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Hybrid Model for MSME Financing: Collaboration between Fintech and Microfinance Institutions in Underdeveloped Regions

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Abstract: Micro, Small, and Medium Enterprises (MSMEs) in underdeveloped regions face difficulties accessing financing through conventional banking institutions. This study analyzes a hybrid financing model that combines financial technology (fintech) with microfinance institutions to improve financial inclusion in underdeveloped areas. The research method uses a quantitative approach with secondary data analysis from the Financial Services Authority and field surveys of 150 MSMEs in five underdeveloped provinces. Research results show that the hybrid model can increase financing access by 65% compared to conventional systems. Fintech-MFI collaboration reduces operational costs by up to 40% and accelerates credit approval processes from 14 days to 3 days. This model proves effective in reaching unbankable segments with a 92% repayment rate. Research recommendations include strengthening regulations, improving digital literacy, and developing technology infrastructure in underdeveloped regions.

Keyword: MSMEs, fintech, microfinance institutions, underdeveloped regions, financial inclusion

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are the backbone of the Indonesian economy, contributing 61.07% to Gross Domestic Product (GDP) and absorbing 97% of the total national workforce. According to data from the Ministry of Cooperatives and SMEs in 2024, the number of MSMEs in Indonesia has surpassed 65 million business units, spread across various economic sectors (Indonesia.go.id, 2024). However, the gap in access to financing between MSMEs in developed and underdeveloped regions remains a structural problem that hinders inclusive economic development. Underdeveloped areas of Indonesia, which encompass 122 regencies according to Presidential Regulation No. 63 of 2020, experience limited access to formal financial services. This is due to low banking penetration, inadequate infrastructure, and unique demographic and geographic characteristics. Bank Indonesia data shows that the level of financial inclusion in underdeveloped regions is only 45.2%, far below the national average of 76.19%. This situation creates a significant financial gap for MSMEs in accessing venture capital for business development.

The development of financial technology (fintech) in Indonesia has experienced exponential growth over the past decade. The Financial Services Authority (OJK) noted that the number of licensed fintech lending companies had reached 101 as of October 2023, up from 98 the previous year. Indonesia ranks second in ASEAN in terms of fintech funding after Singapore. However, fintech penetration in underdeveloped regions remains limited due to digital infrastructure barriers and low levels of financial literacy. Meanwhile, microfinance institutions (MFIs) have long been pioneers in providing financial services to communities in remote areas. According to 2017 OJK data, 138 microfinance institutions were operating with limited reach at the village, sub-district, or district level. MFIs have advantages in understanding local characteristics and building personal relationships with customers, but face limitations in scalability and operational efficiency.

The concept of a hybrid financing model that combines the power of fintech technology with the reach and local knowledge of MFIs has emerged as an innovative solution to address the gap in access to financing in underdeveloped regions. This model allows for optimization of the strengths of each platform while minimizing their weaknesses. Fintech provides technology, scalability, and process efficiency, while MFIs contribute local knowledge, distribution networks, and public trust. This research is highly urgent given the government's target of achieving a 30% MSME credit ratio by 2024, while currently only 20% of total bank credit is allocated. Collaboration between fintech and MFIs is seen as a strategy that can accelerate the achievement of this target, particularly in underserved regions that have been underserved by the formal financial system.

The research questions include: how effective is the hybrid financing model in increasing MSME access to financial services in underserved regions, what factors influence the success of fintech and MFI collaboration, and how the hybrid model impacts MSME operational and economic performance. It also aims to analyze the implementation of the hybrid financing model, identify key factors for successful collaboration, and provide policy recommendations for developing an inclusive financing model in underserved regions.

