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Production Planning in Custom Furniture: A Case Study of Sabar Furniture Without Interior Designer Involvement

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Abstract — *The home industry, particularly the furniture sector, is experiencing rapid growth in Indonesia, in line with increasing consumer interest in unique and personalized customization products. However, this industry continues to face significant challenges, including a lack of collaboration with interior designers and technical limitations in meeting consumer requirements. This study aims to analyze the production planning process at Sabar Furniture, a furniture industry specializing in custom furniture, particularly for products produced without the involvement of interior designers, to identify the challenges and strategies employed to address them. This research employs qualitative methods and case studies to explore production planning challenges at Sabar Furniture. The results show that production planning at Sabar Furniture is conducted in a structured manner and is capable of implementing adaptive, order-based (made-to-order) production planning. However, in terms of function and aesthetics, the product will be more optimal if the production process involves collaboration between artisans and interior designers. This study offers insights into the importance of collaboration between artisans and designers in the household furniture industry, aiming to enhance product quality, achieve customer satisfaction, and address the rapid development challenges in the furniture sector.*
Keywords: *furniture industry, production planning, interior designers, customization*

Abstrak — Industri rumah tangga, khususnya sektor furnitur, mengalami pertumbuhan yang pesat di Indonesia, yang sejalan dengan meningkatnya minat konsumen terhadap produk kustomisasi yang unik dan personal. Namun, industri ini terus menghadapi tantangan yang signifikan, termasuk kurangnya kolaborasi dengan desainer interior dan keterbatasan teknis dalam memenuhi persyaratan konsumen. Penelitian ini bertujuan untuk menganalisis proses perencanaan produksi pada industri furnitur Sabar Furnitur yang bergerak di bidang furnitur kustom, khususnya pada produk yang diproduksi tanpa keterlibatan desainer interior, guna mengidentifikasi tantangan tersebut dan strategi yang digunakan untuk mengatasinya. Penelitian ini menggunakan metode kualitatif dan studi kasus untuk mengeksplorasi tantangan perencanaan produksi pada Sabar Furnitur. Hasil penelitian menunjukkan bahwa perencanaan produksi di Sabar Furnitur berlangsung secara terstruktur, dan mampu mengimplementasikan perencanaan produksi yang adaptif berbasis pesanan (*made to order*). Namun, dari segi fungsi dan estetika, produk akan lebih optimal jika proses produksi melibatkan kolaborasi antara pengrajin dan desainer interior. Penelitian ini memberikan wawasan tentang pentingnya kolaborasi antara pengrajin dan desainer dalam industri furnitur rumah tangga agar kualitas produk meningkat, kepuasan konsumen dapat tercapai, serta mampu menghadapi tantangan perkembangan pesat dalam sektor furnitur.
Kata Kunci: industri furnitur, perencanaan produksi, desainer interior, kustomisasi

INTRODUCTION

The home industry has experienced significant growth in recent years, primarily fueled by rising consumer interest in unique, handmade, and personalized products. Items produced by home industries are often perceived as more exclusive and valuable compared to mass-produced goods, making them increasingly attractive to consumers. In Indonesia, one of the fastest-growing subsectors within the home industry is furniture manufacturing.

Demand for furniture continues to rise as lifestyles evolve and people seek pieces that are not only functional but also aesthetically pleasing and ergonomically designed (Putra et al., 2019).

The Indonesian furniture industry plays a crucial role in satisfying both domestic and international market demands. Renowned for their exceptional quality and distinctive, innovative designs, Indonesian furniture and handicrafts enjoy a strong reputation worldwide. Within the country, small and medium enterprises (SMEs) in the furniture sector have thrived, especially in regions with long-standing traditions of craftsmanship such as Jepara, Solo, and Yogyakarta. Once considered a secondary necessity, furniture has now become an essential element of home decor, meeting both aesthetic and functional requirements.

The furniture industry is increasingly moving toward customization and personalization as consumer involvement in the production process grows. Wu et al. stated that manufacturing patterns across various industries, including furniture, are shifting more towards personalization, which demands more adaptive and responsive production planning systems to meet consumer needs (Wu et al., 2023). However, many home furniture businesses face challenges in meeting the increasingly complex demands of consumers, particularly in terms of customized products. Key challenges include limited production planning and limited access to professional interior designers. These limitations are often driven by factors such as higher costs for professional designers, a shortage of qualified designers in certain regions, and the lack of established partnerships between furniture manufacturers and design professionals. Consequently, product development tends to rely solely on artisan skills, which can limit functional innovation and the aesthetic quality of the final product. Similar challenges are noted by Kineber, who highlights that limited access to relevant expertise and resources in local markets, including the high cost of design services and a scarcity of skilled professionals, pose significant barriers to improving design quality and innovation, particularly in developing country contexts (Kineber et al., 2023). Effective production planning entails calculating raw materials, production capacity, and the production schedule, including the manufacturing process (Sirojudin, 2023). In the furniture industry, collaboration between craftsmen or furniture makers and interior designers is crucial to create products that meet consumer expectations, encompassing both aesthetics, ergonomics, and functionality.

