

Optimizing the process of storing goods in warehouses using the Dedicated Storage method.

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Abstract. This research focuses on optimizing the process of storing goods in warehouse lot 6 of PT. Giken Precision Indonesia by implementing the Dedicated Storage method, the PDCA system approach, and the 5S (Seiri, Seiton, Seiso, Seiketsu, and Shitsuke) implementation. Warehouse lot 6 of PT. Giken Precision Indonesia faces challenges in terms of inefficient layout, random placement of goods, lack of cleanliness, and an inadequate security system. To overcome these problems, the Dedicated Storage method is used, which is a way of organizing warehouse layout by allocating specific storage space for each type of goods, making it easier to search and retrieve goods. The implementation of the Dedicated Storage method has proven effective in improving warehouse operational efficiency. By allocating a specific storage area for each type of goods, the time it takes to search and place goods is shortened, and the use of storage space is optimized. The implementation of the PDCA (Plan, Do, Check, Action) system helps in identifying problems, designing solutions, implementing solutions, and evaluating the effectiveness of the implemented solutions. The implementation of 5S (Seiri, Seiton, Seiso, Seiketsu, and Shitsuke) shows varied results, with the implementation of Seiri (Sort) and Seiton (Set in order) achieving an achievement level of 75%, Seiso (Shine) achieving 50%, Seiketsu (Standardize) achieving 100%, and Shitsuke (Sustain) not being specifically measured in this research. Overall, this research shows that the implementation of the Dedicated Storage method with the PDCA system approach and 5S can be an effective solution to overcome the problems faced in warehouse lot 6 of PT. Giken Precision Indonesia.

Keywords: *Dedicated Storage, PDCA, 5S, Warehouse,*

1 Introduction

Employee efficiency plays a crucial role in supporting the success of a business. Optimal productivity levels bring significant benefits to both business owners and employees, especially in terms of their well-being. Productivity also reflects the work ethics of employees and portrays a positive mental attitude. To achieve success in company activities, work productivity becomes a key element that cannot be overlooked. To enhance work efficiency, the implementation of an optimal work system involving various components such as methods, labor, materials, equipment, and environment is necessary. Company conditions that do not align with established standard procedures, coupled with employees' lack of discipline towards procedures, can trigger a decline in work system performance. Therefore, it is important to pay attention to and improve the

work system to achieve optimal efficiency and productivity. In line with this, warehouse management also plays a vital role in a company's structure. To support the smooth flow of activities and production processes, the implementation of an efficient storage system is necessary.

However, warehouse management systems often do not receive adequate attention from business players. Yet, the introduction of warehouse management systems can regulate warehouse processes from receiving goods to delivering them to consumers. Imperfections in warehouse management systems can lead to loss of goods, damages, and other issues that potentially reduce company revenue.

Warehouse management is a discipline that governs the storage and distribution of goods within a warehouse. The implementation of this management involves organizing and supervising the goods entering and leaving the warehouse. Managing large inventories requires the use of warehouse facilities as a safe storage place for goods before distribution to consumers.

Highlighting a report, warehouse conditions show significant disorder. The arrangement and organization of goods in the warehouse do not comply with the established layout, negatively impacting operational efficiency. To address this issue, a rearrangement and strict procedural implementation are necessary to ensure that all goods are placed according to the existing system, thus enhancing efficiency and accuracy in warehouse management.

Warehouse management at lot 6 PT. Giken Precision Indonesia is a key research subject. The arrangement of goods storage in this warehouse needs improvement, especially concerning the workforce operating the warehouse system and the layout of stored goods. Implementing dedicated storage methods can be a solution to enhance efficiency and warehouse performance.

Additionally, the 5S method or technique serves as a starting point for many companies striving to improve their work environment. 5S, originating from Japanese words Seiri, Seiton, Seiso, Seiketsu, Shitsuke, translated into 5R in Indonesian, stands for neat, orderly, clean, maintain, and diligent. The primary goal of this approach is to reduce various forms of waste, such as material, time, machinery, space, labor, and money.

One approach to solving problems and implementing continuous improvements is using the PDCA (Plan-Do-Check-Action) method. This method involves planning, executing, checking, and taking action to ensure the effectiveness of implemented improvements in the long run. Therefore, optimizing the storage of goods at lot 6 PT. Giken Precision Indonesia through dedicated storage methods with a PDCA and 5S system approach can provide practical and theoretical benefits to the company and serve as a valuable reference for researchers and business practitioners aiming to enhance their warehouse performance.

