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Article

# Why Digital Literacy Alone Is Not Enough: Evidence from Women-Owned Micro Enterprises in Indonesia

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**Abstract:** This study aims to analyze the influence of spiritual capital, family support, business management skills, digital financial literacy, and digital financial access on women's business sustainability in micro-enterprises in the culinary sector with digital financial access as a moderation variable. The study was conducted on 438 women culinary micro business actors in East Java. The research was carried out quantitatively by collecting data through questionnaires and analyzed using Structural Equation Modeling–Partial Least Square (SEM-PLS). The results of the study show that spiritual capital, family support, business management skills, and access to digital finance have a positive effect on the sustainability of women's businesses in culinary micro-businesses. On the other hand, digital financial literacy does not have a significant effect on business sustainability. The study also found that business management skills are able to mediate the influence of spiritual capital and family support on business sustainability, while digital financial literacy is unable to mediate these relationships. In addition, access to digital finance is not able to moderate the influence of business management skills and digital financial literacy on business sustainability. The results show that the sustainability of women's micro businesses is more influenced by internal factors, family social support, and managerial skills than digital skills alone. This research provides important implications for the development of policies for the empowerment of women MSMEs, especially in strengthening business management skills and access to inclusive digital financing.
**Keywords:** Spiritual Capital, Family Support, Digital Financial Literacy, Business Management Skills, Digital Financial Access, Women's Business Sustainability.

## 1. Introduction

Micro, small, and medium enterprises (MSMEs) remain the backbone of many emerging economies, particularly in developing countries where they contribute substantially to employment generation, income distribution, and economic resilience (Chibueze, 2023). In Indonesia, the contribution of MSMEs to Gross Domestic Income (GDP) is 60.5% of total GDP, and is able to absorb 96.9% of the workforce in Indonesia (Hidayanti, 2026). According to the Ministry of Micro, Small and Medium Enterprises (MSMEs), 99% of MSME businesses in Indonesia are dominated by Micro-scale businesses dominated by the food and beverage sector (Hakiki, 2025), meaning that Indonesia's economy is still driven by micro-scale businesses, especially the food and beverage sector. Despite their economic importance, most micro enterprises struggle to survive in the long term. More than 80% of MSMEs fail to survive until the third year, this figure is higher than the global average of 60-70% (Pratondo, 2026). A survey conducted by DSInnovate on 1500 MSMEs showed that 70.2% of MSME owners experienced difficulties in marketing their products. 51.2% have access to capital problems. 46.3% regarding the fulfillment or inventory of raw materials and 30.9% digital adoption (Rohima et al., 2025).

This challenge is particularly salient among women-owned micro enterprises. Women entrepreneurs play a critical role in household welfare and local economic development, yet they often operate under structural constraints, including limited access to capital, lower formal education, restricted business networks, and the burden of balancing productive and domestic roles (Love et al., 2024; Manzanera-Ruiz et al., 2023). These constraints make women-owned micro enterprises more vulnerable to business discontinuity and limit their ability to scale. In sectors such as food and culinary businesses, where competition is intense, sustaining business operations becomes increasingly difficult. In a

society that is still patriarchal, women entrepreneurs often face double burdens in the form of domestic demands and business responsibilities, so that their capacity to develop their businesses optimally is hampered (Eftekhar, 2026). Lack of support from spouses and other family members is also a significant factor contributing to the high rate of business failure, especially in the early stages of operations (Degen & Clausen, 2026). The social and cultural barriers faced by women entrepreneurs are strongly influenced by regional characteristics and local contexts, so the form and intensity of the challenges can differ in each region (Alzahrani *et al*., 2026).

As an effort to help business competition, digital transformation has been widely promoted as a strategic pathway for MSME development (Marolt et al., 2025). Berbagai pihak seperti governments, financial institutions, and technology platforms increasingly emphasize digital financial inclusion, digital payment systems, and financial technology adoption as mechanisms to improve business competitiveness (Danladi et al., 2023; Kamis, 2025). Digital financial literacy has emerged as a critical capability, referring to the knowledge and skills required to access, understand, and use digital financial services effectively. Existing studies often assume that higher digital literacy leads to better financial decisions, improved access to capital, and ultimately stronger business outcomes.

Digital financial literacy has emerged as a critical capability, referring to the knowledge and skills required to access, understand, and use digital financial services effectively (Yadav et al., 2024). Existing studies often assume that higher digital literacy leads to better financial decisions, improved access to capital, and ultimately stronger business outcomes (Anwarul Islam et al., 2024; Ratnawati et al., 2022). However, the impact of digital financial literacy on business sustainability remains under-researched, particularly in the context of women-owned microenterprises. Micro-entrepreneurs may possess basic knowledge of digital tools like smartphones, but are unable to leverage them strategically for business growth. This is still reasonable because in Indonesia 52.92% of microentrepreneurs are between 45-64 years old with 46.49% being elementary school graduates, and only 4.99% have studied (BPS Indonesia, 2024). This profile shows that micro entrepreneurs are not yet accustomed to the optimal use of technology. This indicates that digital competence may be a necessary condition, but not a sufficient one. The ability to sustain and scale a business may depend on broader internal and external resources beyond digital knowledge itself.

From a resource based view perspective, business sustainability depends not only on technological capability but also on intangible strategic resources (El Nemar et al., 2025). Psychological resources such as spiritual capital may shape entrepreneurial resilience, ethical decision-making, and persistence under uncertainty (Igwe et al., 2025). Social resources, particularly family support (Hamid, 2023), may provide emotional, financial, and knowledge-based assistance that strengthens women entrepreneurs' capacity to manage business challenges (Atkočiūnienė et al., 2023). In addition, managerial capability remains central, as business sustainability ultimately requires the ability to organize resources, manage operations, and respond to market changes (Khattak et al., 2024; Pasko et al., 2024).

Despite growing research on MSME digitalization, three major gaps remain. First, prior studies predominantly focus on small and medium enterprises, leaving micro enterprises underexplored, even though they represent the most vulnerable segment. Second, most digital entrepreneurship research emphasizes technological determinants while paying limited attention to psychological and social factors. Third, studies rarely examine why digital literacy may fail to generate meaningful business outcomes, especially among women entrepreneurs in emerging markets.

