



**PARADIGM AND OPERATIONAL EFFICIENCY STRATEGIES  
OF LOCAL PRODUCTS: A CASE STUDY OF SONGKET PECI  
PRODUCTION IN BATU BARA REGENCY**

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**ABSTRACT**

This study aims to describe the paradigm and strategies of production and operational efficiency in Micro, Small, and Medium Enterprises (MSMEs) of Songket Peci in Batu Bara Regency. The research method used is a descriptive qualitative approach with data collection techniques through observation, interviews, and MSME documentation. The research results show that the songket peci production process is still carried out manually, relying on traditional skills, so the production time is relatively long. In addition, operational efficiency is not yet optimal due to limitations in equipment, time management, as well as the management of raw materials and labor. Nevertheless, the quality of the products produced has high aesthetic value and competitiveness at the local level. This study's contribution emphasizes the importance of paradigms and strategies for production effectiveness of local wisdom products that are holistic, accommodative, and contextual.

**Keywords:** *Paradigm, Strategies, Production, Batu Bara, Songket Peci.*



## A. Introduction

Digitalization has become one of the main pillars of global economic development in the modern era. In recent decades, the development of digital technology has driven the transformation of various sectors, including the micro, small, and medium enterprises (MSMEs) sector (Mendrofa et al., 2023). In Indonesia, MSMEs play a strategic role in the national economy. Based on data from the Ministry of Cooperatives and SMEs (2023), MSMEs contribute around 60% to the national gross domestic product (GDP) and absorb more than 97% of the workforce. This shows that MSMEs are not only the backbone of the economy but also contribute significantly to the welfare of society. However, in the face of increasingly fierce global competition, MSMEs are faced with various challenges, including limited market access, resources, and technology adoption (Akbar, 2020).

Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in the Indonesian economy. At the national level, MSMEs are recorded as major contributors to Gross Domestic Product (GDP) and employment. As part of the creative economy and small manufacturing sectors, MSMEs that produce traditional goods such as songket hats, including the Batu Bara Songket Peci MSME, have the potential to empower local communities and preserve local cultural values (Yunitalia, 2024).

However, many MSMEs continue to face substantial challenges in achieving operational efficiency and maintaining competitiveness. Prior studies have demonstrated that the adoption of information technology and digitalization can significantly enhance operational performance, particularly in inventory control, record-keeping, and process management. Nevertheless, a considerable number of MSMEs have yet to optimize their production systems and internal management practices, resulting in persistent inefficiencies, especially among enterprises that rely on traditional and manual production methods.

Against this backdrop, this study aims to examine the production process and assess the level of operational efficiency within the Batu Bara Songket Peci MSME. A descriptive qualitative approach is employed, utilizing data collected through direct observation, in-depth interviews with key stakeholders, and documentation of production activities. The data are systematically analyzed using descriptive analytical techniques to identify inefficiencies, evaluate operational practices, and formulate potential strategies for enhancing production efficiency.

Operations encompass many aspects: material selection, cutting and sewing processes, quality control, raw material inventory management, and optimal labor utilization. If the production process is inefficient, this can lead to high costs, long production times, inconsistent product quality, and difficulty meeting market demand—problems often encountered in the small and medium-sized manufacturing sector. One study in the manufacturing sector in Makassar showed that inventory management and operational strategies have a significant impact on performance (Faesa & Rudi, 2025).

In addition, competitive pressures from mass-produced products, imported products, and factory-made products require MSMEs to be able to increase production efficiency while maintaining the uniqueness of their traditional products. However, the lack of capital, access to technology, and systematic management are often obstacles for small-scale MSMEs (Yolanda & Hasanah, 2024). An urgent need

to conduct direct research (field study) on the Batu Bara Songket Peci MSME to map how the production process is carried out, where points of inefficiency occur, and how operations can be optimized without sacrificing quality and cultural values. The theme is relevant not only from an academic perspective (operational management, efficiency, productivity), but also from the perspective of local economic empowerment and cultural preservation (Muhammad & Rohtih, 2024). A growing body of literature highlights that the operational efficiency of MSMEs is largely determined by production management practices and the adoption of technology. Yolanda and Hasanah (2024) identify limited capital and restricted access to technology as primary constraints hindering efficiency improvements among small-scale enterprises. Similarly, Akbar (2020) finds that low levels of digital adoption contribute to suboptimal production processes and weak operational management. In the manufacturing context, Faesa and Rudi (2025) demonstrate that effective inventory control and operational strategies significantly enhance business performance. Furthermore, Muhammad and Rohtih (2024) emphasize that culture-based MSMEs face a dual challenge: preserving local cultural values while simultaneously improving market competitiveness. Mendrofa et al. (2023) also report that digitalization has a positive impact on operational efficiency; however, its implementation remains uneven and limited across MSMEs.

