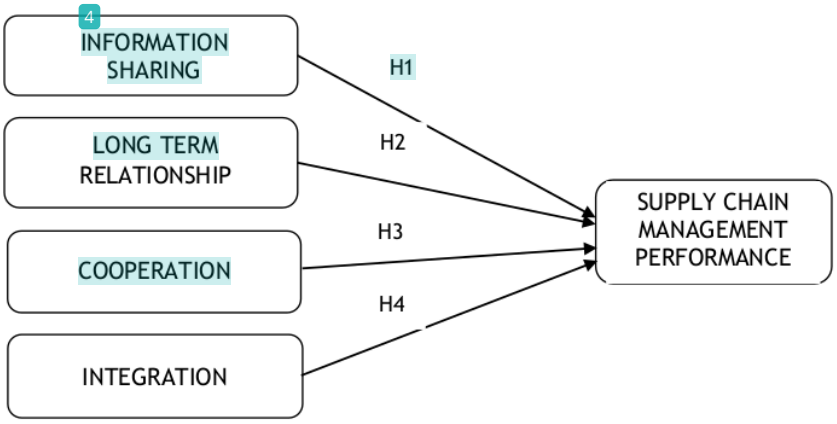


Figure 2. Conceptual Frames
Source: Processed Primary Data, 2023

3. Research Methods

3.1 Types of Research

This study combines a quantitative technique with an associative methodology. The goal of this kind of associative research is to ascertain how the independent variable (X) affects the dependent variable (Y). According to (Arifin, Kevin, & Siswanto, 2017), this kind of study employs a quantitative strategy in which researchers first construct hypotheses and propositions to discover new concepts, and then test them against quantitative data to produce tested hypotheses.

3.2 Research Variables

The independent variable and the dependent variable were both put to the test in this study. According to (Hassan & Nasereddin, 2018), independent variables are those that affect, trigger, or otherwise contribute to changes in or the emergence of the dependent variable. The author employs one dependent variable, namely the dependent variable (Y), along with four independent or independent variables (X1, X2, and X3 X4).

In this instance, the X1 variable is Information Sharing, which is measured by 3 indicators, the X2 variable is Long-Term Relationship, which is measured by 4 indicators, the X3 variable is Cooperation, which is measured by 3 indicators, the X4 variable is Integration Process, which is measured by 3 indicators, and the variable

which is a variable that influences the variable Y, namely Supply Chain Performance, is measured by 5 indicators.

3.3 Population and Sample

When conducting research, it is common for data to be examined in order to form conclusions that lead to important results. In order to retrieve this data, a population and sample must exist in order to make the data analysis process simpler. The population is a collection of all elements that take the shape of occasions, objects, or individuals who share certain traits and are the focus of a researcher's attention because they are viewed as belonging to the same research universe. (Mukhsin & Suryanto, 2022). The sample, which includes a number of population members, is a subset of the population. This subset is chosen because it is frequently hard for researchers to look at every person of the population; as a result, they must create a sample of the population. the method of choosing a statistically representative sample of the population under study. There are typically too many people in the population of interest for any specific research effort to involve them as participants. Non-probability samples were selected using simple random sampling (Simple Random Sampling) in this study. In this study, 100 participants were randomly selected from among UMKM producers and distributors of rice bran in Banten Province.

3.4 Data Analysis Methods

This study uses descriptive statistical analysis techniques and PLS (Partial Least Squere) analysis using SmartPLS 3.0.m3 software.

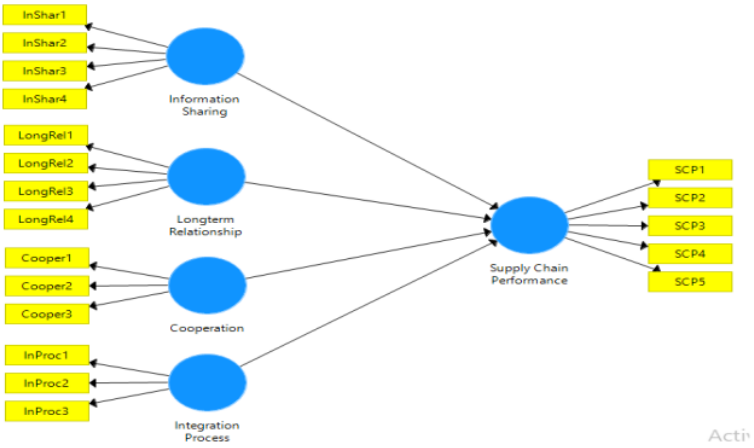


Figure 3. Research Model Path Diagram
Source: Primary data obtained by researchers, 2023

