# THE ROLE OF COST REDUCTION AND INVENTORY OPTIMIZATION ON THE PARTNERSHIP IN PURCHASING AND LOGISTICS, AN EMPIRICAL STUDY OF FOOD AND BEVERAGE COMPANIES FROM INDONESIA

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Abstract: Supply chain management is of primary importance in industries operating in an archipelago country like Indonesia. This study aimed to determine the effect of cost reduction and inventory optimization on the partnership in purchasing and logistics on purchasing and logistic performance. This study focuses on food and beverage manufacturing companies in Indonesia. This research uses quantitative methods and descriptive research types. The population in this study is managers of manufacturing companies in Indonesia. The questionnaires obtained were 74 respondents, then respondents who came from manufacturing companies were 50 respondents who met the research criteria. This study indicates several findings: cost reduction and inventory optimization affect the partnership in purchasing and logistics but do not affect purchasing and logistics performance. Furthermore, partnership in purchasing and logistics affects purchasing and logistic performance. The results show that the partnership strategy is essential for manufacturing companies, especially food and beverages because cost reduction and inventory optimization need to involve several companies with more resources to increase purchasing and logistic performance.



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**Keywords:** Supply Chain Management, Manufacturer, Inventory Optimization, Cost-Reduction, Partnership, Purchasing, Logistic, Performance, Covid-19

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Indonesia is located between two continents, namely Asia and Australia, and two oceans, the Indian and the Pacific. Indonesia is the largest archipelagic country globally, with 17,508 large and small islands, with a broader

sea area than its land area, amounting to 5.8 million kilometers. In contrast, the land area is 1.937 million km2, with the longest coastline in the world (Cahya, 2019). The function of the sea for Indonesia is as a means of connecting. It should be noted that a solution that can be done to secure every island in Indonesia in carrying out the distribution of goods, services, assistance, and others, requires

Corresponding Author: Timotius F.C.W. Sutrisno, Universitas Ciputra Surabaya, Indonesia, DOI: http://dx.doi.org/10.21776/ub.jam.2022.020.01.20 good, efficient, and reliable logistics. Explain that logistics is an activity of procuring, maintaining, distributing, and supplying goods. Logistics activities in Indonesia are familiar because logistics itself has a vital role in increasing economic equity in Indonesia (Sitorus and Sitorus, 2017). When it comes to logistics, there is a system or management that we look at to say that logistics is efficient or not.

Logistics management is an activity that focuses on managing an item through planning and determining needs, procurement, storage, and maintenance to achieve predetermined goals (Sitorus and Sitorus, 2017). The logistics system in Indonesia is said to be 30 years behind compared to developed countries. This condition is based on the fact that there is still a frequent scarcity of basic foodstuffs, there are differences in prices on the island of Java and outside Java and high export costs due to the distance between factories and ports are far (Pamudji and Achmadi, 2012). To measure the performance of existing logistics in Indonesia, the most commonly used is the Logistic Performance Index (LPI). The condition of logistics in Indonesia must be continuously improved in terms of customs, quality of infrastructure, ease of international shipping, competence and quality of logistics services, tracking and tracing capabilities, and on-time delivery, because bad logistics can affect the growth of manufacturing companies.

A manufacturing company is an industrial company that processes raw materials into semi-finished or finished goods. Manufacturing companies include tools, machines, and labor. Manufacturing companies are also divided into three sectors: the primary industrial sector and chemicals, the various industrial sectors, and the consumer goods industry. Manufacturing companies focus on creating low-cost and quality products to meet consumer needs. In carrying out these activities, one of the contributing parts is operational activities included in the Supply Chain Management (SCM) series. Drivers in an SCM are known as supply chain drivers.

Supply chain drivers such as cost reduction and inventory optimization can affect the partnership strategy to improve company performance (Frank, 2017). If the partnership strategy is successfully

implemented, then the partnership will affect a company's performance that focuses on purchasing and logistics performance because the company can reduce the number of product defects from suppliers and its hourly production costs (Rezaei et al., 2018). That means that the company can turn the partnership strategy into an internal strength for the company's competitiveness, according to the grand theory in this study, namely the Resource-Based View (RBV). Based on existing phenomena, this research will analyze the effect of supply chain drivers (inventory optimization and cost reduction) on partnerships in purchasing and logistic and purchasing and logistic performance in the manufacturing industry in Indonesia.

