Sinergi International Journal of Logistic
Volume. 1, Issue 1, April 2023
Page No: 17-31

Analysis of Factors Causing Logistics Warehouse Inventory Mismatch at PT Dai Nippon Printing Indonesia

Mandar Sugiarto[1], Degdo Suprayitno[2]
[12]STIAMI Institute of Social Sciences and Management, Indonesia
Correspondent: degdosuprayitno@gmail.com[2]

Received: January 10, 2023

Accepted: April 5, 2023

Published: April 30, 2023

Citation: Sugiarto, M., Suprayitno, D. (2023). Analysis of factors causing mismatch of logistics warehouse inventory at PT Dai Nippon Printing Indonesia. Synergy International Journal of Logistics, 1(1), 17-31.

ABSTRACT: This research was conducted at PT Dai Nippon Printing Indonesia. The purpose of this study is to determine the factors causing the mismatch of logistics warehouse inventory at PT Dai Nippon Printing Indonesia. In this study researchers conducted interviews. The research methodology used in this study is the litative research method. The results of the study stated that there are several factors that cause the discrepancy of logistics warehouses, including Man, Machine, Method, Material, Environment. Improvements that can be made to minimize inventory discrepancies in the logistics warehouse of PT Dai Nippon Printing Indonesia Pulogadung Factory include training or training for each employee and rolling work, rejuvenating transportation equipment and repairing network servers, ensuring goods entering logistics are well administrated, making special areas of problematic materials and creating a comfortable work environment for each employee.

Keywords: Warehouse Logistics, Causative Factors, Warehouse Inventory

INTRODUCTION

A manufacturing company is a company engaged in the manufacture or production of a product. In making a product, the company requires raw materials, where the raw materials are processed into finished products with a series of processes. Smooth production is supported by raw materials that have good quality, for that it is necessary to make an adequate storage (Gong & Liu, 2020; Mangla & Luthra, 2022; Sałek, 2021; Zhang et al., 2019).

Storage of raw materials has a very vital role in the company because in the process of making a product several raw materials are needed. These raw materials are placed in a room for storage called the raw material warehouse (Aloini et al., 2022; Erdem, 2022; Giordano et al., 2018a, 2018b; Heitz et al., 2017).

The high use of warehouses and various types of raw materials makes the efficiency of time, space and accuracy of stock of goods with actual goods very important.

PT Dai Nippon Printing Indonesia is a manufacturing company engaged in the manufacture of flexible packaging for medicine, food, cleaners, and others. In carrying out the production process, companies need raw materials to be processed into finished packaging products that are ready to be marketed. The high demand for orders from consumers makes companies prepare raw materials that are comparable to these demands. Raw materials that have a large amount and various types make the company have a warehouse for storage (Delfmann et al., 2018; Klauenberg & Cauduro, 2019; Sitikarn & Kankaew, 2021; Wei & Sheng, 2018).

Storage of raw materials of PT Dai Nippon Printing Indonesia based on needs and production capacity, so the company needs adequate storage. Raw materials are stored in various warehouses, both company-owned warehouses and rental warehouses. To support logistics activities, the company has internal warehouses divided into 4 based on usage, namely Pulogadung Warehouse with code GUD01, Karawang Warehouse with code GUD07, Pulogadung Logistics Warehouse with code PPG01 and Karawang Logistics Warehouse with code PPG07. While the rental warehouse is a warehouse that is not owned by the company PT Dai Nippon Printing Indonesia but another party's warehouse that is leased to PT Dai Nippon Printing Indonesia with an annual rental scheme.

The classification of warehouses above is based on the type of material and production needs. When described internal warehouses as storage of raw materials used for the needs of a week of production processes (pulogadung and karawang warehouses). While the Logistics Warehouse is either Pulogadung or Karawang Logistics as storage for production needs for 3 days (Gonzalez et al., 2022; Jat, 2017; Pham et al., 2016; Ritola et al., 2021).

The large demand for finished packaging products from consumers makes the level of production increase. The increasing demand for production also makes the demand for raw materials increase as well. So it is undeniable that there are often problems in the storage of raw materials in warehouses. These problems include the quality and quantity of raw materials that are not appropriate.

