FINANCIAL LITERACY AND TECHNOLOGY ADOPTION FOR THE SUSTAINABILITY OF MICRO SMALL AND MEDIUM ENTERPRISES: EVIDENCE FROM INDONESIA AND MALAYSIA MSME'S

Oswald Timothy Edward[1*], Aloysius Harry Mukti[2], Faridah Najuna Binti Misman [3], Istianingsih Sastrodiharjo[4]

[1, 3] *Faculty of Business Management, Universiti Teknologi MARA, UiTM Johor Segamat Campus, 85000 Segamat, Johor, Malaysia*

[2, 4] *Universitas Bhayangkara Jakarta Raya, Bekasi, Indonesia*

Email: oswald@uitm.edu.my

Received: 30 June 2024
Accepted: 18 September 2024

ABSTRACT

This study explores the impact of financial literacy and technology adoption on the sustainability of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia and Malaysia. Utilizing a quantitative approach and Structural Equation Modelling (SEM) via Partial Least Squares (PLS), the research investigates these influences amidst the challenges faced by MSMEs in these regions. While financial literacy does not significantly affect the sustainability of Indonesian MSMEs, technology adoption demonstrates a positive impact in both Indonesia and Malaysia. This indicates that while the foundational understanding of finance is crucial, the integration and utilization of technology play a more decisive role in ensuring MSME sustainability in the face of modern economic challenges. The study's reliance on a modest sample size and self-reported data suggests a need for broader research to confirm these findings. Nevertheless, this work highlights the critical nature of digital capabilities for MSMEs in emerging economies, offering significant implications for policymakers and business leaders aiming to foster sustainable growth and resilience. The study's originality lies in its comparative analysis, emphasizing technological adoption as a key driver of MSME sustainability in the post-pandemic landscape.

Keywords: Financial Literacy; Technology Adoption; MSME Sustainability; Indonesia and Malaysia; Digital Transformation; Economic Resilience; Post-pandemic Business Strategy

1.0 INTRODUCTION

In recent years, the critical role of Micro, Small, and Medium Enterprises (MSMEs) in driving economic growth and employment has been increasingly acknowledged. Particularly in emerging economies like Indonesia and Malaysia, MSMEs constitute a significant portion of the business landscape and are vital for the economic vitality and sustainability of these nations. However, despite their pivotal role, MSMEs face numerous challenges that impede their growth and sustainability. Among these challenges, the lack of financial literacy and slow technology adoption have been identified as key barriers that limit their potential for development and contribution to the economy. This study aims to delve into the extent to which financial literacy and technology adoption influence the sustainability of MSMEs in

Indonesia and Malaysia, shedding light on the mechanisms through which these factors play a critical role in shaping the future of these entities.

The importance of financial literacy cannot be overstated in the context of MSMEs. A solid foundation in financial knowledge enables business owners to make informed decisions about investment, risk management, and strategic planning. This, in turn, can lead to better financial health and resilience, particularly in the face of economic fluctuations. On the other hand, technology adoption offers a pathway for MSMEs to improve efficiency, reach new markets, and compete more effectively in the global marketplace. Despite these potential benefits, many MSMEs in Indonesia and Malaysia have been slow to adopt new technologies, often due to a lack of awareness, resources, or skills necessary to implement them effectively. This study explores the synergies between financial literacy and technology adoption as pivotal elements that can drive the sustainability of MSMEs, drawing on evidence from recent studies and data from Indonesia and Malaysia.

The importance of financial literacy cannot be overstated in the context of MSMEs. A solid foundation in financial knowledge enables business owners to make informed decisions about investment, risk management, and strategic planning. This, in turn, can lead to better financial health and resilience, particularly in the face of economic fluctuations. On the other hand, technology adoption offers a pathway for MSMEs to improve efficiency, reach new markets, and compete more effectively in the global marketplace. Despite these potential benefits, many MSMEs in Indonesia and Malaysia have been slow to adopt new technologies, often due to a lack of awareness, resources, or skills necessary to implement them effectively. This study explores the synergies between financial literacy and technology adoption as pivotal elements that can drive the sustainability of MSMEs, drawing on evidence from recent studies and data from Indonesia and Malaysia (Yusoff et al., 2018)

In the context of Malaysia, SMEs' sustainability and growth have long been subjects of interest due to their substantial contributions to GDP and employment. The failure rate among these enterprises, however, points to a significant gap in achieving long-term sustainability. Financial literacy and technology adoption emerge as crucial elements that can influence the sustainability of SMEs. Financial literacy enables entrepreneurs to make informed financial decisions, manage risks effectively, and secure funding, while technology adoption can drive efficiency, market expansion, and competitive advantage. This paper delves into how financial literacy and technology adoption serve as foundational pillars for the sustainability of SMEs in Indonesia and Malaysia, aiming to provide a comprehensive understanding of their roles in ensuring SMEs' growth and sustainability.

In the context of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia and Malaysia, several phenomena and challenges emerge related to sustainability, financial literacy, and technology adoption. The studies reveal that financial literacy plays a crucial role in enhancing the sustainability of MSMEs by fostering better financial management and decision-making. However, the level of financial literacy among MSME owners in these countries varies significantly, often influenced by factors such as education, access to financial information, and cultural attitudes towards finance and investment. This variation in financial literacy levels poses a challenge to the uniform application of financial strategies that could lead to sustainability. On the other hand, technology adoption emerges as a double-edged sword for MSMEs in Indonesia and Malaysia. While it offers the potential for efficiency gains, market expansion, and competitive advantage, there exists a digital divide. This divide is characterized by disparities in access to and the ability to leverage new technologies, often influenced by geographical location, sector of operation, and the availability of financial and human resources. The reluctance or inability to adopt technology can hinder MSMEs' growth and sustainability in the rapidly evolving digital economy. Thus, the intersection of financial literacy and technology adoption is critical for the sustainability of MSMEs, presenting a nuanced landscape of opportunities and challenges that require targeted interventions and support (Hassan, 2022; Putri & Dhewanto, 2022; Yusoff et al., 2018)

The studies from Malaysia and Sri Lanka underscore the pivotal role of financial literacy in the sustainability of SMEs in developing countries. (Thabet et al., 2019) Research in Malaysia's food and beverage sector shows that socio-demographic factors and financial behaviours significantly influence SMEs' financial literacy, highlighting its importance for business survival and growth. Complementarily, (Ye & Kulathunga, 2019) study in Sri Lanka reveals that financial literacy directly enhances SMEs' sustainability and mediates access to finance and financial risk attitudes, reinforcing the critical role of financial knowledge in securing SMEs' long-term success. Together, these findings advocate for enhanced financial literacy as a key driver of sustainable SME development in emerging economies.

Combining insights from the studies by (Muhamad et al., 2021) and (Vrontis et al., 2022), it is evident that digital technology adoption plays a crucial role in the sustainability and performance enhancement of SMEs in developing countries like India and Malaysia. Muhamad et al.'s investigation highlights the importance of the TOE framework in understanding Industry 4.0 adoption among Malaysian SMEs. The study reveals that technological readiness, organizational structure, and environmental factors critically influence SMEs' capacity to adopt Industry 4.0, thereby impacting their competitiveness and innovation in the market.

