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Procurement Risk Management to Improve Supply Chain Performance

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Abstract. This research aims to analyze the impact of logistics integration and procurement risk management on supply chain performance in goods distribution for fast-moving consumer goods (FMCG) companies. The SEM method uses Smart-PLS software version 3.3. The respondents are 202 companies from the economic sector, logistics centers, and transportation service providers. The study results show that information sharing and supplier integration have a significant positive impact on supply chain performance through sharing information about plans, volumes, key performance indicators (KPIs), on-schedule delivery status, and transportation management systems. The novelty of this study is that it shows that procurement risk management is proven to moderate the impact of information sharing on supply chain performance. However, procurement risk management does not reduce the impact of long-term supplier relationships and integration on supply chain performance. It was clear that deliveries were not going well, as deliveries were made in response to demand via the spot market due to truck availability and high prices. Long-term relationships do not have a significant positive impact on supply chain performance.

Keywords: FMCG, Logistics integration, Procurement risk management, Supplier integration, Supply chain performance.

1. INTRODUCTION

Fast-moving consumer goods (FMCG) are primary products purchased for consumption and use by people daily (Ogbogu-Asogwa et al., 2017). These products generally have a short shelf life, are purchased repeatedly in large quantities, and are consumed quickly. According to the Central Statistics Agency (BPS), Indonesia's population is projected to reach 278 million people in 2023, and the public's need for FMCG products is very high (Niedermeier, Emberger-Klein, et al., 2021). Based on the 2014 Kantar World Panel, Indonesia is one of the countries with the largest FMCG market in Asia. Indonesian consumers shop for FMCG products 400 times a year. Consumptive consumer behavior and population growth in Indonesia continue to increase yearly. FMCG growth in Indonesia reaches 6.6% per year (Stewart & Niero, 2018). Indonesia has four main FMCG product categories: personal care, foods and beverages, cigarettes, and alcohol. PT XYZ is a multinational FMCG company focusing on foods and beverages and ingredients that can be consumed directly or must be processed first.

This research has become a hot issue since the COVID-19 pandemic has caused the FMCG industry to raise prices to overcome the surge in raw material prices caused by supply chain problems due to geopolitical conflict, resulting in soaring energy and commodity prices. The increase in product prices causes people's purchasing power to decrease (Asgharizadeh et al., 2023; Gardas & Narwane, 2024). Distribution in FMCG integrated Logistics to optimize Supply Chain Performance through the Moderating Role of Procurement Risk Management in Indonesia

The goods distribution channel at logistics company management is a vital tool in controlling the distribution process to improve quality, save time, and increase profits. FMCG company supply chains are very complex (Sarker et al., 2022). The problem is the high number of product deliveries with many transport service providers and the types of trucks or modes required, whether by land, air, sea, or multimodal (Stanciu et al., 2019). The number of transportation service providers for finished goods in the 2021-2022 period, with a growth in the number of transporters in 2022 compared to 2021 of 15%. The increase in the number of transporters is projected to continue to increase along with the growth in the number of deliveries.

The second problem is that the level of competition between FMCG product industries on the market is very tight. Companies can compete by optimizing supply chains (Niedermeier et al., 2021). Optimizing the supply chain in terms of performance, namely regular measurement and evaluation based on logistics cost indicators and logistics service quality. Measuring indicators in terms of logistics costs (Maemunah & Syakbani, 2021), the more efficient the logistics costs in the supply chain process, the more competitive the final product price will be. Logistics costs are influenced by three categories: transportation, storage, and system. (Macchion et al., 2018) Stated that transportation costs are the most significant component in logistics, namely 30-60% of distribution costs.

The quality of logistics services needs attention to improve delivery performance and on-time delivery for business success. Consumers want same-day delivery at a reasonable shipping price. Meanwhile, providing transportation is difficult due to fluctuating demand and uncertain travel conditions. Transportation service providers have a limited number and type of trucks, so proper delivery planning is needed. Procuring on-demand transportation via the spot market increases shipping risk due to price fluctuations and uncertainty of truck availability (Gardas & Narwane, 2024). It also causes an increase in delivery times and waiting times. The novelty of this research is that procurement risk management in transportation procurement strategies is

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essential for controlling logistics cost indicators and service quality.