One example of a thriving home furniture industry in Indonesia is Sabar Furniture, a business owned by Mr. Sabar in Jebres. The company has been in operation for 15 years and employs a staff of seven. Sabar Furniture specializes in custom furniture, where products are made to order, ranging from tables and chairs to cabinets, shelves, and kitchen sets. The owner has relied on a network of colleagues, relatives, and interior designers to secure orders. The interior designer's role in this collaboration is crucial, as they help translate the customer's ideas into designs that the furniture maker can produce.

However, Sabar Furniture often faces challenges in realizing products according to customer desires when there is no clear design from the designer. A limited understanding of interior design among furniture makers usually results in products that are suboptimal in terms of functionality, design, and innovation. Furthermore, the limited resources available for recruiting designers remain a significant obstacle in the production planning process. This highlights the importance of better collaboration between furniture makers and interior designers to produce higher-quality products that meet customer needs. Suntrayuth emphasizes that collaboration in community-based product design and development can strengthen identity, enhance competitiveness, and expand global market acceptance (Suntrayuth, 2017).

Given this context, the present study analyzes the production planning process at Sabar Furniture, with a focus on products manufactured without the involvement of an interior designer. The study's contribution is the examination of production planning in the absence of professional design collaboration, offering insights into how furniture craftsmen independently organize and implement production within the expanding custom furniture sector.

RESEARCH METHOD

Study Location

This research involved a source, namely Mr. Sabar, a carpenter craftsman and owner of Sabar Furniture, a home furniture industry business. The small and medium-sized business, Sabar Furniture, is located on Jalan Bimasakti Jebres, Surakarta City, Central Java. Sabar Furniture is a business that specializes in customizing furniture, including tables, chairs, cabinets, kitchen sets, and interior sets, tailored to meet the desires of its consumers. This business has been operating for 15 years, which is one of the reasons for selecting the research location to analyze further how Sabar Furniture's production planning process is carried out.

The interviewees were selected using purposive sampling because they were considered to have direct experience and knowledge of the production planning process. With extensive experience in the industry, Sabar Furniture has successfully addressed various challenges, including meeting customer demand and improving production efficiency. This experience provides a strong foundation for understanding planning methods, resource management, and production strategies applied when

the production planning process is conducted without the involvement of interior designers.

Data Analysis

The collected data will be analyzed using thematic analysis. Thematic analysis is a method used to identify, analyze, and report patterns or themes in qualitative data (Braun & Clarke, 2006).This analysis allows researchers to identify and group key ideas emerging from the data related to production planning, challenges, and adaptation strategies implemented by Sabar Furniture. The stages of thematic analysis, according to Braun & Clark (2006), are as follows:

1. Data Familiarization
   At this stage, the researcher repeatedly reviews the data to gain a comprehensive understanding of the content from interviews, observations, and documentation.
2. Generating Initial Codes
   The researcher develops initial codes from the data, which are simple labels or categories representing themes or meanings within the data.
3. Searching for Themes
   After creating the initial codes, the researcher groups these codes into broader and more relevant themes.
4. Reviewing Themes
   The researcher reviews and examines the identified themes to ensure consistency and alignment with the data.
5. Defining and Naming Themes
   Each theme is assigned a clear name and definition to represent its core meaning.
6. Producing the Report
   The final stage of thematic analysis involves writing up the results, which describe the main themes and provide interpretations of the research findings.

By employing thematic analysis, this study aims to identify and understand patterns in the production process at Sabar Furniture, particularly those related to the absence of an interior designer and the ways they adapt to meet consumer demands (Braun & Clarke, 2006).

RESEARCH FINDINGS AND ANALYSIS

According to Ningtyas, the planning stage involves supporting the production of the product, conducting market analysis, planning capacity, and allocating the required resources (Ningtyas, 2023). This stage involves production planning, which includes estimating market demand, determining production capacity, and scheduling production. This research found that Sabar Furniture is capable of developing an adaptive production planning process even without collaboration with professional interior designers. The findings highlight several key themes: (1) strict scheduling and time management to ensure on-time completion of custom products, (2) task division based on workers' expertise to optimize human resources, (3) effective utilization of basic equipment and machinery to maintain efficiency, (4) challenges in managing material inventory and limited access to professional design support, and (5) continuous monitoring and evaluation through quality control and customer feedback.

Data analysis in this study was conducted in six stages, in accordance with the thematic analysis by Braun and Clarke (2006), as follows:

A. Data Familiarization

Data collection for this study was obtained through in-depth interviews with the owner of Sabar Furniture, direct observations in the workshop, and photo documentation. Initial results indicate that Sabar Furniture implements a made-to-order production system, employs a skills-based division of labor, uses basic equipment, and does not always involve interior designers in the product design process.