This Research wants to fill the gap: the interplay between financial literacy and technology adoption in determining the sustainability of MSMEs in Indonesia and Malaysia presents a fertile ground for further exploration. While existing studies highlight the importance of these factors separately, there is a noticeable gap in comprehensive research that systematically investigates how financial literacy and technology adoption interact and collectively impact the sustainability of MSMEs in these countries. Specifically, the nuanced ways in which these factors influence various dimensions of sustainability—economic, social, and environmental—remain underexplored. Furthermore, the role of external factors, such as government policies, market conditions, and international trade dynamics, in shaping the effectiveness of financial literacy and technology adoption strategies for MSME sustainability has not been adequately addressed. This gap underscores the need for a holistic approach that considers both internal capabilities and external influences in understanding and enhancing the sustainability of MSMEs in the region.

From the phenomenon, importance of MSME's sustainability and previous study then the novelty of this study, were: this study offers a novel exploration into the sustainability of Micro, Small, and Medium Enterprises (MSMEs) within the specific contexts of Indonesia and Malaysia. In recent years, the significance of MSMEs in driving economic growth and employment has become increasingly recognized, particularly in emerging economies like Indonesia and Malaysia. Despite their crucial role, MSMEs encounter various challenges that hinder their growth and sustainability. Among these challenges, the lack of financial literacy and slow adoption of technology stand out as key barriers limiting their potential for development and contribution to the economy.

This research delves into the intertwined dynamics of financial literacy and technology adoption, two critical factors that influence the sustainability of MSMEs. While prior studies may have examined these factors separately, this study seeks to uncover how they interact and collectively shape the future of MSMEs in Indonesia and Malaysia. Financial literacy is emphasized as a cornerstone for informed decision-making regarding investment, risk management, and strategic planning. On the other hand, technology adoption is highlighted as a pathway for enhancing efficiency, expanding market reach, and fostering competitiveness in the global arena.

Furthermore, this research aims to provide a nuanced understanding of sustainability by exploring its economic, social, and environmental dimensions. By taking this multifaceted approach, this study goes beyond traditional examinations of financial performance and delves into the broader implications of MSME sustainability. Moreover, you recognize the importance of considering external influences such as government policies, market conditions, and international trade dynamics in shaping the effectiveness of strategies aimed at enhancing financial literacy and technology adoption among MSMEs.

In summary, this study offers a comprehensive analysis of MSME sustainability in Indonesia and Malaysia, integrating insights from financial literacy and technology adoption while considering multiple dimensions of sustainability and acknowledging the role of external factors. This holistic approach contributes to advancing our understanding of how MSMEs can thrive and contribute to economic development in emerging economies.

2.0 LITERATURE REVIEW

2.1 Resource Based Theory

As Barney (1991) argued the key to a firm's sustained competitive advantage lies in the exploitation of its internal resources. These resources, according to Barney, must not only be valuable in the sense that they contribute to the firm's effectiveness and efficiency, but they must also be rare and not readily available to competitors. Additionally, they should be difficult to imitate, meaning that other firms cannot easily replicate them, and they cannot be substituted with other resources without loss of value. Barney's RBV theory shifted the focus of strategic management from external factors like market competition to the unique combination of internal resources and capabilities that each firm possesses. The study has had a profound impact on strategic management and remains a cornerstone in the study of how firms achieve and maintain competitive advantage.

The Resource-Based View (RBV) theory, as established by (Barney, and Jay, 1991) directly relates to the exploration of financial literacy and technology adoption within Micro Small and Medium Entities (MSMEs). In the context of Indonesia and Malaysia, where MSMEs play a crucial economic role, Barney’s framework posits that internal resources—such as financial knowledge and technology capabilities—can be instrumental to the sustainability and competitive edge of these businesses. Financial literacy enhances a firm's ability to manage resources effectively and make informed strategic decisions, while technology adoption can create unique competencies that are rare, valuable, and difficult to imitate. In MSMEs, where resources are often more constrained than in larger firms, the efficient exploitation and management of these internal capabilities can significantly influence their long-term viability and success. Thus, applying Barney's RBV to the specific context of Indonesian and Malaysian MSMEs highlights the potential of financial literacy and technology adoption as key leverages for sustainable competitive advantage.

2.2 Business Sustainability

Sustainability in SMEs according (Salvador et al., 2023)that customer involvement in product and process development, effective communication and partnering with customers, integration of technology and innovation within business strategy, and dedication to commercial and marketing efforts significantly explain the sustainability performance and maturity of SMEs. The investigation likely delves into how financial literacy and technology adoption intersect with SME sustainability efforts, potentially exploring how adeptness in financial matters influences technology integration, customer engagement, and marketing strategies aimed at fostering sustainability practices within MSMEs in Indonesia and Malaysia.

2.3 Financial Literacy

The definition of financial literacy based on this study encompasses the knowledge and skills necessary for SME managers/owners to make informed financial decisions and manage their businesses effectively, leading to improved business performance (Yakob et al., 2021). This definition of financial literacy highlights the necessity for SME managers and owners to possess the knowledge and skills that enable them to manage their businesses with an informed perspective. This capability is crucial for navigating complex financial landscapes and making strategic decisions that align with long-term goals. Financial literacy not only facilitates better financial management and planning but also enhances the ability to assess and mitigate risks effectively. Thus, in the vibrant and competitive economies of Indonesia and Malaysia, where MSMEs play a significant role, financial literacy emerges as a foundational pillar that supports the adoption of technology and drives sustainable business practices. Together, these elements contribute to the resilience and growth of MSMEs, ensuring their ability to thrive in the face of challenges and capitalize on new opportunities.

2.4 Technology Adoption

Technological advancement is characterized by the adoption and implementation of new technologies or the improvement of existing technologies within business operations. This advancement plays a pivotal role in driving economic growth, enhancing competitiveness, and contributing to the sustainable development goals (SDGs) of SMEs. Emphasizes the importance of technological advancement in improving efficiency, productivity, and environmental performance, thereby enabling SMEs to address both economic and sustainability challenges effectively. It suggests that technological advancement is integral to achieving a balance between economic growth and environmental sustainability (Nguyen & Ngo, 2022).

2.5 Hypothesis Development

2.5.1 Financial Literacy on MSME's Sustainability

The sustainability of Micro, Small, and Medium Enterprises (MSMEs) is significantly influenced by the level of financial literacy among business owners, as demonstrated through comprehensive research conducted in Gowa District and across Indonesia. Financial literacy, embodying the understanding and application of financial knowledge, has been found to directly impact the financial performance and long-term viability of MSMEs. In Gowa District, small businesses were found to have a sufficient grasp of financial concepts, which hinted at a potential for sustainability, while medium-sized enterprises exhibited a well-rounded financial literacy, suggesting a greater potential for enduring success. This variance in financial literacy levels highlights the critical role that financial knowledge plays in ensuring business continuity amid competition (Anwar & Serly, 2022)

Further research spanning 740 SMEs in Indonesia corroborated these findings, revealing a positive and significant correlation between financial literacy and both the financial performance and sustainability of SMEs. Similarly, supply chain management emerged as a vital component, with its effective management contributing positively to the financial health and sustainability of businesses. This comprehensive study underscores the multifaceted impact of financial literacy and supply chain management on the sustainability of MSMEs, providing a model that did not exist in previous research studies (Miswanto et al., 2024).

