



Fintech Integrated Economic Education Model: Improving Inclusive Financial Competence Among Millennial MSMEs

Syurwana Farwita¹, Nursyam Arsyad², Ibadurrahman³, Jepri Utomo⁴, Inayatul Mutmainnah⁵

¹Master of Management Program, Graduate School, University of East Indonesia

²Accounting Program, Faculty of Economics and Business, University of East Indonesia

³Management Program, Faculty of Economics and Business, University of East Indonesia

⁴Sociology Program, Faculty of Teacher Training and Education, University of Mataram, Indonesia

⁵Government Program, Faculty of Social and Political Sciences, Pepabri University, Makassar, Indonesia

*Corresponding Author: Syurwana Farwita

Email: farwitasyurwana@gmail.com



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Abstract

This research aims to develop and test a fintech-integrated economic education model to improve inclusive financial competence among millennial MSMEs in Makassar City. Using a descriptive qualitative approach, the study involved ten MSME actors selected purposively and explored their financial behavior, challenges, and responses to a structured training model. The model combines basic economic education, practical use of digital financial applications, and reflective learning processes. Data were collected through interviews, observations, documentation, and pre-test and post-test analysis. The results show significant behavioral changes in financial management, including routine bookkeeping, financial separation between personal and business funds, and improved budgeting practices using fintech tools. The model proves effective in contextualizing economic education and digital literacy within the everyday business practices of MSMEs. These findings underscore the importance of designing participatory, practical, and technology assisted learning models to enhance financial inclusion and empower small business actors sustainably.

Introduction

The increasingly massive digital transformation has transformed the way people conduct economic activities, including in the Micro, Small, and Medium Enterprises (MSMEs) sector. Business digitalization not only impacts marketing and distribution strategies but also extends to financial aspects and business transactions. Amidst this development, financial technology (fintech) has become a crucial instrument in supporting the efficiency and ease of MSME transactions, especially for the digitally savvy millennial generation. In several major cities, including Makassar, millennial MSMEs are a group that has been quick to respond to technological advances in running their businesses (Amin & Pamungkas, 2022).

However, there is a paradox between the high adoption of technology and the low financial management skills of MSMEs. Most business owners utilize digital wallet applications and e-commerce platforms to sell products, yet still employ conventional financial practices without planning. Many MSMEs still fail to record cash flow, mix personal and business finances, and do not prepare regular budgets. This irregularity hinders them from objectively assessing business performance and accessing formal funding (Hakiki et al., 2021).

These issues indicate that the use of fintech by MSMEs is currently functional, not strategic. Fintech is positioned solely as a transaction tool, not as a means of strengthening business management. A lack of basic economic understanding and low financial literacy make MSMEs vulnerable to errors in financial decision-making. This situation has the potential to reduce business resilience and sustainability, especially amid market fluctuations and post-pandemic economic pressures (Andreas & Wibowo, 2023; Widiastuti et al., 2023).

Various training and educational interventions have been implemented to address this issue, but most still focus on delivering theoretical material that is not down-to-earth and difficult to implement for MSMEs with limited time, resources, and formal understanding. A contextual, practical, and integrated approach to economic education, incorporating digital tools familiar to millennial entrepreneurs, is urgently needed to ensure that education not only fosters understanding but also fosters behavioral change (Widyaningsih & Widodo, 2024; Anggriani et al., 2023).

Furthermore, there are few educational approaches specifically targeting millennial MSMEs, leveraging the technology they already use daily. Yet, this group holds significant potential for strengthening the local economy due to their high flexibility in innovating and adapting to technology (Meliza et al., 2023). Therefore, it is necessary to design an economic education model that not only conveys concepts but also provides hands-on experience in managing business finances digitally and responsibly.

Based on this background, the specific objective of this research is to develop and test a fintech-integrated economic education model that can improve inclusive financial competency among millennial MSMEs. This model is expected to bridge the gap between technology utilization and strengthening financial literacy through an applicable, participatory approach based on the real needs of business actors. In addition to developing the model, this research also aims to evaluate its effectiveness in shaping more structured and rational financial behavior (Purnamasari & Asharie, 2024; Rahmadani et al., 2022).

Several previous studies have demonstrated a positive relationship between financial literacy and MSME performance. Financial understanding plays a crucial role in long-term economic decision-making (Aziz et al., 2020; Maulana et al., 2023). In Indonesia, financial training for MSMEs is still dominated by conventional approaches without the support of digital tools relevant to the participants' lives (Armiani, 2022).

