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Bridging Knowledge to Growth: How Financial Education Empowers Small Enterprises

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ABSTRACT: This study examines the effectiveness of financial literacy training interventions for Micro, Small, and Medium Enterprises (MSMEs) in Indonesia—the research aimed to enhance financial management capabilities among MSME owners. The study surveyed 82 MSME participants. Data were analysed using descriptive statistics, reliability analysis (Cronbach's Alpha = 0.94), Spearman correlation, Principal Component Analysis (PCA), and regression analysis. Results identified five key components of financial literacy: Spending and savings Behaviour, Financial Planning and budgeting, Investment Knowledge, Risk Management, and Retirement and debt Management. PCA and cluster analysis revealed two distinct groups: a "Moderate Financial Literacy" cluster and a "Highly Aware and Disciplined" cluster. Statistically significant differences ($p < 0.05$) were found between two groups across 20 financial literacy aspects, with the High Literacy group demonstrating superior budgeting, investment knowledge, and debt management skills. While years of business operation showed a marginally significant relationship with financial literacy ($p = 0.062$), age was not a significant predictor ($p = 0.293$). The study concludes that targeted financial literacy interventions can significantly improve MSME owners' financial management practices, contributing to enhanced business performance and sustainability. These findings emphasise the importance of comprehensive financial education programs, particularly focusing on budgeting, financial responsibility, and debt management skills.

KEYWORDS: Financial Literacy, MSMEs, Financial Management, Training Interventions, Sustainable Development

JEL Codes: G53, L26, O16, M21, D14

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a pivotal role in the economic development of many countries, particularly in Indonesia. As the backbone of the national economy, MSMEs contribute significantly to employment creation, poverty alleviation, and economic resilience, especially during economic uncertainty (Azizah et al., 2022). The COVID-19 pandemic, for instance, highlighted the resilience of MSMEs, as many were able to adapt and survive despite the severe economic disruptions caused by the global health crisis. However, despite their critical role, MSMEs often face numerous challenges that hinder their growth and sustainability. One of the most pressing issues is the lack of financial literacy and poor financial management practices among MSME owners (Damayanti et al., 2021)

Financial management is a cornerstone of business success, yet many MSMEs struggle with basic financial practices such as cash flow management, accurate bookkeeping, and long-term financial planning. The inability to separate personal and business finances, coupled with a lack of understanding of financial statements, often leads to poor decision-making and business failure. This is particularly evident in the case of MSMEs in Kelurahan Kemiri Muka, a sub-district in Depok, West Java, where many business owners operate informally and lack access to formal financial services (Putri & Handayani, 2022). The absence of financial literacy limits their ability to manage day-to-day operations and restricts their capacity to invest in growth opportunities, thereby perpetuating a cycle of stagnation.

The importance of financial literacy for MSMEs cannot be overstated. Financial literacy enables business owners to make informed financial decisions, manage risks effectively, and plan for future growth. Studies have shown that MSMEs with higher levels of financial literacy are more likely to adopt sound financial practices, such as maintaining separate accounts for personal and business finances, keeping accurate records, and making strategic investments. However, despite the clear benefits, many

MSME owners in Indonesia remain financially illiterate, particularly in rural and semi-urban areas. This is often due to a lack of access to financial education and resources and cultural and social barriers that discourage the adoption of formal financial practices (Santoso, 2023).

Various initiatives have been undertaken to improve financial literacy among MSMEs in response to these challenges. One such initiative is the community service program conducted by the Faculty of Economics and Business at Universitas Pancasila in collaboration with PT. PNM Depok. This program, titled "Cerdas Finansial, UMKM Berkelanjutan" (Financial Literacy for Sustainable MSMEs), aims to enhance the financial management capabilities of MSME owners in Kelurahan Kemiri Muka through targeted training and mentoring. The program focuses on key areas such as cash flow management, budgeting, and digital financial tools, aiming to foster sustainable business practices and long-term growth.

The program's emphasis on digital financial tools is particularly noteworthy. In recent years, the adoption of digital technologies has become increasingly important for MSMEs, not only for financial management but also for marketing, sales, and customer engagement. Digital tools such as mobile accounting applications can simplify bookkeeping, improve accuracy, and provide real-time insights into business performance. However, many MSME owners, especially those in less developed areas, lack the knowledge and skills to utilise these tools effectively. By introducing MSME owners to user-friendly applications like LAMIKRO, the program seeks to bridge this gap and empower business owners to take control of their finances.