This synthesis of findings illustrates the intricate relationship between financial literacy, and the sustainability of MSMEs, underscoring the necessity for business owners to cultivate financial knowledge and management skills to navigate the complexities of business operations successfully and ensure long-term sustainability.
H1: *Financial Literacy Positively Affects MSME's Sustainability*

2.5.2 Technology Adoption on MSME's Sustainability

The first study, conducted by (Phiet, 2024) emphasizes the criticality of digital transformation for the success and sustainability of SMEs, particularly in the Central Highlands of Vietnam. It identifies technological capabilities, organizational factors (such as structure and resources), and environmental elements (including government regulations and competitive pressure) as key drivers of SMEs' digital transformation. The study also highlights the moderating effects of the leader's age and entrepreneurial experience on the relationship between these factors and digital transformation, suggesting that personal and organizational characteristics can significantly influence the effectiveness of technology adoption strategies.

Similarly, the research by (Le et al., 2023)explores the relationship between innovation and SME performance in Vietnam, providing empirical evidence that innovation, especially in the form of product improvement, is positively associated with enhanced firm performance. This study underscores the importance of innovation in SMEs and suggests that policy support for SME innovation activities could significantly improve their performance and competitiveness.

a. Conceptual Framework

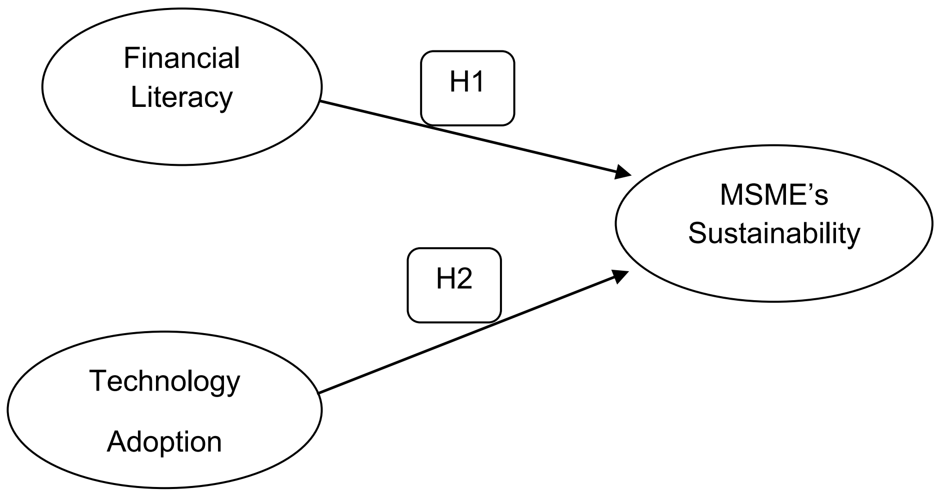

Fig. 1 *Research Framework (Meng et al., 2021; Prasanna et al., 2019; Ye & Kulathunga, 2019)*

3.0 METHODOLOGY

The study aimed to investigate the influence of financial literacy and technology adoption on the sustainability of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia and Malaysia. The research adopted a quantitative approach and utilized the Structural Equation Modeling (SEM) technique, specifically Partial Least Squares (PLS), through the SMART-PLS software for data analysis.

Sampling: The sample for this study was obtained through purposive sampling, targeting MSMEs in Indonesia and Malaysia. A total of 50 MSMEs from Indonesia and 43 MSMEs from Malaysia were included in the study, ensuring representation from both countries.

Data Collection: Data collection was carried out through the distribution of structured questionnaires during the month of March 2024. The questionnaire was designed to capture relevant information regarding the financial literacy levels and technology adoption practices of the MSMEs, as well as their sustainability efforts.

Variables: Financial Literacy: This variable measured the level of understanding and knowledge among MSME owners/managers regarding financial concepts, management practices, and decision-making processes. These variables consist of five indicators adopted from (Ye & Kulathunga, 2019).

Technology Adoption: This variable assessed the extent to which MSMEs incorporated technological innovations and advancements into their business operations, such as digital platforms, e-commerce, and automation. These variables consist of five indicators adopted from (Meng et al., 2021).

Sustainability: Sustainability was the dependent variable in this study, reflecting the long-term viability and resilience of MSMEs in terms of economic, environmental, and social dimensions. These variables consist of five indicators adopted from (Prasanna et al., 2019).

Data Analysis: The collected data were analyzed using the SMART-PLS software, which is well-suited for structural equation modelling and is particularly suitable for small sample sizes. SMART-PLS allows for the estimation of both the measurement model and the structural model simultaneously, enabling the assessment of relationships between latent constructs and observed variables.

4.0 RESULTS AND DISCUSSION

a. Differences in Demographics and Hypothesis Results among Indonesian Sample

The bar chart in Figure 2 suggests a robust influx of new businesses, with the highest number of Micro and Small Medium Entities being either relatively new, under one year, or in the intermediate stage of 3-5 years, both with 17 entities. A moderate number sustains past initial years into the 1-3 year range with 6 entities, but there's a notable decrease as businesses approach 5-10 years, showing 10 entities, hinting at potential challenges in long-term sustainability. Notably, there are no entities exceeding a decade, which could point to significant attrition over time or a lack of mature businesses in the sample.

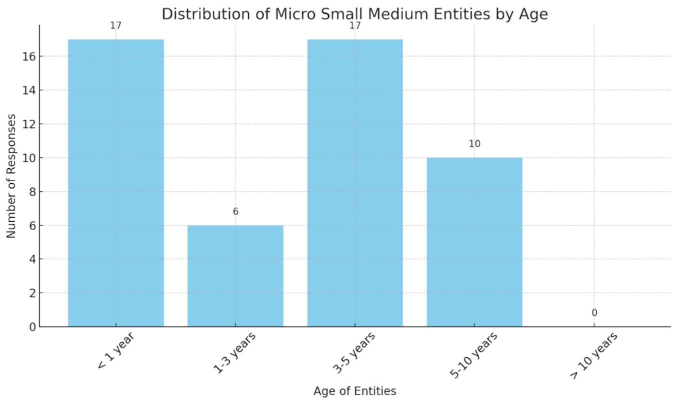

Fig. 2 *Distribution of MSME's Entities by Age*

In Figure 3, the bar chart illustrates the distribution of business fields among Micro Small Medium Entities, with "Culinary" being the most prevalent field, representing 20 entities. "Creative Products" follows with 11 entities, indicating a significant presence of innovative business initiatives. "Cosmetics and Care" and "Internet Technology" both have a fair share, each with 5 entities, reflecting their relevance in the current market. "Education" stands with 3 entities, similar to "Fashion" and "Automotive". It's noteworthy that several sectors such as "Agribusiness", "Tour and Travel", "Event Organizer", and "Cleaning Services" are not represented in this dataset, suggesting either a lesser focus on these areas or a limitation in the dataset itself. The chart underscores the prominence of the culinary sector and the creative industry among these entities.