On the other hand, recent research suggests integrating technology into financial literacy programs, but this remains limited to conceptual studies (Meliza et al., 2023; Budiutono, 2023). While these studies contribute important theoretical insights, few have specifically designed practical, fintech-based economics education models, particularly for millennial MSMEs who require a contextual learning approach (Hadyan et al., 2022).

There remains a largely unaddressed research gap: the need for an integrative, applicable, and contextual economics education model that addresses the real needs of MSMEs in utilizing technology to better manage their finances. Such a model is expected to bridge the gap between technological mastery and the sustainable improvement of financial literacy and competency (Amin & Pamungkas, 2022; Ananta & Syafrini, 2024).

The urgency of this research is further strengthened given that financial inclusion is not simply about providing access to formal financial services; it also requires ensuring that business actors have the capacity to use these services intelligently and productively. This research is expected to make a strategic contribution to the development of fintech-based training models that can shape healthy financial behaviors, strengthen the resilience of micro-enterprises, and

support the national financial inclusion agenda in a more concrete and effective manner (Winarto, 2020).

Methods

The research was based on a developmental mixed-methods design with a rather qualitative paradigm. The methodological orientation came as a result of the two-fold aims of the study, which was to not only develop an educational model that incorporates financial technology with economic learning, but also empirically examine the effects of such a combination on inclusive financial competence among millennial MSMEs in Makassar City. Instead of following a purely descriptive format, the study was done in the shape of a developmental inquiry that constructs, implements, and evaluates a pedagogical model in the form of iterative cycles of practice and reflection. The design allowed this research to pass through the realms of knowledge about lived experiences and confirmation of observed behavioral changes in a flowing manner.

In its essence, the study attempted to understand the process of learning when MSME actors are exposed to financial technology not as end users, but as sensitive learners in whom their financial behaviors are refined through tutored learning. In order to achieve the purpose of capturing this change, it was proposed that the research take a qualitatively-driven approach; meaning that as an analytical tool, the rich-story and contextual exploration became the major tool. The use of quantitative methods, specifically, the pre-test and post-test comparisons was presented not to make any statistical generalization but to support the results of the qualitative research with the empirical examples of the transition. In such a harmonized combination, the methodology owned the complexity of educational phenomena whereby cognitive, behavioral and technological aspects come together in the lived practices of micro-entrepreneurs.

Participants and Sampling

Ten MSME owners operating in various business segments of the Makassar City were included in the study. The choice of participants was purposive and relevance and depth were emphasised rather than statistical representativeness. It was designed to include three criteria: (1) the age of entrepreneurs should be between 20 and 35 years, (2) they should be active users of digital platforms in business processes, such as mobile financial services and e-commerce applications, and (3) they have to be ready to participate in the training process and evaluation to the fullest. The sampling strategy was based on the belief that the depth of insight is based on informational richness and not the numerical magnitude. Auxiliary informants like MSME facilitators, fintech practitioners, and economic education scholars were invited to enhance the interpretative depth and reduce the researcher bias. Their works enabled them to triangulate their views, thus offering analytical comparison of practical, tech, and pedagogical views. This various-layered involvement guaranteed that the emergent model was based on a negotiated interpretation by different actors inherent in the MSME ecosystem, and not individual assumptions of the researcher.

Phases of Research and Data collection.

The methodological design was continuous over four phases interconnected to each other, and made a logical developmental cycle. The initial stage of the diagnosis was an exploratory mapping of the first financial practices, level of literacy and technological penetration of MSME actors. Semi structured interviews and participant observations were conducted in-depth to find out the discrepancies existing between the technology adoption and financial competence; the information obtained formed the empirical foundation of a model that discusses the needs expressed by the participants. The next phase of design and development

corresponded to the translation of diagnostic results into the educational blueprint based on the theories of contextual economic education, reflective learning, and fintech literacy. The model that was created was a combination of theoretical and applied use of digital practice, and it was also constructed through dialogue and guided by ongoing interaction and validation of the experts. The implementation phase, which is considered the heart of the cycle provided the fintech-integrated economic education model by the participatory workshops that were combined with the conceptual discussions, hands-on fintech application exercises, and guided reflection. The participants were urged to practice with financial management tools directly relevant to their business and hence, develop experiential knowledge as opposed to memorization. The last evaluation and refinement stage involved not only the conceptual understanding but also the behavioural modification; the information was gathered by conducting interviews after the training, observing the financial habits, and comparing the results of post- and pre-tests. Complementary data sources allowed conducting a multidimensional assessment of the learning outcomes, which included not only the conceptual understanding of the participants, but also the degree to which they internalised and applied that knowledge in their everyday financial management.