3.4.1 Hypothesis Testing

This method has a hypothesis test and uses the explanatory research method as a methodological approach using PLS. With a minimum of 5000 bootstraps, the bootstrapping resampling approach was used to test the hypotheses (and). Statistics and probabilities are obtained by running the SmartPLS bootstrap algorithm and are used to decide whether or not the proposed hypothesis is accepted because PLS does not use normality and data distribution to determine the t-statistic value in the PLS test. Instead, a non-parametric test is used to determine the significance level of the path coefficient where the t value results.

With the explanatory research method as a methodological approach with the help of PLS, this method has a hypothesis test. Hypothesis testing (γ and λ) was carried out

using the bootstrapping resampling method with a minimum number of bootstrapping of 5000. Because PLS does not use normality and data distribution to determine the t-statistic value in the PLS test using a non-parametric test to determine the significance level of the path coefficient where the t value results -Statistics and probabilities are obtained by running the SmartPLS bootstrap algorithm and are used to determine whether or not the proposed hypothesis is accepted.

3.4.2. Data Analysis and Hypothesis Testing

Data analysis serves as a model for combining findings from comparisons, similarities, and differences in the data to be investigated, allowing the analysis's conclusions to be made into a choice that can be made or information that can be used to address issues raised by the research. It is thought important to first analyze the measurement model in order to confirm indicators and latent variables for further testing before conducting hypothesis testing to forecast the link between latent variables in a structural model. The SmartPLS 3.0.m3 program, which comprises of an Outer Model Test and an Inner Model Test, was used for data analysis in this study using a conceptual framework with reflecting indicators throughout the entire model.

4. Test the Measurement Model (Outer Model)

4.1.1. Convergent validity

Correlation if the value is more than 0.70 with the latent variable or construct that you want to measure. However, according to (Arifin et al., 2017) for early-stage research, a loading value measurement of 0.5 to 0.6 is considered sufficient.

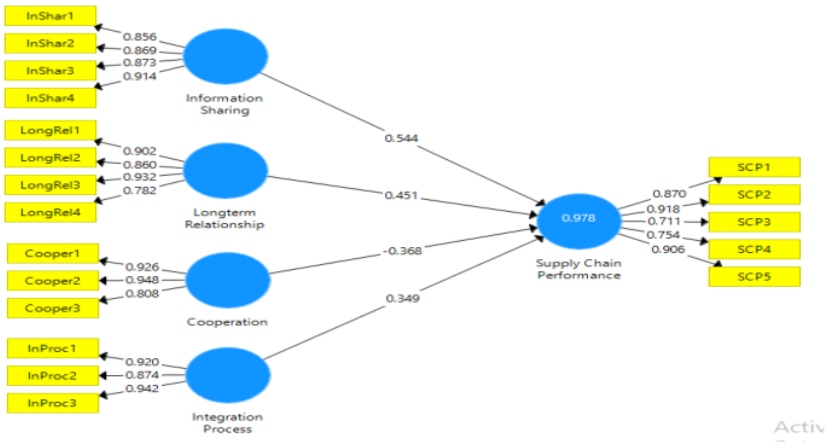


Figure 4 : Measurement model output
Source: SmartPLS processed data 3.0.m3, 2023

Based on the outer loading above, the results show that all indicators have a loading score > 0.50, so there are no indicators that need to be removed from the model. The following is the result of the outer loading score table below.

Table 1: Outer Loading Score

Matrix	Cooperation	Information Sharing	Integration Process	Longterm Relationship	Supply Chain Performance

Cooper1	0.926				
Cooper2	0.948				
Cooper3	0.808				
InProc1			0.920		
InProc2			0.874		
InProc3			0.942		
InShar1		0.856			
InShar2		0.869			
InShar3		0.873			
InShar4		0.914			
LongRel1				0.902	
LongRel2				0.860	
LongRel3				0.932	
LongRel4				0.782	
SCP1					0.870
SCP2					0.918
SCP3					0.711
SCP4					0.754
SCP5					0.906

Source: SmartPLS processed data 3.0.m3, 2023

It is mentioned that the latent variables Cooperation, integration process, information exchange, and long-term relationship account for more than 70% of each indication based on Figure 3 and Table 1. Similar to latent variables, supply chain performance endogenous variables each have a percentage value higher than 70% in each indication.