The significance of this initiative extends beyond the immediate benefits to individual MSMEs. By improving financial literacy and management practices, the program can contribute to broader economic development goals, such as reducing poverty, increasing employment, and promoting inclusive growth. Moreover, the program aligns with the Indonesian government's broader strategy to support MSMEs through various policy measures, including access to finance, capacity building, and market access (Rahmawati, 2023). As such, the program represents a valuable contribution to the ongoing efforts to strengthen the MSME sector and enhance its contribution to the national economy.

I. LITERATURE REVIEW

Financial literacy is a critical factor in the success and sustainability of Micro, Small, and Medium Enterprises (MSMEs). Research has consistently shown that MSMEs with higher levels of financial literacy are better equipped to manage their finances, make informed decisions, and achieve long-term growth (Lusardi & Mitchell, 2014). Financial literacy encompasses the ability to understand and use financial concepts such as budgeting, cash flow management, and investment planning, which are essential for the effective operation of any business (Huston, 2010). Despite its importance, many MSME owners, particularly in developing countries like Indonesia, lack the necessary financial knowledge and skills to manage their businesses effectively (Widodo, 2019).

One of the primary challenges MSMEs face is the lack of separation between personal and business finances. This issue is particularly prevalent among informal MSMEs, where owners often use personal funds for business expenses and vice versa, leading to poor financial management and difficulties in tracking business performance (Damayanti et al., 2021). Studies have shown that MSMEs that maintain separate accounts for personal and business finances are more likely to achieve financial stability and growth (Azizah et al., 2022). Furthermore, accurate bookkeeping and financial record-keeping are essential for monitoring cash flow, identifying financial problems, and making informed business decisions.

Access to formal financial services is another significant barrier for MSMEs. Many MSMEs, especially those in rural and semi-urban areas, operate outside the formal financial system, relying on informal sources of credit and savings (Putri & Handayani, 2022). This lack of access to formal financial services limits their ability to obtain loans, invest in growth opportunities, and manage financial risks. Financial literacy programs that educate MSME owners about the benefits of formal financial services and how to access them can be crucial in addressing this issue (Santoso, 2023).

Adopting digital financial tools is increasingly recognised as a key factor in improving financial management among MSMEs. Digital tools such as mobile accounting applications can simplify bookkeeping, improve accuracy, and provide real-time insights into business performance. However, many MSME owners lack the knowledge and skills to effectively utilise these tools, highlighting the need for training and support in this area (Rahmawati, 2023). Programs that introduce MSME owners to user-friendly digital tools and provide ongoing mentoring and support can help bridge this gap and empower business owners to take control of their finances.

The role of financial education in improving financial literacy among MSMEs has been widely documented. Financial education programs focusing on practical skills such as budgeting, cash flow management, and investment planning have significantly improved financial knowledge and behaviour among MSME owners (Lusardi & Mitchell, 2014). Moreover, these programs can positively impact business performance, leading to increased profitability, growth, and sustainability (Huston, 2010). The "Cerdas Finansial, UMKM Berkelanjutan" program, which provides targeted training and mentoring to MSME owners in Kelurahan Kemiri Muka, is an example of such an initiative. By focusing on key areas such as financial management and the use of digital tools, the program aims to equip MSME owners with the knowledge and skills they need to achieve sustainable growth (Azizah et al., 2022).

II. METHOD

This study employs a quantitative methods approach to evaluate the impact of financial literacy training on MSME owners in Kelurahan Kemiri Muka, Depok, Indonesia. The quantitative component involves pre- and post-training surveys to measure changes in financial literacy levels. The study targets 82 MSME owners participating in the "Cerdas Finansial, UMKM Berkelanjutan" program. Data were collected through structured questionnaires administered before and after the training sessions. The questionnaire was designed to assess participants' knowledge of financial management practices, including cash flow management, budgeting, and the use of digital financial tools.

Spearman's rank correlation coefficient was used to examine the relationship between financial literacy and business performance. This non-parametric measure is appropriate for ordinal data and can capture monotonic relationships between variables. The correlation analysis assessed the strength and direction of the association between participants' post-training financial literacy scores and key business performance indicators, such as monthly revenue and profit margins. Then Principal Component Analysis (PCA) was employed to reduce the dimensionality of the financial literacy assessment data and identify underlying factors that explain the variance in participants' responses. PCA transforms the original variables into uncorrelated components, each representing a linear combination of the original variables. The first component accounts for the maximum variance, followed by subsequent components.

