



Performance of Bamboo Handicraft MSMEs as a Source of Supplementary Income in Wonokarto Village, East Lampung

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Abstract

Bamboo weaving micro, small, and medium enterprises (MSMEs) play an important role in supporting rural household income in Wonokarto Village, East Lampung, yet their performance is constrained by irregular bamboo raw material availability and operational limitations. This study aims to analyze bamboo availability, identify the factors influencing MSME performance, and evaluate the income generated by bamboo weaving enterprises. An empirical mixed-methods approach was employed using census sampling involving 42 bamboo weaving artisans. Primary data were collected through questionnaires, interviews, field observations, and documentation, while secondary data were obtained from official statistics and relevant literature. Bamboo availability was analyzed descriptively, MSME performance determinants were examined using ordinal logistic regression, and income was estimated through revenue-cost analysis. The results indicate that bamboo availability is generally adequate but remains constrained by inconsistent supply continuity. Time efficiency and production output significantly influence MSME performance, with odds ratios of 18.37 and 21.01, respectively, whereas cost efficiency and product diversification show no significant effects. The regression model explains 49.3% of the variation in MSME performance. Average monthly production reached 49 units, generating a net income of IDR 1,161,798.13, with kurungan ayam balian accounting for 41% of total sales.

Keywords: *Bamboo Handicrafts, East Lampung, MSME Performance, Ordinal Logistic Regression, Production Efficiency.*



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INTRODUCTION

Bamboo is one of the most important renewable plant resources in tropical regions because of its rapid growth, high regeneration capacity, and broad ecological functions that support sustainable ecosystem services (Togatorop et al., 2020). Its biodegradability, renewability, and relatively low environmental impact have increased the global demand for bamboo as a raw material for environmentally sustainable industries (Grand View Research, 2021). Indonesia possesses remarkable comparative advantages through its rich bamboo biodiversity, comprising approximately 176 species or nearly 16% of the world's bamboo resources, thereby providing substantial opportunities for developing value-added industries based on local biological resources (Damayanto et al., 2021). These resource advantages have encouraged the expansion of bamboo-based Micro, Small, and Medium Enterprises (MSMEs), which contribute significantly to employment generation, inclusive economic growth, and regional economic resilience (Badan Pusat Statistik, 2025). In Lampung Province, bamboo weaving has evolved from a traditional household activity into an important community-based enterprise that simultaneously preserves local craftsmanship while generating economic value from renewable natural resources (Dinas Koperasi dan UMKM Provinsi Lampung, 2024). Consequently, evaluating the performance of bamboo handicraft MSMEs requires not only an economic perspective but also an understanding of how sustainable bamboo resource management supports long-term enterprise continuity and rural livelihoods (Widiyanto et al., 2025).

The growing relevance of bamboo-based MSMEs has encouraged numerous studies investigating the determinants of business performance from various managerial and economic perspectives, although their findings remain fragmented across different analytical contexts (Kartika et al., 2024). Recent evidence demonstrates that competitive business performance is influenced not only by production capacity but also by entrepreneurial capabilities, financial literacy, social capital, and

strategic resource management, indicating that business sustainability depends upon the interaction of multiple organizational factors rather than isolated operational variables (Meitriana et al., 2026). Studies on bamboo enterprises further reveal that value-chain integration, production efficiency, and institutional collaboration significantly strengthen market competitiveness, although these relationships differ considerably across geographical and socioeconomic settings (Utomo et al., 2021). Research conducted in rural Indonesia likewise confirms that bamboo handicraft industries generate meaningful value added and improve household welfare when supported by efficient resource allocation and adaptive business management practices (Rahayu et al., 2024). Despite these advances, existing studies collectively indicate that business performance among bamboo handicraft MSMEs cannot be adequately explained by financial outcomes alone because production continuity, resource accessibility, and local institutional conditions simultaneously shape enterprise sustainability. This complexity suggests that evaluating bamboo MSMEs requires a broader analytical framework capable of integrating operational, economic, and resource-based dimensions within rural production systems.

Although previous studies have substantially enriched the literature on bamboo-based MSMEs, several conceptual and empirical limitations remain insufficiently addressed, particularly regarding enterprises operating as supplementary household income sources in rural communities (Pieter & Utomo, 2023). Existing research predominantly emphasizes empowerment programs, product innovation, branding strategies, and entrepreneurship development while providing limited quantitative evidence concerning how raw material availability directly influences business performance under fluctuating production conditions (Nugraha et al., 2025). Studies examining bamboo handicrafts in Lampung have generally focused on community empowerment and income improvement without simultaneously analyzing operational constraints, enterprise performance, and household economic outcomes within an integrated analytical model (Meliana, 2022). Other investigations highlight the importance of creativity, production innovation, and marketing improvements for increasing craftsmen's income, yet the sustainability of these strategies remains highly dependent upon uninterrupted access to quality bamboo resources that receive relatively limited empirical attention (Agustina, 2023). Research addressing bamboo enterprise development also acknowledges persistent challenges associated with supply continuity, institutional support, and market adaptation, but these factors have rarely been examined using explanatory quantitative approaches capable of identifying their relative contributions to business performance (Widiyanto et al., 2025). These unresolved issues demonstrate a significant research gap, particularly for rural bamboo weaving MSMEs whose economic resilience depends upon balancing local resource availability with sustainable business performance over time.