The interviews with the owner of Sabar Furniture revealed the following key findings in Table 1:

Table 1. Interview Results at Sabar Furniture

Theme	Main Findings
History of the business	Established since 2009, with experience gained from working with others.
Production System	Made-to-order, custom according to request.
Labor Force	3–7 people, with task distribution based on expertise (carpenter, welder, finishing, painting).
Equipment	Basic equipment helps the process, but there are limitations for special tasks (e.g., a curve saw is not available).
Design Collaboration	Sometimes working with a designer, but if without a designer, only relying on simple sketches.
Obstacles	The workshop is inadequate, with limited materials and no workers present.
Adaptation Strategy	Flexibility in worker roles and work arrangements for craftsmen to keep production running.
Quality Control	Daily monitoring by the owner, progress reports to the customer, and revisions as requested.

Based on the table above, the interview results show that Sabar Furniture, established in 2009, operates a made-to-order system supported by 3–7 workers whose tasks are divided based on their expertise. Production mainly relies on basic equipment, with limitations for specialized tasks. In the absence of professional designers, product development depends on simple sketches, which often limit design quality. Key obstacles include limited workshop facilities, material shortages, and worker absenteeism. To adapt, the business uses flexible work arrangements and maintains quality control through daily monitoring by the owner, progress reports, and revisions based on customer feedback.

B. Initial Coding

The initial code that appears from the interview data includes:

1. Tight scheduling,
2. Worker role rotation,
3. Task distribution according to expertise,
4. Limited specialized equipment,
5. Made-to-order production,
6. Difficulty obtaining certain materials,
7. Technical limitations and understanding of the design,
8. Limited workshop space,
9. Prices according to production specifications,
10. Cost efficiency,
11. Production supervision by the owner,
12. Post-production evaluation.

C. Theme Exploration

The data from the initial code creation that appeared was then analyzed using thematic analysis, where the researcher attempted to group the initial codes from the interview data into major themes. This analysis allows the researcher to identify and categorize the main themes that emerge from the data related to the production planning process implemented by Sabar Furniture.

Based on the initial code that has been created, ten main themes in the production planning process at Sabar Furniture have been identified and are listed in Table 2, including:

Table 2. Ten Major Themes in the Production Planning Process of Sabar Furniture

Major Theme	Main Findings
Time and Production Scheduling	Scheduling is conducted strictly to minimize delays; if workforce issues arise, role rotation or overtime is implemented as necessary.
Labor and Human Resource Management	Consists of 3–7 people; task division according to expertise (carpenter, welder, finishing, painting, sanding).
Equipment and Machinery	Using a saw, drill, planer, and sander, as well as specialized equipment like a curve saw.
Production Method	Made-to-order production system according to customer requests; design adjustments based on customer needs.
Production Constraints and Problem Solving	Limited workshop space, difficulty obtaining certain materials, and the absence of workers; solutions include task flexibility and overtime, as well as challenges in recruiting designers.
Ability and Adaptation	Material selection is tailored to the customer's budget, and quality is closely monitored at every stage of production.
Material and Product Quality	Material selection is tailored to the customer's budget, and quality is closely monitored at every stage of production.
Price and Cost Efficiency	The price is adjusted according to the customer's specifications, and efficiency is achieved through the optimal use of materials and working time.
Production Monitoring	The owner monitors the process daily and provides progress reports to the customer.
Evaluation	The evaluation is conducted after production to facilitate process improvement and quality enhancement for future use.

As shown in the table above, the ten major themes in Sabar Furniture's production planning process are Time and Production Scheduling, Labor and Human Resource Management, Equipment and Machinery, Production Method, Production Constraints and Problem Solving, Ability and Adaptation, Material and Product Quality, Price and Cost Efficiency, Production Monitoring, and Evaluation.

D. Review of the Theme

After the main themes are identified through the coding grouping process, the next step is to review to ensure that each theme has adequate support from the field data. The following is an analysis of the production process planning at Sabar Furniture for each major theme that the researcher found, linked to theories or concrete examples from the supporting data related to the identified themes:

1. Time and Production Scheduling

A production plan essentially determines how a product will be manufactured, including the quantity and production capacity, the raw materials required, distribution scheduling, and other related aspects. (Sirojudin, 2023).

Based on the interview results, Sabar Furniture has regular working hours (8:00 AM - 4:00 PM WIB) and overtime depending on the number of orders to be produced. This shows an effort to overcome time limitations to ensure customer demands are met on time. The company also sets targets for product manufacturing, such as cabinets that require one week to complete, while interior sets like bedrooms take 3-4 weeks to finish. However, the company faces some challenges related to material availability and the lack of formal employment agreements with workers, which can hinder the production process when workers are absent.