In downstream logistics at PT XYZ, three main parties are involved: the goods owner, transportation service provider, and consumer (Maemunah et al., 2023; Yuliantini & Maemunah, 2023). The complexity of the supply chain in outbound transportation is relatively high in terms of the number of deliveries, types of transportation modes, parties involved in transportation, and distribution cost efficiency targets (Niedermeier, Emberger-Klein, et al., 2021). The specified timeliness of delivery of goods is very high, so many things need to be considered so that the supply chain process can run according to the strategy and objectives set.

1.1. Literature Reviews

Supply chain management is an approach used to manage the flow of goods and information from suppliers to end consumers. Transportation and transportation supply chain management focuses on managing and coordinating the transportation of goods in the supply chain (Maemunah & Susanto, 2020; Núñez-Merino et al., 2020; Pournader et al., 2021). Supply chain management includes Integrated Supply Chain: Effective supply chain management involves close cooperation and integration between all partners in the supply chain, including manufacturers, suppliers, distributors, and logistics parties. This integration includes real-time information exchange, collaboration in planning and decision-making, and efficient fulfillment of customer needs (Bode & Wagner, 2015). Logistics service providers offer inbound and outbound services to supply chain users. Logistics integration is said to help logistics service providers integrate and efficiently manage the various activities involved in the supply chain (Anjomshoae et al., 2022). It also encourages logistics service providers and focal companies to exchange resources with each other in an integrated system to reduce the uncertainty of supply chain processes (Kristinae et al., 2020). Organizations outsource their supply chain operations to third-party logistics service providers to achieve higher customer satisfaction and better overall performance. Logistics integration is vital to logistics service providers in any service disruption.

Appropriate and timely information sharing is the key to increasing the efficiency and effectiveness of supply chain operations. Information sharing plays a vital role in supply chain management. Company information can analyze information obtained from parties in the supply chain to make better decisions (S. Singh et al., 2021). Some of these benefits include increased visibility and the sharing of information, and parties in the supply chain can have better visibility into inventory, market demand, and product movement. With accurate and up-to-date information, companies can respond quickly to changes in demand or market situations (S. P. Singh et al., 2022). This allows better production, inventory, and delivery plan adjustments.

Supplier Integration Studies on logistics integration found that there are four types of integration: external and internal integration, process integration, physical information flow, and supplier integration (Gopal et al., 2024; Maditati et al., 2018; Maemunah & Nekrasov, 2023). External and internal integration is a collaboration between suppliers and customers called supply chain integration. Supplier integration is coordination between agents involved in an organization's entire supply chain (Maemunah & Susanto, 2019). Logistics service providers work as an integral component of supply chain logistics (Gupta & Singh, 2020).

Long-term Relationship, Agency Theory: This theory focuses on the relationship between the principal (mandate giver) and agent (executor). In logistics commitment, agency theory can describe the commitment between the Company and the third-party responsible for implementing logistics activities. Logistics commitment will be formed when the principal and agent have mutually supportive goals and trust each other (Thekkoote, 2022).

Accurate and timely information sharing is essential to improve the efficiency and effectiveness of supply chain operations (Hashemi et al., 2022). Information sharing is critical in supply chain performance (Birkel & Müller, 2021) By providing information to each other, companies can analyze the information obtained from parties in the supply chain to make better decisions. By increasing visibility, i.e. sharing information, parties in the supply chain can have better visibility of inventory, market demand, and product movements, improving supply chain performance for the long term (Nurhayati et al., 2023). This aids in better leadership decision-making and more efficient and competitive planning of supply chain activities (Long et al., 2024) Improving responsiveness is accurate and up-to-date information; Companies can respond quickly to changes in demand or market situations and improve supply chain performance.

Procurement Risk Management exists for organizations "when market supply behavior, and the organization's dealings with suppliers, create outcomes that damage the company's reputation, capabilities, operational integrity, and financial viability" (Claro & Esteves, 2020). Identification of procurement risks as a company's dependence on suppliers, including unexpected raw material price volatility, supplier quality and regulatory issues, supply chain disruptions, supplier bankruptcy, and supplier dependence on the Company (Becheroni, 2019; Hibrida, 2023). Procurement risk management practices are steps taken, including changes in behavior, procedures, and controls that minimize or reduce procurement risks to acceptable levels (Samaras et al., 2019). The risk management framework applied to procurement involves risk anticipation, risk monitoring, and risk mitigation.