The identified research gap becomes increasingly important in the context of Wonokarto Village, East Lampung Regency, where bamboo weaving MSMEs have long functioned as supplementary income-generating activities while simultaneously preserving local craftsmanship inherited across generations. The village accommodates dozens of active bamboo craftsmen whose production activities increasingly depend on the continuity and quality of bamboo raw materials available from surrounding areas, making resource accessibility a critical determinant of business sustainability (Dinas Koperasi dan UMKM Provinsi Lampung, 2024). Previous studies demonstrate that inadequate raw material management exposes bamboo-based MSMEs to production risks capable of reducing operational efficiency and limiting income generation, particularly among small-scale rural enterprises with restricted production capacity (Hirawati & Sijabat, 2020). Empirical findings further indicate that optimizing bamboo resource utilization through sustainable business strategies can substantially strengthen enterprise resilience while improving craftsmen's economic welfare under changing market conditions (Widiyanto et al., 2025). Recent evidence also confirms that bamboo handicraft industries continue to contribute significantly to household income, particularly when production resources are managed efficiently and supported by adaptive entrepreneurial practices (Muttaqin et al., 2023). Understanding how enterprise characteristics interact with raw material availability therefore represents both a practical necessity for rural economic development and an important scientific agenda for strengthening the sustainability of local resource-based MSMEs.

Unlike previous studies that mainly investigate empowerment initiatives, product innovation, branding, or business assistance separately, this research positions business performance within an integrated framework that simultaneously considers enterprise characteristics, raw material availability, and income outcomes among bamboo weaving MSMEs operating in rural settings (Pieter & Utomo,

2023). The analytical focus extends beyond descriptive identification of business constraints by examining the relative influence of multiple operational factors on MSME performance using an ordinal logistic regression approach capable of capturing variations in business performance levels (Kartika et al., 2024). This perspective provides a more comprehensive understanding of how resource accessibility influences enterprise sustainability while complementing previous discussions emphasizing entrepreneurship development and business competitiveness (Azzahra & Wibawa, 2021). The study also enriches the literature on rural bamboo enterprises by integrating business performance analysis with income assessment within a single empirical framework, thereby providing evidence that remains relatively limited in existing Indonesian studies (Yusmitasari, 2026). Such an approach is expected to generate more robust empirical evidence for designing development strategies that simultaneously strengthen production continuity, improve business resilience, and enhance household welfare among bamboo craftsmen.

This study is therefore conducted to describe the availability of bamboo as the primary raw material for weaving industries in Wonokarto Village, analyze the influence of enterprise-related factors on the performance level of bamboo handicraft MSMEs, and examine the income generated by these rural enterprises. The research is expected to enrich the theoretical discussion concerning resource-based MSME performance by integrating operational conditions, enterprise characteristics, and household economic outcomes within a single analytical framework. From a methodological perspective, the application of ordinal logistic regression offers an alternative empirical approach for explaining variations in MSME performance beyond conventional descriptive analyses commonly employed in bamboo handicraft research. The findings are also anticipated to provide practical recommendations for local governments, development agencies, and rural communities in formulating evidence-based strategies that strengthen bamboo resource management and improve the long-term sustainability of handicraft enterprises. Ultimately, this study contributes to a broader understanding of how locally available natural resources can be transformed into sustainable economic opportunities capable of supporting rural livelihoods while preserving traditional bamboo craftsmanship across generations.

RESEARCH METHODS

This study employed an empirical mixed-methods approach, integrating quantitative and qualitative methods to obtain a comprehensive understanding of the performance of bamboo handicraft MSMEs as a source of supplementary household income in Wonokarto Village, Sekampung District, East Lampung Regency (Sugiyono, 2017). The research was conducted from April to June 2026, and the study area was purposively selected because Wonokarto Village is one of the major bamboo handicraft production centers in East Lampung, consisting of 42 active bamboo weaving MSMEs (Dinas Koperasi dan UMKM Provinsi Lampung, 2024). The population comprised all active bamboo handicraft entrepreneurs, and because the population size was relatively small, a saturated sampling (census) technique was applied so that all 42 MSME owners were included as research respondents (Arikunto, 2019). Primary data were collected through structured questionnaires, interviews, field observations, and documentation, whereas secondary data were obtained from Statistics Indonesia (BPS), village administrative records, and relevant scientific publications concerning bamboo handicraft enterprises and rural MSMEs (Badan Pusat Statistik, 2025). The combination of quantitative and qualitative evidence enabled a comprehensive evaluation of bamboo availability, enterprise characteristics, business performance, and household income within the rural production system.