This study addresses these gaps by investigating women-owned micro enterprises in Indonesia's culinary sector and proposing an integrative framework combining digital, psychological, social, and managerial perspectives. Specifically, this study examines whether digital financial literacy directly contributes to business sustainability or whether its effect is contingent upon other enabling resources. The novelty of this research lies in challenging the dominant assumption that digital literacy alone is sufficient for business advancement. Instead, this study argues that sustainable business growth among women-owned micro enterprises requires the interaction of digital access, managerial capability, social support, and internal psychological capital. By uncovering why digital literacy alone may not be enough, this study contributes to a more nuanced understanding of inclusive entrepreneurship and offers policy insights for designing more effective MSME empowerment programs.

## 2. Literature Review

### *2.1 Sustainability Business*

Business sustainability is rooted in the idea of *sustainable development* that emphasizes meeting current needs without sacrificing the ability of future generations to meet their needs (Akpuokwe *et al*., 2024). This concept is then adapted to describe how business activities can be carried out sustainably by paying attention to the balance between economic goals, social responsibility, and resource sustainability (Achmad et al., 2025). Elkington (2004)

introduced the concept *of triple bottom line* which is an important foundation in the study of business sustainability, namely the balance between *profit* (economic), *people* (social), and *planet* (environment). This perspective asserts that a business's sustainability is measured by its ability to generate profits, and its contribution to social well-being and environmental impact management (Nogueira et al., 2025).

## *2.2 Spiritual Capital*

In women-owned micro enterprises, spiritual capital may play a particularly important role due to the high uncertainty and resource constraints commonly faced by micro entrepreneurs (Christiana, 2026). A person who has high spiritual capital will generally tend to work with perseverance, resilience, and stress management in the entrepreneurial process, so as to maintain stability and business growth (Haddoud et al., 2025). Spiritual capital can also foster moral awareness to protect nature and use resources wisely as a form of responsibility to future generations (Ibrahim et al., 2025). Spiritual capital that includes religious values such as honesty, trust, justice, hard work, and spiritual responsibility has proven to be an important foundation in shaping Muslim women's business behavior and supporting the sustainability of their businesses. Religious values can provide ethical guidelines that influence the way women manage businesses, interact with customers, make financial decisions, and address social and economic challenges (Ummiroh et al., 2022). Religious values encourage honest, disciplined, responsible, and socially sustainability oriented business practices and community well-being all factors that contribute to the resilience and sustainability of businesses (Kurjono *et al*., 2025). Therefore, stronger spiritual capital is expected to enhance the sustainability of women-owned micro enterprises.

H1 : Spiritual capital has a positive effect on individuals sustainability of women-owned micro enterprises

## *2.3 Family Support*

Family support is widely recognized as an important resource for entrepreneurial success, particularly among women-owned micro enterprises (Ning et al., 2024). Family support refers to emotional, financial, informational, and practical assistance provided by family members to help entrepreneurs manage business challenges (Duran-Encalada et al., 2021). From the perspective of Social Capital, family support represents a form of social capital that provides access to valuable resources such as trust, encouragement, knowledge, and financial assistance, all of which can reduce business uncertainty.

Family support can improve emotional stability, time availability, and dual role management, which ultimately positively impacts business performance and sustainability (Haque *et al*., 2025). This relationship pattern confirms that social factors serve as enablers for performance and sustainability achievement (Zhang *et al*., 2025). Women entrepreneurs who receive family support tend to have better ability to balance work and family roles, so that they are able to maintain business performance in a sustainable manner (Yang *et al*., 2025). Family support has been proven to have a significant influence on business performance and sustainability (Zehra et al., 2023)

Business sustainability in this study is measured using the Triple Bottom Line framework, encompassing economic, social, and environmental dimensions. Family support may contribute to economic sustainability through financial assistance and improved resource availability (Hamid, 2023). Socially, emotional and moral support can strengthen motivation and resilience. Environmentally, family-based knowledge and values may encourage responsible business practices such as efficient resource use and waste management, especially in food-related micro businesses (Pramono et al., 2023). Therefore, stronger family support is expected to enhance the sustainability of women-owned micro enterprises.

H2 : Family support has a positive effect on individuals sustainability of women-owned micro enterprises

## *2.4 Business Management Skills*

Managerial capabilities, such as management skills, motivation, and entrepreneurial orientation, have been proven to have an effect on business performance and sustainability (Fahmi *et al*., 2025). Business owners with better managerial competence tend to be able to maintain their business in uncertain market conditions (Bağış *et al*., 2025). In the context of women entrepreneurs, these capabilities are often influenced by access to training and institutional support (Seppänen *et al*., 2025). This pattern shows that individual capabilities are the initial foundation that influences the long-term outcomes of the business (Sualeh Khattak *et al*., 2024). Business actors with strong managerial capabilities tend to be able to formulate the right strategies, manage risks, and take advantage of market opportunities, thereby increasing the durability and sustainability of the business in the long term (Popescu *et al*., 2022).

Business management skills can contribute to economic sustainability by improving productivity, cost efficiency, and profitability. Socially, effective interpersonal and leadership skills support better relationships with customers, suppliers, and communities (Zhou et al., 2022). Environmentally, managerial competence can encourage more efficient resource use, waste reduction, and responsible operational practices (Khattak et al., 2024). Therefore, stronger business management skills are expected to positively influence the sustainability of women-owned micro enterprises.

H3 : Business management skills has a positive effect on individuals sustainability of women-owned micro enterprises

## *2.5 Digital Financial Literacy*

From the perspective of Technology Acceptance Model, higher digital financial literacy enhances users' ability to perceive digital financial technologies as useful and easy to use, thereby increasing the likelihood of adoption and effective utilization (Davis, 1989). For women-owned micro enterprises, digital financial literacy has become increasingly important in the digital economy, where financial transactions and access to capital are progressively mediated by technology (Abdallah *et al*., 2024). Entrepreneurs with stronger digital financial literacy are expected to manage transactions more efficiently, access financing more easily, and make better financial decisions. These capabilities may improve operational flexibility and reduce financial constraints. These findings are in line with Zaimovic *et al*. (2025) that the ability to utilize digital financial technology contributes to increasing the productivity and stability of MSME performance (Quarshie *et al*., 2025).

