Determinants of MSME Sustainability in Kupang City: A Triple Bottom Line Perspective

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Abstract

This study applies the Triple Bottom Line (TBL) approach to analyze the determinants of sustainability for Micro, Small, and Medium Enterprises (MSMEs) in Kupang City. A mixed-methods design was used, combining qualitative analysis with ATLAS.ti, quantitative analysis with logistic regression, and priority analysis with the Analytic Hierarchy Process (AHP). The study involved MSME owners selected through purposive sampling. The variables examined include capital, business duration, age, education level, gender, financial literacy, financial inclusion, and fintech utilization. The findings show that MSME sustainability consists of profit, people, and planet dimensions. Logistic regression results indicate that education level and fintech utilization positively influence MSME sustainability, while financial inclusion has a negative effect. AHP analysis identifies profit as the highest priority for supporting MSME sustainability, followed by the people and planet aspects. Overall, the findings suggest that MSME sustainability in Kupang City is still primarily driven by economic factors.

Keywords: MSMEs Sustainability, Triple Bottom Line, ATLAS.ti, Logistic Regression, AHP, Kupang City

INTRODUCTION

Sustainability has become an increasingly important issue in the global economy, where economic growth is no longer measured solely by profit generation but also by social welfare and environmental responsibility (Santos et al., 2023). This concept is widely recognized through the Triple Bottom Line (TBL) approach introduced by John Elkington in Cannibals with Forks: The Triple Bottom Line of 21st Century Business. The TBL framework emphasizes three fundamental pillars of sustainable business, namely profit, people, and planet, which together form the basis for evaluating long-term business sustainability (Hammer et al., 2017). As a result, sustainable business practices require enterprises to integrate economic, social, and environmental dimensions into their operational activities.

The implementation of sustainability principles is particularly important for Micro, Small, and Medium Enterprises (MSMEs) because this sector plays a strategic role in supporting economic growth, employment, and community welfare (Endris et al., 2022). In Indonesia, MSMEs contribute approximately 60% to the national Gross Domestic Product (GDP) and absorb more than 97% of the workforce (Bappenas, 2023). Despite their significant contribution, many MSMEs in developing countries, including Indonesia, still prioritize short-term profit due to limited capital, low financial literacy, and restricted access to technology and financing (Durrani et al., 2024). Consequently, social and environmental aspects are often neglected because they are perceived as additional costs that may reduce business competitiveness.

The condition of MSMEs in Kupang reflects these challenges. Although the number of MSMEs in Kupang City increased significantly from around 2,500 in 2020 to 17,609 in 2024 (BPS, 2026), improvements in sustainable business

quality have not fully kept pace with this rapid growth. Many MSMEs still face challenges related to limited business capital, low financial literacy, limited financial inclusion, and low utilization of digital technologies and fintech services (Fandeli et al., 2025). In addition, the implementation of sustainability practices based on the Triple Bottom Line approach remains relatively low, particularly regarding social and environmental responsibility. These conditions indicate that MSME sustainability is influenced not only by economic capability but also by demographic characteristics, financial accessibility, and technological adoption.

Several previous studies have examined factors influencing MSME sustainability. Endris et al. (2022) emphasized the importance of MSMEs in improving economic resilience and community welfare. Teka (2022) found that demographic characteristics and entrepreneurial capacity significantly affect business sustainability. Furthermore, Martínez-Peláez et al. (2023) highlighted that digital technology and inclusive technological support can strengthen sustainable business development. Similarly, A. Ramadani et al. (2025) demonstrated that financial literacy, financial inclusion, and fintech utilization positively contribute to MSME competitiveness and long-term sustainability. However, most previous studies mainly focused on economically advanced regions such as Java and tended to emphasize financial aspects without comprehensively integrating demographic, technological, and contextual regional factors.

Therefore, this study aims to analyze the determinants of MSME sustainability in Kupang City using the Triple Bottom Line approach, integrating business and economic factors, demographic characteristics, and financial and technological access into a comprehensive analytical framework. This research is expected to make empirical contributions to the literature on sustainable MSME development, particularly in the relatively underexplored regions of Eastern Indonesia.