Despite these insights, prior studies have largely focused on general operational performance or the role of digitalization, with limited attention given to in-depth, process-level analysis of traditional, culture-based MSMEs. In particular, there is a lack of empirical evidence that systematically maps production workflows, identifies specific inefficiency points, and evaluates operational practices within manually operated production systems. Therefore, this study addresses this gap by examining the production process and operational efficiency of the Batu Bara Songket Peci MSME, with a specific focus on identifying inefficiencies and formulating context-sensitive strategies that enhance productivity while preserving cultural authenticity.

This study offers several key contributions. First, it provides a micro-level, process-oriented analysis of production activities in a traditional MSME context, which remains underexplored in the existing literature. Second, it develops an empirical mapping of inefficiency points across the production workflow, thereby offering a more nuanced understanding of operational constraints in manual production systems. Third, it proposes contextually grounded efficiency improvement strategies that integrate simple technological interventions without undermining cultural values. By bridging the gap between operational efficiency and cultural preservation, this study contributes to the advancement of MSME operational management literature, particularly within the domain of culture-based industries.

Data collection is conducted to obtain the information needed to achieve the research objectives. Data collection in business studies begins with literature review. First, data is collected from the relevant MSMEs. Second, the works of others related to the research topic are collected. Third, interviews are conducted with the relevant individuals. Previous studies on MSMEs have predominantly focused on general

aspects of operational performance, digital adoption, and managerial practices, often employing quantitative approaches or macro-level analyses.

In contrast, this study adopts a micro-level, process-oriented perspective by specifically examining the detailed production workflow of a culture-based MSME, namely the Batu Bara Songket Peci enterprise. Unlike prior research that emphasizes technological adoption as the primary driver of efficiency, this study explores how operational efficiency can be improved within a predominantly manual production system while maintaining traditional craftsmanship. Furthermore, this research integrates direct field observations with in-depth qualitative insights from business owners and workers, enabling a more comprehensive identification of inefficiency points across each stage of production. By focusing on the intersection between operational efficiency and cultural preservation, this study offers a distinct analytical perspective that is rarely addressed in existing MSME literature.

## **B. Overview of Operational Efficiency in MSME**

The findings of this study are consistent with prior research highlighting the importance of operational efficiency in enhancing MSME performance. Previous studies have shown that inefficient production systems, particularly those relying on manual processes, tend to experience longer production times and lower productivity levels (Abdulmalek & Rajgopal, 2007; Shah & Ward, 2003). In line with lean production theory, the presence of non-value-adding activities such as waiting time, rework, and unstructured workflows significantly reduces operational performance.

Furthermore, the results support the argument that limited access to technology and managerial capability remains a critical barrier for MSMEs in improving efficiency (Tambunan, 2019; Nguyen et al., 2015). Studies by Demeter and Matyusz (2011) emphasize that effective resource utilization and process integration are key determinants of operational success. In addition, the role of workforce skills and task specialization has been identified as a crucial factor influencing productivity in small-scale manufacturing (Koc & Bozdag, 2017).

In the context of culture-based MSMEs, this study also aligns with findings by Fillis (2004) and McAuley (2001), which suggest that traditional and creative industries face unique challenges in balancing efficiency with the preservation of cultural value. While modernization and process optimization are necessary, excessive standardization may risk diminishing product authenticity. Therefore, a hybrid approach that combines efficiency improvement with cultural sustainability is essential for long-term competitiveness.

Production process efficiency is a central concept in operations management, referring to the extent to which a production system optimally transforms inputs such as raw materials, labor, capital, and time into outputs with minimal waste and

maximum value creation (Heizer et al., 2020; Slack & Brandon-Jones, 2019). Efficiency is commonly associated with the ratio between outputs and inputs, where higher efficiency indicates the ability to achieve greater output using the same or fewer resources. In this regard, production efficiency is not only concerned with cost minimization but also with process effectiveness, quality consistency, and the smooth flow of operations.

From a theoretical perspective, production efficiency can be examined through several key dimensions, including time efficiency, resource utilization, process integration, and waste reduction. Lean production theory emphasizes the elimination of non-value-adding activities (waste), such as waiting time, overproduction, unnecessary motion, and defects, which directly affect operational performance (Womack & Jones, 2003).

