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Optimization of Cost and Time in Fulfilling Furniture Raw Materials Through the Utilization of Kepelan Wood Waste: A Case Study at CV Dijawa Abadi, Jepara

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Abstract

This study aims to identify the impact of using *kepelan* wood waste to optimize production costs and time at CV Dijawa Abadi. Furniture industry waste at CV Dijawa Abadi has become an increasing problem due to accumulating waste in storage areas. This situation occurs due to the lack of waste utilization and delays in waste collection by buyers at CV Dijawa Abadi. This study analyzes wood waste at CV Dijawa Abadi by identifying waste according to wood thickness. The research adopts a qualitative descriptive approach, collecting data through four months of observation, interviews, and documentation. The data is analyzed and compared with materials from vendors. The results indicate that utilizing *kepelan* wood waste can minimize furniture production costs and time. These findings serve as a reference for furniture entrepreneurs to be more creative in running their businesses by optimizing material utilization for high-quality products.

Keywords: Optimization, Kepelan Wood Waste, Cost and Time, Production

INTRODUCTION

In any business, each has its own opportunities and uniqueness, including CV Dijawa Abadi. Known by the slogan Kayulama, this name is not just a brand but represents the company's vision and mission of sustainable furniture production that prioritizes high-quality products while ensuring environmental and social responsibility with a strong team. Sustainable furniture refers to furniture made from sustainable, eco-friendly, and recyclable materials. CV Dijawa Abadi focuses on using reclaimed wood as the primary raw material for producing environmentally friendly products.

However, wood component production often generates accumulating wood waste. This occurs because only specific wood sizes required by purchase order (SPK) specifications are used, leaving the rest as waste. According to Aula & Susila (2024), wood waste in Jepara accounts for approximately 58.85% of total production, from tree felling to furniture manufacturing. This issue is commonly faced by furniture companies, including CV Dijawa Abadi.

The main problem is that kepelan wood waste is often considered unusable by the community, leading to a lack of waste management among craftsmen (Khasan, 2024). However, if managed properly, wood waste can have significant resale value and promising prospects. CV Dijawa Abadi typically sells its wood waste, generating revenue while preventing excessive accumulation. However, dependency on waste sales poses a

problem—when buyers do not purchase, the waste keeps piling up. This accumulation disrupts access to the oven area, reducing productivity.

Since October 2024, CV Dijawa Abadi has implemented kepelan wood waste utilization as a solution to waste accumulation. The process begins with sorting kepelan wood waste based on quality and size standards. The wood is then measured and categorized by thickness and length for easier future use. Non-standard waste is separated and sold, while standard waste is reused for in-house furniture production.
Besides reducing waste accumulation, this utilization aims to optimize furniture production costs and time. The procurement process at CV Dijawa Abadi typically takes one week to one month. The procurement of wooden blocks requires quality control checks and preparation, leading to long wait times. Similarly, component purchases from vendors take approximately one week to one month. Thus, utilizing wood waste optimizes the procurement time for furniture components. Additionally, it reduces raw material costs, as purchasing a single wooden block can cost up to IDR 12,500,000 for lengths above 300 cm. The introduction needs to relate to the problems or issues being recognized and eventually lead the research questions. The structure of the introduction may vary.

During the internship and research period at CV Dijawa Abadi, the following problems were formulated:

1. Does using kepelan wood waste impact costs at CV Dijawa Abadi?
2. How does using wood waste optimize furniture production costs at CV Dijawa Abadi?

Operations and Production Management

According to Rahmawati & Scholastika (2023), operations and production management is a continuous and effective process that integrates various resources efficiently using all management functions. Three interrelated aspects of operations management include:

- Structural Aspect: The configuration of components that build the operations management system and their interactions.
- Functional Aspect: Directly related to management and organization, including planning, implementation, control, and improvement to achieve optimal performance.
- Environmental Aspect: Highlights the importance of considering external developments and trends affecting the operations management system.

Optimization of Production Costs and Time

Optimization aims to maximize production efficiency by making the most of limited resources (Indhasari & Ramli, 2024). Devani & Fitri (2024) define optimization as improving efficiency by applying the most effective methods to achieve maximum output with minimal costs.
This section discusses the results and conclusions of previously published studies, to help explain why the current study is of scientific interest. (Cambria, 12-point, 1.0 Spacing).

This section is also used to limit the scope of the relevant data by focusing on specific variables and defining the specific viewpoint (framework) that the researcher will take in analyzing and interpreting the data to be gathered, understanding concepts and variables according to the given definitions, and building knowledge by validating or challenging theoretical assumptions. (Cambria, 12-point, 1.0 Spacing).