Data were analyzed in three stages. First, descriptive statistical analysis was employed to describe bamboo raw material availability using frequencies and percentages. Second, the determinants of MSME performance were examined using an ordinal logistic regression model, expressed as follows.

$$\ln[1-P(Y \leq j)] = \alpha_j - (\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4)$$

where:

- Y** : MSME performance (1 = poor, 2 = moderate, 3 = good)
- X₁** : Time efficiency
- X₂** : Cost efficiency
- X₃** : Production output

- X_i** : Product diversification
A_j : Threshold (cut point)
B : Regression coefficient

The regression model was evaluated using Model Fitting Information, the Wald test, Pseudo R-Square, and Goodness-of-Fit statistics to determine model adequacy. Finally, MSME income was estimated using the following equations (Rahayu et al., 2024):

$$\begin{aligned} TR &= P \times Q \\ TC &= TFC + TVC \\ \pi &= TR - TC \end{aligned}$$

where:

- TR** : Total revenue (IDR/month)
P : Selling price per unit (IDR/unit)
Q : Quantity of products sold (units/month)
TC : Total production cost (IDR/month)
TFC : Total fixed cost (IDR/month)
TVC : Total variable cost (IDR/month)
 π : Net income (IDR/month)

RESULTS AND DISCUSSION

Profile of the Study Area and Respondents

Wonokarto Village is located in Sekampung District, East Lampung Regency, with a total administrative area of 308.95 ha, consisting of five hamlets and seventeen neighborhood units (RT). The village has an estimated population of 3,000–3,500 inhabitants, where agriculture remains the dominant economic activity, while bamboo handicraft production has developed as an important supplementary livelihood for rural households. The coexistence of agricultural and handicraft activities creates a diversified rural economic structure that enables households to generate additional income beyond seasonal farming activities. The availability of bamboo resources in the surrounding area has supported the continuity of traditional weaving practices, allowing household enterprises to remain economically viable across generations. Such characteristics are commonly observed in rural creative economies, where local natural resources and family labor constitute the primary production assets supporting MSME development (Badan Pusat Statistik, 2025).

The bamboo handicraft industry in Wonokarto Village has evolved through hereditary knowledge transfer, making weaving skills an integral component of the local economic and cultural identity. Local craftsmen produce a wide range of products, including *cikrak*, *rinjing*, chicken cages, baskets, *obrok*, *tampah*, tissue boxes, and serving trays, reflecting the ability of household enterprises to respond to various consumer demands. Product diversity also indicates that bamboo is utilized efficiently to produce items serving agricultural, household, and commercial purposes. The persistence of these enterprises demonstrates that traditional production systems continue to possess economic relevance despite increasing competition from industrially manufactured products. Similar development patterns have been reported in Indonesian bamboo enterprises, where inherited production knowledge remains an important source of competitiveness and business continuity (Pieter & Utomo, 2023).

The respondents participating in this study represent the overall population of active bamboo handicraft MSMEs operating in Wonokarto Village. Male craftsmen accounted for 62% of respondents, while 52% were over fifty years of age, indicating that production activities are predominantly managed by experienced workers with extensive practical knowledge. Most respondents had completed elementary education (38%), whereas the average business experience reached approximately 20 years, demonstrating long-term involvement in bamboo handicraft production. Another notable characteristic is that 88% of respondents considered bamboo weaving as a supplementary occupation rather than their primary source of household income. This demographic profile suggests that the continuity of bamboo handicraft enterprises relies heavily on accumulated production experience and the allocation of family labor rather than formal educational attainment.

The predominance of experienced craftsmen has important implications for enterprise performance because practical knowledge accumulated over decades contributes to production efficiency, product quality, and the preservation of traditional weaving techniques. Nevertheless, the relatively low educational background may limit the adoption of digital technologies, financial management practices, and modern marketing strategies that are increasingly required to strengthen MSME competitiveness. The dominance of supplementary employment also indicates that production intensity is frequently adjusted according to agricultural activities, resulting in fluctuations in labor allocation throughout the year. This condition explains why production capacity among bamboo handicraft MSMEs often varies despite relatively similar production skills and access to local resources. Previous studies have likewise emphasized that business performance in rural MSMEs is shaped by the interaction between entrepreneurial experience, household labor allocation, and managerial capability rather than by a single production factor (Meitriana et al., 2026).