The problem that is often a concern in raw material warehouses is the problem of quantity, namely in the storage often found a mismatch between the stock and actual raw material goods which is often a problem in the demand for raw materials by production. This problem can be known after Stock Opname is carried out every month, namely the last date of the month.

Pulogadung Logistics Warehouse is a raw material storage warehouse that is a link between the GUD01 pulogadung warehouse and production. Because it has high shipping and receiving activities so that it cannot be avoided from various problems.

These problems such as the quality of goods are not good and one of the problems that is of concern because it is often found is the mismatch of goods with stock in computer data with actual raw materials in the warehouse.

c	*Stock on Hand*	*Stock Opname (Roll)*	Percentage

Moon	*(Roll)*	*Over Stock*	*Out of Stock*	Problem SO
December 2021	126	3	13	12,60%
January 2022	254	10	28	14,96%

From table 1 above, there are material stock differences in December 2021 and January 2022 of 12.60% and 14.96% respectively in the Pulogadung logistics warehouse. Stock problems in logistics warehouses are often found by logistics warehouse officers during routine stock-taking audits at the end of the month.

Literature Review

1. Understanding Logistics Management

Human life cannot be separated from the process of moving goods to meet the needs of life, be it primary, secondary or tertiary needs. To meet these needs, logistics activities will occur. Logistics activities can be a starting point in an effort to obtain maximum benefit from the use of these goods.

According to Siahaya (2012) Logistics Management is defined as part of Supply Chain Management that plans, implements and controls the flow of goods effectively and efficiently which is transportation, warehousing, distribution, services and information.

Logistics Management ispart of supply chain management which consists of planning, implementing, and controlling effectively and efficiently the flow of goods in and out as well as storage of goods, services, and information related to the point of origin and point of consumption in order to meet customer needs (CSMP in Hendayani, 2011).

From the description of the opinions of the experts above, it can be concluded that logistics management is a way of managing goods, be it government property or company property (legal entity) and / or individual property with the aim that its use or use is carried out effectively and as efficiently as possible so that it can provide benefits to the owner of the goods.

Therefore, in making logistics planning must be with seriousness and caution so that mistakes do not occur and in exploring the science of logistics management must be serious.

Without logistical management, a job will become hampered and disrupted work activities such as slowing down work and even resulting in the failure of a job.

2. Understanding inventory

Inventory is one of the largest capital investments in current assets, making it a major element of working capital and assets that change frequently. Therefore, the inventory of goods in the company is very important in order to create effective and efficient operational activities.

According to Zaki Baridwan (2013: 149) Inventory is goods that are owned for resale or used to produce goods to be sold.

According to Handoko (2015) inventory is a general term used as a guide of everything or resources in the organization that are stored to anticipate consumer demand.

According to R.Agus sartono (2010; 443) Inventory is generally one of the types of current assets that have a large enough amount in a company. This is easy to understand because inventory is a very important factor to determine the smooth operation of a company.

And according to Rangkuti (2007) Raw material inventory has an important influence in the company because the inventory of raw materials greatly affects the production process.

And according to Eddy Herjanto (2007) Inventory is 2materials or goods that are stored and will be used to achieve certain purposes, such as used for production or assembly processes, for resale, and or only for spare parts of an equipment or machine.

From the opinions of the experts above, the author can conclude that inventory is a material used to support the production process or to be resold to consumers which can be in the form of raw goods, semi-finished goods and / or finished goods.

3. The Importance of Inventory for Companies

Inventory is the most important key in the operational activities of large companies. Every organization must have a good planning system and inventory control system. According to IDX Channel.com, inventory has become a very important part such as retail sales, wholesale, F&B, and other industries that concern stock management. Managers around the world agree that good

inventory management is essential for companies that can maximize the management of goods at minimal costs and can generate large profits.