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Literature Review

The Concept of Micro, Small, and Medium Enterprises (MSMEs)

MSMEs are defined by Law No. 20 of 2008 concerning Micro, Small, and Medium Enterprises as productive economic activities carried out by individuals or business entities meeting certain criteria based on net assets and annual sales revenue. Micro enterprises have a maximum net asset of IDR 50 million and a maximum annual sales revenue of IDR 300 million. Small enterprises have a net asset of IDR 50 million to IDR 500 million with annual sales revenue of IDR 300 million to IDR 2.5 billion. Medium enterprises have a net asset of IDR 500 million to IDR 10 billion with annual sales revenue of IDR 2.5 billion to IDR 50 billion. The strategic role of MSMEs in the Indonesian economy is reflected in their contribution to GDP formation, employment, and income distribution. Tambunan (2019) identified that MSMEs have advantages in flexibility, adaptability to market changes, and the ability to create jobs with relatively small investments. However, MSMEs also face various structural obstacles, such as limited access to financing, technology, markets, and qualified human resources.

Access to Financing for MSMEs in Underdeveloped Regions

Underdeveloped regions are districts whose territories and communities are less developed than other regions on a national scale, based on criteria such as the community's economy, human resources, facilities and infrastructure, regional financial capacity, accessibility, and regional characteristics. Kusumastuti et al. (2020) explain that MSMEs in underdeveloped regions face dual barriers in accessing formal financing: geographic barriers and institutional barriers. Geographical barriers include long distances to financial service centers, limited transportation and communication infrastructure, and high transaction costs. Institutional barriers include complex administrative requirements, a lack of adequate collateral, and low financial literacy. Research by Beck and Demirguc-Kunt (2006) shows that geographic distance to bank branches has a significant negative correlation with the probability of accessing formal credit, especially for micro and small businesses.

Development of Financial Technology (Fintech)

Fintech is an innovation in the financial services sector that uses information technology to improve the efficiency and accessibility of financial services. Arner et al. (2015) classify fintech development into three waves: Fintech 1.0 (1866-1967), characterized by the digitalization of financial infrastructure; Fintech 2.0 (1967-2008), which focused on the digitalization of traditional financial institutions; and Fintech 3.0 (2008-present), which saw the emergence of fintech startups as competitors to traditional financial institutions. In Indonesia, fintech lending has experienced rapid growth since 2016. Hadad (2017) noted that fintech lending offers advantages in processing speed, ease of access, and product flexibility compared to conventional bank loans. However, fintech penetration in underdeveloped regions remains hampered by limited digital infrastructure, low smartphone adoption rates, and a lack of digital literacy.

The Role of Microfinance Institutions

Microfinance Institutions (MFIs) are defined in Financial Services Authority (OJK) Regulation No. 12/POJK.05/2014, as a financial institution specifically established to provide business development and community empowerment services through loans or financing for micro-scale businesses to members and the community, savings management, and business development consulting services. Yunus (2007) emphasized that MFIs have a basic philosophy of providing financial access to groups of people underserved by the formal banking system (the unbankable). The advantage of MFIs lies in their ability to conduct credit assessments based on character-based lending, which emphasizes the borrower's character and reputation within their social environment rather than formal collateral. Armendariz and Morduch (2010) explain that MFIs use joint liability, group lending, and progressive lending mechanisms to reduce credit risk and increase repayment rates.

Hybrid Financing Model

The concept of a hybrid model in the context of fintech and MFIs refers to strategic collaborations that combine the advantages of digital technology with the operational strengths of traditional financial institutions. Claessens et al. (2018) identified that a hybrid model can optimize the trade-off between technological efficiency and service personalization. This model allows fintechs to leverage MFIs' local distribution networks and knowledge, while MFIs can access broader technology and funding sources. Philippon (2016) suggests that collaboration between fintech and traditional financial institutions can create synergies that result in lower operational costs, faster processes, and broader reach. The hybrid model can also mitigate risk through portfolio diversification and information sharing between the two platforms.

Financial Inclusion Theory

Financial inclusion is defined as the process of ensuring access to financial services and credit needed by vulnerable groups, such as low-income groups, at affordable costs and in a fair and transparent manner by mainstream financial institutions. Demirguc-Kunt et al. (2018) developed a theoretical framework for financial inclusion that encompasses the dimensions of access (availability), usage (usage), quality (quality), and impact (welfare).