RESEARCH METHODOLOGY

This research employs a mixed-method approach that combines qualitative and quantitative methods to obtain comprehensive and in-depth findings regarding MSME sustainability in Kupang. The mixed-method approach in this study is applied concurrently, where qualitative and quantitative data are collected and analyzed simultaneously to provide a more comprehensive understanding of the determinants of MSME sustainability. The qualitative approach is used to explore the challenges, perceptions, and contextual factors affecting MSME sustainability through interviews and observations, while the quantitative approach is conducted using structured questionnaires and statistical analysis to empirically examine the relationship between variables.

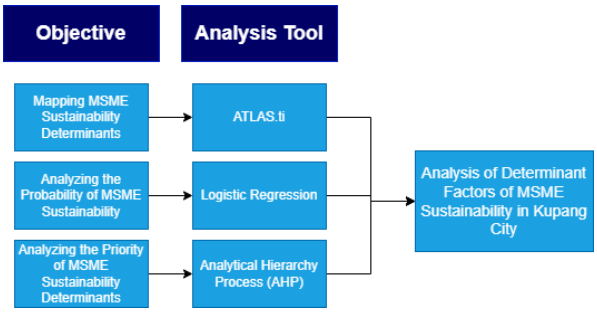


Figure 1. Research Framework

The subjects of this study are MSME owners in Kupang from a range of sectors, including trade, catering, services, and handicrafts. The research focuses on the sustainability of MSMEs based on the Triple Bottom Line (TBL) dimensions of profit, people, and planet. The study will examine several factors, including business capital, duration of business, age, level of education, gender, financial literacy,

financial inclusion, and utilisation of fintech.

Both primary and secondary data were used in this research. Primary data were collected via questionnaires and in-depth interviews with MSME owners, while secondary data were obtained from the Central Statistics Agency (BPS), Bank Indonesia, the Financial Services Authority (OJK), academic journals, books, and previous studies. The study involved 100 respondents, selected using purposive sampling and the Slovin formula with a 10% error tolerance.

The research instruments included questionnaires, interviews and observations. Qualitative analysis was conducted using ATLAS.ti version 8, logistic regression was used for quantitative analysis, and the Analytic Hierarchy Process (AHP) was employed to determine sustainability priorities based on the Triple Bottom Line framework.

FINDING AND DISCUSSION

Qualitative Findings: Mapping Of Determinant Factors Affecting MSME Sustainability Based On Triple Bottom Line Frameworks

Profit Dimension

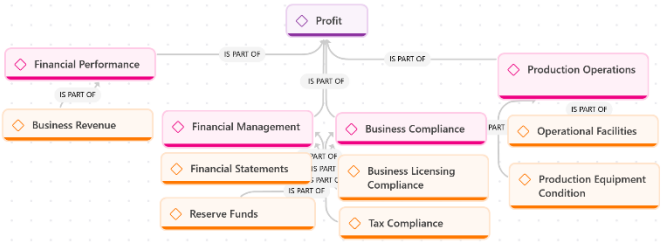


Figure 2. Mapping of Profit Dimension Factors

This research reveals that the profit dimension plays an important role in determining MSME sustainability in Kupang City. Based on the qualitative analysis using ATLAS.ti, the profit dimension consists of financial performance, financial management, business compliance, and production operations. The findings show that most MSMEs experienced relatively stable turnover growth after the post-pandemic recovery period, especially businesses operating in the food and beverage sector. Stable revenue allows businesses to maintain operational continuity and improve resilience against economic uncertainty. However, several sectors such as photocopying and printing services experienced declining demand due to digital transformation, indicating that business sustainability is strongly influenced by the ability to adapt to market and technological changes.

The findings also indicate that financial management among MSMEs has gradually improved. Most respondents already conduct simple bookkeeping and prepare reserve funds to maintain operational sustainability during uncertain conditions. Businesses with better financial management tend to demonstrate stronger resilience and operational stability. Nevertheless, several MSMEs still rely on manual and memory-based financial recording systems, particularly older business owners who prioritize practical experience over formal accounting systems. This finding is in line with the study of Mishra and Kiran (2024), which states that managerial capability and resource management become important determinants of MSME sustainability.