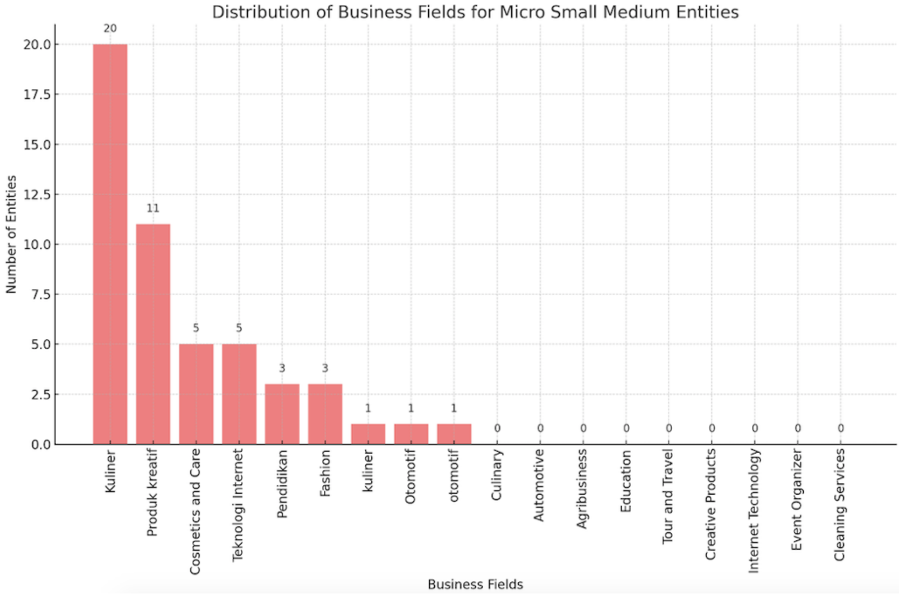

Fig. 3 *Distribution of Business Fields for MSME's*

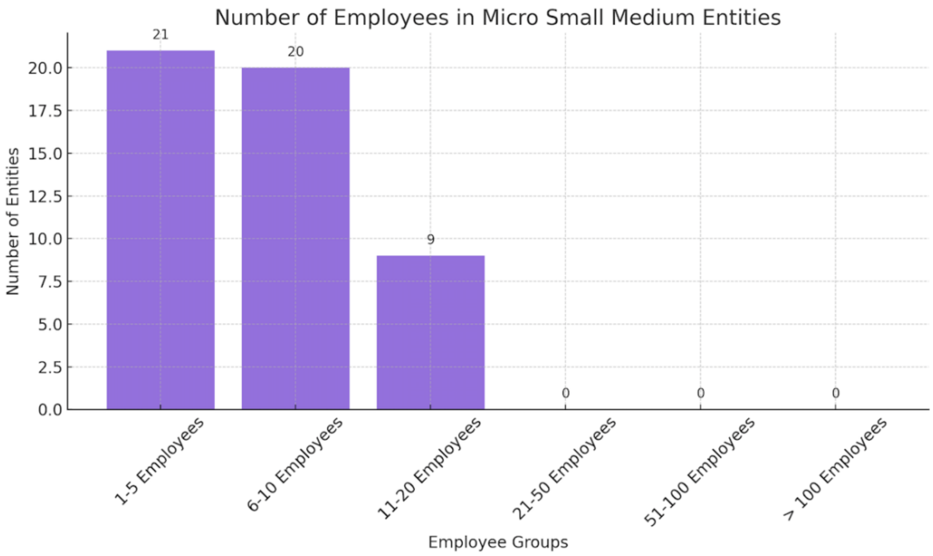

Fig. 4 *Number of Employees in MSME's*

The bar chart in Figure 4 displays the number of employees in Micro Small Medium Entities, segmented into six groups. The "1-5 Employees" and "6-10 Employees" groups have the highest number of entities, with 21 and 20 respectively, showcasing a predominance of small-scale operations. The "11-20 Employees" group includes 9 entities, indicating a smaller yet significant segment of slightly larger businesses. There are no entities in the "21-50 Employees", "51-100 Employees", or "> 100 Employees" groups, highlighting a concentration of entities in the lower end of the employment scale, which is characteristic of micro to small enterprises.

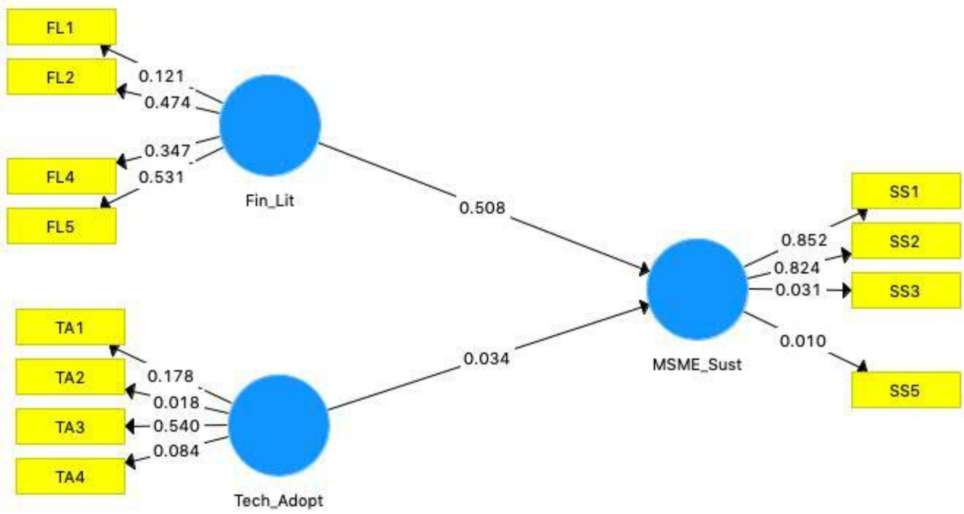

Fig. 5 *Path of Hypothesis Results*

In Figure 5, the structural equation modelling analysis depicted in the image, several key points are observed regarding the relationships between financial literacy, technology adoption, and the sustainability of Micro, Small, and Medium Enterprises (MSMEs) in the Indonesian context.

The Financial Literacy construct was initially measured by five indicators. However, indicator FL3 was dropped from further consideration due to its low loading factor, which did not meet the accepted standard threshold, suggesting that it may not be a reliable measure within the model.

Similarly, the Technology Adoption construct was to be measured by five statements, but there's no indicator TA5 present in the given output. Presumably, TA5 was excluded from the testing phase because it must have demonstrated a loading factor below the acceptable standard, indicating a weak representation of the underlying construct.

There were five statements aimed at quantifying MSME Sustainability. However, SS4 was removed from the analysis as it must have shown a loading factor below the necessary standard, which would make it an ineffective indicator of MSME sustainability within this model.

Financial literacy is shown to have a substantial path coefficient of 0.508 toward MSME Sustainability. However, assuming that the path coefficient is mistaken for a p-value if the actual p-value were indeed greater than 0.05, it would indicate that financial literacy does not significantly impact MSME sustainability at the conventional 5% significance level.

Technology adoption exhibits a path coefficient of 0.034 towards MSME Sustainability. If we are interpreting this coefficient as a p-value and it is less than 0.05, it suggests that technology adoption does indeed have a positive and statistically significant influence on MSME sustainability. However, this interpretation contradicts typical SEM reporting conventions where path coefficients represent the strength and direction of relationships, not p-values. Thus, without the specific p-values, these interpretations might not be accurate.