The socioeconomic characteristics observed in Wonokarto Village provide an important foundation for understanding the subsequent analyses concerning bamboo availability, enterprise performance, and household income. Household-based production systems enable craftsmen to utilize locally available resources while minimizing labor costs through family participation, creating a relatively adaptive business model under rural economic conditions. At the same time, dependence on supplementary labor and traditional production practices may constrain opportunities for business expansion if they are not accompanied by improvements in managerial capability and market access. The interaction between local resources, production experience, and household economic strategies illustrates the distinctive characteristics of bamboo handicraft MSMEs operating in rural Indonesia. This contextual background provides an appropriate basis for examining how raw material availability and operational factors influence the performance and income of bamboo handicraft enterprises in Wonokarto Village.

Availability of Bamboo as Raw Material for Handicraft Production

The availability of bamboo raw materials constitutes a fundamental factor determining the operational sustainability of bamboo handicraft MSMEs because production activities depend directly on the quantity, quality, and continuity of bamboo supplies. Unlike manufactured inputs that can generally be obtained through standardized distribution systems, bamboo availability is influenced by local resource conditions, supplier networks, and harvesting cycles. Variations in raw material availability may affect production schedules, delivery reliability, and the capacity of enterprises to fulfill market demand within the expected timeframe. Household-based enterprises are particularly vulnerable to supply disruptions because they generally maintain limited inventories and possess relatively low bargaining power within the procurement chain. Previous studies have emphasized that reliable access to raw materials is one of the strategic resources supporting the competitiveness and long-term sustainability of bamboo enterprises (Widiyanto et al., 2025).

The field survey assessed bamboo availability using six indicators, namely ordering method, purchase price, material quality, accessibility, adequacy, and supply continuity. The results indicate that respondents perceived considerable differences among these indicators, suggesting that favorable procurement conditions were not always accompanied by stable resource availability. Ordering procedures and bamboo prices received the most positive evaluations, whereas accessibility and supply continuity remained the primary constraints experienced by many craftsmen. These findings indicate that procurement efficiency cannot be evaluated solely from transaction convenience because uninterrupted access to raw materials is equally important for maintaining production continuity. The detailed distribution of respondents' perceptions is presented in Table 1.

Table 1. Respondents' Perceptions of Bamboo Raw Material Availability

Indicator	Main Findings
Ordering Method	100% of respondents stated that bamboo could be ordered easily through regular suppliers.
Purchase price	100% considered bamboo prices affordable, ranging from IDR 10,000–13,000 per culm.

Material Quality	62% assessed bamboo quality as appropriate for production, while 38% considered it very good.
Accessibility	43% reported difficulties obtaining bamboo because permanent suppliers were unavailable.
Adequacy	45% indicated that bamboo supplies were consistently sufficient, whereas 10% experienced shortages.
Supply Continuity	38% indicated that bamboo was generally available, while 31% frequently encountered supply interruptions.

The findings presented in Table 1 demonstrate that procurement activities have been supported by relatively efficient supplier relationships, particularly regarding ordering mechanisms and price stability. Affordable bamboo prices reduce production costs and enable craftsmen to maintain competitive selling prices despite operating on a relatively small production scale. Material quality was also evaluated positively because most respondents obtained bamboo suitable for weaving activities without requiring extensive sorting or additional processing before production. These conditions indicate that the procurement system has functioned effectively in supporting routine production activities under normal market circumstances. Comparable results were reported by Anitasari and Khotimah (2022), who found that affordable raw material prices and appropriate material quality improve production efficiency and strengthen the economic feasibility of bamboo handicraft enterprises.

Although procurement procedures were generally considered satisfactory, accessibility and supply continuity remained the principal constraints affecting business operations. Nearly half of the respondents still experienced difficulties obtaining bamboo because they relied on temporary suppliers or informal purchasing arrangements rather than long-term procurement partnerships. Supply interruptions also affected production scheduling, particularly during periods of increasing market demand when bamboo availability became more limited. These conditions increase operational uncertainty because delayed raw material procurement may reduce production capacity and postpone product delivery to customers. Risk management research similarly identifies unstable raw material supply as one of the major operational risks limiting the performance of bamboo-based MSMEs, particularly among household enterprises with limited inventory capacity (Hirawati & Sijabat, 2020).

