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**LOGISTICS PERFORMANCE FOR PRACTICE IN THE FMCG INDUSTRY
THROUGH A SUPPLY CHAIN MANAGEMENT APPROACH**

**Umari Abdurrahim Abi Anwar, Aditia Wirayudha, Sri Suwarni, Azyyati Anwar,
Baderisang Mohamed**

Universitas Islam Bandung, Universiti Teknologi MARA (UiTM)

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Corresponding author:

Umari Abdurrahim Abi Anwar
umari.abdurrahim@unisba.ac.id

Abstract. *Business competition that is getting tougher in the digitalization 5.0 era requires companies to further improve their business performance, especially in the aspect of supply chain management. Logistics, which is a critical process in supply chain management, needs to be made into an integrated system from upstream to downstream. Logistics activities which include distributing goods, managing warehousing, and managing consumer orders are of concern to the entire industry, including the FMCG industry. This study used a quantitative method using multiple regression analysis. The company used as a case study is a multinational FMCG company. Descriptive quantitative to describe a symptom, event, and incident that occurs when the attempt is made to photograph the events and incidents that are the center of attention of the researcher and then describe them as they are. This study focuses on logistics activities that become variables, namely transportation, handling and storage, and product availability. The results showed that transportation, handling and storage, and product availability greatly affect the logistics performance of FMCG companies.*

Abstrak. *Persaingan bisnis yang semakin ketat di era digitalisasi 5.0 menuntut perusahaan untuk lebih meningkatkan kinerja bisnisnya, khususnya pada aspek manajemen rantai pasok. Logistik yang merupakan proses krusial dalam manajemen rantai pasok perlu dijadikan suatu sistem yang terintegrasi dari hulu hingga hilir. Aktivitas logistik yang meliputi pendistribusian barang, pengelolaan pergudangan, dan pengelolaan pesanan konsumen menjadi perhatian seluruh industri, termasuk industri FMCG. Penelitian ini menggunakan metode kuantitatif dengan menggunakan analisis regresi berganda. Perusahaan yang dijadikan studi kasus adalah perusahaan FMCG multinasional. Deskriptif kuantitatif untuk menggambarkan suatu gejala, peristiwa, dan kejadian yang terjadi apabila dilakukan upaya untuk memotret peristiwa dan kejadian yang menjadi pusat perhatian peneliti kemudian menggambarkannya sebagaimana adanya. Penelitian ini berfokus pada aktivitas logistik yang menjadi variabel yaitu transportasi, penanganan dan penyimpanan, serta ketersediaan produk. Hasil penelitian menunjukkan bahwa transportasi, penanganan dan penyimpanan, serta ketersediaan produk sangat mempengaruhi kinerja logistik perusahaan FMCG.*

INTRODUCTION

In industrial competition in the digitalization 5.0 era, companies are required to carry out efficiency, work effectiveness and good risk management. Digitization enables companies to quickly capture, analyze, integrate, access, and interpret real-time data that can be used for future decision making (Rachinger et al., 2019; Rha & Lee, 2022). Every company must be able to adjust technological developments with the company's strategy, needs, and priority goals.

Today's business world has increasingly fierce business competition so that those who cannot compete well will be left behind by their competitors. This business is part of the global economy, so the consequence is that the development of the business world will be characterized by changes that are increasingly open, complex, and competitive both from the company's own internal environment and from the external environment. It is these changes that cause socio-economic conditions to create obstacles and challenges that must be faced. During increasingly fierce business competition, the key to success in improving the company's performance lies in the company's ability to work together with its business partners (Bressler, 2012; Supriadi et al., 2022).

The company's competitive advantage will be achieved in various ways, one of which is by using supply chain management. Supply chain management is very important to do in order to streamline the production and marketing process so that it can meet every consumer need (Prajogo & Olhager, 2012; Tarifa-Fernandez & Burgos-Jiménez, 2017). In order to control the supply chain more effectively, there is a need for smooth information and mutual trust between parts, be it suppliers, companies, as well as consumers (Aslam et al., 2018; Gligor et al., 2015). To create information that is smooth, precise, and able to bring about openness between each part, a system is needed that can help the process run more automatically (Amer et al., 2010; Kim et al., 2013). Logistics activities in supply chain management are crucial activities in distributing goods, managing warehousing, and managing consumer orders (Fugate & Mentzer, 2010; Hazwani et al., 2018).