Similarly, the concept of total quality management (TQM) highlights the importance of continuous improvement, standardization of processes, and quality control in achieving efficient production systems (Oakland, 2014). In small-scale enterprises, particularly those operating with traditional methods, these principles are often not formally implemented, leading to inefficiencies in workflow, labor allocation, and material usage.

Moreover, in the context of MSMEs, production efficiency is closely linked to managerial capability and technological adoption. According to resource-based view (RBV) theory, internal resources—such as skilled labor, organizational routines, and production knowledge—play a crucial role in determining operational performance (Barney, 1991). However, limited access to technology and capital often constrains MSMEs from achieving optimal efficiency levels. As a result, inefficiencies may manifest in the form of prolonged production time, inconsistent product quality, and suboptimal utilization of resources.

In this study, production process efficiency is operationalized by examining several indicators, including production time per unit, effectiveness of raw material usage, labor allocation across production stages, workflow continuity, and the presence of operational bottlenecks. This theoretical framework provides a basis for analyzing empirical findings and identifying critical inefficiency points within the production system of the Batu Bara Songket Peci MSME, while also linking practical observations to established theories in operations and production management.

### **C. Production Process of Songket Peci**

On the first day, researchers conducted initial observations to understand the general picture of the operational activities of the MSME. The activity began with an introduction to the physical environment of the production site, including the material cutting area, sewing room, cap frame forming area, and finished product storage area. Researchers also studied the simple organizational structure

implemented by the business owner. From the initial interview with the MSME owner, he stated that this business has been operating for more than five years and employs three to five daily workers.

The owner also explained that the production process is still manual and relies on worker skills. This information serves as a basis for understanding work patterns, production rhythms, and potential operational problems (Sigalingging et al., 2024).

On the second day, the focus of the study was directed at the raw material procurement stage. Researchers studied the types of songket fabric used, the characteristics of complementary materials such as lining foam, cardboard paper for the frame, thread, and supporting accessories. Based on interviews with the owners, songket raw materials are generally obtained from local suppliers in Medan City and a small portion from suppliers in other areas when certain motifs are not available on the market (Syaputra, 2025).

The owner revealed that material procurement constraints usually occur during periods of high demand, such as around religious holidays, which results in limited supply of songket cloth and increased prices. He also stated that raw material purchases are made weekly to adjust production capacity and avoid excessive stock buildup (Mayuli, 2022).

The third day was devoted to a deeper examination of the songket peci production process from start to finish. Researchers observed the stages of cutting the material, forming the pattern, sewing, attaching the songket cloth to the peci frame, and finishing processes such as quality control and thread tidying. In this observation, researchers noted that the material cutting process is a stage that requires high precision because errors in measurement can lead to fabric waste. From an interview with a worker, he explained that "cutting errors usually occur when workers are less focused or when demand is high so the work is done more quickly." This information indicates that factors of precision and fatigue also affect operational efficiency.

On the fourth day, researchers measured production time to determine the effectiveness of the production workforce. Observations were made by recording the duration of making one unit of peci from start to finish. The average production time was around 20–30 minutes per unit, depending on the complexity of the songket motif and the worker's experience. One worker said that their productivity was also affected by the condition of their work equipment, especially their sewing machine. He said, "If the machine is having problems, the work tempo will definitely be slow, sometimes we have to call a repairman or stop first." This data helped researchers identify that the condition of the equipment has a significant contribution to operational efficiency (Sigalingging et al., 2024).

On the fifth day, researchers focused on identifying operational constraints. Based on the results of in-depth interviews with the owners, there were several common constraints that often emerged, including: Delays in raw materials,

especially for certain songket motifs. Damage to sewing machines that disrupted the production flow. The division of tasks that was not fully structured, so that when demand increased, work piled up at certain stages.<sup>1</sup> The lack of supporting equipment, such as adequate cutting tables, has resulted in longer cutting times. The owner stated that the temporary solution is to expedite communication with suppliers and perform routine maintenance on the sewing machines. However, he also acknowledged that investment in new equipment is still limited due to limited capital.

On the sixth day, researchers conducted in-depth interviews with the owner and workers to gather information regarding production strategies, daily workloads, and their expectations for MSME development. Researchers also collected quantitative data in the form of average daily production volume, operational costs, number of workers, and seasonal demand levels. The owner stated that average production ranges from 30–50 units per day, depending on orders. He added that demand peaks during Ramadan and around other Islamic holidays. Furthermore, researchers documented the production process through photographs and technical notes to supplement the field analysis.