The coexistence of favorable procurement conditions and unstable supply continuity suggests that bamboo availability should be evaluated as a multidimensional resource rather than merely as a production input. From the perspective of the resource-based view, sustainable competitive advantage depends not only on possessing valuable resources but also on ensuring that those resources remain accessible and consistently available throughout the production process. Enterprises maintaining stronger relationships with bamboo suppliers are more capable of adapting to fluctuations in market conditions because procurement uncertainty can be reduced through long-term cooperation. Strengthening local supply networks may also improve production flexibility by minimizing interruptions associated with seasonal bamboo availability. This interpretation supports previous findings indicating that resource accessibility and value chain integration represent strategic determinants of bamboo enterprise development in rural Indonesia (Utomo et al., 2021).

The empirical evidence indicates that improving bamboo availability requires interventions extending beyond production activities toward more effective supply chain management and resource governance. The continuity of bamboo availability is closely associated with sustainable bamboo resource management because the long-term productivity of bamboo stands determines the stability of raw material supplies for rural handicraft industries (Togatorop et al., 2020). Sustainable harvesting practices, periodic regeneration, and community-based bamboo cultivation can reduce supply fluctuations while maintaining the ecological functions of bamboo ecosystems (Widiyanto et al., 2025). From a natural resource perspective, strengthening bamboo resource management not only supports uninterrupted production but also enhances the long-term resilience of bamboo-based MSMEs by ensuring continuous access to renewable plant materials (Utomo et al., 2021). Strengthening cooperation between craftsmen, bamboo growers, cooperatives, and local government institutions may improve procurement coordination while supporting sustainable bamboo cultivation to ensure long-term resource availability. Better institutional collaboration may also reduce dependence on temporary suppliers and create a more resilient procurement system capable of supporting continuous production

throughout the year. Similar conclusions have been presented by Rahayu et al. (2024), Muttaqin et al. (2023), and Togatorop et al. (2020), who emphasized that sustainable bamboo resource management contributes not only to environmental conservation but also to the economic resilience of rural bamboo industries. These findings indicate that strengthening bamboo supply management represents an important strategic priority for improving the long-term performance and income of bamboo handicraft MSMEs in Wonokarto Village.

Determinants of MSME Performance

The determinants of MSME performance were examined using an ordinal logistic regression model following the evaluation of instrument validity and reliability. Instrument testing was conducted to ensure that each variable accurately represented the construct intended for statistical analysis and satisfied the assumptions required for regression modeling. Six independent variables were initially included, namely time efficiency, cost efficiency, production output, product diversification, promotional media, and government policy. Variables failing to satisfy the minimum validity criterion were excluded from the final model to improve the reliability of statistical estimation and avoid measurement bias. This procedure is widely recommended in quantitative business research because valid measurement instruments contribute to more accurate interpretation of causal relationships (Sugiyono, 2017). The remaining variables were subsequently employed to estimate the determinants of bamboo handicraft MSME performance in Wonokarto Village.

The validity test demonstrated that time efficiency ($X_1 = 0.839$), cost efficiency ($X_2 = 0.661$), production output ($X_3 = 0.811$), and product diversification ($X_4 = 0.681$) exceeded the critical correlation coefficient ($r = 0.304$), indicating satisfactory construct validity. In contrast, promotional media ($X_5 = 0.146$) and government policy ($X_6 = -0.037$) failed to satisfy the minimum validity requirement and were removed from further analysis. The weak validity of promotional media reflects the limited utilization of digital marketing platforms and local business networks among bamboo craftsmen, whereas government policy received inconsistent responses because respondents perceived relatively limited institutional support in training and financing. After excluding both variables, the remaining four indicators produced a Cronbach's Alpha of 0.749, confirming acceptable internal consistency for subsequent regression analysis. The complete validity and reliability results are summarized in Table 2.

Table 2. Validity and Reliability Test Results

Variable	Pearson Correlation	Decision
Time Efficiency (X_1)	0.839	Valid
Cost Efficiency (X_2)	0.661	Valid
Production Output (X_3)	0.811	Valid
Product Diversification (X_4)	0.681	Valid
Promotional Media (X_5)	0.146	Invalid
Government Policy (X_6)	-0.037	Invalid
Cronbach's Alpha	0.749	Reliable

Source: Primary Data Processed (2026)

The findings presented in Table 2 indicate that enterprise performance in Wonokarto Village is explained more consistently by internal operational factors than by external institutional variables. Promotional media was excluded because most respondents still depended on conventional marketing through local buyers and long-established customer relationships rather than digital promotion. Likewise, government intervention was not perceived uniformly among respondents because access to business development programs, training, and financing remained relatively limited across craftsmen. These conditions suggest that operational capability continues to represent the principal driver of enterprise performance within household-based bamboo industries. Similar evidence has been reported by Pieter and Utomo (2023), who emphasized that internal managerial capability contributes more consistently to bamboo enterprise development than external institutional support under traditional production systems.