The logistics process is an important process that should not be taken for granted in any industry, including the Fast-Moving Consumer Goods (FMCG) industry. This is because the FMCG industry is one of the large-scale industries in Indonesia that makes a significant contribution to economic development. FMCG are "non-durable" goods that are needed for daily use. During the COVID-19 pandemic, the FMCG industry was one of the industries that had not been significantly affected. In March 2020, demand for these goods increased by 53% compared to March 2019. Indonesia also recorded an overall positive year-over-year change in FMCG market value of 8.8% in the third quarter of 2020.

In carrying out the activities of the distribution process, the company is faced with a problem condition, namely the company is required to visit and serve consumers with locations spread over the targeted area while considering the load capacity of the fleet and the routes that the vehicles pass (Chang, 2009; Tan et al., 2022). Timely delivery with the right quantity and specification is one of the most important factors in meeting today's consumer demands. The right distribution process can minimize the costs incurred by the company.

PT PQR is a multinational company engaged in the FMCG industry. PT PQR has three distribution centers, from the three distribution centers it is known that there are product delivery delays. Table 1 shows the factors causing PT PQR product delays.

Table 1. PT PQR product delay's factor

Distribution Center	Delivery Time	Cause
DC A	3-20 days	<ul style="list-style-type: none"> • out of stock at the distribution center • transportation
DC B	3-30 days	<ul style="list-style-type: none"> • out of stock at the distribution center • transportation • handling and storage
DC C	3-30 days	<ul style="list-style-type: none"> • out of stock at the distribution center • transportation • handling and storage

From Table 1, there are problems with product logistics which will certainly affect company logistic performance and business performance in PT PQR's distribution centers. From the results of interviews with the three heads of distribution centers, it was said that delays in the supply of products by factories affected the empty supply of products in their distribution centers, this had an impact on their business performance. Business performance is a term that includes economic aspects and operational aspects, business performance is also an umbrella for all concepts that influence the success of a company and its activities.

Logistics activities are carried out to support and assist the company in minimizing all forms of risks and problems that are currently occurring or that will be faced by the company (Chow et al., 1994; Lambert & Burduroglu, 2000). Companies must also make logistics an appropriate technology. For this reason, it is necessary to implement well-planned and organized logistics distribution so that business performance at PT PQR is getting better. The problem to be discussed in this study is the influence of transportation, handling and storage, and product availability on company logistic performance at PT PQR.

Transportation

Transportation plays an important role in the supply chain because it is impossible for goods that have been produced to be consumed in the same place. So that the goods that have been produced must be distributed to other places. This distribution process clearly requires adequate transportation to ensure goods reach consumers in good condition. Transportation activities in general include the delivery of goods from one location to another in the supply chain (Chopra, Sunil; Meindl, Peter; Karla, 2016; Tseng et al., 2005). The need for this logistics delivery is increasing rapidly along with the development of e-commerce (Gorokhova & Mamatova, 2020; Kawa & Światowicz-Szczepeńska, 2021).

From the customer side, this transportation is the most visible activity because it uses various types of vehicles. In terms of the supply chain, this logistics delivery has two functions, namely: 1) the movement of goods, both raw goods, components, raw materials, to finished goods (Ghodsypour & O'Brien, 2001); and 2) product storage, because before the goods are shipped, usually the goods will be temporarily stored in a warehouse so that transportation management also includes warehousing management to manage simple goods storage (Hazwani et al., 2018). In a facility network, transportation is a connecting link. In designing a logistics system, a careful balance should be established between transportation costs and service quality. The hypothesis of the relationship between transportation variables and company logistic performance is:

H1: Transportation has a positive and significant effect on company logistic performance.

Handling and Storage

Handling and storage are the process of moving, storing and controlling certain goods, objects or loads within the company (Dinu et al., 2017). In general, handling and storage is used in the manufacturing, logistics and development sectors (Hamidi, 2016). This handling has various components that work to keep activities in the factory or construction going. The flow of the handling and storage process usually starts when the goods are stocked in the warehouse until then material handling tools are used to move the goods to the storage area (Larson et al., 2010). Then from the storage area, the material handling equipment takes it to the preparation site in the order it is ready to be distributed.

Material handling takes place throughout the supply chain. Raw materials must be received before they can be used to manufacture finished products, which then need to be moved and prepared for shipment. They are consolidated into units and loaded onto trucks for transportation. Once they arrive at warehouses, they must be unloaded, processed, and placed on racks for storage. And finally, when they are needed, they must be taken out of storage and prepared for distribution.