Table 2: Convergent validity test results

Construct	Average Varience Extracted (AVE)
Information Sharing	0.832
Longterm Relationship	0.759
Cooperation	0.803
Integration Process	0.771
Supply Chain Performance	0.699

Source: SmartPLS processed data. 3.0.m3, 2023

Because all factor loading results indicated a value of > 0.50 and it was established that there were no issues with the convergent validity model, the findings after removing the indicators showed that they fulfilled convergent validity.

4.1.2. Composite reliability

The reliability of each indicator in the model is represented by the composite reliability value. The base number is 0.70. With a minimum value of 0.70, Cronbach Alpha strengthens the dependability test (Ghozali, 2014).

Table 3: Composite reliability values

Construct	*Composite reliability*
Information Sharing	0.937
Longterm Relationship	0.926
Cooperation	0.924
Integration Process	0.931
Supply Chain Performance	0.920

Source: SmartPLS processed data 3.0.m3, 2023

Based on table 3's findings, it can be inferred that each construct has a strong reliability value since the composite reliability of each construct has a value over 0.70. This indicates that either the four measurement models produce accurate results or that each indicator may accurately measure latent variables.

Table 4 : Cronbach alpha values

Construct	*Cronbach's alpha*
Information Sharing	0.899
Longterm Relationship	0.891
Cooperation	0.877
Integration Process	0.901
Supply Chain Performance	0.888

Source: SmartPLS processed data. 3.0.m3, 2023

All constructions already have adequate reliability, as can be shown by the Cronbach's alpha value of the block that measures construct indicators, which shows values over 0.70. It is inferred that the measurement model's composite dependability is good or trustworthy because it has a value greater than 0.70, which qualifies it as reliable.

4.1.3. Structural Model Test (inner model)

A goodness-of-fit model test called the R-squere value is used to evaluate the structural model. The model of the impact of external variables on endogenous variables has an effect of 0.67 (high), 0.33 (moderate), and 0.19 (weak), according to (Chin, 1998 in Ghozali, 2014).

Table 5: R-squere values

Construct	R-*squere* values
Supply Chain Performance	0.978

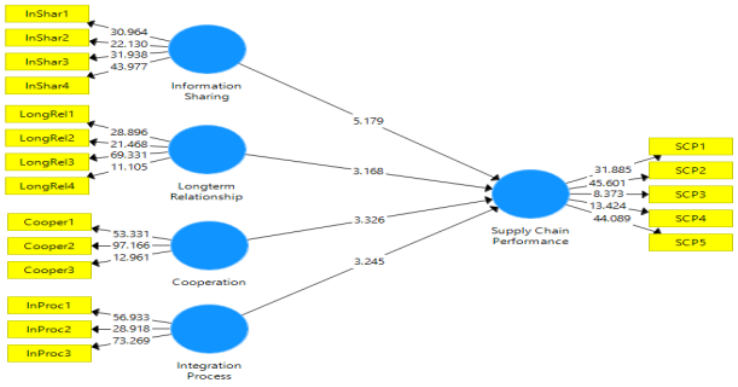
Source: SmartPLS processed data 3.0.m3, 2023

According to Table 10 the model's findings regarding the impact of cooperation, long-term relationships, and information sharing on supply chain performance result in an R-Squere value of 0.978, meaning that the four independent variables of cooperation, integration processes, information sharing, and long-term relationships account for

97.8% (nearly high effect) of the variance in the endogenous variable of supply chain performance, while the remaining 2.2% is explained by other factors.

4.1.4. Hypothesis test

To calculate the significance level of the association in SmartPLS, hypothesis testing is done on the research sample using the bootstrapping approach. The results of the SmartPLS bootstrapping can be used to test hypotheses by examining the t-statistic and path coefficient values. The t-statistic value represents the construct's level of significance, and the path coefficient describes the nature of the relationship between constructs. It can be interpreted with an f-squere value of 0.02 (weak), 0.15 (moderate), or 0.35 (high) based on the structural level of the data. (Arifin et al., 2017).