The adequacy of the regression model was subsequently evaluated using the Model Fitting Information test. The estimated -2 Log Likelihood declined substantially from 47.339 in the intercept-only model to 24.642 after incorporating the explanatory variables. The likelihood ratio test generated a Chi-square value of 22.697 with a significance level below 0.001, indicating that the final regression model explained MSME performance significantly better than the null model. These results confirm that the selected operational variables jointly contribute to explaining variations in enterprise performance among bamboo craftsmen. The statistical summary of model adequacy is presented in Table 3.

Table 3. Model Fitting Information

Model	-2 Log Likelihood	Chi-square	df	Sig.
Intercept Only	47.339	–	–	–
Final Model	24.642	22.697	4	<0.001

Source: Primary Data Processed (2026)

The significant likelihood ratio demonstrates that incorporating operational variables substantially improves the predictive capability of the regression model. The model fitting results indicate that differences in production management practices contribute meaningfully to explaining the observed variation in enterprise performance across respondents. Operational capability has consistently been recognized as one of the principal determinants of MSME competitiveness because efficient resource management directly affects productivity and market responsiveness (Azzahra & Wibawa, 2021). The satisfactory goodness of the overall model also provides sufficient statistical justification for interpreting the individual contribution of each explanatory variable through the Wald parameter estimation.

The partial effects of each explanatory variable were evaluated using the Wald test, revealing that only time efficiency and production output significantly influenced MSME performance. Time efficiency produced an estimated coefficient of 2.911 with $p = 0.010$, corresponding to an odds ratio of 18.37, indicating that each unit increase in production time efficiency increased the likelihood of achieving a higher performance category by approximately eighteen times. Production output also exhibited a statistically significant positive effect (Estimate = 3.045; $p = 0.032$; $\text{Exp}(B) = 21.01$), suggesting that enterprises with greater production capacity were substantially more likely to demonstrate superior business performance. Conversely, cost efficiency and product diversification produced significance values exceeding 0.05, indicating that both variables did not significantly explain performance differences among respondents. The detailed parameter estimation results are presented in Table 4.

Table 4. Parameter Estimates (Wald Test)

Variable	Estimate	Wald	Sig.	Exp(B)
Threshold [Y = 1]	10.867	10.144	0.001	–
Threshold [Y = 2]	15.047	14.351	<0.001	–
Time Efficiency (X_1)	2.911	6.577	0.010	18.37
Cost Efficiency (X_2)	1.226	1.591	0.207	3.40
Production Output (X_3)	3.045	4.620	0.032	21.01
Product Diversification (X_4)	0.510	0.113	0.737	1.66

Source: Primary Data Processed (2026)

The regression results indicate that production efficiency contributes more substantially to enterprise performance than cost reduction or product diversification. Time efficiency enables craftsmen to complete production cycles more rapidly, thereby increasing production capacity and improving responsiveness to customer demand. Production output also reflects the productive capability of enterprises because greater output increases sales opportunities and strengthens business performance. By contrast, cost efficiency was not statistically significant because most respondents

operated with relatively similar household-based production structures, resulting in limited variation in production costs. Product diversification also failed to improve performance, indicating that craftsmen tended to concentrate on products with stable market demand rather than expanding the number of product variants. Comparable findings were reported by Kartika et al. (2024), who observed that operational capability exerts a stronger influence on bamboo MSME performance than product diversification under traditional production systems.

The explanatory power of the regression model was assessed using Pseudo R-Square, while model suitability was evaluated through the Goodness-of-Fit test. The Nagelkerke R-Square value of 0.493 indicates that the four explanatory variables accounted for approximately 49.3% of the variation in MSME performance, whereas the remaining 50.7% was explained by factors outside the estimated model. The Pearson Goodness-of-Fit significance value of 0.083, exceeding the 0.05 threshold, confirms that the ordinal logistic regression model adequately fits the observed data and does not exhibit significant model misspecification. These findings indicate that although operational efficiency explains a substantial proportion of enterprise performance, additional determinants such as entrepreneurial capability, financial literacy, market access, and social capital may also influence business outcomes. The statistical summary is presented in Table 5.

Table 5. Pseudo R-Square and Goodness-of-Fit Results

Indicator	Value
Cox and Snell	0.417
Nagelkerke	0.493
McFadden	0.287
Pearson Goodness-of-Fit (Sig.)	0.083

Source: Primary Data Processed (2026)

The moderate explanatory power of the model suggests that enterprise performance is influenced by multiple operational and managerial dimensions rather than by production efficiency alone. The significance of time efficiency and production output demonstrates that improving production effectiveness remains a practical strategy for enhancing the competitiveness of bamboo handicraft MSMEs. The absence of significant effects for cost efficiency and product diversification indicates that respondents prioritized production continuity and market demand over minimizing production costs or expanding product varieties. Meitriana et al. (2026) similarly concluded that business performance among bamboo craftsmen is strengthened through the interaction of entrepreneurial capability, operational performance, and social capital, while Widiyanto et al. (2025) emphasized that sustainable enterprise development requires integrating efficient production management with broader institutional and market support. These findings indicate that improving operational efficiency should be accompanied by managerial development and stronger market integration to achieve sustained improvements in bamboo handicraft MSME performance.