All material movement and storage activities must be integrated to form a coordinated operational system. Some of the things that must be covered in this principle are receipt, inspection, storage, production, assembly, packaging, collection, selection of orders, shipping, transportation, and handling of returns. Whenever possible, all material handling operations should be performed mechanically or automatically. This increases operational efficiency, increases responsiveness, improves consistency, predictability, and reduces operational costs and/or potentially unsafe manual labor. The hypothesis of the relationship between handling and storage and company logistic performance is:

H2: Handling and storage strategy has a positive and significant effect on company logistic performance.

Product Availability

Procurement of inventory in the logistics system aims to regulate the level of availability of production goods so that there are no vacancies when consumers need them (Masudin et al., 2018; Utama et al., 2022). In addition, so that the company can maintain the quantity and quality of goods according to market needs. Inventory shortages can disrupt marketing and manufacturing plans, excess inventory can cause problems. The hypothesis of the relationship between product availability variables and company logistic performance is:

H3: Product availability at distribution centers has a positive and significant effect on business performance.

The framework of this research is transportation (X1), handling and storage (X2) and product availability (X3) to the dependent variable of company logistic performance (Y1).

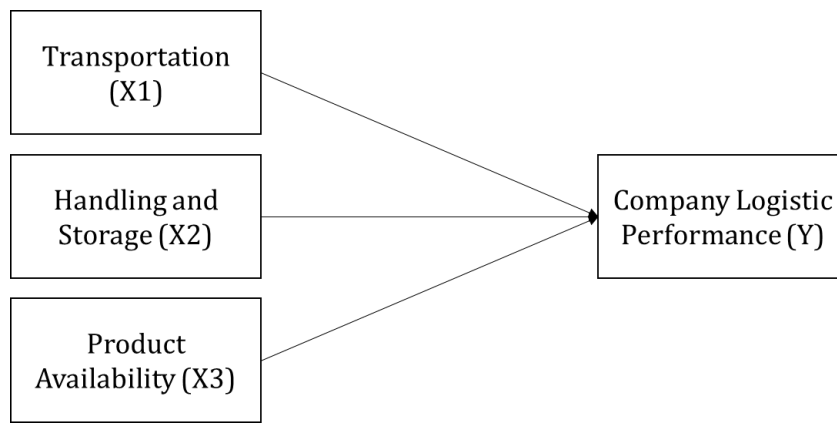


Figure 1. Research framework

METHODS

This study uses a quantitative descriptive method with three dependent variables to be measured in this study by using multiple regression. Descriptive research attempts to describe a symptom, event, and incident that occurs when the attempt is made to photograph the events and incidents that are the centre of attention of the researcher and then describe them as they are.

Table 2. Variable operationalization

Variable	Dimension
Transportation	1. Vehicle quantity 2. Vehicle quality 3. Vehicle capacity 4. Vehicle maintenance 5. Human resources 6. Routes
Handling and Storage	1. Reliability of the movement of goods 2. Storage quality 3. Warehouse security 4. Accuracy of inventory data 5. Information exchange
Product Availability	1. Product optimization level 2. Availability level 3. Cost of inventory 4. Product inventory strategy
Company Logistic Performance	1. Order fulfillment rate 2. Delivery according to due date 3. Flexibility of supply of goods 4. Productivity of the supply of goods 5. Lead-time order fulfillment 6. The perfect number of invoices

RESULTS AND DISCUSSIONS

		ANOVA ^a				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2920.256	3	973.419	260.411	.000 ^b
	Residual	545.749	146	3.738		

Total	3466.005	149			
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- a. Dependent Variable: Company_Logistic_Performance
- b. Predictors: (Constant), Product_Availability, Handling_Storage, Transportation

From the table above, it is known that the F count is 260,411 and the significance is below 0.000 so that it can be said that all the independent variables in this study have a significant effect on the dependent variable of the company's logistics performance.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	-4.481	.958		-4.680	.000		
Transportation	.280	.088	.225	3.182	.002	.217	4.616
Handling Storage	.619	.088	.468	7.064	.000	.246	4.066
Product Availability	.470	.109	.279	4.301	.000	.257	3.896

- a. Dependent Variable: Company_Logistic_Performance

$$x + y = 2 \tag{1}$$

From the T test above, the final equation is obtained as follows:

$$Y = 0.225X_1 + 0.468X_2 + 0.279X_3 \tag{1}$$

Multiple linear regression analysis is used to determine whether there is a significant effect between the independent variables and partially. From the above equation it can be explained that:

The transportation variable has a positive and significant effect on the company's logistics performance with a coefficient value of 0.225, which means that the better the distribution center's transportation, the company's logistics performance will increase assuming other variables are constant.