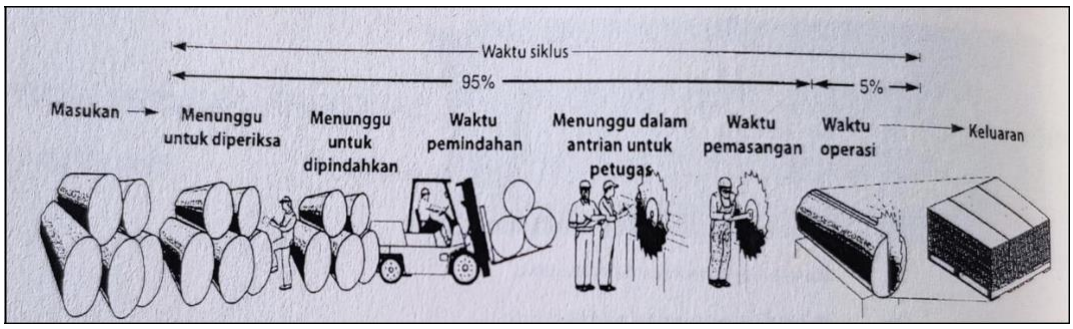

Figure 2.1 Material Flow Cycle

From the picture above, the author concludes that in the process of making goods, the role of inventory holds 95% of the cycle time and the production process to become output goods only requires 5% of the cycle time. So that the implementation of adequate inventory can reduce risks that are not desired by the company such as a more controlled material flow cycle time. A balance between inventory investment and customer service can be realized through good inventory.

METHOD

Research is one of the important factors in efforts to solve a problem. So that research will produce a solution to solve the problem. In order for research to run well, appropriate research methods are needed.

According to Arikunto (1998, p.309) qualitative research is intended so that in collecting information about the status of an existing symptom, namely the symptoms that occur as they are at the time the research is conducted. Based on the type of data used in this study, researchers used a qualitative research approach. With the use of a qualitative approach, it can raise and dissect phenomena in an object that will be examined more deeply.

Based on the purpose of this study, which is to describe and develop a situation in detail, then in this study researchers use a type of descriptive research.

In this study, the operationalization of the author's concept is to focus on the factors that cause inventory mismatch problems in the Logistics Warehouse of PT Dai Nippon Printing Indonesia, the pulogadung factory in the period of December 2021 and January 2022.

Data sources are subjects derived from research data which can be objects, human behavior, location and so on. Field research or in English Field Research is a source of data obtained by researchers from the field directly and is the main source of data in this study.

This research was conducted at PT Dai Nippon Printing Indonesia (Pulogadung Factory) with the address Pulogadung Industrial Estate Jalan Pulogadung No.16 - 18 Kav II Block HII & HIII, Jatinegara, Cakung District, Special Capital Region of Jakarta 13930.

RESULT AND DISCUSSION

Research Results

The results of the study are reports on the description of the entire series of research, namely by observation and interviews. The results of the study can be described as follows:

1. Observation Results

The observations in this study focused on observations on facilities and infrastructure that support work activities at the logistics warehouse of PT Dai Nippon Printing Indonesia pulogadung factory.

1.1 Observations on Logistics Warehouse Facilities

a. Forklift and Low Truck conveyances

Transportation equipment is equipment used to move heavy goods over a distance that is not too far from one place to another. The transportation equipment used in the work at the logistics warehouse of PT Dai Nippon Printing Indonesia is using forklifts and lowtrucks.

There is one forklift type electric drive and 2 types of lowtruck with electric drive. The physical condition and performance of the forklift is good because every day before it is operated, an inspection is carried out by a competent forklift officer or operator with his forklift Operating License.

In terms of life, the lowtruck has an old service life but gets good maintenance from the Engineering division and maintenance independently by the operator. Lowtruck conveyances have good conditions although there are still frequent problems such as not being able to walk and holding forks even though they are rarely found inside.

b. Material Supply Data

Material supply data is a document used as a source of recording in material delivery to machinery or production. In accordance with the SOP or work instructions, logistics operators in sending materials to production are required to write down every material sent in accordance with the production plan and OC (Order Confirmation). Logistics operators in the delivery of materials to production still found delivery without the use of OC documents. And the delivery material data that has been inputted is printed after delivery.

c. Place of Archive

The archive place is used to store data related to the delivery of materials. The archived data are Logistics material supply data to production, Production material supply data to logistics, Logistics material supply data to the Warehouse and Warehouse material supply data to Logistics.