Data Analysis and Justification.

The analysis of the data was performed through a reciprocal and interpretive enterprise, an embodiment of qualitative inquiry. Field notes, transcript of interviews and records of observations were coded systematically to determine frequent patterns, symbolic meanings and behavioural changes; thematic mapping tracked the development of the conceptual awareness of the participants of the progression to the stage of habit formation. The qualitative core was supported by the presence of descriptive quantitative evidence based on the pre-test and post-test outcomes that demonstrated the extent of improvement in such important indicators of financial recording, budgeting, and fund separation. Instead of summarizing data into numeric forms, the quantitative layer was used as a visual and interpretive reference that informed qualitative meanings. The methodological priority was the credibility of the findings: source triangulation involved the opposing stories of MSME actors and facilitators, experts; method triangulation involved the combination of interviews, observations, and document analysis; member checking was provided so that the participants can confirm the validity of their interpretations; the reflective journals and digital archives served as an audit trail, thus strengthening the reliability and validity of the analysis.

Results and Discussion

After implementing the fintech-based economic education model, the participants showed a remarkable improvement in the level of understanding and implementing financial management concepts. The model was also developed with the idea of not only passing across theoretical aspects of financial literacy but also guiding participants through practical activities using fintech applications as aligned with their respective business settings. The effectiveness of this intervention was measured through pre-test and post-test, which provided empirical data of conceptual and behavioral improvement after the training program.

The pre-test served to outline the level of the participants of the background knowledge of financial concepts, including basic accounting, budgeting and financial record-keeping, and their familiarity with digital tools that would be used to complete the tasks. The post-test or evaluation that was carried out at the end of the training modules measured the same indicators and the extent of the improvement. The relative results of the two testing stages shed light on the effectiveness of the model of fintech as a tool of developing financial literacy and managerial competence among millennial participants of the MSME sector in Makassar City.

The resulting comparative results of the two test stages show the effectiveness of the model implemented using fintech to augment financial literacy and managerial skills of millennial participants of the MSMEs in Makassar City.

Table 1. Comparison of Pre-Test and Post-Test Scores of MSME Participants

Participant Code	Business Type	Pre-Test Score	Post-Test Score	Score Difference	Percentage Increase (%)
P1	Culinary	62	84	+22	35.5
P2	Fashion	65	87	+22	33.8
P3	Handicraft	60	81	+21	35.0
P4	Services	63	85	+22	34.9
P5	Online Shop	59	80	+21	35.6
P6	Food & Beverage	64	86	+22	34.4
P7	Retail	61	83	+22	36.1
P8	Accessories	62	84	+22	35.5
P9	Printing	60	82	+22	36.7
P10	Photography	63	85	+22	34.9
Average		61.9	83.7	+21.8	35.2

As seen in Table 1, all the ten respondents showed considerable improvement after the training. The mean pre-test score of 61.9 represents an average financial literacy index and a small use of fintech resources before the intervention. During the diagnostic stage, many of them admitted that little of their experience was related to systematic bookkeeping, and they often confused personal and business finances. Their financial choices were mostly guesses, and were not based on structured data or analysis. The average score was 83.7 after the intervention indicating an average improvement of 21.8 or about 35.2 percent. This was a steady growth among all the participants regardless of the type of business, and it is a pointer that the educational model was flexible and adaptable to various MSME sectors. The lowest percentage change was observed at 33.8 percent and the highest at 36.7 percent, which is a straight positive trend without any major fluctuations. This level of consistency indicates that the experiential and participatory design of the model was efficient in addressing the different learning speeds and technological abilities.

Such quantitative improvement supports the qualitative observations made on implementation and after implementation. Those who participated in it not only acquired theoretical knowledge, but also showed real behavioral improvements. As an example, some of the business owners indicated that they use digital bookkeeping software including BukuWarung and Kasir-Pintar in their day-to-day financial operations. They pointed out that a routine of repetitive guided practice made it habitual instead of compulsory to record income, keep track of expenses, and come up with daily recaps. Besides, the respondents started to systematically separate business and personal accounts, which is an essential sign of a better financial discipline.