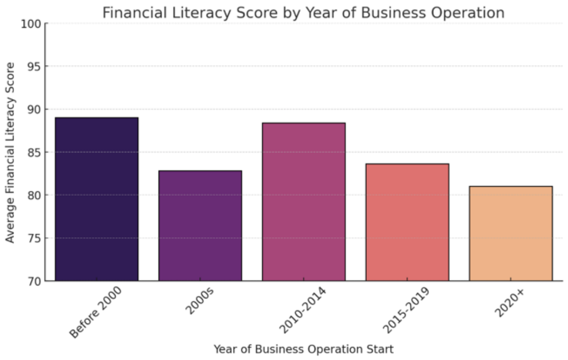
The hypothesis statements for this study aim to investigate potential differences in financial literacy scores between distinct groups, specifically High and Low/Moderate groups. The null hypothesis (H_0) posits that there is no significant difference in financial literacy scores between these groups, suggesting that group categorisation does not influence financial literacy levels. Conversely, the alternative hypothesis (H_1) asserts a significant difference in financial literacy scores between the groups, implying that group membership may play a role in shaping financial literacy outcomes. To test these hypotheses, a t-test will be performed for each financial literacy variable, assessing whether the observed differences in scores are statistically significant. This analysis will provide empirical evidence to support or reject the null hypothesis, offering insights into the relationship between group categorisation and financial literacy. By integrating Principal Component Analysis (PCA) to identify underlying constructs in financial literacy dimensions, the study ensures a robust examination of the data, enhancing the validity and depth of the findings.

Regression analysis examined the predictive relationships between variables, offering deeper insights into how specific factors influence outcomes. The regression analysis helps quantify the extent to which financial literacy contributes to business performance, holding other factors constant. Several empirical studies have utilised similar methodologies to assess the impact of financial literacy programs on MSMEs. For instance, Lusardi and Mitchell (2014) used regression analysis to demonstrate the positive relationship between financial literacy and retirement planning. Similarly, Huston (2010) employed descriptive statistics and correlation analysis to explore the determinants of financial literacy among small business owners. These studies provide a robust methodological foundation for the current research and highlight the importance of using a combination of statistical techniques to capture the multifaceted nature of financial literacy and its impact on business outcomes. The regression model is specified as:

The hypothesis for this study focuses on examining whether Age and Years of Operation significantly predict financial literacy scores, using multiple linear regression as the analytical tool. The dependent variable (Y) is defined as the total financial literacy score, calculated as the sum of all relevant responses, while the independent variables (X) include Age and Years of Operation. The regression analysis aims to assess two key aspects: first, whether Age or Years of Operation has a statistically significant impact on financial literacy scores, as indicated by p-values and regression coefficients, and second, the strength of the relationship, measured by the coefficient of determination (R^2), which quantifies the proportion of variance in financial literacy scores explained by the independent variables.

III. RESULT

The descriptive statistics reveal a generally positive response to the questionnaire, with mean scores ranging from 4.07 to 4.31 on a Likert scale. This indicates that most respondents agreed or strongly agreed with the statements presented, reflecting a favourable perception of the measured financial literacy concepts. The high mean scores suggest that the respondents found the content relevant and aligned with their understanding or experiences. The standard deviation, which measures the variability of responses, was relatively low, mostly below 0.7. This low dispersion indicates that the responses were consistent, with most participants providing similar ratings. Such consistency is crucial for ensuring the results are reliable and representative of the studied group.



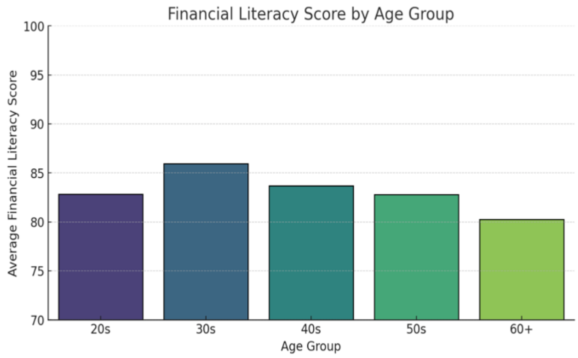


Figure 1. Financial Score by 'year operation' and 'age'