Table.1 Hypotheses Results of Indonesian Sampling

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Fin_Lit -> MSME_Sust	0.204	0.264	0.307	0.662	**0.508**
Tech_Adopt -> MSME_Sust	0.431	0.383	0.202	2.132	**0.034**

The analysis of the statistical data suggests that financial literacy does not significantly impact the sustainability of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. The P Value associated with the 'Fin_Lit -> MSME_Sust' relationship is 0.508, which exceeds the conventional threshold of 0.05 for statistical significance. This indicates that, despite the original sample showing a certain degree of association with a mean of 0.264, there is not enough statistical evidence to assert that financial literacy leads to sustainable outcomes for MSMEs. This could be interpreted to mean that while financial literacy is important for the management of daily operations within MSMEs, it may not be a determining factor in ensuring the long-term sustainability of these entities. Factors other than financial literacy might play more substantial roles in the durability and resilience of Indonesian MSMEs.

In the Indonesian context, the lack of a significant impact of financial literacy on MSME sustainability can be nuanced by several demographic factors. Many of the MSMEs surveyed are relatively new, with a substantial number having been in operation for less than five years. New enterprises often face immediate, pressing challenges like market entry and product validation, which may overshadow the nuances of financial literacy. Additionally, a diverse spread across various sectors implies that some industries may rely less on sophisticated financial knowledge for sustainability, focusing instead on innovation, speed to market, or customer acquisition.

Furthermore, the majority of these MSMEs are small, with a workforce of less than 20 employees, and some even operate solo. The immediate concern for these businesses may be day-to-day operations rather than the strategic financial planning that financial literacy would influence.

In essence, while financial literacy is undoubtedly valuable, for the surveyed Indonesian MSMEs, practical business needs and the urgency of adapting to a rapidly changing market, potentially exacerbated by the pandemic's influence on consumer behaviour, seem to be the driving forces for sustainability. Technology adoption, in contrast, presents immediate operational efficiencies and market opportunities, which could explain its more pronounced impact on sustainability in these cases.

Conversely, the data presents a different narrative for technology adoption. With a P-Value of 0.034 for 'Tech_Adopt -> MSME_Sust', it is suggested that there is a statistically significant positive effect of technology adoption on the sustainability of MSMEs in Indonesia. The original sample value of 0.431, compared to the sample mean of 0.383, further indicates a positive direction. This suggests that MSMEs that embrace technological tools and innovations are more likely to achieve sustainability. This could be due to various factors such as improved efficiency, access to new markets, better customer engagement, and the optimization of resources through technology. Given the rapid digital transformation in Indonesia, MSMEs that leverage technology are positioning themselves for future growth and resilience in a competitive market.

b. Differences in Demographics and Hypothesis Results among Malaysian Sample

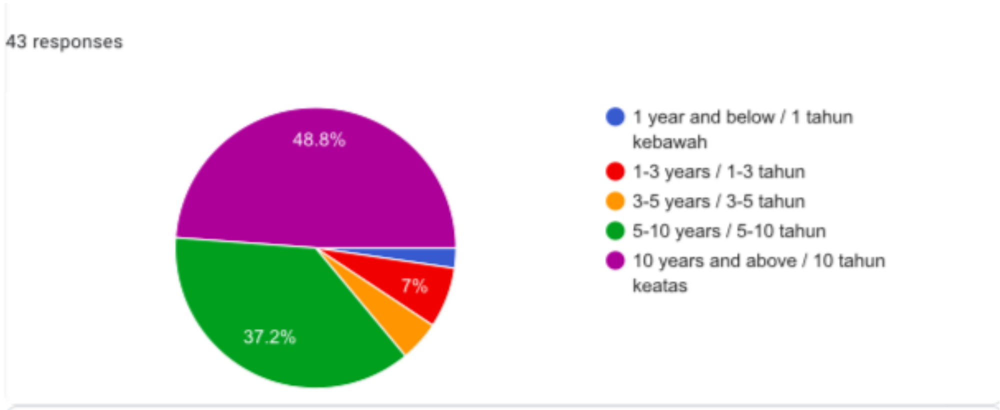

Fig. 6 *Year of MSME's Operational*

The pie chart in Figure 6 presents data on the operational duration of Micro, Small, and Medium Enterprises (MSMEs) from a survey of 43 respondents. A significant majority, 48.8%, have been in operation for 10 years and above, suggesting a prevalence of well-established enterprises within this sector. The next largest segment, 37.2%, represents enterprises operating between 5 to 10 years, suggesting a stable presence in the market. New businesses or start-ups, those running for 1 to 3 years constitute a smaller proportion, at 7% and the remaining percentage respectively, which may reflect challenges in sustaining business operations over a shorter term, or possibly the dynamic nature of the MSME sector with new businesses continuously entering the market.

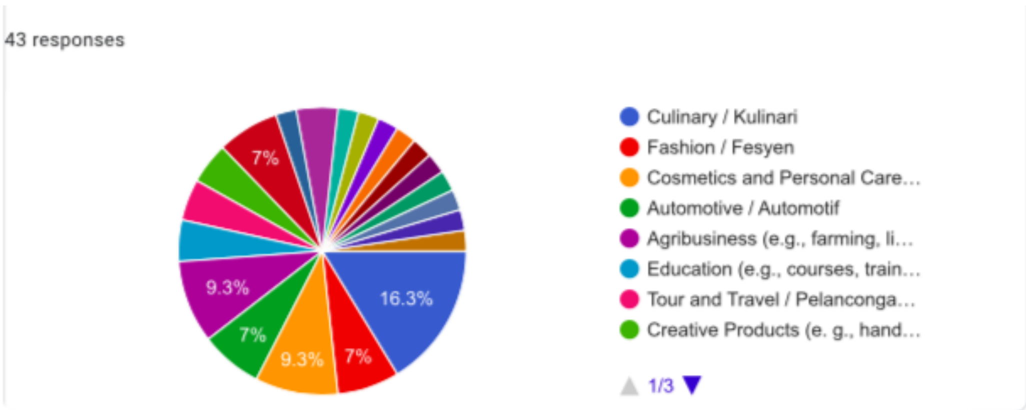

Fig. 7 *Sectors of MSME's*

In Figure 7, the pie chart illustrates the sector distribution of Micro, Small, and Medium Enterprises (MSMEs) based on a survey with 43 responses. The most noticeable sector is Culinary, making up 16.3% of the businesses, indicating a strong entrepreneurial interest in food-related ventures. Agribusiness Cosmetics and Personal Care are equally represented at 9.3% each, showing a notable presence in the market. These top three sectors highlight the diversity within the MSME landscape. The remaining enterprises are spread across a variety of sectors including fashion, automotive, education, tour and travel, and creative products, each constituting 7% or below. This distribution suggests a vibrant mix of industries within the MSME sector, with a significant portion of enterprises focused on consumer goods and services.