Business sustainability in this study is measured using the Triple Bottom Line framework, encompassing economic, social, and environmental dimensions. Digital financial literacy may contribute to economic sustainability by improving financial planning and resource allocation (S. Peter et al., 2025). Socially, it may strengthen business connectivity and customer service through digital transactions (Dafri et al., 2023). Environmentally, digital financial tools may reduce paper-based transactions and improve operational efficiency (Putrevu et al., 2024). Therefore, higher digital financial literacy is generally expected to enhance the sustainability of women-owned micro enterprises.

H4 :Digital financial literacy has a positive effect on individuals sustainability of women-owned micro enterprises

## *2.6 Digital Financial Access*

Digital financial access refers to entrepreneurs' ability to obtain business financing through digital channels such as fintech lending platforms, digital banking, peer-to-peer lending, and online credit services (Bakashaba et al., 2024). Compared to conventional financing, digital financing offers greater flexibility, faster approval processes, and lower administrative barriers, making it particularly relevant for micro enterprises with limited collateral and formal financial records (Minarni, 2025). For women-owned micro enterprises, access to financing remains one of the most critical barriers to business growth and sustainability. Many women entrepreneurs face difficulties obtaining formal credit due to limited assets, lower financial documentation, and restricted access to traditional banking services (Irene et al., 2025; W. Peter et al., 2024). Digital financing can help reduce these barriers by expanding access to working capital and business development funds (Yao et al., 2022).

As a moderating variable, digital financial access may strengthen the relationship between internal capabilities and business sustainability. From the perspective of Resource-Based View, managerial skills and digital financial literacy can create greater business value when entrepreneurs have sufficient financial resources to implement strategic decisions.

H5 :Digital financial access has a positive effect on individual sustainability of women-owned micro enterprises

Beyond the direct relationships proposed in the previous hypotheses, this study further examines the underlying mechanisms and boundary conditions through which key antecedent variables influence business sustainability. Specifically, this research investigates the mediating roles of business management skills and digital financial literacy, as well as the moderating role of digital financial access in strengthening the relationship between digital financial literacy and business sustainability among women-owned micro enterprises.

H6 :Digital financial access positively moderates the relationship between business management skills and business sustainability of women-owned micro enterprises, such that the relationship becomes stronger when digital financial access is higher

H7 :Digital financial access positively moderates the relationship between digital financial literacy and business sustainability of women-owned micro enterprises, such that the relationship becomes stronger when digital financial access is higher

H8 :Business management skills mediate the relationship between spiritual capital and business sustainability of women-owned micro enterprises.

H9 :Business management skills mediate the relationship between family support and business sustainability of women-owned micro enterprises.

H10 :Digital financial literacy mediates the relationship between spiritual capital and business sustainability of women-owned micro enterprises.

H11 :Digital financial literacy mediates the relationship between family support and business sustainability of women-owned micro enterprises.

## 3. Materials and Methods

### *3.1 Research Design*

This study is a quantitative research with a causal approach that examines the influence of spiritual capital, family support, business management skills, digital financial literacy, and digital financial access on women's business sustainability in micro-enterprises in the culinary sector with digital financial access as a moderation variable. The research subjects in this study are women microentrepreneurs in the culinary sector who run their businesses in the digital economy sector as well as the conventional sector and have utilized digital services, such as digital payments, online marketing , or technology-based financing. This study uses purposive sampling techniques to ensure that the selected respondents are really in accordance with the characteristics of the research, namely women micro-entrepreneurs in the culinary sector who are active as Amartha partners and utilize the fintech-based financing ecosystem. The selected respondents must be domiciled in East Java and have been running a business for at least two years, so that they have sufficient business experience to assess the research variables. The minimum sample size was determined using G*Power 3.1 to ensure adequate statistical power. A priori power analysis was conducted using the F-test family for multiple regression with a medium effect size ($f^2 = 0.15$), significance level of 0.05, statistical power of 0.95, and five predictors. The analysis indicated a minimum required sample size of 138 respondents. Since this study involved 438 women-owned micro-enterprises, the sample exceeded the minimum requirement, indicating sufficient statistical power for hypothesis testing.

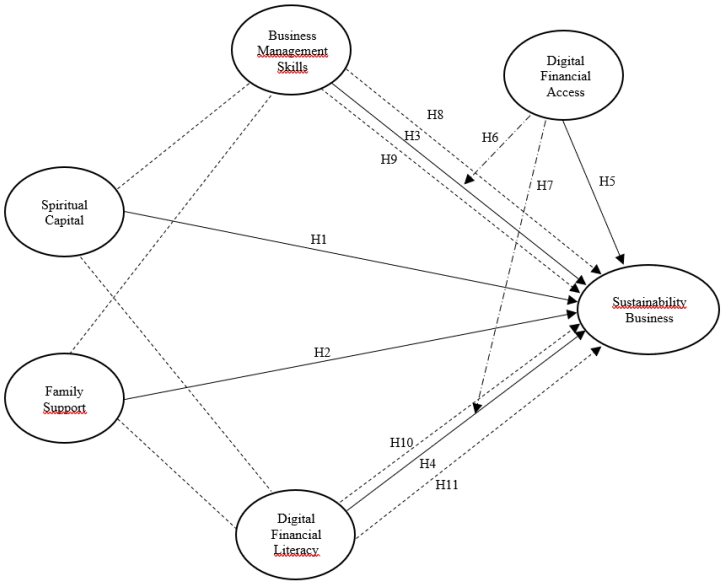


**Figure 1** Research Model

### *3.2 Research Instruments*

This study employed structured questionnaire instruments adapted from prior validated studies to measure all latent constructs. All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Spiritual capital was measured using 10 indicators adapted from Benson et al. (1993), Pérez-nordtvedt et al. (2022), Singh et al. (2025), and (Hosseinbor et al., 2022). The construct consists of two dimensions: horizontal spirituality (5 indicators), reflecting moral responsibility, honesty, interpersonal relationships, ethical decision-making, and adherence to principles; and vertical spirituality (5 indicators), reflecting spiritual closeness to God, faith-based guidance, meaningful purpose, and spiritual resilience. Family support was measured using 9 indicators adapted from Saoula et al. (2023), Chauhan et al. (2024), Harini et al. (2025) and Haque et al. (2025). This construct comprises four dimensions: financial support (2 indicators), knowledge support (2 indicators), morale support (3 indicators), and time support (2 indicators). Digital financial literacy was measured using 9 indicators adapted from Xie et al. (2025), Desai et al. (2025), Hasan et al. (2023), and Mishra et al. (2024). The construct includes four dimensions: risk control (2 indicators), digital knowledge (2 indicators), digital financial behavior (3 indicators), and digital financial attitude (2 indicators).