Payment system make it difficult for consumers to ignore their desire to buy goods that interest them. This behaviour is better known as impulse buying. Impulse buying is a behaviour, where when someone makes an impulse purchase, they buy something spontaneously and immediately, without even realizing why they are doing it. Purchase stimulus can come from the encouragement of the buyer himself or other factors. Elements of the TAM acceptance model can be used to predict how paylater users make impulse purchases. Business people, especially in the retail industry, must continue to adapt to digital payment technology innovations.

Although several studies have discussed the impact of the utilization paylaters on the impulsive purchasing behaviour of e-commerce consumers, there has not been a specific study that has analyzed the effects of utilizing paylaters on the impulsive purchasing behaviour of e-commerce consumers in Batam City. Hence, conducting this research is important in the hope that the discoveries in this study can be utilized as a valuable information repository for paylater consumers in Batam City to be wiser in using this feature.

Other research (Yuniaristanto, 2019) Re-design Facility Layout using Systematic Layout Planning Method: A Case Study: Biopro Cosmeceutical Sdn. Bhd. this research uses the systematic layout planning (SLP) method and Activity Relationship Chart. The goal is to minimize Material Handling Costs (OMH). Research Results 47% savings value or IDR 71,379 per month. Another study (Tippayawong, Sopadang, & Patitad, 2013) Improving Warehouse Layout Design of a Chicken Slaughterhouse using Combined ABC Class Based and Optimized Allocation Techniques by using ARC and Linear Programming methods. The aim is to make an improved warehouse layout design. The object is a chicken slaughtering company. product circulation ratio is the basic consideration of the study to create a new rack design, product grouping, new layout, product retrieval. The result of this study is a 45% decrease in traveling distance and 42% retrieval time can be done. An increase in utility of 45% can be expected to occur for Return on investment.

Research by (Mutaqin, 2016) Optimization of Warehouse Facility Layout with Dedicated Storage Policy Case Study CV. XYZ Dedicated Storage method, Linear Programming. The aim is to minimize mileage and minimize transportation costs. CV research object. XYZ is a footwear manufacturer. Calculation of distance and solving this problem with 58 iterations with the branch and bound search method. Literatur Review

2.1 Operational Management

Operational management involves managing resources such as labor, raw materials, equipment, and other production factors to create products that can be widely sold in the market. The primary goal of operational management is to achieve efficiency and effectiveness in production to meet quality standards and compete in the market. Overall, operational management is a comprehensive approach to managing all aspects of production for optimal results.

2.2 Warehouse

Warehouse serves as a temporary storage facility for various types of items, from raw materials to finished products ready for distribution. In the business and supply chain context, warehouses play a crucial role in maintaining stock availability, managing inventory, and facilitating distribution processes. Warehouses are often equipped with advanced inventory management systems to ensure operational efficiency, including monitoring stock levels, handling goods, and providing accurate reporting. Thus, warehouses are not just temporary storage spaces but also strategic elements in overall logistics and supply chain management.

2.3 Layout

Layout planning is a crucial decision that has a significant impact on the long-

term efficiency of operations. This decision not only affects operational efficiency but also impacts productivity, workplace comfort, and resource optimization. Therefore, careful and strategic layout planning is essential to achieve long-term goals and ensure optimal balance among various operational factors.

2.4 Warehouse Management System

Warehouse management system involves a deep understanding of interconnected activities in storing temporary goods. Broadly, this integrated storage system includes three main components: receiving goods from suppliers, handling goods within the warehouse, and dispatching goods to specified destinations. Receiving goods involves processes of acceptance, inspection, and recording to ensure received items match orders and meet quality standards. Additionally, the warehouse management system also encompasses real-time inventory tracking to monitor stock availability. Dispatching goods to designated destinations is a critical stage in warehouse management. It involves selecting items as per orders, safe packaging, and logistical arrangements for efficient deliveries. The system factors in elements like delivery time, costs, and monitoring the journey of goods to ensure accuracy and reliability in deliveries. Thus, the warehouse management system not only covers storage activities but also integrates technology and comprehensive management strategies to achieve efficiency and accuracy throughout the warehouse management process.

2.5 Optimazation

Optimization originates from the base word "optimal," which carries the meaning of best, highest, most advantageous, making the best or highest, as well as the optimization of processes, methods, or actions to enhance quality (making the best, highest, and so forth). Therefore, optimization can be defined as an action, process, or methodology aimed at making an entity, such as design, system, or decision, more or entirely perfect, functional, or effective.