The production scheduling established at Sabar Furniture indicates that Sabar Furniture has effectively implemented the production planning and execution mechanism, as it aligns with the Theory of Production and Operations Management. The importance of production scheduling in a company lies in determining the time required to produce and complete a product, ensuring there are no delays in production, and adjusting it to meet the company's targets. Sabar Furniture is capable of projecting or forecasting the level of consumer demand and knowing how many products need to be produced within a specific period. Sirojudin explained that there are three mechanisms for implementing production planning, namely routing, scheduling, and the operationalization process of production (dispatching) (Sirojudin, 2023). In this case, it demonstrates that Sabar Furniture has implemented one of the production planning execution mechanisms, specifically scheduling, and has performed the production planning function of projecting consumer demand. This aligns with the findings in Lu et al., which emphasize that production planning and scheduling are crucial factors in improving efficiency, reducing costs, and ensuring on-time product completion, especially in a customization-based production environment (Lu et al., 2025).

2. Labor and Human Resource Management

Sabar Furniture divides tasks based on workers' expertise, with some individuals possessing special skills in finishing, painting, and carpentry. This division is implemented to meet the company's production needs. To face the intense competition now and in the future, it is essential to have adequate human resources (HR) to manage change effectively and efficiently (Marjuki, 2023). The management of human resources aims to ensure that production planning runs smoothly and effectively. Additionally, this strategy can optimize workers' skills at each stage of production, thereby increasing operational efficiency.

In situations of labor shortages or sudden absences, Sabar Furniture employs a work rotation system that enables experienced workers to perform multiple tasks, ensuring production continuity even when some workers are absent.

Sabar Furniture successfully maximized workforce productivity through a simple yet effective HR management strategy, such as basic training, task flexibility, and incentive arrangements. With this approach, the company can overcome common HR challenges faced by SMEs. Implementing cross-functional training is a valuable step in maintaining quality and productivity.

3. Equipment and Machinery

Sabar Furniture has basic equipment, including a power saw, drill, planer, and sander. Below is the documentation data of the equipment and machines owned by Sabar Furniture:

Table 3. Equipment and Machinery owned by Sabar Furniture

Pictures	Name of Tools and Machines
	Saw machine for cutting plywood.
	Profile machine for smoothing HPL edges.

	Nail gun.
	Compressor machine.
	A saw machine is used to cut wood precisely.
	Grinding machine for smoothing surfaces.
	Cutting machine for cutting and trimming 90-degree corners.
	Battery drill.

As shown in Table 3, this equipment enables the essential basic production process for woodworking and furniture making. Using the right equipment can improve efficiency and product quality, while also reducing production time.

Due to equipment limitations, some production processes require adaptation. For example, in furniture making that requires special cuts, such as curved shapes, the Sabar Furniture team uses a handsaw as an alternative when more specific tools are unavailable. Equipment limitations are often overcome through creativity in utilizing available tools, although this solution can compromise efficiency.

Equipment and machinery management at Sabar Furniture demonstrates good adaptation to resource limitations. Although limited, strategies such as the efficient use of tools allow Sabar Furniture to maintain productivity and product quality. However, gradual investment in more advanced equipment is still recommended to achieve higher efficiency in the future.

4. Production Method

Sabar Furniture employs a customer demand-based production method, where each product is manufactured upon receipt of a customer order, tailored to the customer's specifications and preferences. This demand-driven method (flow method) is a planning approach driven by customer demand, which can be seen from the continuous flow of units that persistently move through the distribution and production channels. (Sirojudin, 2023).

This approach demonstrates their adaptation to the growing trend of custom furniture in the market. This flexibility allows them to meet the unique and diverse needs of consumers, from furniture size and materials used to types of finishes.

Based on the analysis above, the type of production planning at Sabar Furniture, using the demand (flow method), is a planning method driven by consumer demand, as evident from the continuous flow of units that occurs sustainably along the distribution and production channels (Sirojudin, 2023).

5. Production Constraints and Problem Solving

Production obstacles frequently faced by Sabar Furniture include limited workshop facilities, a shortage of workers, and inconsistent material availability. These issues can disrupt the smooth flow of production and delay completion times, ultimately leading to decreased customer satisfaction.

a. Workshop Facility Limitations

Sabar Furniture is experiencing space limitations in its workshop, which restricts production capacity and equipment arrangement.

Figure 1. Sabar Furniture Workshop Room
Source: Personal Documentation

Figure 1 shows that the Sabar Furniture workshop space is limited due to its small size, resulting in storage arrangements for raw materials, equipment, and products that do not meet the required quality and quantity of production. There is a need to prepare a production and operation system, as well as to operate this system, including determining the factory layout and material handling. The goal is to design a physical facility layout that meets the required quality and quantity of production in the most economical manner (Hasibuan, 2023). Therefore, Sabar Furniture needs to reorganize its production facilities to achieve optimal production and improve workers' mobility efficiency.

b. Absence of Workforce

Worker absences, which may be caused by health conditions or personal issues, disrupt the production flow due to the specific division of tasks at each stage of work. If one worker is absent, it affects the production system and causes deviations from the initial plan. The occurrence of discrepancies between planned production and actual output necessitates control functions that utilize control mechanisms to correct the situation and ensure that actual conditions align with the desired production. (Sanni, 2023). Therefore, there is a need for optimal workforce management to ensure that production runs on schedule, reduces downtime, and minimizes delays.