Business management skills were measured using 9 indicators adapted from Aripin et al. (2025), Pedraza-Rodríguez et al. (2023). The construct consists of group skills (2 indicators), interpersonal skills (2 indicators), and personal skills (5 indicators). Digital financial access was measured using 6 indicators adapted from Wulandari et al. (2025), Han et al. (2025), Frimpong et al. (2022), and Kumar et al. (2025). These indicators assess entrepreneurs' knowledge, accessibility, experience, and perceived ease in obtaining digital financing. Women's business sustainability was measured using 12 indicators adapted from Akther et al. (2024), Koliby et al. (2024) and Hasan Al-Obaidy et al. (2025). The construct was operationalized using the Triple Bottom Line framework, consisting of economic performance (4 indicators), social performance (5 indicators), and environmental performance (3 indicators). All multidimensional constructs were modeled as higher-order reflective constructs to capture the complexity of each latent variable.

### *3.3 Data Analysis*

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS. This study employed the disjoint two-stage approach to estimate higher-order constructs. The disjoint analysis was used because several constructs in this study namely spiritual capital, family support, digital financial literacy, business management skills, and business sustainability were conceptualized as multidimensional higher-order constructs. Prior to the main survey, a pretest was conducted to evaluate the validity and reliability of all measurement instruments. The pretest results confirmed that all indicators met the required thresholds for validity and reliability. Therefore, all measurement items were retained and deemed appropriate for use in the main data collection.

## 4. Results

### *4.1 Profile Respondent*

Based on the respondent profiles, the majority of female micro entrepreneurs are in the age range of 35-44 years (37.21%) and more than 45 years (36.99%), which shows that most of the respondents are of productive age and have quite mature life experience in running a business. In terms of education, the majority of respondents are educated in high school/vocational school (46.35%) and elementary/junior high school (40.41%), so it can be indicated that most of the business actors come from lower secondary education backgrounds.

**Table 1** Demographic Profile (n = 438)

| Criteria | Category | Freq | Percentage |
|---|---|---|---|
| Age | Less than 25 Years | 14 | 3.20% |
| | 25–34 Years | 99 | 22.60% |
| | 35–44 years old | 163 | 37.21% |
| | More than 45 Years | 162 | 36.99% |
| Education | Elementary/Junior High School | 177 | 40.41% |
| | High School/Vocational School | 203 | 46.35% |
| | Diploma | 26 | 5.94% |
| | Undergraduate/Postgraduate | 32 | 7.31% |
| Income Type | Main income | 177 | 40.41% |
| | Additional income | 261 | 59.59% |

| | | | |
|---|---|---|---|
| Length of Business Operation | 2–4 years | 200 | 45.66% |
| | 4–6 years | 115 | 26.26% |
| | More than 6 years | 123 | 28.08% |
| Number of Employees | No employees | 369 | 84.25% |
| | 1–4 people | 61 | 13.93% |
| | 5–9 people | 6 | 1.37% |
| | More than 9 people | 0 | 0.00% |
| Regions (city) | Surabaya | 116 | 26.48% |
| | Kediri | 155 | 35.39% |
| | Sidoarjo | 4 | 0.91% |
| | Pasuruan | 7 | 1.60% |
| | Jombang | 154 | 35.16% |
| Type of Business | Snacks / snacks | 151 | 34.47% |
| | Home Production | 88 | 20.09% |
| | Food Stalls (Ready-to-eat) | 106 | 24.20% |
| | Others | 16 | 3.65% |

Most of the businesses are run as additional income (59.59%), indicating that women's micro businesses still function as a support for the family economy. From business characteristics, the majority of businesses have been operating for 2-4 years (45.66%) and 84.25% of respondents do not have employees, which shows the dominance of very small-scale or family-based businesses.

This study uses the PLS-SEM analysis method with 2 main stages, namely the measurement model and the structural model. However, this research model is prepared using LOC and HOC variables which will be analyzed in more detail hierarchically (hierarchal component analysis). In the hierarchical analysis of this research model, the disjoint two stage approach was used according to the recommendations (Sarstedt et al., 2022)