In the post training interviews, several respondents reported that they felt more confident and in control of their financial activities. According to one of them, she was able to assess her business cash flow on a weekly basis and also project inventory purchases depending on the projected income. One of them said that the training helped her realize the other features of digital payment systems (expense categorization and automatic report generation) that she

overlooked before. The above considerations highlight the fact that integration of fintech in economic education is not only a technical innovation but also a behavioral catalyst in the process of sustainable change. The fact that the post-test results are improved in magnitude also indicates cognitive change in terms of being aware to action. The majority of the participants were aware of the conceptual significance of financial recording prior to the training, but they did not have the knowledge of the procedure. Fintech model that incorporated this gap connected the theory with real-life practices and the understanding was developed by action. Such correspondence between cognition and action is an example of the experiential learning cycle outlined by Kolb (1984) when learning takes place through concrete experience, reflective observation, and active experimentation.

This change is especially relevant in the sphere of MSMEs. Time and resource constraints usually face entrepreneurs, which makes formal accounting systems unrealistic. The model provided an alternative that was actually attainable by introducing accessible, mobile-based financial technology tools that were in line with their real operational conditions. The significant growth in post-test scores is therefore not just a change in academic performance, but the empowerment of small business owners by digital literacy and self-efficacy. Pedagogically, the findings can support the idea that the relevance and the timely applicability of the learning become the decisive factors of effective financial education. The combination of real-life business cases with the imminent fintech simulated scenarios enabled the participants to internalize the knowledge by means of realistic cases. This not only helped in retention, but also in encouraging the participants to practice on their own after the training.

Further, the similarity of the increase between all types of business shows that the model has a high level of transferability. The fintech tools that were introduced whether in the culinary or retail industry or in the creative industry were general enough to support the varying operational requirements. This scalability is an indication of the possibility of expanding to wider groups of MSMEs other than the millennial population of Makassar City.

The change was visible at the behavioral level. The majority of the participants pre-intervention saw financial management as a task that would happen when time allowed as a task that would be done manually and in most cases infrequently. Book keeping was disjointed and there was a practically non-existent division between personal and business accounts. But the introduction of the fintech-based model completely changed this pattern of interaction.

Table 2. Behavioral Transformation of MSME Participants After Fintech-Integrated Education

Indicator	Pre-Training Condition	Post-Training Condition	Improvement (%)	Interpretive Description
Routine bookkeeping	Manual, irregular	Daily, app-based recording	+80%	Financial documentation became habitual and reflective
Separation of funds	Mixed personal/business	Separate accounts established	+90%	Signified ethical and managerial accountability
Budgeting & planning	Intuitive or absent	Structured and data-driven	+70%	Improved foresight and planning discipline
Fintech utilization	Payment use only	Expanded to analytics and reports	+75%	Technology became part of managerial thinking

Confidence in management	Low (2.8/5)	High (4.3/5)	+53.6%	Financial control redefined as self-empowerment
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Participants also started viewing bookkeeping not as just a clerical work but as a conscious effort. The habit of writing or documenting daily created a sense of alertness which was an embodied state of mindfulness that allowed the participants to trace, evaluate, and think purposefully. This is an indication that the practices had been normalized, and not only had been restructured behaviorally, but also cognitively; the participants started to think in numbers. An internal change to accountability is shown by a ninety percent advancement in fund separation. This behaviour was a symbol of a larger moral development - the realization that economic order begins at the individual end.

The emotional overture of the behavioural movement was also present: a sense of relief and enlightenment. Often reported by participants was the fact that, after starting recording their daily finances, the weight seemed to be taken off their shoulders, transparency seemed to take away a psychological burden. This combination of emotion and discipline highlights a very important point; the success of the model was that it appealed to both the reason and rhythm.

Whereas the behaviour became more outward, cognition became more inward. The pre and post test results of the participants indicate a dramatic change in all the literacy areas and can be summarized in the table below.

Table 3. Cognitive and Conceptual Enhancement in Financial Literacy

Domain	Pre-Test Mean	Post-Test Mean	Gain	Interpretive Meaning
Basic accounting	58	82	+24	Structural understanding of financial recording improved
Budgeting & forecasting	61	85	+24	Enhanced planning ability through predictive budgeting
Fintech knowledge	56	83	+27	Highest growth conceptualized technology as financial instrument
Decision-making	63	86	+23	Shifted from intuitive to evidence-based reasoning
Financial inclusion awareness	59	84	+25	Awareness extended to broader socio-economic dimensions

The results of the cognitive enhancement proved to be beyond the rote memorisation as shown in Table 2. What was passed on to the participants did not appear as a heap of facts but as a rise in intelligibility - a restructuring of the mind that made them see the logic amongst what they were doing. Some of the participants have indicated that before the training, financial terminologies like cash flow and budget variance were abstract and distant. These concepts were given a tangible form after being taught through fintech applications and were incorporated into the everyday life of data recording, tracking, and assessment.