c. Material Availability

Sabar Furniture frequently encounters challenges with the availability of raw materials, resulting in delays in the production process. Ineffective inventory management causes long waiting times when materials run out, disrupting the continuity of production. According to Sirojudin, one of the functions of production planning is to control inventory, as it is part of the production planning strategy, where inventory should be managed well in terms of company inventory management, product turnover, storage, and warehousing, as well as reordering (Sirojudin, 2023). Efficient inventory control can help minimize sudden shortages of raw materials. An suboptimal inventory system often poses risks of production delays and material waste. This aligns with findings from a case study of a furniture company, which showed that implementing an inventory management system can significantly improve production flow efficiency and reduce material distribution errors (Adeel et al., 2012). Design adaptation strategies in the furniture industry have become an important aspect for maintaining sustainable production and efficient material use. Puspita et al. emphasize that the furniture industry in Central Java faces challenges related to limited raw materials, thus requiring a sustainable design approach through the utilization of alternative materials, design modularization, and the application of production efficiency principles (Puspita et al., 2016).

d. Challenges in Recruiting Interior Designers

For 15 years, operating as a home-based SME in the furniture industry, Sabar Furniture has never hired an interior designer. One of the main reasons Sabar Furniture does not hire an interior designer is budget constraints. Hiring an interior designer adds significant fixed costs to the operational budget, which may be difficult for SMEs like Sabar Furniture to bear.

So far, upcoming interior designers have gone directly to Sabar Furniture to collaborate on interior production. Sabar Furniture often receives custom requests from customers, which ideally require the contribution of designers to understand unique specifications and details. When designers are unavailable, the owners and staff must handle the design independently, which can reduce efficiency and quality if not managed by professionals in the field. The resulting designs may be less aligned with customer preferences due to technical limitations and a lack of understanding of more complex interior design. Without interior designers, the burden of design and customer request adjustments falls entirely on the owners and staff. This can limit innovation and result in less competitive products, especially when customers seek more professional and aesthetically pleasing design elements. Although Sabar Furniture is able to meet customer demands through a made-to-order approach, limited access to interior design has resulted in the product's function and aesthetics not being optimal. Gasparin emphasizes that involving designers in the development of new products can provide significant added value, both through improved functionality, aesthetics, and company profitability by delivering a superior product value (Gasparin, 2018).

Obstacles in recruiting interior designers can be overcome through a more flexible approach, such as collaborating with freelancers or design consultants. In this way, Sabar Furniture can continue to meet the custom needs of clients while maintaining budget and production efficiency. This solution allows small companies like Sabar Furniture to remain competitive by offering designs that meet demand without the high costs associated with hiring full-time designers. Temeltaş emphasizes that collaboration

enables the transfer of artisans' tacit knowledge into new design innovations (Temeltaş, 2017).

6. Ability and Adaptation

Sabar Furniture faces limitations in understanding complex interior designs, but still manages to adapt by translating the customer's wishes based on reference examples or simple sketches created by the owner. Although it does not meet professional working drawing standards, this ability demonstrates technical flexibility in bridging design communication with clients. Here is one example of Mr. Sabar's simple sketch for a customer:

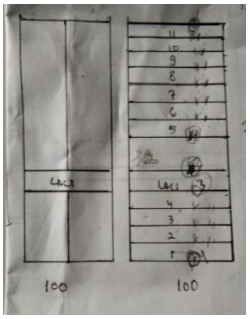

Figure 2. Example of a Simple Sketch Used by Sabar Furniture
Source: Personal Documentation

Figure 2 shows that the provided design images look very basic, the image descriptions are incomplete, and they do not meet the standard requirements for working drawings. According to Ningtyas, the product design should be documented with functional drawings (complete drawings and component information), clear standards and technical specifications, and a bill of materials indicating the quantity of each component required for the product (Ningtyas, 2023). However, this ability reflects technical adaptation skills, as they strive to provide visual images to consumers even with limited design references and without the involvement of an interior designer. Although the design documentation does not meet professional working drawing standards, this ability reflects a form of tacit knowledge, which is implicit knowledge gained from years of experience in the furniture industry. This aligns with Suntrayuth's explanation that the tacit knowledge of local artisans plays an important role in the product creation process, even though it is difficult to document formally (Suntrayuth, 2017). According to him, tacit knowledge enables artisans to develop technical and aesthetic skills that can serve as a foundation for productive collaboration with designers. In the context of Sabar Furniture, technical skills such as operating basic machines (circular saw, drill, planer, and sander), as well as intuition in translating customer needs, demonstrate how tacit knowledge functions as a primary asset in addressing the limitations of professional design.

7. Material and Product Quality

Based on the interview results, Sabar Furniture offers a variety of selected materials for the furniture customization production process, ranging from primary materials to finishing materials and hardware materials with different qualities and prices. This aims to accommodate customer needs.