Resource-Based View is a theory that explains that companies focus on their internal resources to become competitive with other companies. RBV focuses on creating an advantage that is difficult for competitors to imitate or buy (Barney, 1991). RBV plays a vital role in a company and helps managers better understand that the assets owned by the company have a crucial role for the company. RBV explains that company resources can be assets, information, company attributes, company policies. RBV can be a company reference in increasing the company's competitiveness. Suppose the company can make supply chain drivers (inventory optimization and cost reduction). In that case, it will meet consumer demand in the right quantity and time because it has a good inventory system. Companies can also offer competitive prices because they can create low prices through a cost reduction strategy.

The partnership is needed in the company's SCM series to improve a company's performance (Rezaei et al., 2018). This study's supply chain driver elements are inventory optimization and cost reduction. This study focuses on the production activities section by examining inventory optimization and cost reduction to create efficiency and effectiveness in the production supply chain of a manufacturing company.

Every manufacturing industry owns the inventory. Inventory is sometimes considered to have no shelf life (Mohammadi and Musa, 2017). If an in-

ventory is stored for a long time, it can deteriorate the quality and condition of the inventory, so a good inventory system is needed. Inventory optimization is closely related to the company's two business functions, namely: purchasing and logistics and production (Rezaei et al., 2018). The company's ability to optimize inventory at the right time and amount will affect partnerships where suppliers can meet inventory quantities. There are two inventory optimization indicators in this study: A. Times Cycle time is the ability of a company to use raw material stocks to avoid damage due to raw material age (Mohammadi and Musa, 2017). B. Inventory fill rates are the company's ability to maximize inventory capacity to meet consumer demand.

Cost reduction can be made in business functions: purchasing and logistics, production, marketing, and sales. Al such high costs, there are internal and external logistics, so the role of cooperation is considered very important, explained in the literature (Rezaei et al., 2018). It could also be through other forms of collaboration such as joint ventures, contract agreements, and company facts (Rezaei et al., 2018). Cost reduction can be from various company strategies. This study focuses on distribution cost and packaging cost indicators. The company's ability to implement cost reduction affects partnerships to reduce logistics costs on distribution costs. That is a novelty in this research because it focuses on Indonesia's food and beverage industry phenomena.

# HYPOTHESIS DEVELOPMENT

Partnership in Purchasing and Logistics. The buyer-supplier relationship can be built into a partnership (Ryu et al., 2009). The relationship that is made can be agreed to be a short-term or longterm transaction. Still, partnerships are usually agreed upon in a long-term transaction between the buyer and supplier (Ryu et al., 2009). Partnerships in a supply chain involve many parties from different market points, from suppliers, manufacturing companies, retail, and distributors (Ryu et al., 2009). The application of partnerships in purchasing and logistics can use the Vendor-Managed Inventory (VMI) and Third-Party Logistics (3PL) systems, the results have a positive impact on companies such as timely management of raw material purchases and inventory accuracy (Rezaei et al., 2018).

- H1: cost reduction affects the partnership in purchasing and logistics
- H2: inventory optimization for partnership in purchasing and logistic

Partnerships in a supply chain involve many parties from different market points, from suppliers, manufacturing companies, retail, and distributors (Ryu et al., 2009). If the cooperative relationship between the company and supplier is good and mutually beneficial, they will be able to improve their performance and produce good value (Sutrisno, 2019). Implementing a partnership between buyers and suppliers, investing in information sharing, enhances accuracy, and coordination for the better and on time (Ryu et al., 2009). (Sukati et al., 2012). If the company can implement inventory optimization well and know when and how much raw material stock is needed, it will improve purchasing and logistic performance (Oluwaseyi et al., 2017). Likewise, with the application of cost reduction, if the company can reduce costs in production in terms of packaging costs and distribution costs, it can affect purchasing and logistics performance for the better.