Table 1. Financial Literacy by Age Group

Age Group	Respondents (n)	Avg. Score	Std Dev	Min	Max
20s	6	82.83	9.68	70	96
30s	16	85.94	9.83	70	100
40s	30	83.67	7.92	65	100
50s	26	82.77	9.31	63	100
60+	4	80.25	5.31	74	87

The analysis of financial literacy scores reveals significant insights into how age and years of business operation influence financial knowledge. Table 1 highlights that the 30s age group has the highest financial literacy score (85.94), while the 60+ group has the lowest (80.25), indicating a gradual decline in financial literacy with age, despite scores remaining relatively stable from the 20s to the 50s. This suggests that while financial literacy is maintained through mid-adulthood, it may diminish later due to changing engagement with financial systems or cognitive factors. Table 2 further demonstrates that businesses established before 2000 have the highest financial literacy scores (89.00), while newer businesses (2020+) score significantly lower (81.04). This trend underscores the role of long-term experience in enhancing financial knowledge, as older businesses likely benefit from accumulated expertise and practical insights. Together, these findings emphasise the importance of age and operational experience as key determinants of financial literacy, offering valuable implications for targeted financial education and support programs tailored to different age groups and business stages.

Table 2. Financial Literacy by Year of Business Operation

Year of Start	Respondents (n)	Avg. Score	Std Dev	Min	Max
Before 2000	3	89.00	10.15	80	100
2000s	6	82.83	6.40	74	92
2010-2014	10	88.40	9.02	76	100
2015-2019	39	83.64	8.69	63	100
2020+	24	81.04	8.49	65	100

3.1 Spearman Correlation Analysis

A recent study utilised a heatmap to visualise the correlations between various financial literacy aspects, revealing strong interconnections between certain areas, figure 2. For example, the heatmap might reveal a strong positive correlation between budgeting and saving. This indicates that individuals proficient in budgeting are also likely to be effective savers. Such relationships highlight the interconnected nature of financial literacy skills, where competence in one area often supports and enhances competence in another.