Sabar Furniture uses primary materials such as plywood, blockboard, green MDF, and laminated plywood. Figure 3 shows that each of these materials has characteristics tailored to customer needs and budget.

Figure 3. Plywood material owned by Sabar Furniture
Source: Personal Documentation

For finishing, Sabar Furniture uses Fox Prima-D glue, with several lamination options including HPL, duco paint, melamine, and Mowilex. The brands of paint used are Nippon Paints and Top Color. The choice of finish is adjusted according to customer requests and the material's characteristics. For example, Duco paint provides a smooth and elegant finish, while melamine is more resistant to scratches and moisture, making it ideal for frequently used furniture. The Duco paint results for furniture are shown in Figure 4:

Figure 4. Example of Duco Paint Finishing Results
Source: Personal Documentation

Figure 5. Glue and Paint used by Sabar Furniture
Source: Personal Documentation

Figure 5 shows that the paint used by Sabar Furniture is used to smooth the edges of furniture that

need finishing to prevent sharpness. The first process involves applying putty and sanding it, then the putty is painted to match the color of the HPL used. To ensure the color of the HPL is consistent, Sabar Furniture often customizes the paint color to match.

Figure 6. Example of HPL Furniture Finishing Scratch Test Results
Source: Personal Documentation

Figure 6 shows the results of finishing the scratch that was used to smooth the edges of the furniture. This process is part of the production monitoring at Sabar Furniture.

Then, the HPL material brands used are TACO, AICA, and ECO. Sabar Furniture offers several catalogs of HPL brands, allowing customers to select the HPL samples they prefer directly. The example of the HPL Catalog owned by Sabar Furniture can be seen in Figure 7, and each of these brands offers different quality and prices, among others:

a. TACO: Taco is the most well-known HPL brand in Indonesia. It offers quality at an affordable price.
b. AICA: More expensive, but provides better quality for products that prioritize aesthetics and durability.
c. ECO: Cheap material that easily breaks, ideal for products with a limited budget.

Figure 7. Example of the Taco and Eco HPL Catalog owned by Sabar Furniture
Source: Personal Documentation

Not only do the primary materials and finishing materials used for Sabar Furniture products offer a variety of brand options, but also the hardware materials (handles, hinges, drawer slides, etc.) used for these products. These options include TACO, Huben, Hafele, and Blum. Some of these brands offer a range of quality and prices, from standard to the most expensive, with top-tier quality.

Figure 8. Example of Hinge used by the Taco Brand
Source: Personal Documentation

Figure 8 shows that Sabar Furniture uses the Taco brand. Taco is a well-known brand, frequently used in the home furniture industry.The selection of base materials at Sabar Furniture reflects an adaptation to consumer preferences and budgets, with primary materials such as plywood, blockboard, MDF, melamine, and HPL used according to the specific needs of each project. This choice is part of Sabar Furniture's material management efforts, which is a key aspect of management functions related primarily to the procurement, control, and utilization of materials needed for production, as well as the distribution routes for goods and services associated with the production process, all of which have predetermined objectives (Hasibuan, 2023). Sabar Furniture plays an important role in ensuring that every component of the product meets the expected quality and durability standards of consumers.

According to the theory in Production and Operations Management, the selection of materials and quality control processes is an important aspects that help optimize the production process and maintain cost efficiency, especially in meeting customer needs. By choosing materials based on a mutually agreed budget, Sabar Furniture applies the principle of Value Engineering, which aims to produce products that meet specifications at the minimum cost without compromising quality.

Sabar Furniture demonstrates a good understanding of selecting materials according to the type of product and customer needs, which contributes to a high-quality final result. The use of plywood and MDF for strength, along with customized finishes such as duco paint and melamine, reflects Sabar Furniture's commitment to product quality. Their efforts to maintain consistent quality and adapt to customer needs show that they strive to meet high-quality standards.

8. Price and Cost Efficiency

The cost prices and efficiency at Sabar Furniture demonstrate the effective use of strategies in cost control and material selection, aligned with production management principles, to achieve cost efficiency without compromising product quality.

Sabar Furniture selects a range of materials, including plywood, blockboard, MDF, and HPL, in accordance with budget agreements made with customers. This step shows the application of value engineering, aimed at balancing cost and quality to meet consumer preferences.

The selection of finishing methods, such as Duco paint and melamine, is also adjusted according to the budget and customer requests, allowing for efficiency in material usage and production time. This step demonstrates the application of cost management, where each process is considered in terms of costs and benefits to ensure that expenses remain controlled and the final product meets customer expectations. This explains the control in Sabar Furniture's cost management. Monitoring and process adjustments are carried out to ensure that the desired results are achieved, as planning and control are very important for the business to operate efficiently (Rachmat, 2023). Such control is crucial for maintaining competitiveness by offering high-quality products at competitive prices.