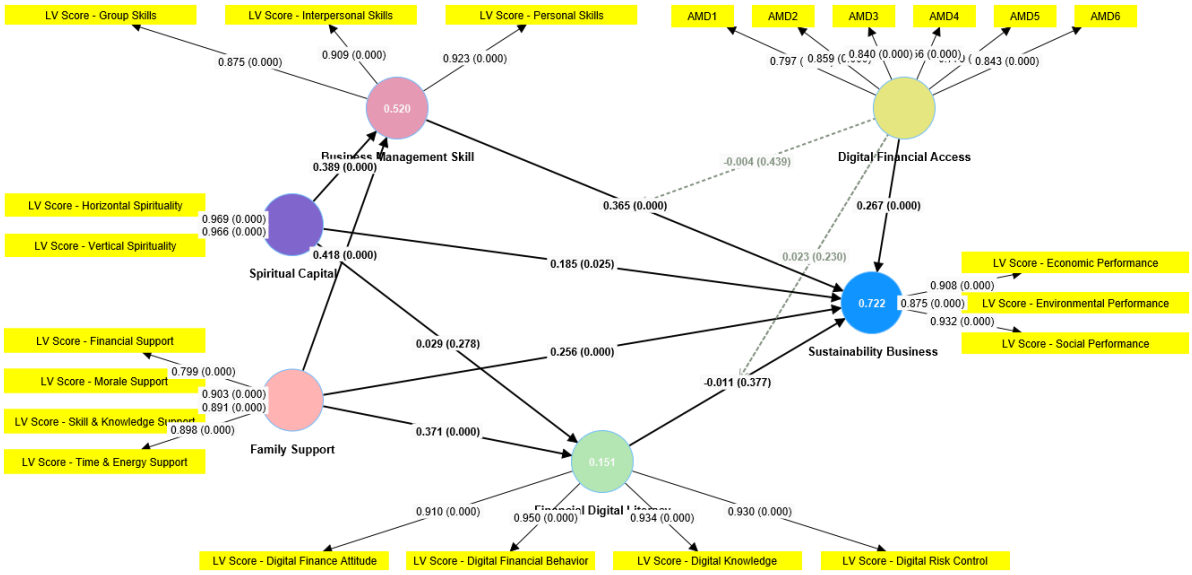


**Figure 2** Path Coefficient and P Values

## *4.2 Outer Model*

The first stage in the evaluation of the measurement model (outer model) is a crucial stage to ensure whether the indicators used in this research model are reliable and valid.

**Table 2** Validity and Reliability Test

| Variable | Indicator | OL |
|---|---|---|
| Spiritual Capital | Horizontal Spiritual (OLS : 0.969 \| AVE : 0.715 \| CA 0.900 \| CR : 0.926) | |
| | MS4 – I view business as a moral responsibility. | 0.829 |
| | MS5 – I maintain honesty in running my business. | 0.847 |

| Variable | Indicator | OL |
|---|---|---|
| | MS6 – I maintain good relationships with others. | 0.874 |
| | MS7 – I weigh the pros and cons before making business decisions. | 0.827 |
| | MS8 – I stick to my principles when facing business pressures. | 0.850 |
| | Vertical Spiritual (OLS : 0.966 \| AVE : 0.696 \| CA 0.890 \| CR : 0.919) | |
| | MS1 – I feel close to God in my daily life. | 0.862 |
| | MS2 – I use my faith in God as a guide in running my business. | 0.871 |
| | MS3 – I believe that a business run with good intentions will bring blessings. | 0.869 |
| | MS9 – I have meaningful business goals. | 0.839 |
| | MS10 – My faith in God helps me persevere when my business faces difficulties. | 0.723 |
| Family | Financial Support (OLS : 0.799 \| AVE : 0.743 \| CA 0.655 \| CR : 0.853) | |
| Support | DK1 – My family helps with the initial capital for the business. | 0.874 |
| | DK2 – My family provides financial support when needed | 0.850 |
| | Skill & Knowledge Support (OLS : 0.891 \| AVE : 0.867 \| CA 0.847 \| CR : 0.929) | |
| | DK7 – My family provides advice on managing my business. | 0.929 |
| | DK8 – My family provides knowledge that can help my business. | 0.934 |
| | Morale Support (OLS : 0.903 \| AVE : 0.716 \| CA 0.802 \| CR : 0.883) | |
| | DK4 – My family supports my business decisions. | 0.850 |
| | DK5 – My family encourages me when my business experiences difficulties. | 0.854 |
| | DK9 – I feel my family believes in my abilities as an entrepreneur. | 0.834 |
| | Time & Energy Support (OLS : 0.898 \| AVE : 0.795 \| CA 0.742 \| CR : 0.886) | |
| | DK3 – My family helps with business operations. | 0.889 |
| | DK6 – Family support helps lessen the burden of my dual roles. | 0.894 |
| Digital | Risk Control (OLS : 0.93 \| AVE : 0.91 \| CA 0.901 \| CR : 0.953) | |
| Financial | LKD5 – I maintain the security of my digital financial accounts. | 0.954 |
| Literacy | LKD7 – I am able to understand the risks involved in digital transactions. | 0.954 |
| | Digital Knowledge (OLS : 0.934 \| AVE : 0.851 \| CA 0.825 \| CR : 0.919) | |
| | LKD1 – I understand how to use digital financial applications for business financial transactions. | 0.935 |
| | LKD4 – I understand the risks involved in digital transactions. | 0.910 |
| | Digital Financial Behavior (OLS : 0.95 \| AVE : 0.816 \| CA 0.888 \| CR : 0.930) | |
| | LKD2 – I use digital payments in my business. | 0.907 |
| | LKD3 – I use an app to record my business finances. | 0.907 |
| | LKD6 – I am able to manage digital financial transactions. | 0.897 |
| | Digital Finance Attitude (OLS : 0.91 \| AVE : 0.787 \| CA 0.735 \| CR : 0.881) | |
| | LKD8 – I use financial data for business decisions. | 0.922 |
| | LKD9 – I feel confident using digital technology for business financial transactions. | 0.851 |
| Business | Group Skill (OLS : 0.875 \| AVE : 0.827 \| CA 0.791 \| CR : 0.905) | |
| Management | KMB8 – I maintain productive teamwork. | 0.905 |
| Skills | KMB9 – I am able to manage business resources efficiently. | 0.914 |
| | Interpersonal Skill (OLS : 0.909 \| AVE : 0.794 \| CA 0.741 \| CR : 0.885) | |
| | KMB5 – I maintain good relationships with customers. | 0.887 |
| | KMB7 – I am able to solve problems in business. | 0.895 |
| | Personal Skill (OLS : 0.923 \| AVE : 0.66 \| CA 0.87 \| CR : 0.906) | |
| | KMB1 – I plan my business activities well. | 0.797 |
| | KMB2 – I manage my business finances regularly. | 0.827 |
| | KMB3 – I organize my production process well. | 0.882 |
| | KMB4 – I actively market my products. | 0.822 |
| | KMB6 – I consider various options before making business decisions. | 0.725 |
| Digital | Digital Financial Access (OLS : 0.797 \| AVE : 0.688 \| CA 0.909 \| CR : 0.930) | |
| Financial | AMD1 – I am aware of business financing services through digital applications. | 0.796 |
| Access | AMD2 – I understand how to apply for business financing through digital applications. | 0.859 |
| | AMD3 – Digital financial applications make it easier to access business capital. | 0.840 |
| | AMD4 – The digital loan application process is easier than with conventional financial institutions. | 0.856 |
| | AMD5 – I have received digital financing to develop my business. | 0.778 |
| | AMD6 – Access to digital financing helps my business grow. | 0.843 |
| | Economic Performance (OLS : 0.908 \| AVE : 0.772 \| CA 0.902 \| CR : 0.931) | |