RESEARCH METHODOLOGY

This research was conducted at CV Dijawa Abadi Batealit Jepara using a qualitative descriptive method with a case study approach. Data was collected through four months of participatory observation, interviews, and documentation. The analysis compares total inventory costs between the company's reordering concept and the use of kepelan wood waste.

OPERATIONAL CONCEPT TABLE

Concept	Element	Description
Raw Material Inventory from Vendor	Raw Material Needs Data	The raw materials required for production
	Ordering Cost Data	Costs incurred for placing orders
	Purchase Frequency	Number of purchases ensuring minimal cost or most economical quantity
Raw Material Inventory from Kepelan Wood Waste	Cost Minimization	Reducing inventory costs by utilizing kepelan wood waste

RESULTS

COMPARISON OF RAW MATERIAL INVENTORY COSTS

Concept	Element	Description
Raw Material Inventory from Vendor	Raw Material Needs Data	The raw materials required for production
	Order Cost Data	Costs incurred for ordering
	Purchase Frequency	The frequency of purchases ensuring minimal cost or most economical quantity
Raw Material Inventory from Kepelan Wood Waste	Cost Minimization	Reducing inventory costs by utilizing kepelan wood waste

OPTIMIZATION OF WOOD PROCUREMENT COSTS AND TIME

Wood Component	Quantity	Vendor Procure	Vendor Cost (IDR)	Waste Utilization Time	Waste Utilization Cost (IDR)

		ment Time			
Rear Leg	2	1-4 weeks	38,640	1-3 days	50,000 per day (labor cost)
Front Leg	2		18,900		
Backrest	1		12,642		
Side Backrest	2		25,284		
Back Support	3		28,140		
Seat Slats	5		38,640		
Side Supports	4		7,768		
Front Support	1		12,642		
Total	20	**1-4 weeks**	**182,656**	**1-3 days**	**50,000 - 150,000**

DISCUSSION

This study addresses efficiency issues in the furniture industry, particularly in the utilization of Kepelan wood waste as an alternative raw material at CV. Dijawa Abadi. In the context of sustainability and production efficiency, this study provides significant contributions in understanding how cost and time optimization can be achieved through innovative approaches to wood waste management.

Utilization of Wood Waste and Production Efficiency

One of the major issues in the furniture industry is the large amount of wood waste that is not properly utilized. As revealed in this study, CV. Dijawa Abadi faces the problem of accumulating waste, which has the potential to hinder productivity and increase workplace safety risks. By implementing a strategy to reuse Kepelan wood waste, the company can reduce its dependence on raw material suppliers and shorten the lead time for procuring product components.

Data presented in the study indicate that utilizing Kepelan wood waste significantly reduces company expenses. For instance, before utilizing waste, the cost of raw material fulfillment for a single product reached IDR 182,656 with a fulfillment time of 1-4 weeks. After implementing waste utilization, the cost was reduced to approximately IDR 50,000 to IDR 150,000 with a significantly shorter fulfillment time of 1-3 days.

Impact on the Sustainability of the Furniture Industry

This study also provides a broader perspective on the sustainability of the furniture industry. The utilization of wood waste not only contributes to cost savings but also promotes environmental preservation efforts. Wood waste that was previously considered non-economical can be reprocessed into useful raw materials, reducing the need for resource exploitation and minimizing industrial waste volume.

This approach aligns with the concept of a *circular economy*, where materials that are no longer in use are repurposed to reduce their negative impact on the environment. Additionally, the utilization of wood waste opens new opportunities for innovative product designs and environmentally friendly marketing strategies.

Challenges and Recommendations

Although the study highlights significant benefits, several challenges need to be addressed in implementing this strategy, including:

1. **Standardization and Material Quality**: Wood waste must be properly sorted and processed to meet the quality standards required for furniture production.
2. **Investment in Technology and Human Resources**: Specialized equipment and trained personnel are needed to manage and process wood waste efficiently.
3. **Production Capacity**: The utilization of wood waste may have limitations in meeting larger production scales if not managed properly.

To overcome these challenges, the following recommendations can be made:

- Developing a more systematic wood waste management system to enhance efficiency.
- Providing training for workers in wood waste utilization and processing techniques.
- Integrating advanced technology in the production process to improve efficiency and product quality.

CONCLUSION

This study demonstrates that the utilization of Kepelan wood waste can be an effective solution for optimizing production costs and time in the furniture industry. In addition to economic benefits, this strategy also contributes to environmental sustainability efforts. Therefore, this approach should be widely adopted in the furniture industry as part of a strategy for efficiency and sustainable business innovation.

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