Document archive activities in logistics have been carried out, but the preparation of files is still not well documented and arranged. Document archives in the file cabinet have a span of 6 months and it looks like there are still documents over 6 months arranged in the document cabinet.

d. Material Unloading crane

Material unloading cranes are used by logistics operators to unload materials to be used for delivery to production. The logistics warehouse material unloading crane has good conditions and every year it is checked by the Engineering department to ensure the safety of the crane.

e. Work Report Book

The work report book is used as a means of connecting information between one shift and another shift and non-shift officers. In the book the work report is written by the shift head in each group. In the book recorded material problems and engine conditions.

Recording work results and problems in shift work is carried out well so that there is a smooth exchange of communication in one part of logistics.

1.2 Observations on Logistics Warehouse Infrastructure

a. Storage Warehouse and logistics material unloading area

The storage warehouse and unloading area of the logistics warehouse are good in terms of layout, cleanliness and neatness. All of that can run well because of the responsibility and culture of 5M owned by each member of the logistics warehouse. Every Friday afternoon, an audit of 5M activities is routinely carried out by the company's management.

b. Problematic material storage area

Problematic material storage areas are used as areas to accommodate problematic materials, be it physical problems such as defects or administrative problems. Problematic material storage places have the most problems in terms of administration both from production and from warehouses.

There is no designated area for storing problematic materials, so far the problem material area has been placed next to the logistics office hallway. This can cause material buildup if the problem in the material is not resolved.

c. Blueslip material storage

Blueslip is a production waste material that is no longer used and will be returned to the warehouse. Blueslip material is placed in a place that contains various materials that are no longer used.

The placement of blueslip material is neatly arranged and clean. It was found that the placement of material labels that were not visible from the side made it difficult for blueslip officers to record materials. Administratively problematic materials are still found in the blueslip material storage area.

d. Logistics Office

The logistics office is the main infrastructure in the logistics warehouse which has the most important role. In addition to being used as a place for material administration processes, the logistics office is used as a place to conduct meetings or meetings. Office conditions are neatly arranged and clean.

Discussion

The data collected in the study were processed and analyzed using the six sigma method with the DMAIC approach (Define, Measure, Analyze, Improve, Control). The use of this method is intended to obtain conclusions that can be used as a reference for correcting supply problems in the logistics warehouse of PT Dai Nippon Printing Indonesia pulogadung factory continuously.

1. Define

In this stage, it aims to find out logistics activities and what factors have an influence on the problem of inventory mismatches in PT Dai Nippon Printing Indonesia's logistics warehouse.

a. Material Receipt from Warehouse and Logistics

Delivery of materials to logistics from the warehouse is a CRM request or material request by logistics, sometimes there are some stock problems stemming from delays in material input from the Karawang warehouse, such as materials from suppliers and materials that have finished the process and do not have a master.

These problems often occur during the afternoon shift and night shift outside office hours and can only be resolved by admin officers during office hours. With various considerations, warehouse officers send the material to the logistics warehouse using temporary manual bonds that have not been entered into computer stock.

With temporary manual bonds, it creates a domino effect, that is, the subsequent delivery process from the logistics warehouse to production also experiences problems and the blue slip process from production also experiences problems.

Material receipt from production occurs during shift switching where the production operator returns the material to the logistics warehouse and has not made any material meter changes after use.

b. Return of Goods to the Warehouse

The materials to be returned to the warehouse are materials that are no longer in the plan. Inventory problems that hinder the smooth return of materials to the warehouse are actual materials with bonds on different materials from computer stock. Changes in production plans are also used as the basis for returning materials to the warehouse.