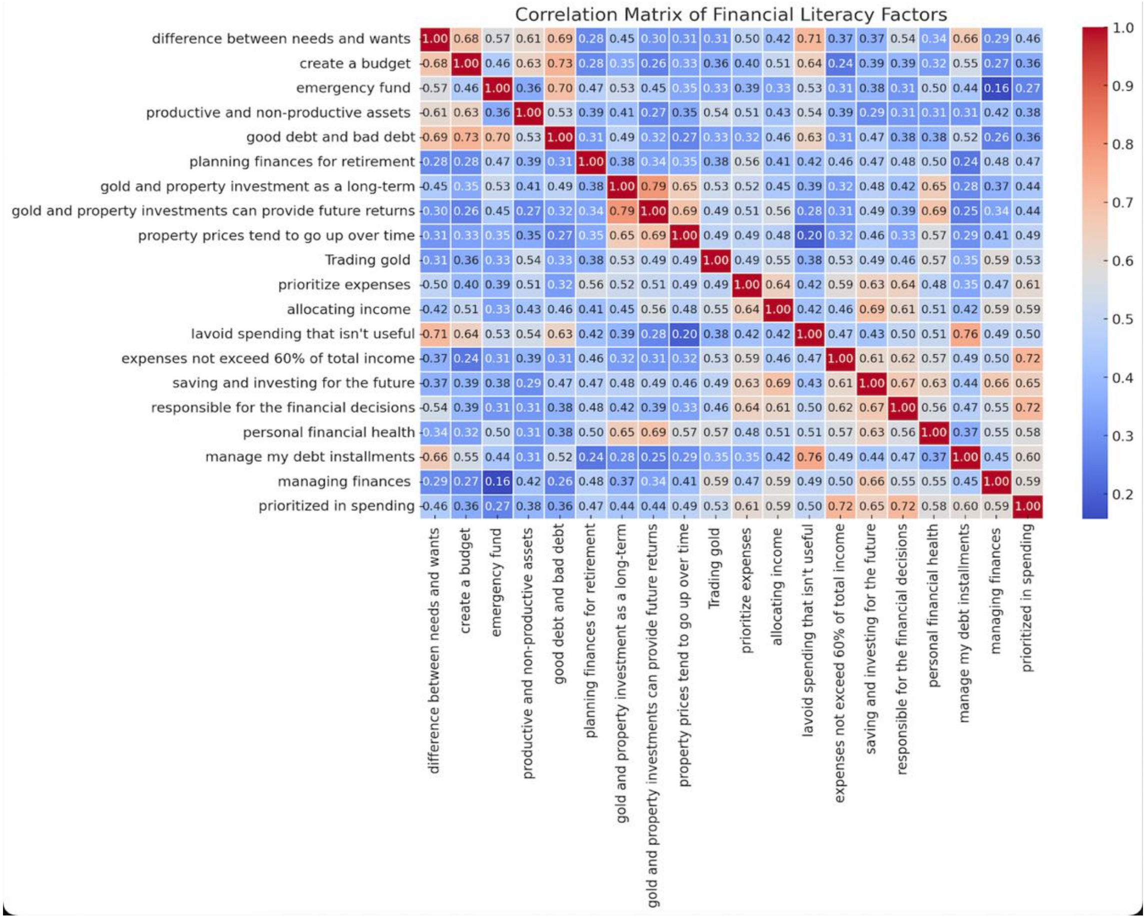


Figure 2. Spearman Correlation Matrix

The correlation analysis reveals significant insights into the relationships between various financial behaviours and attitudes, highlighting strong correlations (>0.7) that underscore key patterns in financial decision-making. Gold and property investment show a high correlation (0.79) with future returns, indicating a strong belief in these assets as reliable means for long-term wealth accumulation. Budgeting is closely linked to understanding the distinction between good and bad debt (0.73), emphasising the role of financial planning in debt management. Avoiding unnecessary spending is strongly associated with recognising the difference between needs and wants (0.71) and effectively managing debt instalments (0.75), reflecting disciplined financial habits. Additionally, prioritised spending strongly correlates with keeping expenses below 60% of income (0.72) and overall financial responsibility (0.71), suggesting that individuals prioritising spending are more likely to maintain sustainable financial practices. These findings highlight the interconnectedness of financial behaviours and attitudes, providing valuable insights into how individuals approach wealth accumulation, debt management, and responsible spending.

3.2 Principal Component Analysis (PCA)

The Principal Component Analysis (PCA) reveals five key components that represent underlying themes in financial literacy, each capturing distinct dimensions of financial behaviour and knowledge. Component 1, labelled *Spending & Savings Behaviour*, encompasses prioritised spending, regular saving and investing, and taking responsibility for financial decisions, reflecting disciplined financial habits. Component 2, *Financial Planning & Budgeting*, highlights the ability to distinguish between needs and wants, create a budget, and avoid unnecessary spending, emphasising the importance of structured financial planning. Component 3, *Investment Knowledge & Long-Term Planning*, focuses on understanding gold and property investments as long-term strategies, their potential for future returns, and the distinction between productive and non-productive assets, showcasing the role of investment literacy in wealth accumulation. Component 4, *Risk Management & Emergency Fund*, includes managing productive and non-productive assets, maintaining emergency fund readiness, and effective debt management, underscoring the significance of preparedness and risk mitigation. Finally, Component 5, *Retirement & Debt Management*, involves planning finances for retirement, managing debt instalments, and ensuring long-term financial security, highlighting the interplay between debt management and future financial stability. Together, these components provide a comprehensive framework for understanding the multifaceted nature of financial literacy, offering valuable insights into the behaviours and knowledge that contribute to financial well-being.