| Variable | Indicator | OL |
|---|---|---|
| Sustainability Business | KBP1 – My business generates consistent profits. | 0.866 |
| | KBP2 – My business revenue increases over time. | 0.909 |
| | KBP3 – My business has long-term prospects. | 0.878 |
| | KBP4 – My business is able to survive changing economic conditions. | 0.862 |
| | Social Performance (OLS : 0.932 \| AVE : 0.663 \| CA 0.872 \| CR : 0.907) | |
| | KBP5 – My business provides economic benefits to my family. | 0.708 |
| | KBP6 – My business benefits the surrounding environment. | 0.815 |
| | KBP7 – My business creates employment opportunities for others. | 0.848 |
| | KBP8 – My business respects the rights of the surrounding community. | 0.851 |
| | KBP9 – I treat workers fairly. | 0.841 |
| | Environmental Performance (OLS : 0.875 \| AVE : 0.769 \| CA 0.85 \| CR : 0.909) | |
| | KBP10 – I manage business waste responsibly. | 0.856 |
| | KBP11 – I maintain a clean environment for food production and marketing. | 0.892 |
| | KBP12 – I use raw materials efficiently. | 0.882 |

All indicators have an outer loading (OL) value in the range of 0.708 – 0.954 in the first order construct test, while the outer loading value in the second order construct (OLS) stage is in the range of 0.779 – 0.969. The Cronbach alpha (CA) value is in the range of 0.655 – 0.909, while the composite reliability (CR) value is in the range of 0.853-0.953. Thus, it can be concluded that all indicators and variables in this study are valid and reliable. Next, it is to test the validity of the discriminator by looking at the value of the Heterotrait-Monotrait Ratio of Correlations (HTMT).

**Table 3** Discriminant Validity (HTMT)

| Antecedent | DFA | FS | BS | BMS | DFL | MS |
|---|---|---|---|---|---|---|
| Digital financial access (AKD) | | | | | | |
| Family Support (FS) | 0.343 | | | | | |
| Business Sustainability (BS) | 0.610 | 0.764 | | | | |
| Business Management Skills (BMS) | 0.475 | 0.722 | 0.861 | | | |
| Digital Financial Literacy (DFL) | 0.620 | 0.417 | 0.444 | 0.375 | | |
| Modal Spiritual (MS) | 0.369 | 0.647 | 0.728 | 0.702 | 0.265 | |

It is known that this research model has been well discriminated in the validity discrimination test because the HT/MT ratio value is less than 0.900 in the entire antecedent relationship. So it can be said that the indicators in this research model have accurately or specifically measured their respective antecedents.

### *4.3 Inner Model*

After evaluating the outer model, the next process is PLS-SEM data analysis evaluating the inner model, which is also known as a structural model. The first thing to analyze when evaluating a structural model is whether or not the model's independent antecedent has collinearity issues. The test was carried out by looking at the value of the variance Inflation Factor (VIF), where the ideal value or it can be said that there is no problem if it is found to be less than 3, while if it is found between 3-5 it is said to be still tolerable.

**Table 4** Multicolinearity and Effect Size

| Path | VIF | f-square |
|---|---|---|
| Access to digital finance -> Business Sustainability | 2.010 | 0.137 |
| Family Support -> Business Sustainability | 2.021 | 0.087 |
| Family Support -> Business Management Skills | 1.584 | 0.208 |
| Family Support -> Digital Financial Literacy | 1.584 | 0.082 |
| Business Management Skills -> Business Sustainability | 2.709 | 0.199 |
| Digital Financial Literacy -> Business Sustainability | 1.629 | 0.002 |
| Spiritual Capital -> Business Sustainability | 2.110 | 0.039 |
| Spiritual Capital -> Business Management Skills | 1.584 | 0.261 |
| Spiritual Capital - > Digital Financial Literacy | 1.584 | 0.002 |
| Digital finance access x Business Management Skills -> Business Sustainability | 1.640 | 0.000 |
| Digital Finance Access x Digital Financial Literacy -> Business Sustainability | 1.420 | 0.002 |

The inner value of VIF was found to be less than 5 as expected so that it can be concluded that there is no multicollinearity in all paths of influence between variables. Based on the results of the f-square (effect size) test, Digital Financial Access, Family Support, and Spiritual Capital showed a small effect size on Business Sustainability, with f-square values of 0.137, 0.087, and 0.039, respectively. Meanwhile, Business Management Skills has a medium effect size on Business Sustainability with a value of 0.199. In the mediation variables, Family Support and Spiritual Capital had a moderate influence on Business Management Skills, 0.208 and 0.261, respectively. In contrast, Digital Financial Literacy does not show a significant influence on Business Sustainability nor as a variable influenced by Spiritual Capital, with a very low f-square value (0.002). Overall, the greatest influence in the model was found on the relationship of Spiritual Capital to Business Management Skills, followed by Family Support to Business Management Skills. The next test is to look at the values of r-square and q-square.