Procurement Risk Management exists for organizations "when market supply behavior, and the organization's dealings with suppliers, create outcomes that damage the company's reputation, capabilities, operational integrity, and financial viability"(Bukhari et al., 2021). (Barbosa, 2021; De Angelis et al., 2018; Solihati & Indriyani, 2021)identify these procurement risks as the Company's dependence on suppliers, unexpected raw material price instability, supplier quality problems, supply chain disruptions, unexpected price instability through currency exchange rates, supplier bankruptcy, regulatory problems, and Supplier dependence on the Company. Procurement risk management practices are steps taken, including changes in behavior, procedures, and controls that minimize or reduce procurement risks to acceptable levels. The risk management framework applied to procurement involves risk anticipation, monitoring, and mitigation (Azadegan et al., 2020).

Sourcing transportation services is challenging due to fluctuating demand and an uncertain travel environment (Green et al., 2019). To overcome customer demand and uncertainty on the supplier side, companies must develop effective strategies to obtain the best transportation services. When shipping demand is unstable, increased flexibility in transportation services can be achieved using demand-based sourcing (Monios & Bergqvist, 2017). In contrast to contract-based sourcing, on-demand sourcing involves short-term arrangements between shippers and transportation providers from the spot market to meet short-term demand (Fu et al., 2020).

Two hybrid contract schemes are typical in the logistics industry: a dedicated fleet and delivery based on a rental contract (O'Brien, 2016). Dedicated fleet contracts utilize a fleet owned and operated by the carrier, where the shipper has complete control over how the assets will be used. However, in lease-based contracts, shippers and carriers can determine prices but cannot guarantee capacity or acceptance (Barbosa, 2021). Both contract schemes are secured using long-term agreements between shippers and carriers, with terms typically between one and two years (Suau-Sanchez et al., 2020). The advantage of using a rental fleet is that shippers can obtain flexible arrangements regarding times and routes at lower prices than dedicated contracts (Aaker, 2011).

Transportation supply chain performance requires effective performance measurements to evaluate operational efficiency and effectiveness. Delivery time, transportation costs have a delivery error rate, and customer service levels can be measured (Gardas & Narwane, 2024) Key Performance Indicators (KPIs) are crucial in evaluating and measuring supply chain performance. Measure the achievement of organizational goals and performance. In supplier transportation, KPIs can include delivery time, delivery accuracy, shipping costs, stock availability levels, and delivery delay rates (Ehiorobo, 2020). A Service Level Agreement (SLA) has an agreement between suppliers and consumers regarding the level of service that must be met. Regarding transportation, SLAs can include estimated delivery times, delivery frequencies, and quality standards to be achieved (Islam et al., 2023)

Total Cost of Ownership calculates all costs associated with owning and using a product or service. Supplier transportation includes transportation, warehousing, inventory, handling, and costs associated with delays or damage to goods during shipping. Lead Time or Processing Time is the time it takes to complete a particular process or activity. In supplier transportation, lead time includes the time it takes to collect, process, and ship orders from suppliers to consumers. Measuring lead time can help identify areas that need improvement to improve the efficiency and responsiveness of the supply chain (Burgos & Ivanov, 2021) Stock Availability Level: Stock availability level refers to the extent to which the stock of goods is available and ready to be shipped to consumers when needed. A high level of stock availability indicates supplier reliability and availability, while a low level of availability can indicate a problem in the supply chain (Gupta & Singh, 2020).

1.2. Problem Formulation

Based on the background of the problem above, a problem formulation was obtained which can be used as a hypothesis for further research. These include:
1): Does information sharing have a positive and significant effect on supply chain performance?; 2) Does long-term relationships have a positive and significant effect on supply chain performance?; 3) Does supplier integration have a positive and significant effect on supply chain performance?; 4) Does the influence of information sharing on supply chain performance by moderating procurement risk management?; 5) Does the influence of long-term relationships on supply chain performance moderated by procurement risk management?; 6) Does the influence of supplier integration on supply chain performance by moderating procurement risk management?