Changes in production plans that change suddenly resulting in goods that have been prepared and inputted being returned to the warehouse (the position is still in the logistics warehouse) are lowered for reuse can cause errors in sending stock data in logistics.

c. Delivery of materials to production

The material sent to production is the material contained in the production plan. The obstacle that often occurs is that the size of the material does not match the size with that in the material bond and the material that enters logistics using temporary manual bonds.

Logistics Operators in shipping to production are in accordance with standards, but in the administrative process of material transfer inputs to production,there are inputs that are tapped. So that it can create production delays in inputting material data.

Material tests for RND there are materials that have stock and some do not, this makes it difficult for operators to supply and need to reconfirm to the request officer. Furthermore, the request officer confirms again to the RND section.

d. Control and storage of materials in the Logistics warehouse

Material control in the logistics warehouse is carried out through stock-taking which is carried out once a month, this can cause inventory discrepancies found at the end of the month to accumulate.

Material storage in this case refers to the grouping of materials that are administratively and physically problematic. Where there is no special place to be used as a place for problem materials so that problematic materials can be mixed with non-problematic materials.

2. Measure

Measure or measure is used to determine key quality characteristics, namely measuring how much inventory mismatch in PT Dai Nippon Printing Indonesia's logistics warehouse based on primary data and secondary data in this study.

From the data, Stock Opname data has been carried out by logistics officers based on data for the period of December 2021 and January 2022 on stock on hand of 126 rolls and 254 rolls, respectively. With a total of 52 rolls of over stock and out of stock issues.

The data obtained is an analysis of the results of stock-taking which is described by grouping based on the source of the problem. Material receipt from warehouses and production has the highest percentage with a value of 61.6% followed by material delivery to production, return of goods to the warehouse and finally problems sourced from material storage control in logistics warehouses.

The above inventory mismatch figure is still far from the company's target, which is zero cases of inventory mismatch that apply to the logistics warehouse of PT Dai Nippon Printing Indonesia Pulogadung Factory.

3. Analyze

The data that has been collected in the previous phase, namely the next measure phase, is carried out Analysis and investigation of the root cause of the problem at this stage. In this phase, it is carried out for the purpose of finding the root of the problem and the cause of inventory discrepancies in the logistics warehouse of PT Dai Nippon Printing Indonesia Pulogadung Factory.In determining the root of the problem can be analyzed using fishbone diagrams.

In the fishbone diagram, the following factors are the cause of inventory discrepancies in the logistics warehouse of PT Dai Nippon Printing Indonesia, Pulogadung Factory is broadly grouped into several categories, namely Man, Method, Machine, Material and Environment.

In making it so that percentage data is more organized and directed, it can be analyzed using a fishbone diagram diagram as shown below:

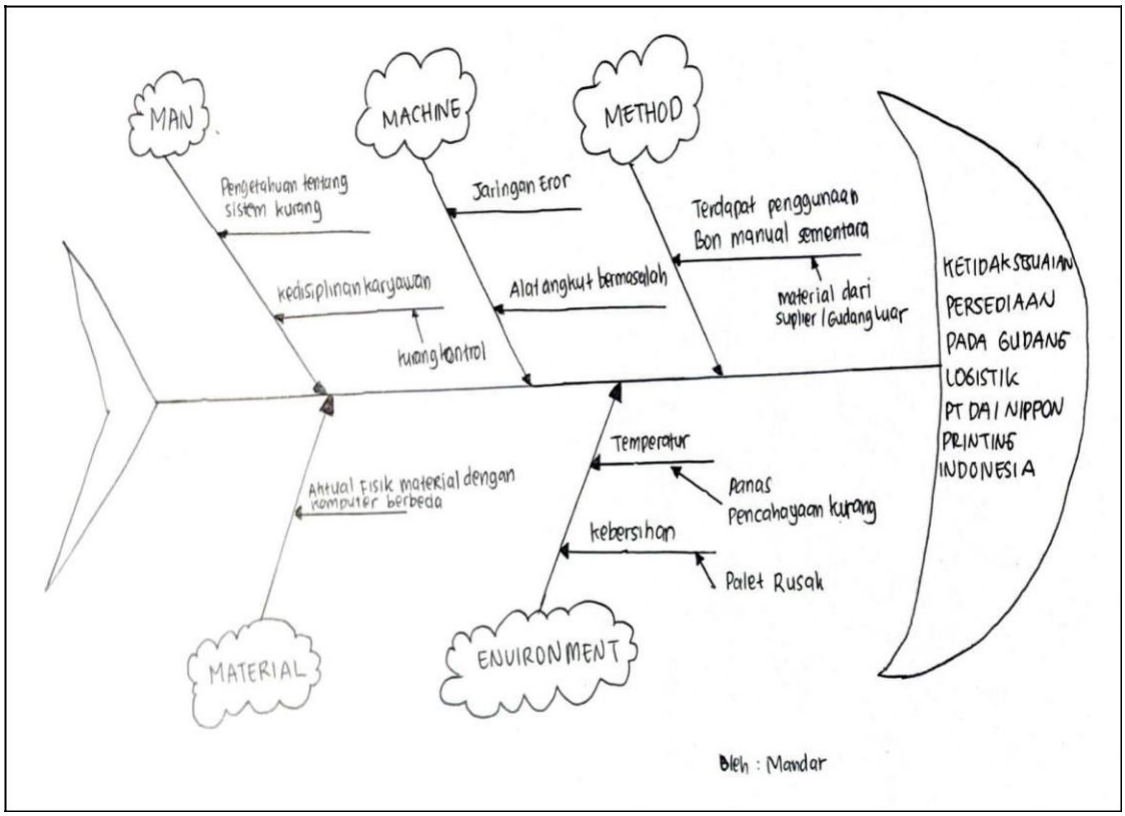

Figure 1. Fishbone diagram of inventory mismatch in PT Dai Nippon Printing Indonesia's logistics warehouse

4. Improve

This stage is part of the DMAIC cycle concept that is carried out. At this stage there are corrective steps for various problems that exist at this time. The proposed improvement is based on the results of the analysis of the cause of the problem in the previous concept analyzed.

The purpose of the proposed improvement is expected to reduce or overcome the problem of inventory discrepancies in the logistics warehouse of PT Dai Nippon Printing Indonesia Pulogadung Factory.

a. Man (Human)

Humans, in this case, employees or operators contribute to the problem of inventory mismatch. To prevent the problem of inventory mismatch in terms of humans, training or training of

employees is not limited only to logistics employees but all employees related to the material delivery system such as production and warehouse employees.

Rolling work on employees with one another so that human resources are obtained that do not only have one skill.

b, Machine

Rejuvenation of transportation equipment, especially lowtrucks, is carried out by providing preventive maintenance on transportation equipment so that material delivery to production can run well.

Coordinating with the EDP department to strengthen the server network so that there is no system failure when doing input work.

c. Method

Materials have not been recorded in computer stock, especially materials originating from outside warehouses and suppliers, resulting in operators sending materials using temporary manual receipts which can result in inventory mismatches. For this reason, it is necessary to take firm steps in overcoming this problem such as the refusal of the material into the logistics area with the permission of the superior.

d. Material

Recheck the materials received or sent carefully and validate to superiors in their respective areas. Grouping or making a special place for problematic materials so that they are not mixed with materials that are not problematic.

e. Environment

The work environment is very influential on employee performance, hot temperatures caused by problematic lighting and air conditioning factors can disrupt employee concentration at work. For this reason, it is necessary to service air conditioners regularly and areas that lack lighting to add lighting.

The cleanliness of the logistics warehouse caused by damaged wooden pallets results in poor material arrangement, the use of wooden pallets of good quality and it is recommended not to send materials with damaged pallets into the production area.

5. Control

Control or controlling is the last stage in the DMAIC concept which aims to control the proposals that have been given to the company.

The control matters that need to be done on the proposed improvements that have been put forward are explained as follows:

a. Proper direction and supervision of employees, especially those related to the work of shipping and receiving goods or materials.

b. Training or refreshing employees regarding work, especially in terms of inputting data. Not only to logistics operators but all those involved in material handover activities.
c. Monitor and analyze any errors by tying back problem reports between shifts and following up to the relevant department.