Partnerships can influence purchasing and logistic performance in purchasing and logistics, inventory optimization, and cost reduction (Rezaei et al., 2018). The key to successful performance in the supply chain is the company's ability to manage information that affects the supply chain (Sukati et al., 2012). Suppose the company's purchasing and logistics performance can be better. In that case, the company's internal strategy can be used as a value for the company's competitiveness to be more competitive than competitors.

- H3: Cost reduction affects purchasing and logistic performance
- H4: Inventory optimization affects purchasing and logistic performance
- H5: Partnership in purchasing and logistics affects purchasing and logistic performance.



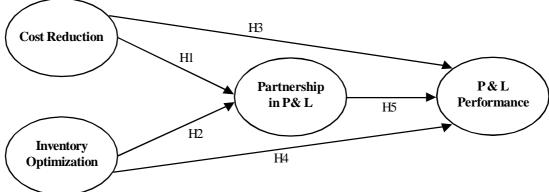


Figure 1. Conceptual Framework

#### **METHOD**

Quantitative research methods have clear objectives, subjects, samples, research steps, and data sources and are carried out if all data have been collected (Wahidmurni, 2017). Data collection uses a questionnaire distributed to managers of manufacturing companies spread across several cities in Indonesia, such as Makassar, Surabaya, Pasuruan, Cikarang, and Gresik. The measuring instrument used is an interval scale. The interval scale used aims to measure the level chosen between strongly agree or strongly disagree from the questionnaire given. The selected level is listed in the form of a score, namely: score 1 (strongly disagree), score 2 (disagree), score 3 (disagree), score 4 (neutral), score 5 (somewhat agree), score 6 (agree), score 7 (totally agree). Data collection has been carried out using a questionnaire that has been distributed to managers of manufacturing companies in Indonesia using an electronic form that gets 74 respondents. The total number of respondents who can be processed is 50 respondents who fall into manufacturing companies. Respondent data was taken in the period September-December 2020. Data analysis used Partial Least Square (PLS), considering the relatively small total sample, at least 50 samples in the study (Hair et al., 2019).

#### RESULTS

The characteristics of respondents can be seen in Table 1, which shows that most companies fall into the category of large companies because they have a workforce of more than 100 people. This questionnaire is filled in by respondents who have worked for a minimum period of 1 year, which means that the respondent's knowledge is increasing to answer the questionnaire statements in this research variable accurately.

# **Confirmatory Factor Analysis**

To measure the validity and reliability, you can see the loading factor value, AVE, composite reliability, and Cronbach's alpha shown in Table 2 and Table 3. The loading factor value is> 0.7, AVE> 0.5, and composite reliability> 0.7. the indicator is considered good. Cronbach's alpha value (Table 3) is more than 0.7, so the indicator is considered reliable (Hair et al., 2019). The goodness-of-fit in the model can be seen by the R-square value. If the value of R-Square is more than 0, it is declared good. Table 3 shows the R-Square value of the partnership in purchasing and logistics (Y1) of 0.372 and the purchasing and logistics performance (Y2) of 0.563. The Q-Square result in this study is 72.56% classified as high and gives an understanding that

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**Table 1. Characteristics of Respondents** 

Item		Number of respondents	Percentage	
Length of work	<1 year	3	6%	
	1 year - 2 years	11	22%	
	2 years - 3 years	6	12%	
	3 years - 4 years	5	10%	
	>4 years	25	50%	
Number of employees	<100	21	42%	
	100-500	18	36%	
	500-1000	5	10%	
	1000-3000	1	2%	
	>3000	5	10%	
Impact of the Corona Virus	No impact	1	2%	
	Little impact	19	39%	
	Moderate impact	16	20%	
	Big impact	10	31%	
	Very impactful	4	8%	

the model has predictive relevance. The following is the calculation of the value of Q:

Q-Square =  $1 - [(1-0.372) \times (1-0.563)] = 0.7256$ 

**Table 2. Outer Loading Test Results** 

Variable	Indicator	<b>Loading Factor</b>
Cost Reduction (X1)	Distribution cost	0.8461
	Packaging cost	0.9186
Inventory Optimization (X2)	Inventory cycle time	0.8740
	Inventory fill rates	0.8553
Partnership in Purchasing and Logistic (Y1)	Control	0.9929
	Decision	0.8352
	Risk / Reward	0.9067
	Investment	0.8666
	Communication	0.8863
Purchasing and Logistic Performance (Y2)	Delivery speed to your customer	0.8758
	Delivery dependability	0.8472
	Responsiveness to your customer	0.9242
	Delivery flexibility to your customer	0.8347
	Order fill capacity	0.7905

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Table 3. Model Validity and Reliability

Variable	Cronbach's Alpha	AVE	Composite reliability	R Square
Cost Reduction (X1)	0.723	0.780	0.876	
Inventory Optimization (X2)	0.663	0.748	0.856	
Partnership in Purchasing and Logistics (Y1)	0.930	0.782	0.947	0.372
Purchasing and Logistics Performance (Y2)	0.908	0.732	0.932	0.563

Table 4. Value of T statistic and P value

Hypothesis	T-Statistic	P-Values	Results
Cost Reduction affects Partnership in Purchasing and Logistic (H1)	1,9743	0.0319	Support
Inventory Optimization affects Partnership in Purchasing and			
Logistic (H2)	3.6554	0.0001	Support
Cost Reduction affects Purchasing and Logistic Performance (H3)	1,7158	0.0808	Does not support
Inventory Optimization affects Purchasing and Logistic			
Performance (H4)	0.3444	0.7240	Does not support
Partnership in Purchasing and Logistic affects Purchasing and			
Logistic Performance (H5)	3.1098	0.0013	Support
Cost Reduction affects Purchasing and Logistic Performance			
through Partnership in Purchasing and Logistics (H6)	1.6064	0.1088	Does not support
Inventory Optimization affects Purchasing and Logistic			
Performance through Partnership in Purchasing and Logistics (H7)	2.5900	0.0099	Support

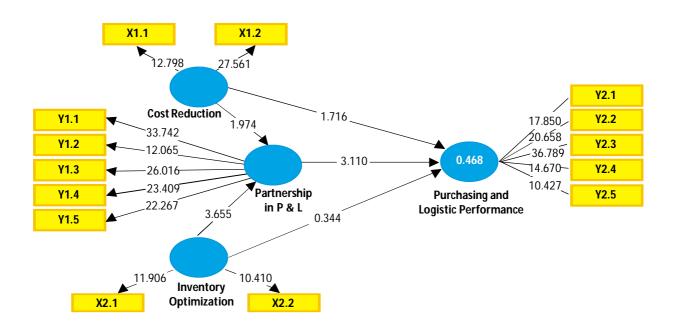


Figure 2. Partial Least Square Model

The results of hypothesis testing are in Table 4. Hypothesis testing can be seen through the P-value, where the P-value <0.05 will be declared valid. If the P value> 0.05 will be declared invalid. Table 4 shows that three hypotheses support and two hypotheses do not support.

#### **DISCUSSION**

# Effect of Cost Reduction on Partnership in **Purchasing and Logistics**

The results of the first hypothesis test state that cost reduction has a positive effect on partnerships in purchasing and logistics. Implementing cost reduction through distribution costs and packaging costs, the company influences the partnership in purchasing and logistics because the company can control and make the company better through partnerships. Cost reduction has a specific relationship in a business function: purchasing and logistics (Rezaei et al., 2018). Cost reduction needs to be implemented in a company coupled with a supportive partnership scheme (Yoo et al., 2019). Profits with a good partnership scheme to affect cost reduction performance will benefit both buyers and suppliers. The company's strategy for cost reduction can be through reducing distribution costs by implementing 3PL (Third Party Logistics). Manufacturing companies can collaborate with logistics parties to manage all logistics activities, including trucking, forwarding, warehousing, and others. By collaborating with logistics companies, companies can agree on the best price for their company. The results of this study are different from what has been done by previous researchers (Rezaei et al., 2018), which focuses on supply chain collaboration on SMEs. This research has a reasonably broad complexity because it sees collaboration as a contribution to the performance of medium-sized companies in the context of the covid-19 pandemic.