**Table 5** Predictive Power Of The Model

| Variable | *R-square* | *Q-square* |
|---|---|---|
| Business Sustainability | 0.706 | 0.568 |
| Business Management Skills | 0.543 | 0.435 |
| Digital Financial Literacy | 0.133 | 0.111 |

Based on the results of the structural model evaluation, the Business Sustainability variable has an R-square value of 0.706 and a Q-square of 0.568, which shows that the model has a strong explanatory and predictive ability for business sustainability. The Business Management Skills variable obtained an R-square value of 0.543 and Q-square of 0.435, which indicates that the model's explanatory ability is in the moderate category with good predictive relevance. Meanwhile, the Digital Financial Literacy variable had an R-square value of 0.133 and a Q-square of 0.111, which indicates a relatively low explanatory ability of the model, although it still has predictive relevance because the Q-square value is greater than zero. Overall, the research model showed good predictive relevance. Next, test the hypothesis as follows:

**Table 6** Hypothesis Test

| | Hypothesis | Coef | t stat | P values | Result |
|---|---|---|---|---|---|
| H1 | Spiritual Capital -> Business Sustainability | 0.185 | 1.956 | 0.025 | Supported |
| H2 | Family Support -> Business Sustainability | 0.256 | 4.865 | 0.000 | Supported |
| H3 | Business Management Skills -> Business Sustainability | 0.365 | 6.790 | 0.000 | Supported |
| H4 | Digital Financial Literacy -> Business Sustainability | -0.011 | 0.314 | 0.377 | Not Supported |
| H5 | Digital Capital Access -Business Sustainability > | 0.267 | 5.680 | 0.000 | Supported |
| H6 | Digital Capital Access x Business Management Skills -> Business Sustainability | -0.004 | 0.153 | 0.439 | Not Supported |
| H7 | Digital Capital Access x Digital Financial Literacy -> Business Sustainability | 0.023 | 0.740 | 0.230 | Not Supported |
| H8 | Spiritual Capital -> Business Management Skills -> Business Sustainability | 0.142 | 4.132 | 0.000 | Supported |
| H9 | Family Support -> Business Management Skills -> Business Sustainability | 0.153 | 4.902 | 0.000 | Supported |
| H10 | Spiritual Capital -> Digital Financial Literacy -> Business Sustainability | 0.000 | 0.154 | 0.439 | Not Supported |
| H11 | Family Support -> Digital Financial Literacy -> Business Sustainability | -0.004 | 0.309 | 0.379 | Not Supported |

The results on H1 showed that spiritual capital had a positive effect on business sustainability (β = 0.185; t = 1.956; p = 0.025). This shows that the higher the spiritual value that business actors have, the higher the sustainability of their business. Spiritual values such as honesty, patience, gratitude, and belief in the blessings of business are sources of motivation and endurance in facing business challenges. These findings are in line with the Resource-Based View theory, which emphasizes the importance of intangible internal resources in supporting business excellence (Abrokwah-Larbi, 2024). These results are also supported by previous research showing that spirituality contributes to business sustainability (Singh et al., 2025; Tjahjadi et al., 2023).

The results on H2 showed that family support had a positive effect on business sustainability (β = 0.256; t = 4.865; p = 0.000). The greater the family support, the higher the ability of the business to survive and grow. Based on the theory of Social Capital, the family is the main source of social capital that provides emotional, energy, knowledge, and financial support. These findings are in line with previous research that confirms the importance of family support for women's business sustainability. As many as 84.25% of respondents do not have employees, so business operations are highly dependent on families. In addition, the dual role of women as household managers and business actors makes family support very important in maintaining business stability. The results of this study are in line with research conducted by Zehra & Usmani (2023), Haque et al. (2025), Yang et al. (2025) and Zhang et al. (2025) which showed that family support is a fundamental factor that influences the sustainability of women's businesses.

The results on H3 showed that business management skills had a positive effect on business sustainability (β = 0.365; t = 6.790; p = 0.000). This shows that the ability to manage finances, production, marketing, and customers plays an important role in maintaining business sustainability. These findings support the Resource-Based View theory, which emphasizes that internal capabilities are a source of competitive advantage. These results are also consistent with previous research that places management skills as an important factor in business sustainability. The majority of respondents have been running a business for 2-4 years or more, so practical experience helps shape managerial skills that support business sustainability. The results of this study are in line with the research conducted by Fahmi et al. (2025), Bağış et al. (2025), Popescu et al. (2022) which showed that business management skills are a factor that can affect business sustainability

The results on H4 showed that digital financial literacy had no effect on business sustainability (β = -0.011; t = 0.314; p = 0.377). Although the direction of the relationship is negative, the effect is not significant. Based on the Technology Acceptance Model theory, technology adoption is influenced by the perception of benefits and ease of use. In the context of this research, business actors still tend to use traditional methods in managing business and finances. The majority of respondents are educated in the lower middle class, run a household business, and do not have employees, so the use of digital technology is still limited to basic uses such as bank transfers, WhatsApp, or QRIS. This condition explains why digital financial literacy has not become an important factor in supporting business sustainability. The results in this study are not in line with the research conducted by Yadav et al. (2024), Al-shami et al. (2024) which shows that digital financial literacy is a factor that can affect business sustainability. However, research conducted by Hadi et al. (2025) and Arofani et al. (2025) on MSMEs also shows that financial literacy has no effect on business sustainability.

The results on H5 showed that digital capital access had a positive effect on business sustainability (β = 0.267; t = 5.680; p = 0.000). The easier it is for business actors to access digital financing, the higher the sustainability of their business. TAM explained that the use of digital technology will be accepted if it is felt to provide benefits and convenience. In the micro culinary business, capital needs are fast and repetitive, especially for the purchase of raw materials and daily operations. The presence of digital financing services makes it easier for business actors to obtain capital in a more practical and flexible manner than conventional financial institutions. Therefore, access to digital finance is an important factor in supporting business sustainability. Since most of the respondents are micro-businesses with small scales, access to digital financing is an important alternative to formal loans which are more difficult to process. In addition, the majority of businesses have been running for more than 2 years, so business actors may start to get to know digital financing services to maintain their businesses.

The results on H6 showed that digital capital access did not moderate the relationship between business management skills and business sustainability (β = -0.004; t = 0.153; p = 0.439). This shows that access to digital capital has not been able to strengthen the influence of management skills on business sustainability. This means that access to digital capital has not been able to strengthen the influence of business management skills on business sustainability. Although business actors have good managerial skills, the existence of access to digital financing does not automatically increase the effectiveness of these skills in encouraging business sustainability. This condition can occur because the majority of respondents are micro business actors who run businesses on a small scale and are

household-based, so that additional digital capital is more used for short-term operational needs such as the purchase of daily raw materials than for expansion or strategic investment. These results are not in line with several studies that state that access to digital financing can strengthen business capabilities, but support studies that show that the benefits of digital finance in micro MSMEs are often hampered by limited business scale and low digital readiness.