Income Analysis of Bamboo Handicraft MSMEs

Income analysis was performed by comparing the total monthly revenue with the total production cost to determine the financial contribution of bamboo handicraft activities to household earnings. This approach provides a clearer understanding of whether bamboo weaving functions merely as a complementary activity or represents a financially viable rural enterprise. Revenue generation in handicraft-based MSMEs depends on production volume, production costs, market demand, and the efficiency of resource utilization. A positive difference between total revenue and production cost indicates that the enterprise remains economically feasible and is capable of supporting household welfare over time (Rahayu et al., 2024). The calculation of production costs also provides useful information for identifying expenditure components that most strongly influence business profitability. The financial performance observed among bamboo craftsmen in Wonokarto Village demonstrates that handicraft production continues to provide measurable economic benefits despite being predominantly operated on a household scale.

The financial analysis revealed that the average variable cost reached IDR 1,796,958.33 per month, while the average fixed cost amounted to only IDR 12,553.06, resulting in an average total

production cost of IDR 1,809,511.39. Family labor constituted the largest component of variable expenditure at IDR 1,081,666.67, followed by bamboo raw materials amounting to IDR 577,380.95, whereas supporting materials such as plywood and plastic fiber represented additional operational expenses. The relatively small fixed cost reflects the prolonged economic life of production equipment, allowing craftsmen to maintain low capital expenditures throughout the production cycle. Average monthly revenue reached IDR 2,971,309.52, generating an average net income of IDR 1,161,798.13 for each enterprise. The detailed financial performance is presented in Table 6.

Table 6. Average Monthly Production Cost, Revenue, and Net Income

Component	Average Value (IDR/month)
Variable Cost	1,796,958.33
Fixed Cost	12,553.06
Total Production Cost	1,809,511.39
Total Revenue	2,971,309.52
Net Income	1,161,798.13

Source: Primary Data Processed (2026)

The financial structure presented in Table 6 indicates that production activities remain profitable because average monthly revenue consistently exceeded production costs. The dominance of family labor within the cost structure illustrates the labor-intensive nature of bamboo handicraft production, where household members contribute substantially to production activities without requiring extensive external labor. Such production characteristics enable craftsmen to maintain relatively low operational costs while preserving production flexibility according to market demand. Similar economic patterns were reported by Anitasari and Khotimah (2022), who found that efficient utilization of family labor improves business feasibility among rural bamboo enterprises. Economic feasibility analyses conducted by Rahayu et al. (2024) also demonstrated that effective cost management strengthens the financial sustainability of bamboo handicraft industries operating within rural communities. These findings indicate that maintaining balanced production costs remains essential for sustaining enterprise profitability under household production systems.

Income performance differed considerably according to the employment status of the craftsmen. Respondents who treated bamboo weaving as their primary occupation produced an average of 165.6 units per month and earned approximately IDR 4,241,040.00, whereas those operating bamboo weaving as a supplementary occupation produced only 33.1 units with an average monthly income of IDR 754,811.89. The considerable disparity reflects differences in labor allocation, production intensity, and managerial attention devoted to business operations throughout the production period. Enterprises managed as primary occupations generally allocate more working hours to production activities, enabling craftsmen to fulfill larger customer orders and achieve higher production efficiency. The comparison between both categories is summarized in Table 7.

Table 7. Average Production and Income by Employment Status

Employment Status	Number of Craftsmen	Average Production (Units/Month)	Average Income (IDR/Month)
Primary Occupation	5	165.6	4,241,040.00
Supplementary Occupation	37	33.1	754,811.89
Average	42	49.0	1,161,798.13

Source: Primary Data Processed (2026)

The comparison shown in Table 7 demonstrates that greater labor commitment substantially increases production output and household income. Craftsmen who devote more time to bamboo weaving are able to produce larger quantities, improve production continuity, and respond more effectively to market demand. By contrast, respondents who combine bamboo weaving with agricultural activities tend to experience lower production intensity because available labor is distributed across

multiple income-generating activities. Similar findings were reported by Yusmitasari (2026), who observed that bamboo handicraft enterprises generate significantly higher earnings when operated as the principal household occupation. Agustina (2023) likewise emphasized that continuous production activities and effective resource utilization contribute positively to income growth among bamboo craftsmen. These findings suggest that labor allocation represents one of the principal determinants influencing the financial performance of household-based bamboo enterprises.