# Effect of Inventory Optimization on Partnership in Purchasing and Logistics

Inventory optimization has a positive effect on partnerships in purchasing and logistics. Suppose the company can know the right time and amount in optimizing inventory. In that case, it can positively impact partnerships in purchasing and logistics because suppliers can meet the company's demands. With the benefits obtained through partnerships in purchasing and logistics, the company can maximize the number of raw material orders according to its capacity and capability (Rezaei et al., 2018). The need for a partnership strategy can also increase the company's ability to optimize the shelf life of raw material so that it is not damaged (Mohammadi and Musa, 2017). These results align with several previous studies that state that inventory has a significant role in purchasing success (Tracey et al., 2005; Youssef and Youssef, 2018).

# Effect of Cost Reduction on Purchasing and **Logistics Performance**

An interesting finding is that cost reduction has no significant effect on purchasing and logistics performance. The cost reduction variable is included in the hybrid supply chain category because it involves several companies in their operational activities (Sukati et al., 2012). The company's cost reduction strategy through distribution and packaging costs requires suppliers to manage operational activities. For example, distribution costs need a logistics company to manage distribution activities ranging from warehouse, trucking, forwarding, and shipping. So that the company can agree on the best price for distribution costs with suppliers, the hybrid supply chain has no influence and relationship to supply chain performance. Because basically, a mixed supply chain requires a supply chain partnership that aims to improve supply chain performance (Sukati et al., 2012).

# Effect of Inventory Optimization on Purchasing and Logistics Performance

The results of the fourth hypothesis test stated that inventory optimization does not affect purchasing and logistics performance. Inventory optimization is included in the hybrid supply chain category of supply chain management. The hybrid supply chain can run well if you implement a supply chain partnership because a mixed supply chain is a supply chain activity that involves several companies (Sukati et al., 2012). Inventory optimization, which consists in purchasing raw materials at the right time and quantity, requires collaboration with suppliers to increase the company's purchasing productivity.

# Effect of Partnership in Purchasing and Logistics on Purchasing and Logistics Performance

The results of the fifth hypothesis test stated that partnership in purchasing and logistics has a positive effect on purchasing and logistics performance. If the company can utilize and control the partnership properly, it will positively affect its purchasing and logistics performance. Implementing a supply chain collaboration is highly recommended for companies that are profitable individually and benefit suppliers. Implementing collaboration helps improve operational performance (Al-Doori, 2019). A good relationship between the company and suppliers will positively impact the company's business performance (Sutrisno, 2019). The results of this research confirm the current conditions because, in the COVID-19 pandemic phase, companies need to strengthen partnerships in logistics to achieve logistics performance

#### **Indirect Hypothesis**

The indirect effect test on the sixth hypothesis shows that Cost Reduction does not affect Purchasing and Logistic Performance through Partnership in Purchasing and Logistics. If the company reduces packaging and distribution costs through cooperation with suppliers, it will not improve purchasing and logistics performance. The results of previous studies show that collaboration as mediation only leads to a partial effect on logistical performance (Aharonovitz et al., 2018). Collaboration in logistics focuses more on long-term cooperation between companies and suppliers and is involved in information and technology sharing. In pandemic conditions like now Covid-19, implementing a cost reduction strategy on distribution costs is ineffective and improves the company's logistics performance. Due to the reality in the field, it requires additional charges such as a rapid test/swab test for the driver to cross the island, so these costs become additional costs in the company's logistics activities.

The seven indirect effect hypotheses show that inventory optimization positively affects purchasing and logistic performance through a partnership in purchasing and logistic mediation. The company's strategy to improve purchasing and logistic performance in terms of inventory optimization, where the company can calculate the amount of inventory needed in the right time and amount, which can meet consumer demand, requires a partnership between the company the supplier. Partnerships can create communication, coordination, trust between companies and suppliers that generate value and benefit for both parties (Ku et al., 2016).