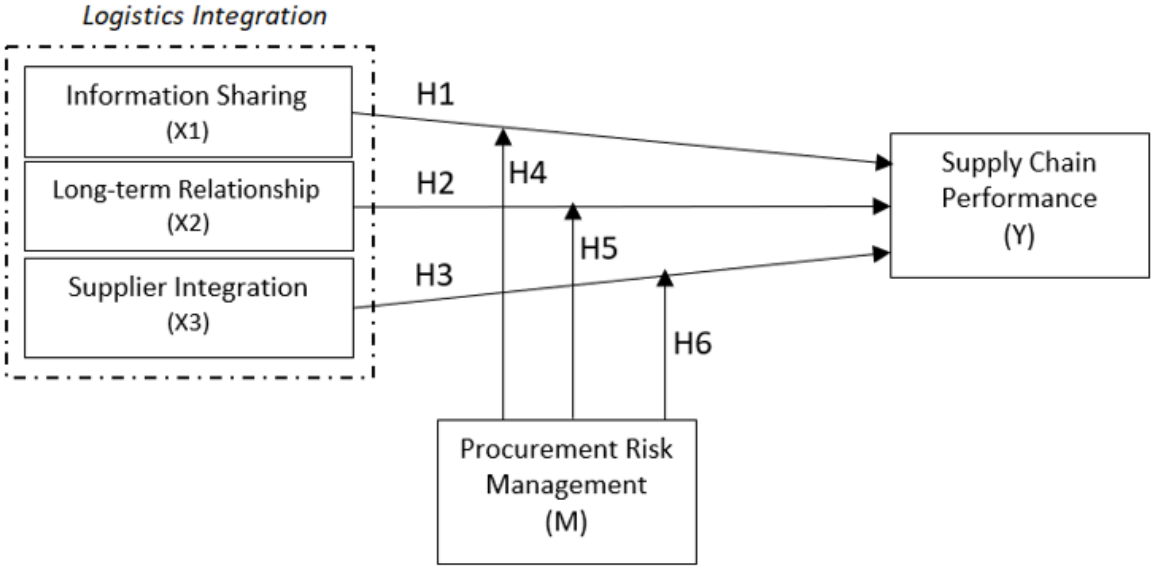


Figure 1: Research framework.

This study analyzes the influence of logistics integration on the performance of supply chains moderated by procurement risk management based on the relationship between variables both directly and the role of moderator variables, the research hypothesis is as follows:

Hypothesis$_1$ *Information sharing has a positive effect on supply chain performance.*

Hypothesis$_2$ *Long term relationships positively affect supply chain performance.*

Hypothesis$_3$ *Supplier integration has a positive effect on supply chain performance.*

Hypothesis$_4$ *Information sharing influences supply chain performance by moderating procurement risk management.*

Hypothesis$_5$ *The influence of long-term relationships on supply chain performance moderated by procurement risk management.*

Hypothesis$_6$ *The influence of supplier integration on supply chain performance by moderating procurement risk management.*

2. METHODOLOGY

The research sample numbered 202 from all staff, managers, and directors related to supply chain activities at PT XYZ and transportation service providers. From the data collected, everything can be explained. The primary data for this research uses a survey technique, namely distributing questionnaires. Meanwhile, secondary data in this research was obtained from journals, websites, data originating from internal companies, and several literature books related to research. Interviews ask questions directly to the respondents studied. The author conducted unstructured or open interviews with companies, namely directors and managers. Researchers use this method to make it more effective and efficient. The scale creation technique in this research uses a Likert Scale, where the Likert scale is related to the assessment of a person's attitude, which consists of 5 levels. Data Analysis Method: This research uses the structural equation partial least squares (SEM PLS) method with SmartPLS3 software.

Convergent validity aims to determine the validity of each relationship between indicators and their latent constructs or variables. Convergent Validity is carried out by looking at the validity indicators shown by the loading factor values. This test is to determine the suitability of the five latent variables (information sharing, long-term relationship, supplier integration, procurement risk management, and supply chain performance) in measuring the level of indicator accuracy with the criteria of having an AVE value greater than 0.5 to meet one convergent validity requirement.

The indicator reliability test aims to determine an indicator's validity. It is based on the outer Loading. An indicator is declared valid if its factor loading is above 0.6 on the targeted construct. This research contains 25 indicators for six latent variables.

The discriminant validity test aims to determine whether the indicators of one construct are not highly correlated with indicators of other constructs. The reflective model's discriminant validity was measured using HTMT (Heterotrait-Monotrait Ratio) analysis.