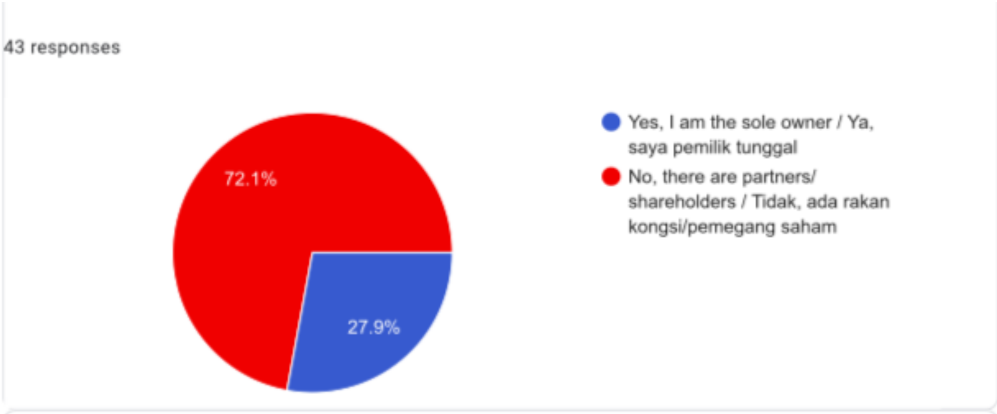

Fig. 8 *Ownership of MSMEs*

The pie chart in Figure 8 details the ownership structure of 43 Micro, Small, and Medium Enterprises (MSMEs). It shows that a significant majority, 72.1%, of these businesses have a partnership or multiple shareholders, which could indicate a preference for collaborative investment and risk-sharing among MSMEs. Conversely, 27.9% are sole proprietorships, highlighting that more than a quarter of these entrepreneurs have taken on the business venture independently. This suggests a robust entrepreneurial spirit, with a sizable portion of business owners preferring to have complete control and decision-making authority. The chart underscores the diverse approaches to business ownership within the MSME sector.

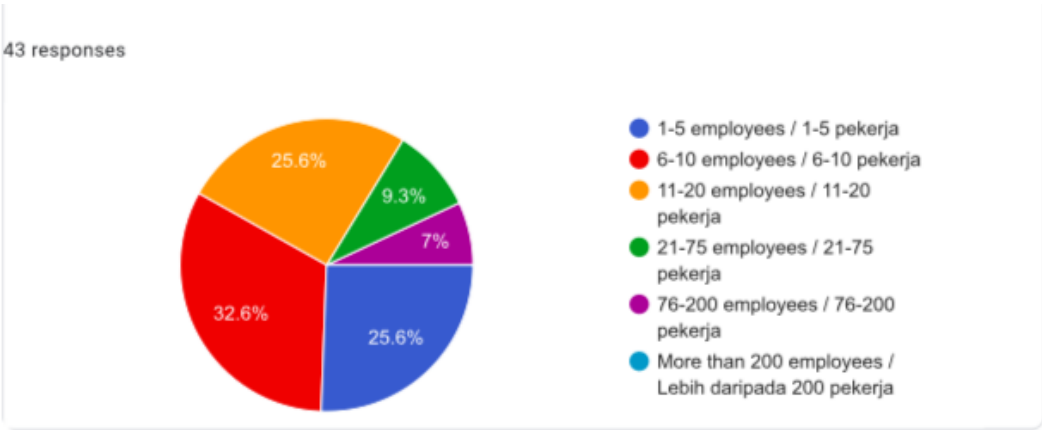

Fig. 9 *Numbers of MSME's Employees*

The pie chart in Figure 9 provides insight into the employee numbers of 43 Micro, Small, and Medium Enterprises (MSMEs). A significant portion, 32.6%, have a small team of

6-10 employees, suggesting a modest operational scale that allows for a focused management style. Another 25.6% employ 11-20 employees, indicating a slightly larger operation, potentially with more specialized roles and a need for structured management. Interestingly, an equal 25.6% of the enterprises have 1-5 employees, which likely includes many solo entrepreneurs with minimal staff, reflecting the grassroots nature of these businesses. The rest are spread across various larger sizes, but those with 21-75 employees, 76-200 employees, and more than 200 employees represent a smaller fraction, illustrating that the majority of MSMEs in this survey operate with fewer than 20 employees, highlighting the lean nature of these businesses.

In Figure 10, The pie chart depicts the capital value distribution of 43 MSMEs, focusing on capital excluding land and buildings. A notable 60.5% of these enterprises have a capital value ranging from RM 300,000 to RM 1.5 million, indicating that a majority of the businesses surveyed are in the middle range in terms of financial size. This could suggest that these MSMEs have moved beyond the initial startup phase and are potentially in a growth stage. On the other hand, 32.6% of the enterprises operate with a capital of RM 300,000 and below, which likely represents newer or smaller-scale businesses that may be in the early stages of development. The distribution shows a substantial gap between the smaller-scale enterprises and those that have managed to accumulate a higher capital value, reflecting the diverse economic standings within the MSME sector.

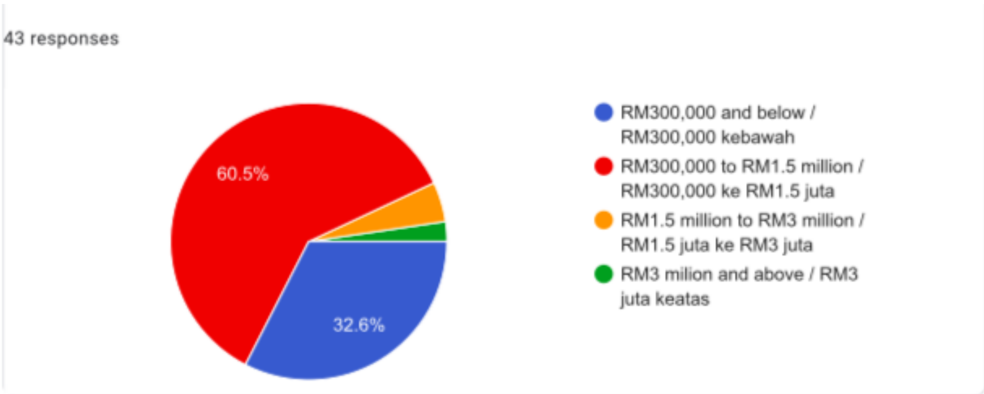

Fig. 10 *Capital Owned of MSME's*

This pie chart in Figure 11 details the annual gross sales revenue of 43 MSMEs. The majority, at 46.5%, report revenues between RM 300,000 to less than RM 3 million, reflecting a substantial segment of the MSMEs that have achieved a moderate level of sales, possibly indicating stable business operations with a solid customer base. A significant 41.9% of the enterprises earn RM 300,000 or less in annual revenue, which suggests they may be in their initial growth phase, serving niche markets, or operating with a lean business model. These two segments combined represent a clear majority of the MSMEs surveyed, highlighting the commonality of small to moderate sales revenues within this group. The data presents a picture of MSMEs with generally modest revenue figures, which is characteristic of this sector.