CONCLUSION

Based on the discussion in chapter IV regarding the causes of inventory mismatch problems in the logistics warehouse of PT Dai Nippon Printing Indonesia Pulogadung Factory, the following conclusions can be drawn:

1. There are several factors causing inventory mismatch problems in PT Dai Nippon Printing Indonesia's logistics warehouse Pulogadung factory analyzed using fishbone diagrams, namely:

    - Man (Human) is knowledge of the material delivery system that is still lacking and lack of superior control makes employee discipline in material delivery administration still lacking.
    - Machine (Machine) is a network system that errors or often has problems hampering operators in carrying out the process of sending or receiving goods. In addition, problematic transportation equipment also affects the performance of sending and receiving materials.
    - Method (Method) is that the material has not been recorded in computer stock, especially material originating from outside warehouses and suppliers, resulting in the operator sending materials using temporary manual receipts which can result in inventory mismatches.
    - Material, that is, the actual condition of the material does not match the bond and material label and the mixing of problematic materials with non-problematic materials creates inventory mismatch problems.
    - Environment (Work environment) is the environment or atmosphere of cleanliness and temperature of logistics warehouses that still need improvement. As well as the use of wooden pallets makes the cleanliness of the logistics warehouse dirty.

2. Improvements that can be made to minimize inventory discrepancies in the logistics warehouse of PT Dai Nippon Printing Indonesia Pulogadung Factory include training or training for each employee and rolling work, rejuvenating transportation equipment and repairing network servers, ensuring goods entering logistics are well administrated, making special areas of problematic materials and creating a comfortable work environment for each employee.

REFERENCES

Handoko, T. Hani. 2012. Personnel Management and Human Resources. Yogyakarta. BPFE

Alex S. Nitisemito, 2012, Personnel Management. 9th printing. 4th edition. Ghalia Indonesia, Jakarta

Siswanto. 2012. Introduction to Management: PT. Bumi Aksara, Jakarta

Siahaya,Willem.2012.Procurement Management.

Management. Bandung: Alfabeta.

Abbas Salim. 2012. Transportation Management. Jakarta: PT. King Grafindo Persada

Baridwan,Zaki.2013.SistemInformasiAkuntansi ,second edition. Yogyakarta: BPFE.

Handoko, T.Hani. 2015. Fundamentals of Production and Operations Management. First Edition. BPFE Yogyakarta

Heizer, Jay & Render, Barry. 2014.Operations Management: Sustainability and Supply Chain Management Edition II. Salemba empat, Jakarta

Baridwan, Zaki. 2011. Intermediate Accounting, 8th Edition. Yogyakarta:BPFE Yogyakarta.

Mulyadi. 2016. Accounting Information Systems. Jakarta: Salemba Empat.

Dwi Martani. 2012. PSAK-Based Intermediate Financial Accounting.Jakarta:Salemba Empat.

Arikunto, Suharsimi. 1998. Research Procedures: A Practice Approach. Jakarta: PT. Rineka Cipta.

Sugiarto.2017.Business Research Methodology.Yogyakarta:ANDI.

Sugiyono.2016.Quantitative, Qualitative and R&D Research Methods.Bandung:Alfabeta

Aloini, D., Fronzetti Colladon, A., Gloor, P., Guerrazzi, E., & Stefanini, A. (2022). Enhancing operations management through smart sensors: measuring and improving well-being, interaction and performance of logistics workers. *TQM Journal*, *34*(2), 303–329. https://doi.org/10.1108/TQM-06-2021-0195

Delfmann, W., Ten Hompel, M., Kersten, W., Schmidt, T., & Stölzle, W. (2018). Logistics as a science – central research questions in the era of the fourth industrial revolution: Invited paper based on the position paper of the scientific advisory board of bundesvereinigung logistik (BVL)[1]. *Logistics Research*, *11*(1). https://doi.org/10.23773/2018_9