In terms of business compliance, all respondents already possess legal business permits and environmental permits through the OSS-RBA system. Tax compliance among MSMEs was also relatively good. This condition reflects increasing awareness among business owners regarding the importance of legality and formal business administration, which supports access to government programs, financial institutions, and business partnerships. This finding supports the

argument of Lubis and Sabrina (2025) that business adaptability and institutional integration are essential factors influencing sustainability in eastern Indonesian MSMEs.

Operational production factors also influence MSME sustainability. Most respondents stated that their operational facilities and production equipment are adequate for current business activities, although several businesses still require additional production equipment, packaging tools, and marketing facilities to improve productivity and competitiveness. Overall, the profit dimension demonstrates that financial capability,
operational efficiency, and business adaptability become important determinants of MSME sustainability in Kupang City.

People Dimension

Figure 3. Mapping of People Dimension Factors

The people dimension reflects the social sustainability of MSMEs through labor absorption, employee welfare, work dynamics, and human resource development. The findings show that MSMEs in Kupang City contribute significantly to employment creation, particularly for local communities and women. Most MSMEs belong to the small enterprise category employing between 5–19 workers. Several respondents stated that they provide employment opportunities even for individuals without formal educational qualifications as long as they demonstrate willingness to learn and work seriously. This finding indicates that MSMEs play an inclusive social role in strengthening community welfare.

Employee welfare among MSMEs was measured through wages, wage classification systems, and holiday allowances. Although most MSMEs still provide wages below the regional minimum wage, respondents generally determine salaries based on work experience, loyalty, and employee performance. Medium-scale MSMEs tend to demonstrate better welfare practices because they possess stronger financial capacity compared to micro-enterprises. These findings support Farhani et al. (2025), who emphasize that inclusivity and equitable employment practices contribute positively to sustainable economic development.

The findings also reveal that work dynamics among MSMEs are relatively flexible. Most businesses apply overtime systems depending on seasonal demand such as holidays, graduation seasons, and special events. However, many businesses operate more than eight working hours per day. From the social sustainability perspective, this condition may potentially affect employee work-life balance even though longer working hours are often considered necessary to maintain productivity and business continuity. This finding aligns with Bonifacio et al. (2025), who explain that excessive working hours may influence employee well-being and work-life balance.

Human resource development within MSMEs remains relatively operational-oriented. Employee training is generally conducted through on-the-job training systems and probation periods. Meanwhile, participation of business owners in formal entrepreneurship training remains relatively low due to limited information access and perceptions that training materials are less relevant to business needs. This finding is consistent with Rodrigues et al. (2022), who argue that

MSMEs often prioritize operational efficiency over long-term human resource development.

Planet Dimension

Figure 4. Mapping of Planet Dimension Factors

The planet dimension reflects the environmental responsibility of MSMEs in maintaining sustainable business practices. The findings indicate that environmental awareness among MSMEs in Kupang City has gradually developed, particularly through the implementation of environmentally friendly practices, energy efficiency, and environmental compliance.Most respondents have started implementing the 3R principles (Reduce, Reuse, Recycle) in their operational activities. Several businesses cooperate with local waste banks and waste management services to manage production waste. However, environmentally friendly packaging has not been widely adopted because local suppliers remain limited and the cost of obtaining green packaging from other regions such as Java and Bali is relatively expensive. This finding is in line with Ncube et al. (2020), who state that remote regions often face structural barriers in accessing environmentally friendly packaging materials.

In terms of energy efficiency, most MSMEs belong to the micro-business electricity category and generally experience stable energy consumption patterns. Increased electricity consumption mainly occurs during seasonal periods such as Christmas and New Year when production activities intensify. Although energy efficiency practices are still relatively simple, MSMEs have demonstrated awareness regarding the importance of controlling operational costs through efficient energy use. This finding supports Gennitsaris et al. (2023), who explain that energy efficiency contributes to both operational sustainability and cost reduction.