2.6 Dedicated Storage

Dedicated storage is a method that involves organizing the layout of product storage based on the movement of goods in the warehouse, minimizing travel distance to the I/O point (throughput). This approach also includes the determination that each product will only be placed in one storage location. The goal is to ensure that stored products have a fixed storage location, create a smooth flow of products, and optimize the use of storage space (space requirements). (Noneng Nurjanah, 2023). According to Nursyanti and Rahayu (2019), things that must be considered when planning a warehouse layout are places for receiving goods, as well as areas for storage, shipping, sorting goods. According to Sitorus et al (2020), to solve the problem of irregular placement of goods, the dedicated storage method can be used. Dedicated storage is a method of storing goods that are fixed for each item. According to Meldra and Purba (2018), the dedicated storage method can be used to provide suggestions for improving warehouse layout, minimizing transportation distance in the warehouse and arranging goods in the warehouse. According to Husin (2020), the stages in using the dedicated storage method are determining space

requirements, calculating throughput, product placement, calculating distance travel, and comparing distance travel before and after.

The dedicated storage method is essential to be applied in warehouse lot 6 of PT. Giken Precision Indonesia because the layout of items in the warehouse is still disorganized, with many items that are no longer needed but still remain in the warehouse. This necessitates optimizing space requirements to improve the effectiveness of managing incoming and outgoing goods. The dedicated storage method involves several stages, starting with analyzing the needs to ensure the efficiency and effectiveness of the warehouse layout. Furthermore, the optimal warehouse layout design is carried out to ensure operational efficiency and maximum space utilization. The implementation of this method includes applying the designed layout and ensuring that each product is placed in the designated location.

2.7 PDCA

PDCA (Plan, Do, Check, Action) is a structured method for continuous improvement that encompasses four key stages: planning, executing, evaluating, and taking action. This systematic approach is widely utilized in various industries to enhance processes, products, or systems by iteratively identifying and addressing issues. The PDCA cycle serves as a dynamic framework for problem-solving and improvement, enabling organizations to adapt and evolve in response to challenges and changing circumstances.

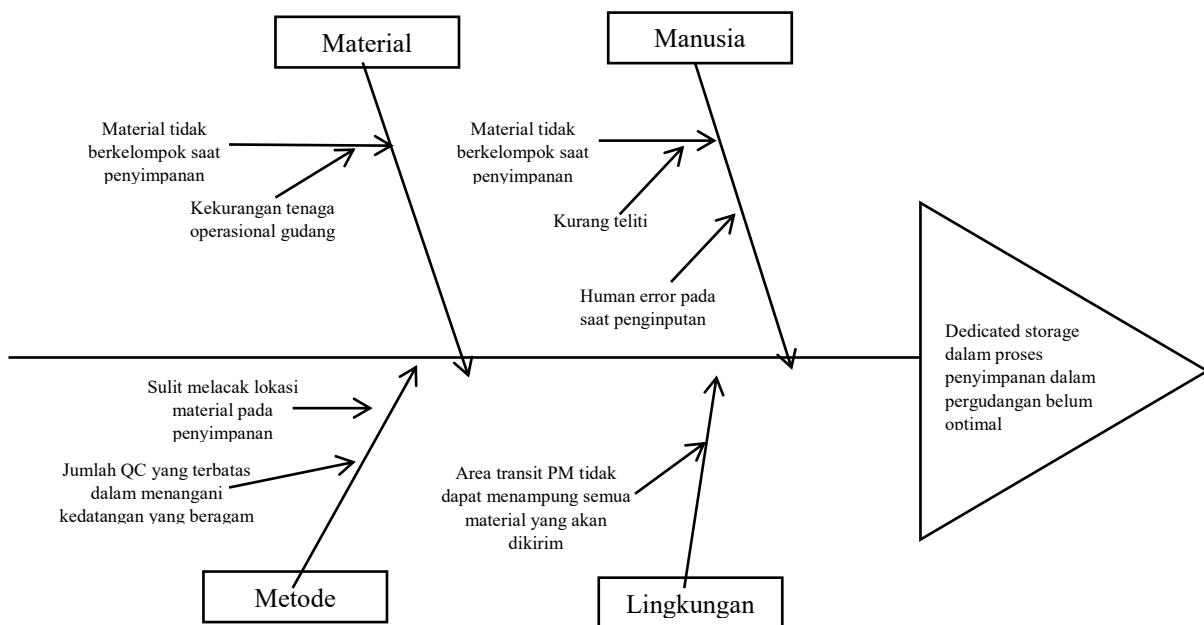
In the planning stage, the focus is on identifying the problem at hand, setting specific goals, and determining the root causes of the issues. This phase involves careful analysis, goal-setting, and the development of a detailed plan of action to address the identified problems effectively. The execution phase involves implementing the solutions and strategies outlined in the planning stage. This is where the planned actions are put into practice, and the proposed changes are executed in a controlled manner to address the identified issues. The evaluation phase is crucial for assessing the effectiveness of the implemented solutions. It involves monitoring and measuring the outcomes of the actions taken, comparing them against the established goals, and evaluating whether the desired results have been achieved.