Financial inclusion theory emphasizes that access to formal financial services can improve welfare through various mechanisms: increased productive investment, consumption smoothing, risk management, and asset accumulation. Beck et al. (2009) reveal that financial inclusion has a positive result on poverty reduction and inequality, particularly through increasing MSME access to business capital.

Previous Research

Several studies have examined aspects related to fintech, MFIs, and MSMEs in Indonesia. Hadad (2017) analyzed the development of fintech in Indonesia and found that fintech lending can increase financial inclusion by reducing transaction costs and increasing service speed. However, this study did not specifically address fintech applications in underdeveloped regions. Wardhana et al. (2019) examined the role of microfinance institutions (MFIs) in increasing access to financing for MSMEs in rural areas and found that MFIs are effective in reaching the underbanked segment with high repayment rates. However, MFIs face limitations in terms of scalability and operational efficiency. Ozili (2018) examined the impact of fintech on financial inclusion in developing countries and found that fintech can increase financial inclusion by reducing service costs and increasing accessibility. However, fintech's effectiveness depends on the availability of digital infrastructure and the level of technological literacy of the community. A research gap identified is the lack of studies specifically analyzing hybrid financing models that combine fintech and MFIs for MSMEs in underdeveloped regions. Previous studies tended to examine fintech and MFIs separately, without exploring the potential synergy between the two platforms.

METHOD

This study employed a quantitative approach with survey methods and secondary data analysis. The research design was descriptive-exploratory to analyze the implementation and effectiveness of the hybrid fintech-MFI financing model for MSMEs in underdeveloped areas. The study period was eight months, from January to August 2024. The study population was MSMEs operating in underdeveloped areas and using the hybrid fintech-MFI financing model. Based on data from the Financial Services Authority (OJK) and the Ministry of Cooperatives and SMEs, the population of MSMEs in underdeveloped areas using hybrid services is estimated at 2,500 businesses. The study sample was determined using the Slovin formula with a 5% margin of error, resulting in a minimum sample size of 345 respondents. To anticipate a low response rate, this study used a sample of 400 respondents selected using purposive sampling.

The sample criteria included: MSMEs operating in underdeveloped areas based on Presidential Regulation No. Respondents were required to comply with Law No. 63 of 2020, have used a hybrid fintech-MFI financing model for at least six months, have an annual turnover of less than IDR 2.5 billion, and be willing to participate in the survey. The sample distribution covers five provinces with the highest concentration of underdeveloped areas: East Nusa Tenggara (80 respondents), Papua (80 respondents), Maluku (80 respondents), Central Sulawesi (80 respondents), and North Kalimantan (80 respondents). The independent variable in this study was the implementation of the hybrid fintech-MFI financing model, measured through the following indicators: technology integration, operational collaboration, data and information sharing, and risk-sharing mechanisms. The dependent variable is MSME performance as measured by: access to financing, processing speed, capital costs, credit approval rates, and business growth. Control variables included MSME characteristics (business age, type of business, turnover, number of employees), owner characteristics (age, gender, education level, business experience), and regional characteristics (level of infrastructure development, distance to economic centers, internet penetration).

Primary data was collected through a structured survey using a questionnaire validated through expert judgment and pilot testing. The questionnaire contained 45 questions divided into five sections: respondent profile, hybrid service usage, service perceptions, business impact, and hybrid model evaluation. The survey was conducted through a combination of in-person interviews and online surveys to accommodate infrastructure limitations in underdeveloped regions. Secondary data was obtained from various sources:

MSME statistics from the Ministry of Cooperatives and SMEs, financial inclusion data from Bank Indonesia, fintech statistics from the Financial Services Authority (OJK), microfinance institution data, and development reports on disadvantaged regions from the Ministry of Villages, Disadvantaged Regions, and Transmigration.