The handling and storage variable has a significant effect on the company's logistics performance with a coefficient value of 0.468 which means that the better the distribution center's handling and storage, the company's logistics performance will increase assuming other variables are constant.

The product availability variable has a positive effect on the company's logistics performance by 0.279, which means that the maximum product availability owned by the distribution center, the company's logistics performance will increase assuming other variables are constant.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.918 ^a	.843	.839	1.93339

- a. Predictors: (Constant), Product_Availability, Handling_Storage, Transportation
- b. Dependent Variable: Company_Logistic_Performance

The adjusted R square value of this study is 0.839 or 83.9%. It can be said that 83.9% of the company's logistics performance can be explained by the variables of transportation (X1), handling and storage (X2), and product availability (X3) and the remaining 16.1% is explained by other factors outside of research.

CONCLUSION

All logistics activities are carried out to ensure the availability of a product at the right time and in the right location. In the process, logistics activities have certain performance standards that must be achieved. The level of performance that must be achieved in logistics activities is the birth of a balance between the quality of service desired by customers with all costs incurred to reach the company's ultimate goal. Transportation, handling and storage, and product availability are important factors determining logistics performance that can increase a company's competitive advantage. These three variables need to continue to improve their performance and be integrated through digitalization technology and the right operating strategy.

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REFERENCES

- Amer, Y., Luong, L., & Lee, S. H. (2010). Case study: Optimizing order fulfillment in a global retail supply chain. *International Journal of Production Economics*, 127(2), 278–291. <https://doi.org/10.1016/j.ijpe.2009.08.020>
- Aslam, H., Blome, C., Roscoe, S., & Azhar, T. M. (2018). Dynamic supply chain capabilities: How market sensing, supply chain agility and adaptability affect supply chain ambidexterity. *International Journal of Operations and Production Management*, 38(12), 2266–2285. <https://doi.org/10.1108/IJOPM-09-2017-0555>
- Bressler, M. S. (2012). How small businesses master the art of competition through superior competitive advantage. *Journal of Management & Marketing Research*, 11, 1–12. <http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=83536045&lang=pt-br&site=ehost-live>
- Chang, C.-H. (2009). A study of global logistics management strategies: based on the bicycle manufacturing. *Journal of Statistics and Management Systems*, 12(3), 543–559. <https://doi.org/10.1080/09720510.2009.10701406>
- Chopra, Sunil; Meindl, Peter; Karla, D. V. (2016). Supply Chain Management Strategy, Planning and Operation. In D. Tylman (Ed.), *Pearson India Education Pvt. Ltd* (Sixth Edit). Pearson India Educations Services Pvt. Ltd.
- Chow, G., Heaver, T. D., & Henriks son, L. E. (1994). Logistics Performance: Definition and Measurement. *International Journal of Physical Distribution & Logistics Management*, 24(1), 17–28. <https://doi.org/10.1108/09600039410055981>
- Dinu, O., Roșca, E., Popa, M., Roșca, M. A., & Rusca, A. (2017). Assessing materials handling and storage capacities in port terminals. *IOP Conference Series: Materials Science and Engineering*, 227(1). <https://doi.org/10.1088/1757-899X/227/1/012039>