Environmental compliance among MSMEs in Kupang City can be categorized as relatively good. All respondents already possess environmental permits in the form of SPPL documents through the OSS-RBA system. In addition, most businesses have undergone periodic inspections conducted by the Environmental Agency. These findings indicate that MSMEs have started integrating environmental responsibility into their business operations, although broader implementation of green business practices still requires stronger institutional support and infrastructure availability. This finding aligns with Handoyo (2018), who emphasizes that environmental compliance is an important component of sustainable business development.

Logistic Regression: Determinant Variables Affecting MSME Sustainability Based on TBL

Variable	Coefficient	Z-Statistic	Probability	Odds Ratio
Capital (X1)	0,000	1,966	0,161	1,000
Business Duration (X2)	-0,011	0,166	0,684	0,989
Age (X3)	0,036	1,006	0,316	1,037
Education (X4)*	1,251	4,262	0,039	3,494
Gender (X5)	-0,789	2,091	0,148	0,455

Financial Literacy (X6)	1,325	2,311	0,128	3,764
Financial Inclusion (X7)*	-2,192	6,000	0,014	0,112
Fintech (X8)*	1,527	4,056	0,044	4,604
McFadden R-Squared		0,170		
LR Statistic		22,378		
Prob (LR Statistic)		0,004		

Table 1. Logistic Regression

The findings reveal that education level, financial inclusion, and fintech utilization significantly influence MSME sustainability. Education level demonstrates a positive and significant effect because MSME owners with higher educational backgrounds tend to possess stronger managerial capabilities, strategic planning skills, and adaptability toward technological and market developments. Higher education also supports entrepreneurial orientation and innovation capacity, which are essential for sustainable business development. This finding supports Meitriana et al. (2024), who found that higher educational attainment improves MSME competitiveness and sustainability.

Financial inclusion significantly affects MSME sustainability, although the relationship demonstrates a negative direction. This finding indicates that access to financial services alone does not automatically guarantee business sustainability if business owners lack adequate managerial capability and financial discipline. Excessive dependence on external financing may increase business risk when not accompanied by effective financial management. This result is consistent with Hayati and Nugraeni (2025), who argue that financial access without proper financial management capability may weaken long-term sustainability.

Meanwhile, fintech utilization positively influences MSME sustainability. MSMEs utilizing digital payment systems, mobile banking, and financial technology applications demonstrate stronger operational efficiency and competitiveness. Digital financial technology facilitates market transactions, improves financial accessibility, and supports broader business market expansion. This finding is supported by Uzuoamaka et al. (2024), who state that technology utilization enhances business adaptability and sustainability.

On the other hand, the variables of capital, business duration, age, gender, and financial literacy do not significantly influence MSME sustainability. Most MSMEs in Kupang City still operate on a micro scale using personal funds, causing sustainability to depend more on business adaptability and managerial capability than on capital size. Business duration also does not determine sustainability because both newly established and long-established businesses possess equal opportunities to survive depending on their innovation and adaptation strategies. These findings align with Abdi et al. (2021) and Collevecchio et al. (2024), who explain that business longevity alone does not guarantee sustainability without continuous innovation and adaptive capacity.

Age and gender likewise do not significantly affect sustainability because each demographic group possesses different comparative advantages. Younger entrepreneurs tend to be more adaptive to technology, while older entrepreneurs rely more on business experience and networks. Furthermore, both male and female entrepreneurs demonstrate relatively equal opportunities in developing sustainable businesses. These findings support Shava et al. (2016), who emphasize that gender is not the primary determinant of business sustainability.

Although respondents generally possess basic financial knowledge,

financial literacy also does not significantly influence sustainability because practical implementation within daily business operations remains limited. This finding is in line with Melia (2022), who explains that financial literacy without operational implementation tends to have limited impact on MSME sustainability.