The internal consistency test uses composite reliability indicators and Cronbach's alpha. The accepted limit value for the composite reliability level (PC) for exploratory research is ≥ 0.5. The aim of the reliability test is to measure the reliability of the research instrument. A questionnaire is reliable if it is consistent over time so that if the measurements are taken by different people and at different times, the results remain the same. (Murniati et. al, 2013). The provisions for testing the reliability of this data are as follows: If the Cronbach Alpha (α) value is greater than 0.9, the questionnaire is considered perfect reliable. The questionnaire is highly reliable if the Cronbach Alpha (α) value is 0.7 to 0.9. If the Cronbach Alpha (α) value is 0.5 to 0.7, the questionnaire is

moderately reliable.

If the Cronbach Alpha (α) value is <0.5, it can be said that the questionnaire has low reliability.

The inner model test built is strong and accurate. Evaluation of the inner model can be seen from several indicators, which in this study used the multicollinearity test, coefficient of determination (R2), Predictive Relevance (Q2), path coefficient, and F Square or Effect Size.

This test shows the coefficient of determination (R-Square) on the influence of five independent variables (information sharing, long-term relationship, supplier integration, procurement risk management) on the dependent variable supply chain performance. The coefficient of determination (R2 or R Square) is one way to assess how much an exogenous construct can explain an endogenous construct. The coefficient of determination (R Square) value is expected to be between 0 (zero) and 1 (one). The R Square value of 0.75 indicates that the model is robust. A R Square value of 0.50 indicates that the model is moderate. A R Square value of 0.25 indicates a weak model (Sarastedt et al., 2017).

Testing the hypothesis of this research is to analyze the influence of the independent variable (exogenous) on the dependent variable (endogenous), which can be seen from the path coefficient (Mean, STDEV, and T-value). R-squared) is used to see the influence between several or a combination of independent and dependent variables and is related to the t-test and probability value test (p-value). Test the calculated t value (T statistics) by comparing the calculated t (T statistics) with the critical t (1.96). Significance (t-test and probability value test) is used to test whether the relationship that occurs in the sample also applies to the population. If the relationship is significant, then the conclusions in the sample can be generalized to the population, and the relationship in that population is also significant. Based on these provisions, the t-test results are as follows: Ho: t count < 1.96, meaning that there is no significant relationship between the independent and dependent variables. Ho: t count > 1.96, meaning there is a significant relationship between the independent and dependent variables. Meanwhile, the significance value of the probability value (p-value) must be smaller than 5% or 0.05 with the following conditions: Ho: Accepted if the significance value (p-value) is >0.05 (5%) Ha: Rejected if the significance value (p-value) <0.05 (5%).

3. RESULTS AND DISCUSSION

3.1. Result

The goods distribution channel at PT XYZ uses an indirect distribution type, where products cannot be received directly by consumers, but through distributors or modern trade. Respondent demographics are described in the table below.

Table 1. Demographic description of respondents.

No	Criteria	Number of Respondents	Percentage
1	Age of Respondent		
	<25 years	16	7.9%
	26–30 years	33	16.3%
	31–35 years	30	14.6%
	36–40 years	31	15.3%
	41-45 years	36	17.8%
	46-50 years	28	13.9%
	≥50 years	28	13.9%
		202	100%
2	The last formal education level		
	≥ Junior high school graduates	9	4.5%
	Diploma	18	8.9%
	(S1)	151	75%
	(S2)	23	11.4%
	(S3)	1	0.5%
		202	100%
3	Position		
	Director / Managing Director	32	15.8%
	Manager	67	33.2%
	Assistant Manager	38	18.8%
	Supervisor	27	13.4%
	Staff	38	18.8%
		202	100%
4	Length of time working.		
	< 1 year	2	0.9%
	1 – 2 years	22	10.9%
	3 – 4 years	33	16.3%
	> 5 years	145	71.8%
		202	100%

This study presents SEM-PLS analysis in three parts: the inner model test, the outer model test, and the hypothesis test. The test criteria are adjusted to the research's characteristics, namely, descriptive research with survey methods.

The variable descriptions in the descriptive statistics used in this study include the minimum, maximum, mean, and standard deviation values of the research variables. Descriptive statistics describe the character of the sample used in this study. Complete descriptive statistics in this study are shown in the following table:

Table 2: Descriptive statistics.