The final stage of the PDCA cycle focuses on taking corrective actions based on the findings from the evaluation phase. This phase involves making necessary adjustments, refining strategies, and implementing improvements to ensure sustained success and continuous enhancement. The PDCA cycle provides a structured and systematic approach to problem-solving and improvement, emphasizing the importance of continuous learning, adaptation, and optimization. By following the PDCA methodology, organizations can drive innovation, foster a culture of continuous improvement, and achieve sustainable growth and success in today's dynamic and competitive business environment. In the context of warehouse management at PT. Giken Precision Indonesia's lot 6, the application of the PDCA cycle can help address challenges such as disorganized storage layouts and inefficiencies in inventory management. By systematically planning, executing, evaluating, and taking action based on the PDCA principles, the warehouse can optimize its operations, enhance productivity, and improve overall efficiency in managing inventory and storage processes.

2.8 Fishbone

Diagram Fishbone, shaped like a fishbone with the head pointing to the right,

is used to illustrate the impact or effect of a problem, with various causes as contributing factors. The effect or consequence of the issue is represented as the head, while the causes are depicted by the fishbone branches following the problem-solving approach. This diagram is known as Cause and Effect because it illustrates the relationship between cause and effect. In the context of statistical process control, a cause-and-effect diagram is used to show the causal factors (cause) and quality characteristics (effect) that arise as a result of these causal factors.



2.9 5s

The 5S method or technique is an important initial step for many companies looking to improve their work environment conditions. In Japanese, 5S represents the concepts of Seiri, Seiton, Seiso, Seiketsu, Shitsuke, which are then translated into 5R in Indonesian, namely sort, set in order, shine, standardize, and sustain. The main goal of this approach is to reduce waste, such as material, time, machinery, space, labor, and money wastage, to create a more efficient and productive work environment. The implementation stages of the 5S method can be applied to warehouse lot 6 of PT. Giken Precision Indonesia by selecting the items to be stored.

2 Research Methods

The research method used in this study is qualitative descriptive research. According to (Hanyfah, Fernandes, & Budiarmo, 2022), qualitative descriptive research is conducted to provide a comprehensive overview of previous research without manipulating the data of the variables under study. This approach involves direct interviews as the primary method, focusing on description and interpretation to reveal the meaning and context of the collected data, aiming to provide a deeper understanding of the observed phenomena without intentionally altering the variables that are the subject of the research.

2.1 Type of Research

The type of research in this study is Qualitative Descriptive. According to (Ridwan, AM, Ulum, & Muhammad, 2021), qualitative descriptive analysis method involves the process of analyzing, portraying, and summarizing various conditions. The information for the analysis is derived from interviews or direct field observations related to the investigated issue.

2.2 Types and sources of research data

The study utilizes qualitative data for descriptive qualitative research, representing a systematically planned and structured approach from the initial stages to the design phase. The methodology emphasizes a deep understanding of observed phenomena through an organized and carefully planned approach, ensuring each stage is meticulously conducted to yield significant outcomes. The research includes both primary and secondary data, referencing observations and interviews.

To obtain primary data, the researcher conducted direct observations and interviews. Observations involve recording facts related to an object based on observation results, reflecting skills in forming observation reports as per Core Competency (CC)-4. The observations were direct in the warehouse during an internship, focusing on operational procedures and layout. Additionally, interviews were conducted.

Interviews are thorough explorations and comprehensive observations of the research focus. Typically involving a minimum of two individuals, with one as the interviewer and the other as the interviewee, there are no restrictions on involving more individuals in a session, known as a group interview. The researcher conducted interviews at PT. Giken Precision Indonesia with warehouse operators and staff, including Abdurrahman, Ilham Munassy, Hariska, Rizka Ayu, and Supervisor Yanti.