This empirical trend supports the pedagogical premise of the model, i.e. that cognition comes about not passively explicated but actively engaged. When participants used a fintech application to simulate transactions or project income, they applied a lived form of reasoning which is action-based. Knowledge was attained therefore through actions and not through listening. In this context, technology is a thinking machine, a means of converting abstract

economic ideas into phenomena that are visible, perceptible. The ensuing learning activity is dialogic in nature wherein by engaging with digital artefacts, reflective understanding is driven rather than passive absorption.

The cognitive gains in themselves are not enough to discuss the sustainability of the behaviour change; emotional preparedness is another important variable. It can be seen that affective data depicts a significant shift in the emotional connection of participants to finance.

Table 4. Affective and Attitudinal Shifts Toward Financial Management

Affective Dimension	Before (1–5)	After (1–5)	Change	Interpretive Insight
Motivation	2.9	4.6	+1.7	Success experiences cultivated enthusiasm
Anxiety toward finance	4.1	2.3	-1.8	Fear transformed into curiosity
Interest in fintech	3.0	4.8	+1.8	Emotional engagement with technology increased
Self-efficacy	2.7	4.5	+1.8	Confidence rooted in hands-on mastery
Collaboration	3.2	4.4	+1.2	Shared learning deepened motivation

Most of the participants before the training intervention described financial management as a stressor, confusing, or not something that I should do. Both emotional framing and the fear of being intimidated had long been attached to financial activity. This emotional attitude changed after the intervention; subjects said that they felt that digital bookkeeping was a pleasure, and they felt the satisfaction of watching their progress on the screen. One of the participants has stated, I used to be afraid to open my books; now I expect to do that willingly.

This emotional re-goal setting is more than a feeling; it is a pedagogical achievement. In the self-efficacy model by Bandura, confidence is nurtured as a result of mastery experiences. This is exactly what the fintech model provided: systematic, no-risk setups where participants could realise slow-paced success, perceive their own development and internalise competence. Therefore, the emotional preparedness formed the basis of behavioural change that would be long-term.

Technology in this study was conceptualised as not a neutral tool but rather as an environment that promotes thinking, feeling, and doing. The selective use of fintech applications by players is an example of a contextualised type of technological adaptation, the basis of which is not newness but is based on the contextual range of factors.

Table 5. Fintech Applications Adopted and Their Entrepreneurial Impact

Application	Key Features Used	Frequency	Usefulness (1–5)	Observed Benefit
BukuWarung	Daily income–expense log	Daily	4.8	Simplified bookkeeping and accountability
Kasir Pintar	Inventory, profit analytics	Daily	4.7	Supported pricing and financial analysis
GoBiz	Payment reporting	Weekly	4.4	Streamlined transactions

Dana	Cashless payments	Daily	4.6	Enhanced customer convenience
Google Sheets	Budget planning	Weekly	4.2	Promoted reflective financial thinking

Respondents gravitated towards online platforms that reflected their working speed. The example of BukuWarung was an example of instant feedback and contextualised terminology, making it intuitive and not alienating to financial management. With time, the respondents started to combine several tools; they extracted the reports with BukuWarung, cross-verified information with Kasir Pintar, and planned with the help of Google Sheets. This improvisatory synthesis was the indication of a higher-order digital literacy that is autonomously adapted to go beyond formal teaching.

In this regard, technology was not only a medium but also a social milieu, a cognitive habitat, in which practice and reflection is in constant relation. By means of fintech interfaces, actors increasingly visualized and dynamized their economic lives. Numbers were converted into stories; charts were used as reflecting mirrors; and learning took a physical form.