Variable/Indicator	Mean	Median	Min.	Max.	Standard Deviation
Information Sharing	4.478	4	4	5	0.4805
IS11	4.342	4	4	5	0.474
IS12	4.554	5	4	5	0.497
IS21	4.545	5	4	5	0.498
IS22	4.609	5	4	5	0.488
IS31	4.614	5	4	5	0.487
Long-Term Relationship	4.5795	5	4	5	0.492
LTR11	4.619	5	4	5	0.486
LTR12	4.55	5	4	5	0.498
LTR21	4.718	5	4	5	0.45
LTR31	4.233	4	4	5	0.423
LTR32	4.54	5	4	5	0.498
Supplier Integration	4.4285	4	4	5	0.495
SI11	4.436	4	4	5	0.496
SI12	4.376	4	4	5	0.484
SI21	4.406	4	4	5	0.491
SI31	4.505	5	4	5	0.5
SI32	4.421	4	4	5	0.494
Procurement Risk Management	4.4925	4	4	5	0.4985
PRM11	4.455	4	4	5	0.498
PRM12	4.371	4	4	5	0.483
PRM21	4.55	5	4	5	0.498
PRM22	4.292	4	4	5	0.455
PRM31	4.53	5	4	5	0.499
Supply Chain Performance	4.339	4	4	5	0.469
SCP11	4.277	4	4	5	0.448
SCP12	4.376	4	4	5	0.484
SCP21	4.391	4	4	5	0.488
SCP22	4.51	5	4	5	0.5
SCP23	4.401	4	4	5	0.49

The mean value indicates the central tendency of each variable. The mean value for Information Sharing (IS) is 4.478, indicating that the average level of information sharing is high. Likewise, the mean values for Long-Term Relationship (LTR), Supplier Integration (SI), Procurement Risk Management (PRM), and Supply Chain Performance (SCP) are 4.5795, 4.4285, 4.4925, and 4.339 respectively. These values indicate an overall positive perception of the constructs concerned. The median value for all variables, except LTR31 and SCP22, is 5, indicating that the response distribution tends to skew toward the upper end of the scale. This indicates a relatively high level of agreement or positive perception among respondents. All variables' minimum and maximum values were 4 and 5, respectively. This indicates that respondents generally perceived the constructs to be at a high level, as the scale used ranged from 1 to 5. Standard deviation measures the spread or variation of responses around the mean. For all variables, the standard deviation values ranged from 0.423 to 0.5. These relatively low values indicate that responses tend to be tightly clustered around the mean, indicating a high level of agreement among respondents. Overall, this data suggests that participants in this study had a positive perception of Information Sharing.

In the Outer Model analysis, using the data provided, several metrics are used to test the validity and reliability of the construct. These metrics include Outer Loading, Cronbach's Alpha, Rho_A, Composite Reliability, and Average Variance Extracted (AVE). The complete outer model test statistics in this study are shown in the following table:

Table 3: Outer model test statistics.

Variable/Indicator	Outer Loading	Cronbach Alpha	Rho_A	Composite Reliability	AVE
Information Sharing (IS)		0.834	0.835	0.884	0.605
IS11	0.665				
IS12	0.812				
IS21	0.764				
IS22	0.823				
IS31	0.813				
Long-Term Relationship (LTR)		0.806	0.826	0.867	0.569
LTR11	0.807				
LTR12	0.785				
LTR21	0.85				
LTR31	0.574				
LTR32	0.727				
Supplier Integration (SI)		0.863	0.879	0.901	0.648

SI11	0.84				
SI12	0.777				
SI21	0.687				
SI31	0.851				
SI32	0.857				
Procurement Risk Management (PRM)		0.899	0.901	0.926	0.714
PRM11	0.889				
PRM12	0.871				
PRM21	0.843				
PRM22	0.778				
PRM31	0.84				
Supply Chain Performance (SCP)		0.894	0.906	0.922	0.704
SCP11	0.759				
SCP12	0.859				
SCP21	0.879				
SCP22	0.913				
SCP23	0.775				

Testing validity or convergent validity using the outer loading value. Outer Loading measures the strength of the relationship between each indicator and the variable or construct being measured. Outer Loading values that are considered good are usually above 0.7. Based on the data provided, all indicators have Outer Loading above this threshold, indicating that all indicators have a strong relationship with the measured construct. After testing the validity using the outer loading value, discriminant validity testing was then carried out using the average variance extracted (AVE) value. Average Variance Extracted (AVE) measures the amount of Variance explained by the indicators in the construct compared to the Variance caused by error factors. The desired AVE value is usually above 0.5. Table 4. shows that all constructs have AVE values above this threshold, indicating adequate construct validity.