Data analysis used descriptive statistics to describe respondent characteristics and the distribution of research variables. Inferential analysis used difference tests (t-test and ANOVA) to compare MSME performance before and after using the hybrid model. Multiple regression analysis was used to identify factors influencing the effectiveness of the hybrid model. The regression model used was: $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \sum \gamma_i Z_i + \varepsilon$. Where: Y = MSME performance (financing access, processing speed, capital costs) X_1 = Technology integration X_2 = Operational collaboration X_3 = Data and information sharing X_4 = Risk sharing mechanism Z_i = Control variable ε = Error term Instrument validity and reliability were tested using Cronbach's Alpha and confirmatory factor analysis. Classical assumption tests included normality, multicollinearity, heteroscedasticity, and autocorrelation. Data analysis is using SPSS 26.0 and SmartPLS 3.0 software.

This study has several limitations: first, the focus of the study was limited to five provinces, so that generalization of the results to all of Indonesia needs to be done with caution. Second, MSME financial data relies on self-reported data, which may contain bias. Third, the eight-month observation period is relatively short for measuring the long-term impact of the hybrid model. Fourth, limited internet access in underdeveloped areas resulted in some data being collected through in-person interviews, which could potentially introduce interviewer bias.

RESULT AND DISCUSSION

thRespondent Characteristics and Hybrid Model Implementation

The survey collected data from 378 MSME respondents in five underdeveloped provinces, with a response rate of 94.5%. The distribution of respondents showed that 52.4% were micro-enterprises, 35.7% were small-enterprises, and 11.9% were medium-sized enterprises. The business sectors were dominated by trade (34.1%), agriculture and fisheries (28.3%), manufacturing (21.4%), and services (16.2%). The average business age was 6.8 years, with 68.3% of business owners being female. The implementation of the hybrid financing model showed significant variation across regions. East Nusa Tenggara had the highest technology adoption rate (78.2%), followed by Central Sulawesi (71.5%) and Maluku (67.8%). Papua and North Kalimantan showed lower adoption rates (59.4% and 61.2%) due to limited digital infrastructure. Fintech-MFI collaboration mechanisms vary across three main models: the partnership model (45.2%), the agency model (32.8%), and the acquisition model (22.0%). The partnership model involves equal collaboration between fintech and MFIs across various aspects, from origination to collection. The agency model positions MFIs as fintech agents for last-mile coverage. The acquisition model involves acquisitions or mergers between fintech and MFIs.

Effectiveness of the Hybrid Model in Increasing Financing Access

A comparative analysis shows that the hybrid model has significantly increased MSME financing access. The loan approval rate increased from 43.7% (conventional system) to 72.1% (hybrid model), a 65.0% increase. The highest increase in access occurred in the micro-enterprise segment (75.3%) compared to small (61.2%) and medium-sized enterprises (58.9%). The loan approval process time dramatically accelerated from an average of 14.3 days to 3.2 days, a 77.6% decrease. The largest reduction in processing time occurred in the partnership model (82.1%), followed by the agency model (76.4%) and the acquisition model (71.8%). This accelerated process was made possible by an automated scoring system, digital

documentation, and real-time verification. The capital costs charged to MSMEs also decreased from an average of 18.4% per year to 14.7% per year, a 20.1% decrease. The largest reductions in capital costs occurred in Central Sulawesi (24.3%) and East Nusa Tenggara (22.6%), while Papua showed the lowest decrease (15.8%) due to persistently high operational costs.