2.3 Data analysis techniques

The data analysis technique used in this study is descriptive analysis, playing a crucial role in supporting research by facilitating data recognition and interpretation. Success lies in its ability to systematically organize and present information, aiding in a deeper understanding of the investigated phenomena. Descriptive analysis is not merely a tool but a critical step in understanding and depicting data accurately and comprehensively.

In this research, the researcher utilized the Dedicated Storage method with the PDCA and 5S systems to zone the layout at warehouse lot 6 using primary data obtained from PT. Giken Precision Indonesia. Dedicated storage refers to a storage mechanism where specific locations are allocated to each item. Adequate space availability for each product is essential, ensuring the total storage allocation meets the space requirements of each product. This approach aims to maintain a consistent storage location for each item, maximizing space utilization and ensuring precise inventory management. The initial step in implementing dedicated storage involves labeling or coding storage racks.

2.4 Data processing techniques

Data processing is a systematic process of collecting, organizing, and arranging records from observations, interviews, and other sources with the aim of enhancing the researcher's understanding of the research subject. Findings resulting from the analysis are then presented to others. However, to achieve a deeper understanding, the analysis must involve efforts to uncover the meaning behind the collected data.

3 Result and Discussion

3.1 Warehouse Description

Warehouse lot 6 at PT. Giken Precision Indonesia is located in Citra Buana Industrial Park II, Jalan Yos Sudarso Lot 2, Kec. Batu Ampar, Kepulauan Riau. This warehouse stores plastic materials that will be processed into production items. The layout of items in warehouse lot 6 is observed to be disorganized, with many items misplaced, leading to a cluttered warehouse environment. The stored items are not properly sorted by PT. Giken Precision Indonesia employees, causing difficulty in locating items. Therefore, an evaluation of the warehouse's inventory management system is necessary using the Dedicated Storage method with the PDCA and 5S systems.

3.2 Research results regarding the implementation of dedicated storage

Referencing the current status quo, the warehouse at PT. GIKEN faces challenges with an inefficient warehouse layout, where items are randomly placed without considering access frequency or item category. This results in extended search times and delays in shipping and receiving processes. Additionally, the warehouse is often untidy and disorganized, with items scattered on the floor and storage areas in disarray. There is a lack of adequate security systems like CCTV or locking mechanisms for sensitive areas, increasing the risk of item loss or damage.

In determining the required storage capacity, it is essential to analyze the volume of items to be stored, considering seasonal fluctuations and business growth. Designing an efficient warehouse layout based on workflow and operational processes ensures adequate storage space, maximizes space utilization, reduces item search times, and places frequently accessed items in easily reachable locations, enhancing operational productivity and efficiency. Accurate and integrated record-keeping systems are vital for real-time inventory tracking, reducing human error risks, and ensuring up-to-date inventory information to facilitate procurement and stock management decisions. Ensuring secure storage of items involves safety measures like CCTV usage, locking sensitive storage areas, and training employees on safety procedures to prevent item damage or loss.

Dedicated storage allocates specific storage areas for each item, streamlining item management and retrieval while reducing placement errors. The structured layout enhances overall operational efficiency and allows for better security system implementation, such as locking mechanisms and CCTV usage. This creates a safer, organized work environment that improves operational performance.

The implementation of dedicated storage significantly boosts operational efficiency by providing fixed accessible storage locations, reducing search and placement times, and enabling faster and more efficient work processes. It also enhances stock recording accuracy by ensuring each item has a designated location, significantly reducing placement and recording errors. Enhanced safety procedures, including CCTV usage and employee safety training, protect items and employees, fostering a safer, organized, and productive work environment that ultimately enhances overall warehouse operational performance.

Therefore, considering the challenges faced by PT. GIKEN in its operational warehouse processes, several improvements were made by the researcher using the dedicated storage method, resulting in a warehouse layout design that addresses PT. GIKEN's issues. In implementation, PT. GIKEN's operational effectiveness stands at 70% when assessed with the PDCA model using the old warehouse layout. This figure significantly improves to 90% with the new warehouse layout, highlighting the effectiveness of the updated design.

3.3 Research results regarding the implementation of PDCA

The research on the implementation of the PDCA (Plan, Do, Check, Action) cycle at PT. Giken Precision Indonesia aimed to optimize warehouse management in lot 6. Data was collected through observations and interviews with employees, focusing on improving various warehouse operations. In the goods receiving process, planning involved employee briefings to minimize errors, inputting accurate data, and rechecking goods against item codes. When discrepancies or mistakes occurred, new procedures were implemented to address them. In terms of warehouse layout management, the focus was on creating an efficient design, such as the use of an 'L' layout for easier storage and retrieval, sorting items by type and code, and continuously improving the arrangement to boost employee performance and efficiency.