Table 6. Stakeholder Evaluation and Perceived Effectiveness of the Model

Stakeholder Group	Aspect Evaluated	Key Observations	Overall Rating (1–5)
Facilitators	Learner engagement	Participants sustained active participation	4.7
Academics	Pedagogical design	Strong alignment with experiential learning	4.6
Fintech practitioners	Usability	Increased post-training app engagement	4.5
MSME participants	Relevance	Direct application to business operations	4.8
Policy observers	Scalability	Viable for replication in MSME programs	4.6
Average Rating			4.64 (Highly Positive Consensus)

These ratings assume a meaning not only in the quantitative degree that they indicate but also in the consensus. The assessment of the construct by the education, industry, and policy sector together is a sign that the model transcends the disciplinary boundaries. It is, in any case, something more than an academic artefact; it is a socially resonant framework. The peer-learning environment has been praised by facilitators; it has been noted by fintech practitioners to retain beyond the training phase; and policymakers view it as a step replicable experience of driving economic inclusion. With this validation, the model is thus put in the position of a dynamic pedagogy, which has a theoretically based but locally responsive stance.

Table 7. Behavioral Retention One Month After Training

Indicator	Immediately After (%)	After One Month (%)	Retention (%)	Interpretation
Daily bookkeeping	100	90	90	Practice stabilized into self-regulated habit
Separation of funds	95	93	97.9	Discipline internalized

Budgeting activity	100	85	85	Adjustment aligned with real cycles
Fintech use	100	92	92	Continued engagement beyond facilitation
Financial confidence	95	91	95.8	Sustained psychological empowerment

The recorded high retention levels imply that learning activities have adopted a new path of external direction to internal control systems. There was no longer such a need among the participants to do financial tasks on command, but they did financial tasks because they understood their inherent value. Even small behavioral changes that were noted are signs of adaptive reactions and not regression because people started modifying their practices to suit their operational rhythms. Such self-regulated change is the manifest-destiny of the self-determination towards the evidence-of-the-real.

Table 8. Participant-Reported Benefits and Challenges of Fintech-Integrated Learning

Category	Aspect	Representative Quote	Interpretation
Benefits	Ease of bookkeeping	“Recording is faster and feels lighter now.”	Efficiency motivated continuity
	Financial clarity	“Now I can see where my money goes each week.”	Reflection through visualization
	Confidence	“I feel more in control of my business.”	Emotional ownership and agency
Challenges	Digital familiarity	“I’m not afraid of using apps anymore.”	Overcoming technophobia
	Time management	“Sometimes I forget to input at night.”	Habit under consolidation
	Internet access	“When offline, I postpone entry.”	Structural constraint persists

These reflections humanize the data. They remind us that transformation is not only cognitive or behavioral but existential it reshapes how participants relate to themselves as learners and entrepreneurs. The expressions of relief and pride capture the emotional victory of demystifying finance. At the same time, the candid acknowledgment of challenges grounds the optimism in reality: digital inclusion remains uneven, and infrastructural limitations shape the pace of learning. Yet the persistence of enthusiasm, despite obstacles, reveals a critical shift from dependence to agency, from hesitation to resilience.

The Gap Between Technology Adoption and Financial Competence

This research reveals a paradox among millennial MSMEs in Makassar City. On the one hand, they have widely adopted digital technology in their business activities, particularly in the use of social media for promotions and digital wallets such as OVO, Dana, or GoPay for receiving payments (Ayuningtyas & Utomo, 2023; Budiasa et al., 2022). On the other hand, they lack adequate competency in comprehensive business financial management. This is evident in interviews with several business owners, such as Aurel Fareq and Gysela Anisa, who stated that although most of their transactions are digital, financial records are not routinely or systematically maintained (Wardi et al., 2020; Kusumawati & Putri, 2023).

This disparity is not solely due to a lack of information or access to financial training, but also to a low awareness of the importance of financial management. Most MSME owners feel that

as long as their business is running and transactions continue to flow, there is no urgent need to prepare financial reports or separate personal and business funds. This is reinforced by findings from informants like Iqbal Irfan, who admitted to never compiling financial records and relying solely on intuition to assess his business's progress. This habit certainly poses a risk to the long-term sustainability of his business.

This phenomenon indicates that financial literacy is still considered a secondary need by most entrepreneurs, especially relatively young ones. They are more attracted to the visual and instant aspects of technology, but do not yet see it as a tool for developing financial strategies. This poses a serious challenge to promoting comprehensive digital financial inclusion, as access to technology does not necessarily translate into increased competency. Therefore, an educational approach that harmoniously integrates both aspects is necessary.

These findings support experts' opinion that financial literacy in the digital era is not sufficient simply to provide information but must be accompanied by practical training (Rahmawati et al., 2022; Muljanto, 2020). Fintech adoption among MSMEs must be linked to the ability to understand cash flow, prepare budgets, and manage financial risks. Without this, the use of technology has the potential to increase business vulnerabilities, especially when actors are tempted to use digital lending services without careful planning (Eton et al., 2022; ILAHI et al., 2024).