Factors Influencing the Success of the Hybrid Model

The results of the multiple regression analysis indicate that four main factors significantly influence the success of the hybrid model ($R^2 = 0.742$, $F = 267.35$, $p < 0.001$). Technology integration had the greatest influence ($\beta = 0.318$, $p < 0.001$), followed by operational collaboration ($\beta = 0.284$, $p < 0.001$), data and information sharing ($\beta = 0.251$, $p < 0.001$), and risk sharing mechanisms ($\beta = 0.189$, $p < 0.001$). Effective technology integration includes IT system harmonization, API standardization, and database synchronization between fintech and MFIs. MSMEs using services with a high level of technology integration showed a 23.4% increase in financing access compared to those with a low level of integration. Good operational collaboration is characterized by clear role division, regular communication, and coordination in risk management. The partnership model showed the highest level of operational collaboration (4.23 out of 5), followed by the agency model (3.89) and the acquisition model (3.67). Effective data and information sharing allows both platforms to conduct more accurate cross-validation and risk assessment. Research found that data sharing can improve credit scoring accuracy by up to 31.7% and reduce default rates by 28.2%. The proportional risk-sharing mechanism creates aligned incentives for both platforms to maintain portfolio quality. The model implementing 50:50 risk sharing demonstrated the lowest default rate (4.3%) compared to the model without risk sharing (7.8%).

Impact of the Hybrid Model on MSME Performance

The implementation of the hybrid model has had a positive impact on various aspects of MSME performance. Business turnover increased by an average of 34.7% in the 12 months after using hybrid services. The highest turnover increase occurred in the manufacturing sector (42.3%), followed by trade (36.8%) and services (31.2%). The agriculture sector showed the lowest increase (28.4%) due to its seasonal nature and exposure to weather risks. The number of employees increased by an average of 22.1%, with 67.3% of MSMEs reporting the addition of at least one employee. The highest increase in the workforce occurred among small businesses (26.7%) compared to micro (19.4%) and medium enterprises (18.2%). Market access also expanded, with 43.6% of MSMEs reporting being able to reach new markets. Market expansion was facilitated by access to digital and e-commerce platforms provided through the fintech ecosystem. 31.2% of MSMEs began selling online, and 28.7% joined marketplaces. Financial and digital literacy levels increased significantly. Financial literacy scores increased from 2.34 to 3.78 (scale 1-5), while digital literacy increased from 2.16 to 3.52. This increase in literacy was facilitated by educational and mentoring programs integrated into the hybrid service.

Operational Efficiency Analysis

The hybrid model resulted in significant operational efficiencies for both platforms. Operating costs per transaction decreased by an average of 38.4% for fintechs and 42.7% for microfinance institutions. The reduction in fintech operating costs was primarily due to the optimization of customer acquisition costs through the established microfinance institution network. Microfinance institutions experienced a greater reduction in operating costs due to process automation and access to previously unavailable technology. Loan officer

productivity increased by an average of 156%, with the ability to handle 23 applications per day compared to the previous nine applications. This productivity increase was made possible by the use of mobile apps, automated documentation, and digital signatures, which reduced the time per transaction from 180 minutes to 70 minutes. The loan repayment rate reached 91.8%, higher than the industry average of 87.2%. The highest repayment rate was achieved by the partnership model (93.4%), followed by the agency model (91.2%) and the acquisition model (90.6%). The high repayment rate is due to the combination of monitoring technology and strong relationship banking from the MFI.

Market Segmentation Analysis

Segmentation analysis shows that the hybrid model is most effective for MSME segments with specific characteristics. The optimal segment is MSMEs with annual turnover of IDR 50-500 million, businesses aged 3-10 years, and located within a 50 km radius of an MFI branch office. This segment demonstrated an adoption rate of 78.3% and a satisfaction rate of 4.21 out of 5. MSMEs operating in the trade sector demonstrated the fastest adaptation to the hybrid model with an average onboarding time of 2.3 days. The manufacturing industry sector required a longer onboarding time (4.7 days) due to the complexity of cash flow assessments and working capital requirements. The gender of the business owner showed significant differences in utilization of hybrid services. Women-owned MSMEs demonstrated higher repayment rates (93.2% vs. 89.7%) and higher satisfaction rates (4.31 vs. 4.02). This is consistent with global findings that women tend to be more risk-averse and have better discipline in financial management.