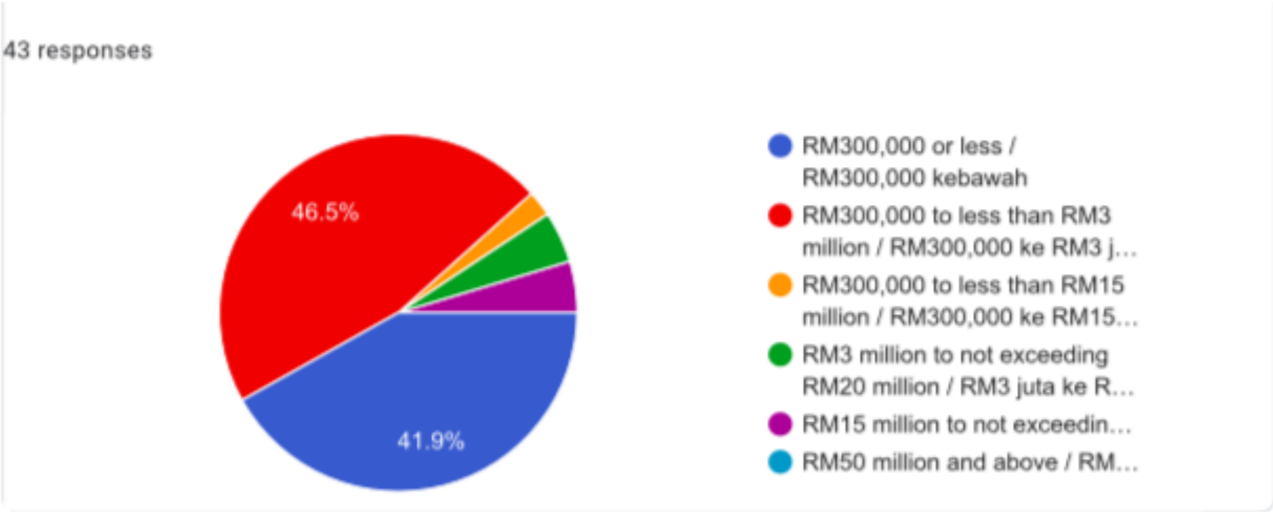

Fig. 11 *Gross Revenue of MSME's*

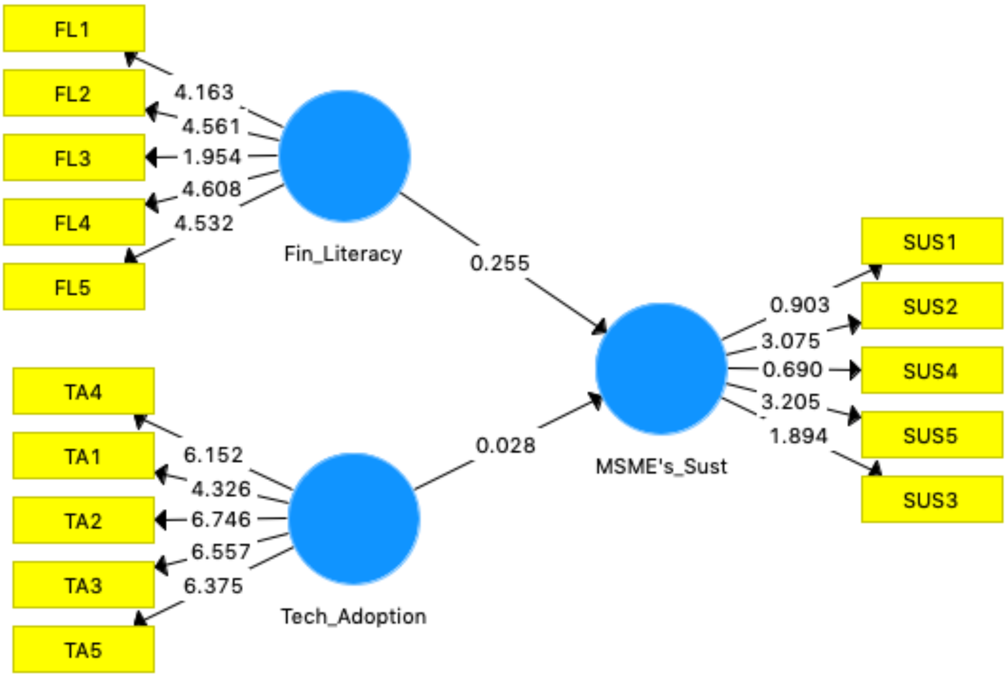

Fig. 12 *Path of Hypotheses Results*

The structural model diagram in Figure 12 illustrates the relationships between financial literacy, technology adoption, and MSME sustainability, based on 43 MSME respondents in Malaysia. The model includes five indicators for financial literacy (FL1 to FL5), five indicators for technology adoption (TA1 to TA5), and five indicators for MSME sustainability (SUS1 to SUS5).

The p-value for the relationship between financial literacy and MSME sustainability is greater than 0.05, which means we cannot conclude that there's a statistically significant effect of financial literacy on the sustainability of MSMEs in this model. This is despite the positive path coefficient of 0.255, which might have represented a positive association, but not a statistically significant one.

On the other hand, the p-value for the relationship between technology adoption and MSME sustainability is 0.028, which is less than 0.05. This indicates a statistically significant positive effect of technology adoption on the sustainability of MSMEs. This means that, based on the data from the 43 MSME respondents in Malaysia, technology adoption is a predictor of MSME sustainability.

Table.2 Hypotheses Results of Malaysian Sampling

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Fin_Literacy -> MSME's_Sust	0.209	0.246	0.183	1.139	**0.255**
Tech_Adoption -> MSME's_Sust	0.419	0.410	0.190	2.205	**0.028**

For financial literacy, the p-value is 0.255, which exceeds the 0.05 threshold, indicating that financial literacy does not have a statistically significant effect on the sustainability of MSMEs. This is corroborated by a lower T-statistic of 1.139, which is not large enough to indicate a significant effect. Despite a positive original sample path coefficient of 0.209, without statistical significance, we cannot confidently assert that financial literacy contributes to the sustainability of these enterprises.

In contrast, technology adoption shows a p-value of 0.028, which is less than the 0.05 threshold, signifying a statistically significant positive effect on MSME sustainability, supported by a higher T-statistic of 2.205. The original sample path coefficient for technology adoption is 0.419, suggesting not only a statistically significant but also a relatively strong positive impact on sustainability.

Considering the context of the COVID-19 pandemic, which has accelerated digitalization across the globe, it is plausible to assume that the positive impact of technology adoption on MSME sustainability is partly due to the rapid shift towards digital business models triggered by the pandemic. Business owners have been compelled to embrace technology for survival as consumer behaviours shifted markedly towards online platforms. The pandemic has likely heightened the awareness and necessity of technology adoption among MSMEs, as those who were quick to adapt would have been better positioned to maintain operations through lockdowns, social distancing measures, and the increased demand for online services. In essence, the pandemic may have catalyzed technological change among Malaysian MSMEs, reinforcing the importance of tech adoption highlighted by the significant p-value in the statistical analysis.

Overall, the analysis suggests that in the current landscape of MSMEs in Malaysia, technology adoption is a more critical factor for business sustainability than financial literacy.

5.0 CONCLUSION

5.1 Research Findings

Based on the survey results from MSMEs in both the Indonesian and Malaysian contexts, the following conclusions can be drawn:

1. Financial Literacy and MSME Sustainability: The P value associated with the relationship between financial literacy (Fin_Lit) and MSME sustainability (MSME_Sust) exceeds 0.05, which does not meet the standard criterion for statistical significance. Consequently, there is insufficient statistical evidence to conclude that financial literacy directly contributes to the sustainability of MSMEs in both countries. This may suggest that while financial literacy is important for understanding and managing business finances, other factors play a more decisive role in determining the long-term success and viability of these businesses in the current economic landscape of Indonesia and Malaysia.
2. Technology Adoption and MSME Sustainability: Conversely, the P value for the relationship between technology adoption and MSME sustainability is below 0.05 for both Indonesian and Malaysian MSMEs, and the direction is positive. This implies a statistically significant relationship where technology adoption positively impacts MSME sustainability in both regions. This finding reflects the critical role that technological integration and digital capabilities play in enabling MSMEs to adapt to market changes, reach new customers, improve operational efficiency, and remain competitive, especially in a post-pandemic economy where digital transformation has become more pronounced.