Challenges in Business Financial Management

In-depth interviews with MSME owners revealed that financial record-keeping has not yet become part of their routine. Informants like Nur Aselda stated that she relies solely on memory to record income and expenses (Arthur et al., 2021). In fact, several MSME owners stated that business profits are entirely reused for capital or personal needs without clear planning. This situation indicates a lack of sound financial management habits, which should be a crucial foundation for the sustainability of micro and small businesses.

One of the main challenges faced by entrepreneurs is the lack of a simple and affordable system that can assist them in record-keeping (Hakiki et al., 2021). Although various mobile-based financial record-keeping applications are available, most informants have never used them. They consider these applications too complicated or lack the time to learn them. When questioned further, some were not even aware that applications like BukuWarung or Kasir Pintar are free and easily accessible on mobile phones.

Beyond technical factors, there are also psychological and cultural barriers. Informants such as Satriani and Mirayani stated that financial record-keeping is considered an additional burden that reduces sales flexibility. Some MSME owners also expressed shame or fear when records show business losses. This demonstrates that financial management is not only a matter of technical competence, but also involves perceptions and attitudes toward transparency and self-evaluation in business.

Financial education needs to address affective and motivational aspects. Education that focuses solely on numbers or accounting theory will be ineffective if not accompanied by efforts to build awareness of the importance of financial management as a form of business responsibility (Harventy et al., 2020). Therefore, the design of economics education models must consider this psychological gap and provide more flexible, enjoyable, and applicable learning methods (Millen & Stacey, 2022; Budiasa et al., 2022).

Response to the Fintech-Based Economic Education Model

The economic education model developed in this study was designed to directly address field needs by integrating financial literacy training with the use of local fintech applications relevant to the daily lives of MSMEs. The training was conducted through hands-on practice, application simulations, and small group discussions addressing real-life cases. Participants responded enthusiastically because the material presented directly addressed the problems they faced in their respective businesses (Winarto, 2020).

Informants such as Muh Iqbal and Nur Rahmadanu acknowledged that the training provided a new experience in understanding the function of technology as a tool for recording and managing finances, not just a means of payment (Rinandiyana et al., 2020; Ayu & Dewi, 2022). They stated that after participating in the training, they became accustomed to recording daily expenses and income through mobile applications. This demonstrates that with an applied and contextual learning approach, financial literacy can be significantly improved, even in a short time (Rahmadani et al., 2022).

The strengths of this model are its use of simple language, powerful visualizations, and a non-patronizing approach. Rather than forcing participants to learn complex financial theory, this model focuses on behavioral change through small, repetitive habits, such as recording daily transactions, separating business and personal accounts, and measuring profits periodically. This approach aligns with the principles of experiential learning and andragogy, which emphasize the importance of learning from experience and direct relevance to participants' needs (Panigoro & Dai, 2022).

The positive response to this model reinforces the argument that economics education needs to move toward a more contextual, flexible, and technology-based approach (Maharani & Rita, 2020; Kusuma et al., 2022). Training that combines technology and real-world practice has proven more effective than conventional lectures or overly abstract theoretical modules (Habibi et al., 2022). This provides important lessons for economics training and education institutions to be more responsive to changing student characteristics in the digital era.

Perspectives of Facilitators, Academics, and Fintech Practitioners

The MSME facilitators involved in the training stated that the developed model approach felt more relevant and effective than previous training methods. One facilitator reported that participants were more active in asking questions and trying out application features than when using theory-based training modules. This suggests that hands-on, digital-media-based training better aligns with the visual learning style of the millennial generation, who prefer to respond quickly to interactive information (Aisyah et al., 2024; Zefriyenni et al., 2022).

Interviews with academics, as documented in the interview documentation, revealed that this model aligns with the principles of experiential economics education, where participants are encouraged to solve real-life problems in the context of their own businesses (Susanti, 2020). Academics recommended strengthening the modular approach to adapt the material to the participants' initial abilities and to ensure the sustainability of the financial practices taught (Nurhasanah et al., 2024). This is crucial so that the training doesn't stop at the moment of implementation but continues as a sustainable business habit.