Cleaning practices were also improved through scheduled maintenance, removal of unused items, and regular inspections to ensure the warehouse remained clutter-free. Reducing human errors, another focus area, was addressed by conducting monthly evaluations, ensuring employees followed standard operating procedures (SOPs), and double-checking tasks. These improvements helped maintain the effectiveness of the warehouse systems and overall operations. Through the PDCA cycle, the company was able to enhance efficiency, reduce errors, and keep the warehouse clean and well-organized, leading to a more effective management system.

3.4 Research results regarding the application of 5S (*seiri, seiton, seiso, seiketsu, shinsuke*)

The implementation of the 5S method (Seiri, Seiton, Seiso, Seiketsu, Shitsuke) at the warehouse of PT. Giken Precision Indonesia in lot 6 was assessed based on observations. The study found that the implementation of "Seiri" (sorting) achieved a 75% success rate. This is because three out of four criteria, such as sorting necessary and unnecessary items, were met, but the elimination of unnecessary goods was not fully implemented. "Seiton" (organization) also achieved a 75% success rate. Three of the four required criteria were met, including the arrangement of goods and equipment in the warehouse. However, daily equipment control by employees was not fully implemented. For "Seiso" (cleaning), the implementation was less successful, with only 50% of the criteria met. Routine cleaning was done, but the cleanliness of warehouse items was not maintained properly. On the other hand, "Seiketsu" (standardization) was successfully implemented, achieving 100% success. All criteria for maintaining the condition of the workplace were met, including the organization of goods according to a coding system. These results illustrate varying degrees of success in the application of 5S principles at PT. Giken Precision Indonesia's warehouse in lot 6.

4 CONCLUSIONS AND SUGGESTIONS

4.1 Conclusions

This research focuses on optimizing the storage process at the warehouse in lot 6 of PT. Giken Precision Indonesia using the Dedicated Storage method, the PDCA system approach, and the implementation of the 5S (Seiri, Seiton, Seiso, Seiketsu, and Shitsuke) methodology. The warehouse at lot 6 faces challenges related to inefficient layout, random item placement, lack of cleanliness, and suboptimal security systems. The Dedicated Storage approach, which divides the warehouse layout into designated storage areas for each type of item to facilitate easier location and retrieval, was used to address these issues. The implementation of Dedicated Storage proved effective in improving the operational efficiency of the warehouse. By allocating specific storage areas for each item type, search and placement times were reduced, and storage space utilization was optimized. The PDCA (Plan, Do, Check, Action) system helped identify problems, design solutions, implement those solutions, and evaluate their effectiveness. The implementation of 5S (Seiri, Seiton, Seiso, Seiketsu, and Shitsuke) yielded mixed results, with Seiri (Sort) and Seiton (Set in Order) achieving 75% success, Seiso (Shine) reaching 50%, Seiketsu (Standardize) reaching 100%, and Shitsuke (Sustain) not being specifically measured in this study. Overall, the research demonstrates that the application of the Dedicated Storage method with the PDCA system approach and 5S methodology can be an effective solution to address the challenges faced by the warehouse at lot 6 of PT. Giken Precision Indonesia.

4.2 Suggestions

This research focuses on optimizing the storage process at the warehouse in lot 6 of PT. Giken Precision Indonesia using the Dedicated Storage method, the PDCA system approach, and the implementation of the 5S (Seiri, Seiton, Seiso, Seiketsu, and Shitsuke) methodology. The warehouse at lot 6 faces challenges related to inefficient layout, random item placement, lack of cleanliness, and suboptimal security systems. The Dedicated Storage approach, which divides the warehouse layout into designated storage areas for each type of item to facilitate easier location and retrieval, was used to address these issues. The implementation of Dedicated Storage proved effective in improving the operational efficiency of the warehouse. By allocating specific storage areas for each item type, search and placement times were reduced, and storage space utilization was optimized. The PDCA (Plan, Do, Check, Action) system helped identify problems, design solutions, implement those solutions, and evaluate their effectiveness. The implementation of 5S (Seiri, Seiton, Seiso, Seiketsu, and Shitsuke) yielded mixed results, with Seiri (Sort) and Seiton (Set in Order) achieving 75% success, Seiso (Shine) reaching 50%, Seiketsu (Standardize) reaching 100%, and Shitsuke (Sustain) not being specifically measured in this study. Overall, the research demonstrates that the application of the Dedicated Storage method with the PDCA system approach and 5S methodology can be an effective solution to address the challenges faced by the warehouse at lot 6 of PT. Giken Precision Indonesia.