In addition, to address the challenge of material procurement delays, Sabar Furniture implements a Just-In-Time (JIT) strategy. JIT is described as an approach aimed at minimizing material stock, reducing storage costs, and increasing production efficiency by manufacturing goods only when needed (Krajewski et al., 2020). This JIT principle helps Sabar Furniture maintain healthy cash flow by avoiding unnecessary inventory accumulation. An effort is made to reduce waste and optimize the production process.

9. Production Monitoring

The production monitoring carried out by Sabar Furniture involves a series of processes designed to ensure that production runs in accordance with the expected quality and efficiency standards. This monitoring process is important in ensuring that the products produced meet consumer needs and stay within the predetermined budget. Here are some key aspects of the production monitoring implemented by Sabar Furniture:

Table 4. Production Monitoring Table implemented by Sabar Furniture

Monitoring Aspect	**Practice at Sabar Furniture**	**Related Theory / References**
Raw Material Quality Control	Checking materials (multiplex, MDF, blockboard, HPL) before use to ensure they meet customer specifications.	Principles of production management: quality control is important to prevent defects (Ningtyas, 2023)
Scheduling & Production Time	Closely monitoring the production schedule to prevent delays and maintain time efficiency.	The Just-In-Time (JIT) principle is employed to minimize waiting time and ensure a continuous production flow.
Finishing Process	Conducting a finishing inspection to ensure the product's aesthetic appearance and durability meet expectations.	Product quality is directly related to customer satisfaction (Fauzan, 2023).
Error Correction	Identify problems in the process and make improvements to prevent defects or material waste.	Implementation of service quality – reliability, which involves providing an accurate and dependable service (Fauzan, 2023).
Reporting & Documentation	Recording the production process as a means of evaluation, as well as a communication tool with customers.	Responsiveness, assurance, empathy in service quality → speed, trust, caring (Fauzan, 2023).

As shown in Table 4, each aspect of monitoring conducted by Sabar Furniture is relevant to production and quality management theories. Raw material supervision aligns with the principles of quality control (Ningtyas, 2023). Meanwhile, schedule monitoring supports the Just-In-Time principle in maintaining production punctuality. The finishing process is closely monitored to ensure product aesthetics and increase customer satisfaction (Fauzan, 2023). The corrective steps taken illustrate the application of the reliability principle, while reporting and documentation are integral to service quality, which emphasizes responsiveness, assurance, and empathy (Fauzan, 2023). With this strategy, Sabar Furniture can maintain consistent production while also enhancing the quality of service to customers.

10. Evaluation

The production evaluation conducted by Sabar Furniture aims to ensure that each stage of production operates according to established standards and meets customer needs. Here are some important aspects of the evaluation carried out by Sabar Furniture:

a. Product Quality Evaluation

Sabar Furniture conducts a comprehensive product quality evaluation, especially on the materials used and the final finish. This evaluation enables the company to ensure that its products meet the specifications and quality that customers desire. During the quality assessment, the company inspects several stages of production to detect defects or discrepancies early, allowing corrections to be made before the products reach consumers.

According to the Total Quality Management (TQM) theory in production management literature, quality must be monitored at every stage of production, which is a standard of quality management. Sabar Furniture strives to provide better service and prevent the same mistakes from happening in the future. This evaluation also allows the company to achieve higher customer satisfaction by producing quality products.

b. Time and Production Efficiency Evaluation

In addition to quality, Sabar Furniture evaluates the time spent at each stage of production to ensure efficiency. The company monitors whether each part of the production process is on schedule or experiencing delays. This evaluation helps Sabar Furniture identify potential bottlenecks that could slow down production and increase costs.

The importance of production scheduling in a company is to determine how long a product takes to be made and completed, ensuring there are no delays in production and aligning with the company's targets (Sirojudin, 2023). Scheduling and time evaluation are crucial for maintaining an effective and efficient production flow, as well as for avoiding delays that could negatively impact customer satisfaction and operational costs.

c. Customer Feedback

Customer feedback is a crucial evaluation component used by Sabar Furniture to gauge how well its products meet market expectations. By monitoring consumer responses to finished products, the company can identify areas that need improvement and understand consumer preferences that may influence future product design or quality.

According to the principle of continuous improvement in production management, listening to customer feedback is an important step for ongoing improvement. Imai in Gemba Kaizen explains that Kaizen not only emphasizes continuous small improvements but also places customer satisfaction as the main goal of every quality improvement process (Kelly, 2021). Consumer feedback provides direct information about product performance in the market, which helps improve the quality and suitability of products to consumer needs.

The evaluation conducted by Sabar Furniture, involving customer feedback, reflects an effort to maintain quality, efficiency, and customer satisfaction, ensuring that the products produced remain relevant to consumer needs. Studies in the service and manufacturing sectors also demonstrate that Kaizen practices, which focus on customer feedback, have been proven to enhance customer satisfaction, product quality, and operational efficiency, particularly in the context of small and medium-sized enterprises. (Ahmad Firman, 2021).