The results on H7 showed that digital capital access did not moderate the relationship between digital financial literacy and business sustainability ($\beta = 0.023$; $t = 0.740$; $p = 0.230$). Theoretically, business actors who have good digital financial literacy should be able to use digital capital access more effectively. However, in this study, this has not been seen. One of the possible causes is the low intensity of the use of digital technology in micro-culinary businesses. Many respondents still use digital services only at the basic level such as bank transfers or QRIS, so digital literacy has not been translated into a business strategy that improves business sustainability. These results are in line with research on micro MSMEs in developing regions which shows that the existence of digital access alone is not enough without a comprehensive transformation of business practices.

The results on H8 showed that business management skills mediated the influence of spiritual capital on business sustainability ($\beta = 0.142$; $t = 4.132$; $p = 0.000$). Spiritual values such as discipline, responsibility, integrity, and perseverance encourage business actors to manage their business in a more structured and consistent manner. In micro-culinary businesses, spiritual capital is not only a source of internal motivation, but also influences managerial behaviour such as financial management, product quality, and customer service. These findings support the Resource-Based View perspective, which explains that intangible resources can create capabilities that result in sustainable excellence. These results are also in line with previous research that found that spirituality can strengthen work ethic and the quality of business management.

The results on H9 showed that business management skills mediated the influence of family support on business sustainability ($\beta = 0.153$; $t = 4.902$; $p = 0.000$). Family support helps business actors improve managerial skills which ultimately supports business sustainability. Family support is not only in the form of emotional or financial assistance, but can also be in the form of transfer of experience, knowledge, and operational assistance that helps business actors develop managerial skills. In the context of women microentrepreneurs, families are often the main partners in the production, distribution, and decision-making process. Therefore, family support indirectly improves the quality of business management. These findings support the theory of social capital, which emphasizes that strong social relationships can increase access to resources and productive capabilities. Previous research has also shown that family support contributes to the development of female entrepreneurial competence.

The results on H10 showed that digital financial literacy did not mediate the relationship between spiritual capital and business sustainability ($\beta = 0.000$; $t = 0.154$; $p = 0.439$). This shows that although spiritual capital shapes positive behaviours such as discipline and prudence, these values are not enough to drive the improvement of digital financial capabilities. Digital financial literacy requires more specific technical competencies, such as understanding financial applications, fintech, and digital transaction management. Because the majority of respondents come from the lower middle education group and still manage businesses traditionally, spiritual capital does not contribute much to the mastery of digital technology. These results support research showing that personal value is not necessarily directly correlated with technology adoption.

The results on H11 showed that digital financial literacy did not mediate the relationship between family support and business sustainability ($\beta = -0.004$; $t = 0.309$; $p = 0.379$). This indicates that family support is not enough to increase digital financial literacy that is able to encourage business sustainability. In the context of culinary micro-businesses, the dominant form of family support tends to be in the form of labor assistance, capital, and moral support, rather than digital skills transfer or financial technology education. Thus, although the family plays an important role in business operations, this role is not enough to improve the digital financial capabilities of business actors. These findings are in line with research that shows that the increase in digital literacy in MSMEs is more influenced by formal training, experience using technology, and access to digital education than family support alone.

## 5. Conclusions

This study aims to analyses the influence of spiritual capital, family support, business management skills, digital financial literacy, and digital capital access on business sustainability in women micro-entrepreneurs in the culinary sector in East Java. The results of the study show that spiritual capital, family support, business management skills, and digital capital access have a positive effect on business sustainability. Among all antecedents, business management skills are proven to have the strongest direct influence on business sustainability. However, digital financial literacy does not have a significant effect on business sustainability.

In addition to direct influence, this study also shows that business management skills play a significant role as a mediator in the relationship between spiritual capital and family support to business sustainability. However, digital financial literacy is not able to mediate the two relationships. The moderation results also show that digital capital access has not been able to strengthen the relationship between business management skills and digital financial literacy to business sustainability. These findings indicate that in the context of women's micro-enterprises in the culinary sector, business sustainability is still more determined by internal factors and social support than digital capabilities.

Theoretically, this study contributes to the development of the Resource-Based View (RBV) theory by showing that intangible resources such as spiritual capital and internal capabilities such as business management skills are strategic factors that support the sustainability of micro businesses. This research also expands the perspective of social capital theory by proving that family support is an important form of social capital in improving women's business sustainability. On the other hand, the results of this study show that the assumptions in the Technology Acceptance Model (TAM) regarding the importance of technology adoption have not fully applied to micro MSMEs, especially when the level of digital adoption is still low.

The practical implications of this study show that efforts to improve the sustainability of women MSMEs should be focused on strengthening business management skills, such as financial management training, marketing, operational control, and business decision-making. In addition, family support and strengthening spiritual values also need to be considered because they have proven to be an important foundation in maintaining the resilience of women's businesses. The MSME digitalization program should not only focus on providing access to technology or digital financing, but also on more intensive assistance so that business actors are able to integrate technology into their daily business activities.

This research has several limitations. First, the object of the research is only limited to women micro-entrepreneurs in the culinary sector, so the generalization of results to other business sectors needs to be done carefully. Second, this study uses a cross-sectional design, so it has not been able to capture changes in business behaviour in the long term. The next research is suggested to expand the scope of the business sector, add other variables such as innovation, entrepreneurial orientation, or digital technology adoption, and use a longitudinal approach to gain a more comprehensive understanding of the factors that affect the business sustainability of women MSMEs.

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## 6. Declarations

### *6.1. Ethical considerations*

This study was conducted in accordance with ethical research principles involving human participants. Prior to data collection, all respondents were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any time without any consequences. Informed consent was obtained from all participants before they completed the questionnaire. The confidentiality and anonymity of respondents were strictly maintained, and all collected data were used solely for academic research purposes.

### *6.2. Use of artificial intelligence (AI)*

The authors declare that no generative artificial intelligence (AI) tools were used in the preparation, analysis, or writing of this manuscript.

### *6.3. Conflict of Interest*

The authors declare no conflicts of interest.

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