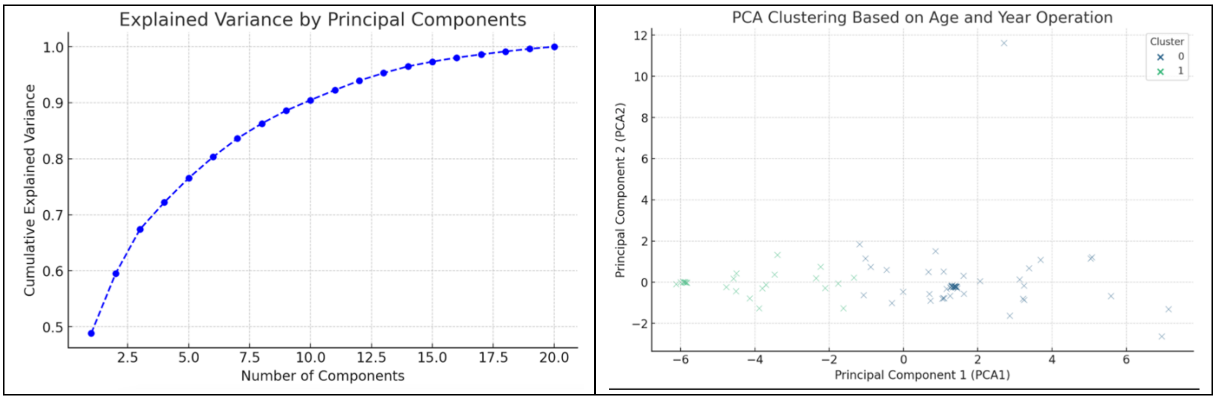


Figure 3. PCA Clusters Analysis

3.3 The clustering analysis

The clustering analysis, supported by the Elbow Method and Silhouette Score, identified three optimal clusters, with Cluster 0 comprising the largest group (57 respondents) and Cluster 1 representing a medium-sized group (24 respondents). Using PCA, the data on Age, Years of Operation, and financial literacy were reduced to two principal components (PCA0 and PCA1), enabling K-Means clustering to distinguish two distinct clusters. Cluster 0, the majority group, likely represents a high financial literacy subgroup, while Cluster 1 may include potential outliers or individuals with unique financial behaviours. Visualisation of the clusters through a scatter plot reveals clear distinctions: Cluster 0 (Yellow-Green) and Cluster 1 (Blue-Purple) exhibit different financial literacy patterns, suggesting that age and business experience significantly influence financial literacy levels. Cluster 0 consists of slightly older respondents (average age: 47.07 years) with more recently established businesses (average start year: 2017), while Cluster 1 includes younger respondents (average age: 44.67 years) with longer business experience (average start year: 2015).

3.4 Regression Analysis

The cluster visualisation (figure 3) findings reveal two well-separated groups, confirming distinct financial literacy behaviours among respondents. Cluster 0, the largest group, represents individuals with "Moderate Financial Literacy," scoring 3.9 and 4.0 across most indicators. These respondents demonstrate balanced financial habits, including basic budgeting, saving, and investing knowledge, but lack advanced planning and asset management skills, suggesting room for improvement. In contrast, Cluster 1, a smaller group, represents the "Highly Aware & Disciplined," with the highest scores (4.5–4.9) across all financial literacy areas. This group excels in financial planning, prioritising expenses, budgeting, investing in gold/property, and managing debt effectively, likely comprising experienced investors or financially conscious individuals. Key insights indicate that Cluster 0 could benefit from targeted financial education programs to enhance their investment strategies, while Cluster 1 serves as an ideal financial literacy model, offering valuable lessons for others. These findings underscore the importance of tailored interventions to address varying levels of financial literacy and promote overall financial well-being.

The comparison between High and Low/Moderate Financial Literacy groups reveals statistically significant differences ($p < 0.05$) across 20 financial literacy aspects, highlighting distinct strengths and weaknesses in each group. High Literacy respondents consistently outperform their Low/Moderate counterparts in key areas such as financial planning and budgeting, including understanding the difference between needs and wants, creating budgets, and allocating income efficiently ($p < 0.0001$). They also demonstrate superior investment and asset management skills, such as distinguishing productive from non-productive assets, recognising the benefits of gold and property investments, and using trading as a financial strategy ($p < 0.0001$). Additionally, Literacy individuals excel in debt management and financial responsibility, effectively managing debt instalments, recognising good versus bad debt, and keeping expenses below 60% of income ($p < 0.0001$). Finally, they show greater proficiency in long-term financial stability, including retirement planning and future savings ($p < 0.0001$).

IV. DISCUSSION

To ensure the questionnaire's reliability, Cronbach's Alpha was calculated, resulting in a value of 0.94. This Score indicates excellent internal consistency, meaning that the items in the questionnaire are highly correlated and measure the same underlying construct—financial literacy—effectively. A Cronbach's Alpha value above 0.9 is considered exceptional, underscoring the questionnaire's robustness as a tool for assessing financial literacy improvements. The high reliability of the questionnaire is a significant strength, as it ensures that the results are consistent and trustworthy. Researchers and educators can confidently use this instrument to evaluate financial literacy programs' effectiveness or identify areas where additional focus is needed. The reliability also suggests that the questionnaire is well-designed, with items that are clear, relevant, and aligned with the construct being measured. This reliability is crucial for longitudinal studies tracking financial literacy development over time. As Billari, Favero, and Saita (2023) argues, consistent measurement instruments are fundamental to establishing valid baseline comparisons and monitoring progress. However, Billari, Favero, and Saita (2023) cautions that even highly reliable instruments may fail to capture cultural nuances in financial literacy, potentially limiting their applicability across diverse cultural contexts.