Table 2. AHP Pairwise Comparison Scale

Importance	Definition	Explanation
1	Equal Importance	Two criteria contribute equally to the objective
3	Moderate Importance	Judgement slightly favours one factor over another
5	Strong Importance	Judgement strongly favours one factor over another
7	Very Strong Importance	A criterion is strongly favored, and its dominance is demonstrated in practice
9	Absolute Importance	The importance of one over another is affirmed in the highest possible order
2,4,6,8	Intermediate	Used to show a compromise between the priorities above

Table 3. Pairwise Comparison of the Main Criteria

Criteria	Priority Weight	Rank
Profit	0,623	1
People	0,219	2
Planet	0,159	3

CR Value = 0,00456 < 0,10 (consistent)

Table 4. Priority weights of the Profit Sub-Criteria

Profit Sub-Criteria	Priority Weight	Rank
Wages	0,381	1
Relationship and Communication between Owners and Employees	0,291	2
Equal Employment Opportunities	0,187	3
Human Resource Training	0,140	4

CR Value = 0,00456 < 0,10 (consistent

Table 5. Priority weights of the People Sub-Criteria

People Sub-Criteria	Priority Weight	Rank
Compliance with Environmental Regulations	0,327	1
Waste Management	0,268	2
Energy Efficiency	0,265	3
Use of Environmentally Friendly Packaging	0,140	4

CR Value = 0,00283 < 0,10 (consistent)

Table 6. Priority weights of the Planet Sub-Criteria

Planet Sub-Criteria	Priority Weight	Rank
Compliance with Environmental Regulations	0,327	1
Waste Management	0,268	2
Energy Efficiency	0,265	3
Use of Enviromentally Friendly Packaging	0,140	4

CR Value = 0,00283 < 0,10 (consistent)

Priority Factors Affecting MSME Sustainability Based On Triple Bottom Line (TBL)

The findings indicate that the profit dimension becomes the primary priority factor influencing MSME sustainability in Kupang City because financial capability directly determines operational continuity and business resilience. Financial management, operational efficiency, and business compliance emerged as the strongest supporting factors within this dimension. This finding is consistent with

the Triple Bottom Line theory, which emphasizes that economic sustainability forms the foundation for maintaining long-term business operations.

The people dimension occupies the second priority position because labor absorption, employee welfare, and human resource development contribute significantly to operational sustainability and productivity improvement. MSMEs not only function as business entities but also play an important social role in supporting local employment and community welfare. This finding supports the perspective of sustainable entrepreneurship proposed by Baber et al. (2023), which highlights the importance of social responsibility in sustainable business development.

Meanwhile, the planet dimension remains at an early development stage. Although environmental awareness has started to emerge among MSMEs, limitations related to environmentally friendly infrastructure, waste management systems, and green packaging supply chains still hinder broader implementation of sustainable environmental practices. This condition indicates that environmental sustainability among MSMEs in Kupang City still requires stronger institutional support, infrastructure availability, and government facilitation.

CONCLUSION

The findings suggest that the determinants of micro, small, and medium enterprise (MSME) sustainability in Kupang City can be categorized into three main categories based on the Triple Bottom Line (TBL) framework: profit, people, and planet. The profit dimension includes financial performance, financial management, business compliance, and production operations. Business turnover stability was identified as the most influential factor in sustaining MSMEs. The people dimension emphasizes the contribution of MSMEs to inclusive employment generation. However, employee welfare and human resource development are limited. The "planet" dimension reveals that while most MSMEs have adopted basic environmentally sustainable practices, such as waste management and implementing the 3R principle, the use of eco-friendly packaging is low due to cost and accessibility constraints.

Logistic regression analysis shows that education and fintech positively affect MSME sustainability. Higher education levels contribute to improved managerial capabilities, innovation, and decision-making. Meanwhile, fintech utilization enhances operational efficiency, digital payment accessibility, and financing opportunities. However, financial inclusion exhibits a negative relationship with sustainability because the majority of MSMEs in Kupang City rely primarily on personal capital rather than external financial institutions. Additionally, variables such as capital, business duration, age, gender, and financial literacy were found to have no significant influence on MSME sustainability. Furthermore, Analytical Hierarchy Process (AHP) analysis indicates that profit is the highest priority for MSMEs, followed by people and the planet. This suggests that economic considerations dominate social and environmental concerns in business operations.

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