5.2 Contribution to Science

1. This research enhances our understanding of the factors influencing MSME sustainability in the Southeast Asian region, specifically in Indonesia and Malaysia, adding a comparative aspect to existing studies.
2. It provides empirical evidence on the role of technology adoption in driving business sustainability, highlighting the importance of digital competencies in the current economic climate.
3. The study may contribute to the field of entrepreneurship by quantifying the impact of digital transformation on small and medium businesses post the COVID-19 pandemic, thereby offering insights into strategic planning and policy-making.
4. It expands the dialogue on financial literacy's role in MSMEs by exploring its relative significance against other factors, which could shape future educational programs and financial support structures for business owners.

5.3 Research Limitations

1. The sample size of MSMEs for each country is relatively small, which could limit the generalizability of the findings across all MSMEs in Indonesia and Malaysia.
2. The study only considers two variables—financial literacy and technology adoption—leaving out other potential factors that could influence MSME sustainability, such as market dynamics, access to capital, regulatory environment, and management practices.
3. P-values provide information on whether an effect exists, but not its size or practical significance, hence the study could be supplemented with effect size measures to better understand the magnitude of the impact.
4. The research is limited to self-reported data, which may introduce biases or inaccuracies in the reporting of financial figures and technology adoption rates.
5. It focuses on the immediate post-pandemic period, which is a time of unusual economic activity; long-term studies would be necessary to understand enduring effects.

ACKNOWLEDGEMENT

The authors wish to express their sincere gratitude for the support received from Universiti Teknologi MARA Cawangan Johorand Universitas Bhayangkara Jakarta Raya, whose collaboration made this research possible. The outcome of the Strategic Research Partnership (SRP) matching grant provided in 2024, amounting to 10,000 Ringgit Malaysia (RM), was not only a financial backbone but also a testament to the shared vision of fostering impactful research within the ASEAN academic community. This generous contribution has been instrumental in advancing our understanding of MSME sustainability in the face of rapid economic and technological changes. We are deeply thankful for the opportunity to contribute to this field and hope that our findings will serve as a stepping stone for further scholarly inquiry and policy development in the region.

REFERENCES

Anwar, A., & Serly, S. (2022). Financial literacy on the sustainability of SMEs in GOWA district. *Economics and Business Journal (ECBIS)*, *1*(1), 37–46. https://doi.org/10.47353/ecbis.v1i1.5.

Barney, Jay. (1991). Firm resoyrces and sustained competitve advantage. *Journal of Management*, *17*(1), 99–120.

Hassan Bazhair, A. (2022). Audit committee attributes and financial performance of Saudi non-financial listed firms. *Cogent Economics & Finance*, *10*(1), 2127238. https://doi.org/10.1080/23322039.2022.2127238.

Le, D. V., Le, H. T. T., Pham, T. T., & Vo, L. V. (2023). Innovation and SMEs performance: Evidence from Vietnam. *Applied Economic Analysis*, *31*(92), 90–108. https://doi.org/10.1108/AEA-04-2022-0121.

Meng, L., Qamruzzaman, M., & Adow, A. H. E. (2021). Technological adaption and open innovation in SMEs: An strategic assessment for women-owned smes sustainability in Bangladesh. *Sustainability*, *13*(5), 2942. https://doi.org/10.3390/su13052942.

Miswanto, M., Tarigan, S. T., Wardhani, S., Khuan, H., Rahmadyanti, E., Jumintono, J., Ranatarisza, M. M., & Machmud, M. (2024). Investigating the influence of financial literacy and supply chain management on the financial performance and sustainability of SMEs. *Uncertain Supply Chain Management*, *12*(1), 407–416. https://doi.org/10.5267/j.uscm.2023.9.011.

Muhamad, M. Q. B., Syed Jamal Abdul Nasir Syed Mohamad, & Norzanah Mat Nor. (2021). Technological-Organisational-Environmental (TOE) framework in industry 4.0 adoption among SMEs in Malaysia: An early outlook. *ASEAN Entrepreneurship Journal*, *6*(3), 13–19.

Nguyen, T.-D., & Ngo, T. Q. (2022). The role of technological advancement, supply chain, environmental, social, and governance responsibilities on the sustainable development goals of SMEs in Vietnam. *Economic Research-Ekonomska Istraživanja*, *35*(1), 4557–4579. https://doi.org/10.1080/1331677X.2021.2015611.

Phiet, L. T. (2024). Factors influencing SMEs' digital transformation: The case study in Central Highlands in Vietnam. *Journal of System and Management Sciences*, *14*(1), 175–187. https://doi.org/DOI:10.33168/JSMS.2024.0111.

Prasanna, R., Jayasundara, J., Naradda Gamage, S. K., Ekanayake, E., Rajapakshe, P., & Abeyrathne, G. (2019). Sustainability of SMEs in the competition: A systemic review on technological challenges and SME performance. *Journal of Open Innovation: Technology, Market, and Complexity*, *5*(4), 100. https://doi.org/10.3390/joitmc5040100..

Putri, A. P., & Dhewanto, W. (2022). The effect of entrepreneurial factors on the realization of Sustainable Development Goals (SDG) and sustainability in Indonesia's SMEs. *Binus Business Review*, *13*(3), 303–313. https://doi.org/10.21512/bbr.v13i3.8524.

Salvador, R., Søberg, P. V., Jørgensen, M. S., Schmidt-Kallesøe, L.-L., & Larsen, S. B. (2023). Explaining sustainability performance and maturity in SMEs – Learnings from a 100-participant sustainability innovation project. *Journal of Cleaner Production*, *419*, 138248. https://doi.org/10.1016/j.jclepro.2023.138248.

thabet, o. b., fazlin ali, a. a. manaf., & kantakji, m. (2019). Financial literacy among SME'S in Malaysia. *Humanities & Social Sciences Reviews*, *7*(2), 376–383. https://doi.org/10.18510/hssr.2019.7244.

Vrontis, D., Chaudhuri, R., & Chatterjee, S. (2022). Adoption of digital technologies by SMEs for sustainability and value creation: Moderating role of entrepreneurial orientation. *Sustainability*, *14*(13), 7949. https://doi.org/10.3390/su14137949.

Yakob, S., Yakob, R., B.A.M., H.-S., & Rusli, R. Z. A. (2021). Financial literacy and financial performance of Small and Medium-sized Enterprises. *The South East Asian Journal of Management*, *15*(1), 72–96. https://doi.org/10.21002/seam.v15i1.13117.

Ye, J., & Kulathunga, K. (2019). How does financial literacy promote sustainability in SMEs? A developing country perspective. *Sustainability*, *11*(10), 2990. https://doi.org/10.3390/su11102990.

Yusoff, T., Wahab, S. A., Latiff, A. S. A., Osman, S. I. W., Zawawi, N. F. M., & Fazal, S. A. (2018). Sustainable Growth in SMEs: A review from the Malaysian perspective. *Journal of Management and Sustainability*, *8*(3), 43. https://doi.org/10.5539/jms.v8n3p43.