Meantime the presence of strong correlations in the heatmap underscores the interrelatedness of various aspects of financial literacy. These correlations suggest that financial skills are not isolated but part of a broader, integrated framework. For instance, a strong correlation between budgeting and saving implies that effective budgeting practices can facilitate better saving habits. Similarly, a strong correlation between understanding credit and managing debt might indicate that knowledge of credit principles is crucial for effective debt management. These interconnected relationships have important implications for financial education. Teaching financial literacy as a series of isolated skills may be less effective than adopting a holistic approach emphasising the connections between different areas. By understanding these interconnections, educators can design programs that build on related skills, enhancing overall financial competence.

The Principal Component Analysis (PCA) findings provide valuable insights into the underlying structure of financial literacy data, revealing key components that explain most of the variance. The first two components account for approximately 59.5% of the variance, indicating they capture significant patterns in the dataset. When expanded to five components, the explained variance increases to around 76.5%, suggesting these components collectively represent the most critical information within the data. While PCA effectively reduces data complexity while preserving meaningful patterns, Kaiser et al. (2021) argue that this approach may oversimplify the multidimensional nature of financial literacy by potentially obscuring subtle but important relationships between variables. In contrast, Walusala, Rimiru, and Otieno (2017) said that PCA has a ability to identify predominant patterns enables more targeted.

The clustering analysis provides valuable insights into how demographic and experiential factors shape financial literacy, offering a foundation for targeted financial education and support strategies. The analysis highlights generational differences in financial literacy behaviours, with younger, more experienced business owners potentially demonstrating distinct financial practices compared to older individuals with newer businesses. This finding aligns with research by Rodriguez and Thompson (2022), who observed that digital natives often display different approaches to financial management than previous generations. However, (Yakob et al. 2021) challenge this view, presenting evidence that financial literacy differences are more strongly associated with educational background and socioeconomic status than with age alone. Billari, Favero, and Saita (2023) support this approach, demonstrating that financial education programs tailored to specific demographic clusters yield significantly better outcomes than generic interventions. Nevertheless, Mogale et al. (2025) cautions against over-reliance on demographic clustering, noting that within-group differences can sometimes exceed between-group differences, potentially limiting the effectiveness of strictly demographic-based interventions. The cluster analysis reveals that the null hypothesis (H_0) is rejected for 20 financial literacy variables ($p < 0.05$), indicating statistically significant differences between High and Low/Moderate financial literacy groups.

The most pronounced differences ($p < 0.0001$) are observed in three key areas: financial planning and prioritization, investment knowledge, and debt control (Mason and Wilson 2000). High literacy respondents demonstrate superior skills in budgeting, avoiding unnecessary expenses, and retirement planning, showcasing their ability to manage finances effectively. These individuals also exhibit advanced investment knowledge, particularly in gold and property investments and asset management. Additionally, they excel in debt control and financial responsibility, distinguishing between good and bad debt and managing debt instalments efficiently (Blue and Brimble 2015). These findings highlight the stark contrast between the two groups, with High-literacy individuals displaying a comprehensive understanding of financial principles and practices. This aligns with research by (Lestari 2023; Nghia Nguyen 2017), who found that individuals with high financial literacy scores were 3.5 times more likely to have adequate retirement savings and 2.7 times less likely to experience financial distress. However, (Hogarth, Beverly, and Hilgert 2003) argue that the binary classification of "high" versus "low/moderate" literacy may oversimplify the spectrum of financial knowledge and behaviours, potentially overlooking important nuances in financial capability development.