Bibliography

- Ahman Tosy Hartino, M. M. A. (2020). *OPTIMALISASI PENDIDIKAN KEWARGANEGARAAN SEBAGAI UPAYA MENINGKATKAN CIVIC KNOWLEDGE PESERTA DIDIK MELALUI MEDIA SOSIAL*. 169–176.
- Angelica Sumartono, M., Bin Hasan Jan, A., Ekonomi Dan Bisnis, F., & Manajemen Universitas Sam Ratulangi Manado, J. (2019). Analisis Sistem Manajemen Pergudangan Pada PT. Mitra Kencana Distribusindo Manado. *Jurnal EMBA*, 7(4), 5879–5888.
- Dianto, C., Widiandoko, F., Rahmanasari, D., Yuniaristanto, & Sutopo, W. (2020). Redesign Production Layout Using Dedicated Storage Method: Case Study of PT.Solo Grafika Utama. *IOP Conference Series: Materials Science and Engineering*, 943(1). <https://doi.org/10.1088/1757-899X/943/1/012042>
- Dwiyana, I. M. A. (2019). *ANALISIS TREND PADA KOPERASI PRIMKOPPOS (PRIMER KOPERASI PEGAWAI POS) PERIODE 2012 - 2015*. 10(1), 1–6.
- Hansen, S. (2020). *Investigasi Teknik Wawancara Dalam Penelitian Kualitatif Manajemen Konstruksi*.

(December). <https://doi.org/10.5614/jts.2020.27.3.10>

- Hanyfah, S., Fernandes, G. R., & Budiarmo, I. (2022). Penerapan Metode Kualitatif Deskriptif Untuk Aplikasi Pengolahan Data Pelanggan Pada Car Wash. *Semnas Ristek (Seminar Nasional Riset Dan Inovasi Teknologi)*, 6(1), 339–344. <https://doi.org/10.30998/semnasristek.v6i1.5697>
- Hayati, E. N. (2014). Supply Chain Management (SCM) Dan Logistic Management. *Jurnal Dinamika Teknik*, 8(1), 25–34.
- Khairuddin, K. (2022). Hubungan Antara Stress Kerja dengan Produktivitas kerja pada Karyawan. *Jurnal Social Library*, 2(1), 24–30. <https://doi.org/10.51849/sl.v2i1.60>
- Kusuma, Y., Sumaraw, J. S. B., & Wangke, S. J. C. (2017). Analisis Sistem Manajemen Pergudangan 602. *Jurnal EMBA*, 5(Juni), 602–611.
- Lama, R., Suyanto, & Suharyoko. (2021). Analisis Sistem Manajemen Pergudangan Pada Pt. Delta Merlin Di Kabupaten Karanganyar. *Jurnal Widya Ganecwara*, 11(1), 1–14.
- Lamanto, A. A., Suryadhini, P. P., & Astuti, M. D. (2019). Perancangan alokasi penyimpanan di gudang bahan baku CV Marasabessy untuk mengurangi waktu delay menggunakan pendekatan Lean Manufacturing. *E-Proceeding of Engineering*, 6(2), 6653–6662.
- Martias, L. D. (2021). *STATISTIKA DESKRIPTIF SEBAGAI KUMPULAN INFORMASI*. 16(1), 40–59.
- Mashabai, I., Ruspendi, R., & Syauqi, M. I. (2022). Analisa Permasalahan Sticking Pada Tablet XYZ Menggunakan Metode PDCA di PT. Sunthi Sepuri. *Unistek*, 9(1), 19–27. <https://doi.org/10.33592/unistek.v9i1.2067>
- Maulia, S., & Ramadhan, dan S. (2020). *PENGARUH MODEL DISCOVERY LEARNING TERHADAP KETERAMPILAN MENULISTEKSLAPORAN HASIL OBSERVASI SISWA KELAS VII SMP NEGERI 15 PADANG*. 64–71.
- Monoarfa, M. I., Hariyanto, Y., & Rasyid, A. (2021). Analisis Penyebab bottleneck pada Aliran Produksi briquette charcoal dengan Menggunakan Diagram fishbone di PT. Saraswati Coconut Product. *Jambura Industrial Review (JIREV)*, 1(1), 15–21. <https://doi.org/10.37905/jirev.1.1.15-21>
- Mu'adzah, Tita Latifah Ahmad, A. N. K. (2020). *SYSTEMATIC LITERATURE REVIEW: IMPLEMENTASI METODE 5S PADA PERUSAHAAN MANUFAKTUR*. 1, 31–39.