Analysis of the Production Process and Operational Efficiency of the Batu Bara Songket Peci MSME. The main activity in the implementation of the field study at the Batu Bara Songket Peci MSME focused on the observation and comprehensive analysis of all stages of the production process as well as aspects of operational efficiency implemented by the business actors. In the initial stage, the activity began with the collection of descriptive data regarding the business profile, simple organizational structure, and work methods used.

The researcher conducted direct observations of the songket peci production flow, starting from the process of selecting and preparing raw materials, cutting the base fabric, forming the peci frame, sewing, installing distinctive ornaments, to the finishing process that determines the final quality of the product. This observation aims to understand work patterns, processing time, and identify critical points that can affect productivity (Kusnadi et al., 2024).

In addition to technical observations, the field study also included in-depth interviews with owners and workers to obtain information on operational systems, task allocation, daily production capacity, and common obstacles encountered in the peci ongket production process. Through this approach, researchers obtained insights into the skill level of the workforce, the effectiveness of production equipment use, and informal quality control strategies. They also documented workflow patterns, interactions between workers, and time management practices that influence the efficiency and productivity of MSMEs.

The next activity includes an analysis of operational efficiency aspects, including evaluation of raw material usage, sewing machine utilization rates, potential waste, and identification of processes that require improvement or simplification. Researchers assess whether production steps are running optimally or whether there are still activities that cause delays, work backlogs, or workload imbalances. In addition, activities also include recording production output over a certain period to measure the level of labor productivity and the stability of the production process (Kusmindari & Aprianto, 2009).

Overall, this field study provided a comprehensive understanding of how the Peci Ongket Batu Bara MSME manages its production process and how operational aspects can be improved through problem identification and strategic recommendations. Direct observation, interviews, and field data analysis served as the primary basis for assessing the effectiveness of production management and opportunities for future efficiency improvements (Putri et al, 2020).

The production of songket caps consists of several main stages, namely selecting raw materials, cutting the fabric, sewing the caps, installing the songket, finishing, and checking quality. All of these stages are still largely carried out manually using simple equipment. The production process for one songket cap takes a relatively long time, depending on the complexity of the songket motif and the skill of the craftsman. This condition has an impact on the limited daily production volume that can be produced by MSMEs (Syaputra, 2025).

Raw material management at the Batu Bara Songket Peci MSME is not yet planned and systematic. Raw material purchases are based on short-term needs, often resulting in production delays due to limited stock. Furthermore, there is a lack of proper record keeping of raw material usage, which can lead to waste and increase production costs.

The workforce at the Batu Bara Songket Peci MSME is largely local and skilled in traditional songket sewing and assembling. However, the division of labor is not well structured, resulting in one worker often handling several production stages simultaneously. This results in suboptimal utilization of work time and impacts overall operational efficiency (Mathes, 1986).

The operational efficiency of the Batu Bara Songket Peci MSME is still relatively low. This is due to the use of limited production equipment, ineffective work time management, and the absence of clear production planning. Furthermore, the MSME has not recorded production costs in detail, making it difficult to measure efficiency levels and determine selling prices accurately.

Although operations are not optimal, the quality of the songket peci produced is relatively good and has high aesthetic value. This product is sought after by consumers due to the unique songket motifs and cultural values contained within it. This indicates that the Batu Bara Songket Peci MSME has strong competitive potential, especially in the local and regional markets.

## D. Conclusion

The findings of this study reveal that the production process of the Batu Bara Songket Peci MSME remains largely manual and dependent on traditional craftsmanship, which leads to relatively long production times and limited output capacity. The production activities involve several interconnected stages, including raw material selection, cutting, sewing, assembly, and finishing, all of which require precision and skilled labor. The study identifies several critical inefficiencies, particularly in unstructured production planning, ineffective labor division, limited equipment utilization, and unsystematic raw material management. These factors contribute to delays, workflow imbalances, and suboptimal operational performance. Nevertheless, the MSME maintains strong product competitiveness due to its high aesthetic value, cultural authenticity, and consistent product quality, which remain attractive in local and regional markets.

From a theoretical standpoint, this study contributes to the existing literature by offering a process-level analysis of operational efficiency within a culture-based MSME, emphasizing the integration of efficiency principles with the preservation of local cultural values. However, the study is limited by its single-case design and qualitative approach, which may limit the generalizability of the findings. Future research is encouraged to incorporate comparative studies or mixed-method approaches to enhance analytical depth and external validity. Practically, this study recommends the adoption of more structured production management, improved labor allocation, and the integration of appropriate simple technologies to enhance efficiency. Furthermore, policy support in the form of training programs, access to technology, and financial assistance is essential to strengthen the sustainability and competitiveness of culture-based MSMEs.

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