E. Naming and Definition of the Theme

Based on the ten major themes that emerge in the production planning process of Sabar Furniture, here are the names and definitions of the themes presented in Table 5:

Table 5. Naming and Definition of Themes

Big Theme	Definition of Theme
1. Time & Production Scheduling	Setting work duration and production schedule to ensure orders are completed on time.
2. Workforce & Human Resources Regulation	Distribution, rotation, and utilization of workers' skills for smooth production.
3. Equipment & Machinery	Availability and use of tools to support efficiency and quality of production.
4. Production Method	Work approaches such as made-to-order and design customization are used to meet customer needs.
5. Production Constraints & Problem Solving	Production barriers and adaptive strategies to overcome them.
6. Ability & Adaptation	Skills and the ability to adapt to changes or problems.
7. Material & Product Quality	Selection of materials according to the agreed-upon budget and quality standards.
8. Price & Cost Efficiency	Price setting and cost management are to be efficient.
9. Production Monitoring	Supervision of the production process and progress reporting.

10. Evaluation	Post-production review for improvements and enhancements.

Based on the thematic analysis in Table 5, these themes provide a comprehensive picture of how Sabar Furniture manages its production planning in a custom furniture context, balancing consumer demands, resource constraints, and quality assurance. These themes provide a comprehensive picture of how Sabar Furniture manages its production planning in a custom furniture context, balancing consumer demands, resource constraints, and quality assurance.

F. Reporting Results

Through interviews, observations, and documentation, an overview is obtained of how artisans and the management team plan, organize, and execute each stage of production to fulfill custom furniture orders. The production planning process implemented by Sabar Furniture generally aligns with the principles of production management according to Hasibuan, including demand forecasting, product planning, raw materials, production capacity, scheduling, labor allocation, and production control (Hasibuan, 2023). Although in practice Sabar Furniture does not use formal demand forecasting, the made-to-order-based production system allows the planning process to proceed while directly considering customer needs. Product planning is carried out by adjusting designs and production quantities, while material and labor planning is done adaptively according to capacity and resource availability. Meanwhile, strict scheduling and daily supervision support the smoothness of the production process. Although this approach is simple and informal, it demonstrates effectiveness in maintaining an efficient production flow.

Below is a flowchart of the production planning process at Sabar Furniture:

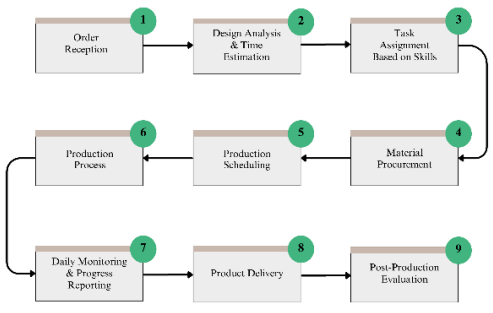

Figure 9. Production Planning Process Flow of Sabar Furniture

As shown in Figure 9, Sabar Furniture has carried out most of the principles of production planning in accordance with the theory, but on a scale and approach that are adapted to the characteristics of small and medium enterprises.

Figure 10. Sabar Furniture Production Results without a Designer
Source: Personal Documentation

Based on the production results in Figure 10, it can be seen that Sabar Furniture is capable of producing custom furniture products according to consumer preferences through the implementation of adaptive production planning, while maintaining high furniture quality. These achievements are also supported by Sabar Furniture's experience of over 15 years in the furniture industry, which has provided them with extensive knowledge and skills in handling various production projects. However, the aesthetic aspect is still less optimal due to the lack of collaboration with interior designers. Kuys et al. emphasized in a study on university–industry collaboration that involving designers in the furniture production process can enhance the sustainability, quality, and aesthetic value of products through a user-centered design approach (Kuys et al., 2021).

CONCLUSION

Based on the research findings, production planning at Sabar Furniture is carried out in a structured manner through stages such as order receipt based on made-to-order, design and time estimation, task division according to worker expertise, material procurement, production scheduling, production process, daily monitoring, product delivery, and joint evaluation to ensure product quality. This process demonstrates Sabar Furniture's ability to implement adaptive and flexible production planning that meets consumer demands, particularly for custom products.

However, the study also found several aspects that are still not optimal, particularly in terms of product function and aesthetics, due to limited collaboration with interior designers, resulting in artisans relying only on simple sketches or reference images from customers. Additionally, other challenges include material inventory management, limitations in workshop equipment and facilities, and dependence on non-contractual labor. These challenges impact innovation, quality, and production capacity.

Therefore, this research emphasizes the importance of closer collaboration between artisans and interior designers to improve the functional and

aesthetic quality of products. Based on the study results from Temeltas, intensive collaboration between artisans and designers can produce product innovations through the combination of practical skills and design thinking (Temeltaş, 2017). The lack of collaboration at Sabar Furniture limits the functionality and aesthetics of their products.

Furthermore, developing a better inventory system, utilizing simple production technology, and providing skills training for workers are practical recommendations that can help Sabar Furniture and similar small businesses enhance their competitiveness amid the rapid development of the custom furniture industry.

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