- Muharni, Y., Kulsum, & Khoirunnisa, M. (2019). Warehouse Layout Designing of Slab Using Dedicated Storage and Particle Swarm Optimization. *IOP Conference Series: Materials Science and Engineering*, 532(1). <https://doi.org/10.1088/1757-899X/532/1/012003>
- Noneng Nurjanah, M. S. (2023). *USULAN PERBAIKAN TATA LETAK GUDANG KARTONAN DENGAN MENGGUNAKAN METODE DEDICATED STORAGE DI PT KIMIA FARMA TRADING & DISTRIBUTION CABANG BANDUNG*. 13(1), 12–17.
- Olivia Audrey, Wayan Sukania, & Siti Rohana Nasution. (2019). Analisis Tata Letak Gudang Dengan Menggunakan Metode Dedicare Storage. *Jurnal ASIMETRIK: Jurnal Ilmiah Rekayasa & Inovasi*, 1(1), 43–49. <https://doi.org/10.35814/asiimetrik.v1i1.221>
- Prasetyo, Y. T., & Fudhla, A. F. (2021). *Layout Improvement with Dedicated Storage Approach in Food and Beverage Product Warehouse Perbaikan Tata Letak Fasilitas Gudang Dengan Pendekatan Dedicated Storage Pada Gudang Distribusi Barang Jadi Industri Makanan Ringan Layout Improvement with Dedicare*. (June). <https://doi.org/10.24014/jti.v7i1.11283>
- Rachman, P. (2020). *IMPLEMENTASI PLAN-DO-CHECK-ACT (PDCA) BERBASIS KEY PERFORMANCE INDICATORS (KPI) : STUDI KASUS DI SMP-SMA INTEGRAL AR-ROHMAH DAU MALANG*. 04(02), 132–145.
- Rahman, D., & Kurniawati, D. (2021). Pemanfaatan Media Sosial Bagi Pengembangan Pemasaran Umkm (Studi Deskriptif Kualitatif Pada Distro Di Kabupaten Sumenep). *Wacana Equilibrium (Jurnal Pemikiran Penelitian Ekonomi)*, 9(02), 112–122. <https://doi.org/10.31102/equilibrium.9.02.112-122>
- Ridwan, M., AM, S., Ulum, B., & Muhammad, F. (2021). Pentingnya Penerapan Literature Review pada Penelitian Ilmiah. *Jurnal Masohi*, 2(1), 42. <https://doi.org/10.36339/jmas.v2i1.427>
- Rijali, A. (2018). *Analisis Data Kualitatif Ahmad Rijali UIN Antasari Banjarmasin*. 17(33), 81–95.
- Septiani, W., Divia, G. A., & Adisuwiryo, S. (2020). Warehouse Layout Designing of Cable Manufacturing Company using Dedicated Storage and Simulation Promodel. *IOP Conference Series: Materials Science and Engineering*, 847(1). <https://doi.org/10.1088/1757-899X/847/1/012054>
- Sitorus, H., & Ginting, M. (2020). *Perbaikan Tata Letak Gudang dengan Metode Dedicated Storage dan Class Based Storage serta Optimasi Alokasi Pekerjaan Material Handling di PT . Dua Kuda Indonesia*. 5(2),

87–98.

Tambunan, M. M., & Tambunan, R. (2020). Product Placement Based on Throughput at PT XYZ Warehouse.

IOP Conference Series: Materials Science and Engineering, 851(1). <https://doi.org/10.1088/1757-899X/851/1/012049>

Wahjono. (2021). *Peran Manajemen Operasional dalam Menunjang Keberlangsungan Kegiatan Perusahaan*.

Wahyuningsih, S. (2019). Pengaruh Pelatihan dalam Meningkatkan Produktivitas Kerja Karyawan. *Jurnal Warta Edisi*, 60(April), 91–96.

Rusandi & Rusli, M. (2021). Merancang Penelitian Kualitatif Dasar/Deskriptif dan Studi Kasus. *Al-Ubudiyah: Jurnal Pendidikan Dan Studi Islam*, 2(1), 1-13.

Sarosa, S. (2021). *Analisis Data Penelitian Kualitatif*. Sleman: PT Kanisius.