Table 4: HTMT Analysis Result.

HTMT	IS	LTR	PRM	SCP
IS				
LTR	0.803			
PRM	0.853	0.827		
SCP	0.827	0.753	0.892	
SI	0.866	0.823	0.891	0.887

The desired HTMT value is less than 1 for convergent validity, indicating that the relationship between two similar constructs is more vital than between two different constructs.

3.2. Discussion

The information-sharing relationship and the Long-Term Relationship have an HTMT value of 0.803; this value is quite good because the HTMT value is less than 1, and all parties exchange information, committed between the Company and the third-party responsible for carrying out supply chain activities to support each other and trust each other to improve performance, agree with the research (Zhang & Mohammad, 2024). Employee commitment that supports logistics integration activities and feels job satisfaction, rewards, and an organizational climate conducive to improving performance (Gupta & Singh, 2020); Farisyi et al., 2024).

The relationship between Information Sharing and Procurement Risk Management has an HTMT value of 0.853. The transporter makes deliveries according to the route and price in the contract. Information sharing is better collaboration between partners in the supply chain (Shahadat et al., 2024) By understanding each party's needs and plans, collaborations can work together to optimize overall supply chain performance, supported by research (Datta, 2017; De Moor et al., 2023) Coordinating partners through online information is important in effectively improving the supply chain. The main concern in this mechanism is information sharing and collaborative efforts to improve performance (Cao et al., 2017; Solis et al., 2023)

The relationship between Information Sharing and Supply Chain Performance has an HTMT value of 0.827. Supply chains are critical to business operations, where maintaining long-term relationships with suppliers will help with sales growth and improve supply chain profitability and performance. Logistics service providers work as an integral component of supply chain logistics (Thekkoote, 2022)

Shipments are delivered on time. The relationship between long-term relationships and procurement risk management has an HTMT value of 0.827, and long-term collaboration can reduce costs. Coordinating partners through online information is important in effectively improving the supply chain. The main concern in this mechanism is information sharing and collaborative efforts to improve the Company's performance (Cao et al., 2017; Solis et al., 2023) The relationship between long-term relationships and supply chain performance has an HTMT value of 0.753, and shipments are delivered with good quality. The relationship between Procurement Risk Management and Supply Chain Performance has an HTMT value of 0.892 regarding periodic monitoring and evaluation of KPIs. Logistics integration, i.e. external and internal integration, process integration, physical

information flow, and supplier integration, can improve performance (Duan et al., 2022)). Collaboration between suppliers and customers is also called supply chain integration. Supplier integration is coordination between agents involved in an organization's supply chain (Yulianto & Menza, 2024) Logistics companies establish long-term relationships with parties in the supply chain, from suppliers to consumers, to increase profitability and improve supply chain performance (Setiabudi et al., 2021; H. Singh & Useem, 2021) Long-term relationships between suppliers and consumers improve performance. Ongoing collaborative relationships (Galvan & Galvan, 2017) influence positive performance (Zhang & Mohammad, 2024)

4. CONCLUSION

The purpose of this study is to examine and analyze the positive influence of information sharing, long-term relationships, and supplier integration on supply chain performance in FMCG distribution. This study also examines and analyzes information sharing and supplier integration on supply chain performance by moderating procurement risk management in FMCG distribution. The findings of the study reveal that information sharing has a positive and significant effect on supply chain performance. By sharing information, parties in the supply chain can have better visibility into inventory, market demand, and product movements. This helps in better decision-making and planning supply chain activities more efficiently. Exchange information according to the company's expected performance achievements. Long-term relationships do not positively and significantly affect supply chain performance. This is because the contract period of 1.5 years is less than the maximum between the owner of goods and the transportation service provider. Supplier integration positively and significantly affects supply chain performance, where communication and transparency run according to company procedures. Procurement risk management does not moderate the influence of long-term relationships on supply chain performance related to off-target shipments and unpredictable raw material price instability. Procurement risk management does not moderate the influence of supplier integration on supply chain performance. Procurement risk management moderates the influence of information sharing on supply chain performance. Sharing information has a positive and significant effect on supply chain performance.

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