Erdem, M. (2022). Designing a sustainable logistics network for hazardous medical waste collection a case study in COVID-19 pandemic. *Journal of Cleaner Production*, *376*. https://doi.org/10.1016/j.jclepro.2022.134192

Giordano, A., Fischbeck, P., & Matthews, H. S. (2018a). Environmental and economic comparison of diesel and battery electric delivery vans to inform city logistics fleet replacement strategies. *Transportation Research Part D: Transport and Environment*, *64*, 216–229. https://doi.org/10.1016/j.trd.2017.10.003

Giordano, A., Fischbeck, P., & Matthews, H. S. (2018b). Environmental and economic comparison of diesel and battery electric delivery vans to inform city logistics fleet replacement strategies. *Transportation Research Part D: Transport and Environment*, *64*, 216–229. https://doi.org/10.1016/j.trd.2017.10.003

Gong, Z., & Liu, N. (2020). Mitigative and adaptive investments for natural disasters and labor strikes in a seaport–dry port inland logistics network. *Maritime Policy and Management*, *47*(1), 92–108. https://doi.org/10.1080/03088839.2019.1675195

Gonzalez, C., Agrawal, V., Johansen, D., & Hooker, R. (2022). Green supply chain practices: The role of institutional pressure, market orientation, and managerial commitment. *Cleaner Logistics and Supply Chain*, *5*. https://doi.org/10.1016/j.clscn.2022.100067

Heitz, A., Dablanc, L., & Tavasszy, L. A. (2017). Logistics sprawl in monocentric and polycentric metropolitan areas: The cases of Paris, France, and the Randstad, the Netherlands. *Region*, *4*(1), 93–107. https://doi.org/10.18335/region.v4i1.158

Jat, M. N. (2017). Time-differentiated supply at customer sites: Analysing the service costs. *Logistics Research*, *10*(1). https://doi.org/10.23773/2017_9

Klauenberg, J., & Cauduro, F. K. (2019). Logistics locations patterns-distance-based methods for relative industrial concentration measurement applied to the region of berlin-brandenburg. In *Urban Freight Transportation Systems* (pp. 3–18). https://doi.org/10.1016/B978-0-12-817362-6.00001-X

Mangla, S. K., & Luthra, S. (2022). When challenges need an evaluation: for operational excellence and sustainability orientation in humanitarian supply and logistics management. *Production Planning and Control*, *33*(6–7), 539–557. https://doi.org/10.1080/09537287.2020.1834129

Pham, T. Y., Jeon, J. W., Dang, V. L., Cha, Y. D., & Yeo, G. T. (2016). A Longitudinal Analysis of Concentration Developments for Container Terminals in Northern Vietnam. *Asian Journal of Shipping and Logistics*, *32*(3), 157–164. https://doi.org/10.1016/j.ajsl.2016.09.004

Ritola, I., Krikke, H., & Caniëls, M. C. J. (2021). Learning-based dynamic capabilities in closed-loop supply chains: an expert study. *International Journal of Logistics Management*, *33*(5), 69–84. https://doi.org/10.1108/IJLM-01-2021-0044

Salek, R. (2021). The importance of telematic information and logistics indicators for the management of the quality of transport services. *Production Engineering Archives*, *27*(3), 176–183. https://doi.org/10.30657/pea.2021.27.23

Sitikarn, B., & Kankaew, K. (2021). Community based tourism logistics supply chain management in the top north of Thailand: A key linkage to the greater Mekong subregion.

Uncertain Supply Chain Management, *9*(4), 983–988. https://doi.org/10.5267/j.uscm.2021.7.002

Wei, H., & Sheng, Z. (2018). Logistics connectivity considering import and export for Chinese inland regions in the 21st-Century Maritime Silk Road by dry ports. *Maritime Policy and Management*, *45*(1), 53–70. https://doi.org/10.1080/03088839.2017.1403052

Zhang, S., Chen, N., Song, X., & Yang, J. (2019). Optimizing decision-making of regional cold chain logistics system in view of low-carbon economy. *Transportation Research Part A: Policy and Practice*, *130*, 844–857. https://doi.org/10.1016/j.tra.2019.10.004