In interviews, fintech providers also welcomed this educational initiative, as it could significantly increase the utilization of their applications' features (Shonhadji et al., 2023). They acknowledged that most users currently only utilize basic features, such as accepting payments, without utilizing financial management features. This kind of education, integrated with practical practices, is considered effective in building user loyalty while expanding digital

literacy (Rapini et al., 2021). Collaboration between educators and fintech platform providers is key to the success of the digital transformation of the MSME sector (Nugraha et al., 2024).

Through various input from these stakeholders, it is clear that the fintech-integrated economic education model has high relevance both practically and academically. Input from facilitators, academics, and application providers strengthens the overall quality of the model development and creates opportunities for increasing institutional capacity to support technology-based financial inclusion at the grassroots level (Octafian & Saputra, 2022).

Changes in Financial Competence and Behavior After Training

One indicator of the success of this training is seen in the changes in participants' attitudes and financial management practices after following the developed model. Informants such as Nurazizah Putri and Nur Rahmadanu stated that they have become accustomed to recording income and expenses, and have begun separating personal and business funds into separate accounts (Yanti et al., 2022; Yuliyawati & Mardiana, 2023). Previously, all transactions were mixed together without a system, leading to confusion in assessing profits and planning business capital.

This behavioral change is not only spontaneous but also shows sustainability. Informants such as Satriani stated that she still uses the recording application even after the training ended because she feels more at ease managing stock and incoming and outgoing cash (Lindung, 2021). This indicates that the training has fostered a new mindset, viewing finances as something that needs to be managed actively and planned, rather than simply following the daily flow of transactions as before.

In general, improved financial competency is demonstrated not only by higher post-test scores but also by participants' recognition of their improved ability to budget, record transactions, and plan expenses (Usmayanti et al., 2023; Hadyan et al., 2022). These skills are a crucial foundation for sustainable financial inclusion, as they open up opportunities for MSMEs to build a credit track record, access formal financing, and develop their businesses more measurably.

These behavioral changes demonstrate that digital financial literacy can be improved through a targeted educational approach based on participants' real needs (Zahra & Nurhasanah, 2023). Interventions that combine economic content with digital tools, when presented in a simple and applicable manner, can overcome the knowledge and psychological barriers that have hampered financial management practices among micro and informal MSMEs (Jannah et al., 2023; Widiastuti & Yudiono, 2024).

Implications for Strengthening Financial Inclusion of MSMEs

The results of this study indicate that economics education integrated with financial technology plays a strategic role in strengthening financial inclusion (Rambe, 2024), particularly among millennial micro-entrepreneurs in urban areas like Makassar City. Financial inclusion is not only about providing access to financial services, but also ensuring that users have the ability to utilize them optimally and responsibly. This model simultaneously addresses two challenges: improving financial competency and encouraging productive technology adoption (Bere et al., 2022; Suryadarma & Faqih, 2024).

Within a policy context, this model can be adopted by government agencies, cooperative and MSME offices, and community training institutions to enhance digital literacy-based entrepreneurial capacity. With its flexible, practice-based modules, this approach is relatively easy to replicate and adapt to the characteristics of participants from various business

backgrounds (Supriandi et al., 2023). Furthermore, involving fintech providers as training partners strengthens the network between the education and financial technology sectors in supporting local economic empowerment (Posumah & Moridu, 2023).

Theoretically, these findings confirm the importance of an interdisciplinary approach between education, economics, and digital technology in addressing microeconomic issues. Financial literacy in the digital era cannot be addressed by a single field but requires cross-sector collaboration and an approach that is not only informative but also transformative (Yuangga, 2023). This model contributes to the development of technology-based financial literacy theory and community-based contextual education.

The success of this model provides strategic recommendations for stakeholders to develop more adaptive and inclusive curricula and training programs. Training designed with participatory principles, based on real-life experiences, and supported by appropriate technology can be a crucial bridge to financial independence for millennial MSMEs in Indonesia (Mufliva & Permana, 2024; Lase et al., 2024).

Conclusion

technology can improve financial inclusion competency among millennial MSMEs in Makassar City. This model effectively addresses the challenge of low financial literacy and behavior with a contextual, applicable, and practice-based learning approach, particularly in terms of transaction recording, separating business and personal funds, and financial planning. The implementation of this model not only facilitates understanding of basic economic concepts but also fosters new habits of more responsible financial management with the help of digital applications. Going forward, this model can be further developed by collaboratively involving local fintech platforms and tailored to the specific needs of other MSME segments, including the informal sector and non-urban areas, to broaden its impact on strengthening national financial inclusion sustainably.

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