The findings underscore the advanced financial capabilities of the High Literacy group, which contrast sharply with the struggles of Low/Moderate Literacy individuals in areas like budgeting, prioritization, and investment awareness. Yusuf et al. (2016) demonstrate that targeted intervention strategies, such as scenario-based financial literacy training, can help bridge this gap and improve overall financial well-being. Their longitudinal study showed significant improvements in financial decision-making after structured interventions focused on budgeting and debt management. The significant gaps in budgeting, debt control, and long-term financial planning suggest a critical need for targeted intervention programs. By focusing on these areas, educational initiatives can help lower literacy groups develop essential financial skills (Kaiser and Lusardi 2024). This approach benefits individuals and contributes to broader economic resilience and growth.

The regression analysis reveals that Age and Years of Operation have a weak relationship with financial literacy scores, with an R^2 value of 0.052, meaning only 5.2% of the variance in financial literacy is explained by these two variables. Age, with a p-value of 0.293, is not a statistically significant predictor of financial literacy, suggesting that older individuals are not necessarily more financially knowledgeable (Billari, Favero, and Saita 2023). Years of Operation, with a p-value of 0.062, shows a marginally significant relationship, indicating a borderline impact on financial literacy. While real-world business experience may contribute to financial knowledge development, its influence appears limited. This finding challenges the conventional wisdom that experience automatically translates to financial literacy.

The findings suggest that a complex interplay of factors beyond age or business experience influences financial literacy. While Years of Operation has a small but noticeable effect, it is likely overshadowed by other variables such as education, income levels, and financial habits, which may impact financial knowledge more strongly (Kaiser and Menkhoff 2017). This underscores the importance of adopting a holistic approach to understanding financial literacy, recognizing that real-world experience alone cannot explain the variance in financial literacy scores. Future research and intervention programs should focus on identifying and addressing these additional factors to better support individuals in developing the financial skills necessary for long-term stability and success. By doing so, policymakers and educators can create more effective strategies to enhance financial literacy across diverse populations (Van Nguyen et al. 2022).

CONCLUSION

This study on financial literacy training interventions for MSMEs offers significant theoretical and practical implications for enhancing financial management practices among small business owners. The comprehensive analysis of the program reveals several important insights contributing to the growing body of knowledge on financial literacy and its impact on MSME sustainability. From a theoretical perspective, this research reinforces the multi-dimensional nature of financial literacy, identifying five key components through Principal Component Analysis: Spending and savings Behaviour, Financial Planning and budgeting, Investment Knowledge and long-term Planning, Risk Management and emergency funds, and Retirement and Debt Management. This finding expands on previous conceptualisations, demonstrating that financial literacy encompasses knowledge, behaviours, and attitudes toward financial management. The interconnections between these components, as revealed through Spearman correlation analysis, suggest that financial literacy should be understood as an integrated system rather than an isolated skill

Identifying distinct financial literacy clusters—"Moderate Financial Literacy" and "Highly Aware and Disciplined"—contributes to the theoretical understanding of financial literacy as a spectrum with recognisable patterns. This clustering provides a framework for categorising financial literacy levels and targeting interventions accordingly. The finding that years of business operation have a marginally significant relationship with financial literacy, while age does not, challenges assumptions about experience and financial knowledge, suggesting that targeted education may be more influential than time alone. From a practical implementation standpoint, this research offers clear guidance for financial literacy program design. The statistically significant differences between High and Low/Moderate literacy groups across 20 variables highlight specific areas requiring focused attention: budgeting, distinguishing between needs and wants, investment knowledge (particularly regarding gold and property), debt management, and long-term financial planning. These findings provide a roadmap for developing targeted interventions that address the most critical gaps in financial literacy among MSME owners.

The strong reliability of the assessment instrument (Cronbach's Alpha = 0.94) provides practitioners with a robust tool for evaluating financial literacy levels and measuring the impact of interventions. This practical contribution enables more effective program evaluation and continuous improvement of financial literacy initiatives. For policymakers and institutions supporting MSMEs, this research emphasises the importance of comprehensive, tailored financial education that addresses fundamental and advanced financial concepts. Identifying transparent relationships between financial literacy and business practices suggests that improving financial knowledge and skills can benefit MSME performance and sustainability. In essence, this research demonstrates that targeted financial literacy training can significantly enhance the financial management capabilities of MSME owners, contributing to their business resilience and growth potential. By addressing the multi-dimensional nature of financial literacy through comprehensive education programs, stakeholders can support the development of a more financially literate MSME sector, ultimately contributing to broader economic development goals, including poverty reduction, employment creation, and inclusive growth in Indonesia.

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