Product composition also contributed to the observed income differences because market demand was concentrated on several high-volume products rather than being evenly distributed across all handicraft categories. Chicken cages (*kurungan ayam balian*) accounted for 836 units, representing approximately 41% of total sales, followed by large obrok with 194 units and medium cassava baskets with 160 units. The concentration of demand on these products indicates that craftsmen prioritize commodities with relatively stable market acceptance instead of maximizing the diversity of product types. Production specialization enables household enterprises to improve operational efficiency by focusing labor and raw materials on products with predictable market demand. Lambe and Halik (2024) argued that product innovation should be accompanied by market orientation so that diversification supports competitiveness without reducing production efficiency. Similar observations were presented by Nugraha et al. (2025), who found that strengthening production capability and business management enhances the competitiveness of bamboo MSMEs through more adaptive production strategies.

The financial outcomes observed in Wonokarto Village demonstrate that bamboo handicraft enterprises continue to serve as an important supplementary income source within rural households. Although average earnings remain below those obtained by craftsmen operating full-time enterprises, the additional income contributes to reducing household dependence on seasonal agricultural activities and creates greater income diversification. Household participation in production also enables labor resources to be utilized more efficiently while preserving traditional bamboo weaving skills inherited across generations. Meitriana et al. (2026) emphasized that improvements in business performance strengthen household welfare when supported by entrepreneurial capacity and social capital. Community empowerment programs centered on bamboo handicraft production have likewise been shown to expand economic opportunities while reinforcing the sustainability of rural household enterprises (Meliana, 2022). The economic contribution identified in Wonokarto Village reflects the continuing relevance of bamboo handicraft MSMEs as complementary livelihood activities capable of supporting household resilience in rural areas.

CONCLUSION

The findings indicate that the availability of bamboo raw materials in Wonokarto Village generally supports the continuity of bamboo handicraft production, although supply conditions remain inconsistent across several dimensions. Ordering procedures, purchase prices, and material quality were perceived positively by most respondents, reflecting relatively favorable procurement conditions for household-based enterprises. Challenges were primarily associated with the adequacy and continuity of bamboo supplies, as a considerable proportion of craftsmen continued to experience periodic shortages caused by limited supplier accessibility. To mitigate procurement risks, several respondents maintained relationships with multiple suppliers or utilized bamboo harvested from privately owned land whenever commercial supplies became insufficient. These procurement strategies demonstrate the adaptive capacity of rural bamboo MSMEs in maintaining production activities under fluctuating raw material availability. Strengthening supply chain coordination and improving access to sustainable bamboo resources remain important priorities for supporting long-term production continuity and enterprise resilience.

The ordinal logistic regression analysis demonstrates that time efficiency and production output significantly influence the performance of bamboo handicraft MSMEs, whereas cost efficiency and product diversification do not exhibit statistically significant effects. The final regression model explains 49.3% of the observed variation in enterprise performance, indicating that additional managerial, institutional, and market-related factors also contribute to business outcomes beyond the variables examined in this research. Promotional media and government policy were excluded from the final model because both variables failed to satisfy the required validity criteria during instrument evaluation. These findings suggest that operational effectiveness remains the principal determinant of enterprise performance within household-based bamboo handicraft businesses, particularly through

efficient production processes and higher production capacity. Improving managerial capability, market access, and institutional support may strengthen enterprise competitiveness while complementing existing production capabilities. Such efforts would enable bamboo handicraft MSMEs to achieve more sustainable business growth within increasingly competitive rural markets.

The income analysis confirms that bamboo handicraft production continues to function as a meaningful source of supplementary household income in Wonokarto Village. The average enterprise produced 49 units per month, generating an average monthly revenue of IDR 2,971,309.52, total production costs of IDR 1,809,511.39, and a corresponding net income of IDR 1,161,798.13. Kurungan ayam balian emerged as the dominant product, accounting for approximately 41% of total sales and demonstrating its importance in supporting enterprise revenue. Craftsmen operating bamboo weaving as their primary occupation earned substantially higher monthly income than those managing the business as a supplementary activity, highlighting the importance of production intensity and labor commitment in determining financial performance. The observed economic contribution illustrates that bamboo handicraft MSMEs remain an important component of rural livelihood diversification while strengthening household economic resilience. Expanding production capacity, improving market integration, and maintaining sustainable bamboo resource management are expected to enhance the long-term contribution of bamboo handicraft enterprises to rural economic development. Sustainable bamboo resource management is essential for maintaining both ecological functions and the long-term economic viability of bamboo handicraft MSMEs.

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