Managerial implications are seen from the characteristics of respondents and hypothesis testing, some of the strategies that companies can implement, namely: (1) most of the manufacturing companies are still dominated in Java. That shows that one of the strategies to increase the company's competitiveness can apply cost reduction through distribution costs. In terms of distributing its products outside Java, the company can cooperate with a logistics service company outside Java to reduce distribution costs so that the selling price of the product does not differ much from the selling price in Java. (2) manufacturing companies included in the food category (Goods Food) use a shelf life characteristic of raw materials. That is very important and is related to the supply chain in manufacturing company inventory. Inventory needs to be considered because producing food requires fresh raw materials according to factory standards. Therefore, companies need to pay attention to inventory, starting from the amount of raw material stock, time to re-stock raw materials, to the ability of raw materials to meet consumer demand. (3) Based on the characteristics of the respondents, 42.9% of companies have employees less than 100. That can be a company advantage because operational activities are minimal in utilizing employees. It can also be a company's lack due to financial capabilities that cannot add employees. These deficiencies can be a consideration for companies to take advantage of partnerships in operational activities such as the company's supply chain. Partnerships are beneficial in terms of human resources, but companies can make partnerships as a company's purchasing and logistics activity. In terms of logistics, companies can be assisted from trucking, warehousing, distribution to delivery of goods. Companies can save costs and resources for company logistics activities. Likewise, in terms of purchasing, companies can make cost savings to meet production raw materials according to the company's purchasing and storage capacity.

# **CONCLUSIONS**

Manufacturing companies have a very important role in the growth of the Indonesian economy. One of the important drivers in the supply chain of manufacturing companies is cost reduction and inventory optimization. The research results show that there is a connection between supply chain drivers (inventory optimization and cost reduction) to the partnership in purchasing and logistics. Suppose the company can optimize inventory in the right time and amount. In that case, it will positively impact suppliers who have a partnership as a partner because they can meet the company's inventory quantity appropriately. If the company can implement cost reduction well, the company can work with logistics as a partnership to get a low price of distribution costs. Inventory optimization and cost reduction strategies can be used as the company's internal strength by the theory in this study, namely Resource Based View (RBV).

The results also indicate a relationship between purchasing and logistic partnerships on purchasing and logistic performance. A good relationship between a company and a supplier will create a good relationship value. That is because the company has limited resources so a good partnership can improve the company's performance for the better. The partnership is carried out benefits individual companies and benefits suppliers.

The results also show an indirect effect between inventory optimization that affects purchasing and logistics performance through partnerships in purchasing and logistics. Companies need to collaborate with suppliers to create the right amount and time for inventory to meet consumer demand and have a positive impact on purchasing and logistics performance. But the cost reduction does not choose the effect on purchasing and logistic performance through a partnership in purchasing and logistic mediation. The partnership strategy in cost reduction is a long-term strategy that benefits the company and suppliers but does not impact company performance.

#### **IMPLICATIONS**

However, the study results did not influence supply chain drivers (cost reduction and inventory optimization) on purchasing and logistic performance because cost reduction and inventory optimization are included in the hybrid supply chain category. The hybrid supply chain cannot run alone because cost reduction and inventory optimization require partnerships in operational activities. If partnerships such as suppliers are already involved in the company's operational activities, then cost reduction and inventory optimization can affect the company's performance.

# **LIMITATIONS**

The research population is limited, only limited to the telegram group, the IPOMS community. If many community members did not fill out the distributed questionnaires, the authors had difficulty finding other respondents. The research conducted is still limited to the food and beverage manufacturing industry, so research in industrial categories is still very limited

# RECOMMENDATIONS

The author suggests companies pay attention to cost reduction strategies, one of which is through distribution costs and packaging costs. Cost reduction is profitable for manufacturing companies, but more costs can be allocated to other company resources for the sake of the company's progress to have competitive competitiveness. It is necessary to have a partnership between buyers and suppliers in today's era. The partnership does not only benefit one party, but as a small and medium-sized company, it will be very profitable. It can take advantage of the resources owned by suppliers.

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