Figur 5: Results of hypothesis testing
Source: SmartPLS processed data 3.0.m3, 2023

The t-statistical values of the exogenous variables on the endogenous variables in the path coefficient table, which will be given in tabular form below, can be used to determine and evaluate the relevance of structural model testing.

Table 6. Summary of Hypothesis Test Results

Construct	Original Sample	T Statistics	P Value	Description
Information Sharing → Supply Chain Performance	0.544	5.179	0.000	Significant: H_1 Accepted
Longterm Relationship → Supply Chain Performance	0.451	3.168	0.002	Significant: H_2 Accepted
Cooperation → Supply Chain Performance	0.368	3.326	0.001	Significant: H_3 Accepted
Integration Process → Supply Chain Performance	0.349	3.245	0.001	Significant: H_4 Accepted

Source: SmartPLS processed data 3.0.m3, 2023

Based on the results of hypothesis testing, it is known as follows:

1. The first hypothesis (H1), that information sharing has a considerable impact on supply chain performance, is accepted. This is demonstrated by a t-statistic value that is bigger than the t-table, specifically by a value of 5.179 > 2.00.
2. The second hypothesis (H2), that there is a significant influence of the long-term relationship on supply chain performance, is accepted. This is demonstrated by a t-statistic value that is higher than the t-table, specifically with a value of 3.168 > 2.00. It has a path coefficient value of (0.451) and a p-value of (0.002 0.05).
3. The third hypothesis (H3), that collaboration has a considerable impact on supply chain performance, is accepted. This hypothesis is supported by a t-statistic value that is higher than the t-table, specifically by a value of 3.326 > 2.00.
4. The fourth hypothesis (H4), that there is a significant impact of the integration process on supply chain performance, is accepted. This conclusion is supported by a t-statistic value greater than that of the t-table, specifically by a value of 3.245 > 2.00.

Table 7. Summary of the results of hypothesis testing

	Hipotesis	Hasil	Keterangan
Hypothesis 1	Sharing information has a positive effect on supply chain performance	Accepted	Positive influence and significant
Hypothesis 3	Long term relationship positive effect on performance	Accepted	Positive influence and significant
Hypothesis 2	Cooperation has a positive effect on supply chain performance	Accepted	Positive influence and significant
Hypothesis 4	The Integration process has a positive effecton supply chain performance	Accepted	Positive influence and significant

Source: SmartPLS processed data 3.0.m3, 2023

4.2 Discussion

4.2.1 Effect of information sharing on supply chain performance

The findings of this study demonstrate that information sharing has a favorable and significant impact on the supply chain performance of MSME actors in the production and distribution of rice bran business actors with a path coefficient value (0.544) and a p-value (0.000 0.05), and this is supported by a t-statistic value higher than t-table, specifically with a value of 5.371 > 2.00 and enhanced by an F-squere of 0.283, which indicates that the impact of information sharing As a result, the initial hypothesis (H1) is deemed to be accepted. The findings of this study are consistent with earlier research by (Mufadhol et al., 2022), which found that information sharing enhances supply chain effectiveness. Additionally, research by (Hassan & Nasereddin, 2018), (Harjadi & Arraniri, 2022) and (Gebisa, 2023) also confirmed the same finding, namely that information sharing improves supply chain effectiveness.

The research has the implication that a successful information-sharing system between supply chain participants, MSME actors in the production and distribution of rice bran in the Province of Banten, Indonesia, will also result in a successful supply chain.Both economically and continuously helping partners in the supply chain are precise product outputs and strong communication.

4.2.2 Effect of long-term relationships on supply chain performance

With path coefficients of (0.451), p-values (0.002 > 0.05), and t-statistic values less than t-table (1.845 2.00), the findings of this study demonstrate that information sharing has a positive and insignificant impact on supply chain performance of MSME actors in the production and distribution of rice bran business actors. so that the f-squere's influence at the structural level has a mild effect of 0.152. As a result, the second hypothesis (H2) is deemed to be correct. The findings of this study are consistent with earlier research by (Sakir & Kuala, 2021),and (Harjadi & Arraniri, 2022) which found that the performance of the supply chain is positively and significantly impacted by long-term connections.