- Fugate, B. S., & Mentzer, J. T. (2010). Logistics Performance: Efficiency, Effectiveness and Differentiation. *Journal of Business Logistics*, 31(1), 43–62.
- Ghodsypour, S. H., & O'Brien, C. (2001). The total cost of logistics in supplier selection, under conditions of multiple sourcing, multiple criteria and capacity constraint. *International Journal of Production Economics*, 73(1), 15–27. [https://doi.org/10.1016/S0925-5273\(01\)00093-7](https://doi.org/10.1016/S0925-5273(01)00093-7)
- Gligor, D. M., Esmark, C. L., & Holcomb, M. C. (2015). Performance outcomes of supply chain agility: When should you be agile? *Journal of Operations Management*, 33–34, 71–82. <https://doi.org/10.1016/j.jom.2014.10.008>
- Gorokhova, T., & Mamatova, L. (2020). The impact of e-commerce development on logistic service in Ukraine: perspectives and challenges. *Intellectualization of Logistics and Supply Chain Management*, 1, 76–90.
- Hamidi, H. D. (2016). Applying Mathematical Model to Determine Location Facilities Storage Optimally With Integrated Logistic System Of Supply Chain For the Industrial Area of The *Industrial Engineering Letters*, 6(9), 66–73. <https://www.academia.edu/download/56913858/J0801025965.pdf>
- Hazwani, K. N., Rahman Noorul, A., & Fitri, S. (2018). Warehousing Productivity Assessment on Logistics Service Sector. *Advances in Transportation and Logistics Research*, 1, 889–903. <https://proceedings.itltrisakti.ac.id/index.php/ATLR/article/view/90>
- Kansil, D. F., Tulung, J. E., & Pandowo, M. H. C. (2022). Antecedent Peer-To-Peer Lending Investment Intention In Manado. *JMBI UNSRAT (Jurnal Ilmiah Manajemen Bisnis Dan Inovasi Universitas Sam Ratulangi)*, 9(1). <https://doi.org/10.35794/jmbi.v9i2.42345>
- Kawa, A., & Światowiec-Szczepańska, J. (2021). Logistics as a value in e-commerce and its influence on satisfaction in industries: a multilevel analysis. *Journal of Business and Industrial Marketing*, 36(13), 220–235. <https://doi.org/10.1108/JBIM-09-2020-0429>
- Kim, D., Cavusgil, S. T., & Cavusgil, E. (2013). Does IT alignment between supply chain partners enhance customer value creation? An empirical investigation. *Industrial Marketing Management*, 42(6), 880–889. <https://doi.org/10.1016/j.indmarman.2013.05.021>
- Lambert, D. M., & Burduroglu, R. (2000). Measuring and Selling the Value of Logistics. *The International Journal of Logistics Management*, 11(1), 1–18.
- Larson, J. A., Yu, T. H., English, B. C., Mooney, D. F., & Wang, C. (2010). Cost evaluation of alternative switchgrass producing, harvesting, storing, and transporting systems and their logistics in the Southeastern USA. *Agricultural Finance Review*, 70(2), 184–200. <https://doi.org/10.1108/00021461011064950>
- Masudin, I., Kamara, M. S., & Zulfikariyah, F. (2018). Impact of Inventory Management and Procurement Practices on Organization's Performance. *Singaporean Journal of Business Economics and Management Studies*, 6(3), 32–39. <https://doi.org/10.12816/0044429>
- Prajogo, D., & Olhager, J. (2012). Supply chain integration and performance: The effects of long-term relationships, information technology and sharing, and logistics integration. *International Journal of Production Economics*, 135(1), 514–522. <https://doi.org/10.1016/j.ijpe.2011.09.001>
- Rachinger, M., Rauter, R., Müller, C., Vorraber, W., & Schirgi, E. (2019). Digitalization and its influence on business model innovation. *Journal of Manufacturing Technology Management*, 30(8), 1143–1160. <https://doi.org/10.1108/JMTM-01-2018-0020>
- Rha, J. S., & Lee, H. H. (2022). Research trends in digital transformation in the service sector: a review based on network text analysis. *Service Business*, 16(1), 77–98. <https://doi.org/10.1007/s11628-022-00481-0>

- Supriadi, Y. N., Husniati, R., Rialmi, Z., Manggabarani, A. S., & Suyudi. (2022). The Role of Dimensions of Supply Chain Management on Operational Performance of Indonesian SMEs During Digital Era. *Journal of Positive School Psychology*, 6(7), 546–557.
- Tan, J., Wang, X., & Zhang, P. (2022). Logistics service standardization and corporate innovation: Evidence from a natural experiment. *International Review of Economics & Finance*, 77, 549–565. <https://doi.org/10.1016/J.IREF.2021.09.010>
- Tarifa-Fernandez, J., & Burgos-Jiménez, J. De. (2017). Supply chain integration and performance relationship: a moderating effects review. *The International Journal of Logistics Management*, 28(4), 1243–1271. <https://doi.org/10.1108/IJLM-02-2016-0043>
- Tseng, Y., Yue, W. L., & Taylor, M. A. P. (2005). The Role of Transportation in Location. *Proceedings of the Eastern Asia Society for Transportation Studies*, 4, 1657–1672. <https://doi.org/10.4159/harvard.9780674494268.c18>
- Tulung, J.E. (2017). Resource Availability and Firm's International Strategy as Key Determinants Of Entry Mode Choice. *Jurnal Aplikasi Manajemen*, 15(1), 160-168.
- Tulung, J. E., & Ramdani, D. (2015). The Influence of Top Management Team Characteristics on BPD Performance. *International Research Journal of Business Studies*, 8(3), 155-166.
- Utama, D. M., Santoso, I., Hendrawan, Y., & Dania, W. A. P. (2022). Integrated procurement-production inventory model in supply chain: A systematic review. *Operations Research Perspectives*, 9(September 2021), 100221. <https://doi.org/10.1016/j.orp.2022.100221>