According to this study's findings, strong long-term relationships that are characterized by a high degree of commitment and trust produce supply chains that function well overall. Based on the findings of this study, MSME actors engaged in the production and distribution of rice bran in the province of Banten, Indonesia, should carry out an evaluation of the relationship of trust and commitment with MSME actors engaged in these activities. If the relationship of trust and commitment is carried out successfully, the long-term relationship is fulfilled and leads to chain performance. also a good supply.

4.2.3 The effect of cooperation on supply chain performance

According to the study's findings, where the path coefficients value is (0.368), the t-statistic value is less than the t-table (3.326 2.00), and the p-value is (0.001 > 0.05), cooperation on supply chain performance has a positive but not significant effect on the supply chain performance of MSME actors in the production and distribution of rice bran business actors. The third hypothesis (H3) is adopted if the influence of the f-squere on the structural level has an effect of 0.207 (moderate).

This study is consistent with earlier studies (Articles, 2021), and (Harjadi & Arraniri, 2022). The study's findings indicate a good and significant effect. According to this study, the supply chain performs better the more cooperation there is between participants. The findings of this study should be used by suppliers of MSME actors in Banten Province, Indonesia, to evaluate their cooperative relationships with MSME players in the manufacturing and distribution of rice bran. Cooperation based on objective conditions is satisfied, as well as sustainable partnerships, in order to develop supply chain performance that can meet strong sales planning and forecasting.

4.2.4 The effect of integration process on supply chain performance

The findings of this investigation support those of prior studies (Mukhsin & Najmudin, 2020), and (Tsinopoulos & Mena, 2015) The results of the study show a positive and considerable impact. This study shows that the supply chain operates more effectively when individuals cooperate more. The results of this study should be used by the manufacturers and distributors of rice bran in Banten Province, Indonesia, to assess their cooperative connections with MSME companies. Sustainable relationships and cooperation based on objective criteria are met in order to improve supply chain performance and enable accurate sales planning and forecasting.

The study's findings demonstrated a favorable and significant effect. This study's conclusion is that the supply chain's performance improves in direct proportion to how well suppliers integrate with one another. The providers of MSME actors in the production and distribution of rice bran in Banten Province of Indonesia should perform an evaluation in integrating MSME actors in Banten Indonesia province, according to the study's findings. in order to provide supply chain performance that is capable of supporting accurate sales planning and forecasting.

5. Conclusion

In this study, methodologies for analyzing how collaboration, long-term relationships, sharing of information, and process integration affect supply chain performance are

covered. The results of this study, which employed SEM (Structural Equation Model) testing utilizing the SmartPLS test program, are as follows:

1. The second hypothesis is accepted since the test of the impact of information sharing on supply chain performance reveals that information sharing has a favorable and significant impact on supply chain performance. The findings of this study are consistent with those of (Hassan & Nasereddin, 2018) and (Harjadi & Arraniri, 2022), whose studies found that information sharing improves supply chain performance in a favorable and significant way. This means that when information sharing is appropriately communicated from upstream to downstream, supply chain performance will also run well in order to reduce business partner disappointment and to foster positive cooperative relationships.
2. 2. The second hypothesis is accepted as a result of the long-term relationship test on supply chain performance, which demonstrates that the long-term relationship has a positive and significant impact on supply chain performance. The study's findings are consistent with those of (Sapa & Awaluddin, 2022), who found that long-term relationships have a positive and significant impact on supply chain performance. (Gebisa, 2023) also found that long-term relationships have a positive and significant impact on supply chain performance.
3. The test of cooperation's impact on supply chain performance demonstrates that cooperation has a positive and significant impact on the performance of the chain; this finding is consistent with those of (Articles, 2021), and (Harjadi & Arraniri, 2022), who also found that cooperation has a positive and significant impact.
4. The fourth hypothesis is accepted as a consequence of the integration process test on supply chain performance yielding the result that the integration process has a positive and significant impact on supply chain performance. The findings of this investigation concur with those of Moh. According to (Mukhsin & Najmudin, 2020) and (Gebisa, 2023), the integration process significantly and favorably affects supply chain performance. In other words, when the integration process is effectively communicated from upstream to downstream, supply chain performance will also operate well in order to reduce business partner disappointment and to foster positive cooperative relationships.

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