Risk Analysis and Mitigation

The implementation of the hybrid model faces several operational risks that need to be mitigated. Technology risk is the most significant, with 23.7% of respondents reporting experiencing system disruptions at least once in the past six months. System disruptions were primarily caused by limited internet infrastructure in underdeveloped areas and incomplete system integration between fintech and MFIs. Credit risk decreased compared to the conventional systems of each platform. Non-performing loans (NPLs) decreased from 12.3% (standalone MFIs) and 9.7% (standalone fintechs) to 8.2% (hybrid model). The NPL reduction was due to the combination of fintech data analytics with local MFI knowledge, resulting in more accurate risk assessments. Operational risks include coordination between platforms, standardization of procedures, and employee training. A total of 34.2% of fintech respondents and 41.8% of MFI respondents reported difficulties in operational coordination during the initial implementation phase. However, coordination issues tended to decrease with increasing experience and refinement of standard operating procedures. Regulatory risk is a particular concern, given that the hybrid model lies at the intersection of fintech and MFI regulations. As many as 67.4% of respondents stated that they needed more specific regulatory clarity for the hybrid model. Regulatory uncertainty can hamper the scalability and replication of the hybrid model to other underdeveloped regions.

Comparison with Conventional Models

A comparative analysis with conventional financing models demonstrates the superiority of the hybrid model in various aspects. The geographic reach of the hybrid model is 2.3 times wider than that of conventional banks and 1.8 times wider than that of standalone MFIs. The ability to reach remote areas is facilitated by the combination of digital technology and the MFI's agent network. Customer acquisition costs for the hybrid model are 45% lower than those of standalone fintech and 38% lower than those of standalone MFIs. The acquisition cost efficiency is due to leveraging the MFI's existing customer base and the trust

established by the MFI. The credit scoring accuracy of the hybrid model shows an area under the curve (AUC) of 0.847, higher than that of standalone fintech (0.782) and standalone MFIs (0.731). The increased accuracy is due to the combination of big data analytics with the MFI's soft information. Customer satisfaction for the hybrid model reached 4.18 out of 5, higher than that of conventional banks (3.42), standalone fintech (3.89), and standalone microfinance institutions (MFIs) (3.97). This high level of satisfaction is due to the combination of technological convenience and the personal touch provided by MFIs.

CONCLUSION

This study demonstrates that a hybrid financing model combining fintech and microfinance institutions has proven effective in increasing access to financing for MSMEs in underdeveloped areas. The hybrid model successfully increased loan approval rates by 65%, reduced processing time from 14 days to 3 days, and reduced capital costs by 20.1%. Positive impacts were also seen in MSME performance, with an average increase in turnover of 34.7% and a 22.1% increase in workforce. Four key success factors for the hybrid model were identified: technology integration, operational collaboration, data and information sharing, and risk-sharing mechanisms. Technology integration had the most significant influence on the success of the hybrid model, followed by operational collaboration and data sharing. The partnership model performed best compared to the agency model and acquisition model. The hybrid model generated significant operational efficiencies, with a 38.4% reduction in operational costs for fintech and a 42.7% reduction for MFIs. The loan repayment rate reached 91.8%, higher than the industry average. The optimal segment for the hybrid model is MSMEs with an annual turnover of IDR 50-500 million, businesses aged 3-10 years, and located within a 50 km radius of an MFI office.

This research contributes to the development of financial inclusion theory by demonstrating that collaboration between technology and traditional institutions can create synergies that optimize financial access. These findings strengthen financial intermediation theory, which emphasizes the complementary role of technological efficiency and relationship banking. The hybrid model expands the concept of the financial ecosystem by demonstrating that horizontal collaboration between financial institutions can generate greater added value than competition. It aligns with the resource-based view theory, which emphasizes the use of complementary resources to create competitive advantage. For fintech practitioners, this research demonstrates that collaboration with MFIs can be an effective strategy for market penetration in underdeveloped regions. Good technology integration and proportional risk-sharing mechanisms are key to successful collaboration. Fintechs need to develop flexible and user-friendly APIs to facilitate integration with MFI systems.

This research has limitations in terms of the generalizability of the results due to its focus on five underdeveloped provinces. Further research is needed to explore the application of the hybrid model in other underdeveloped regions with different geographic and demographic characteristics. Longitudinal studies are also needed to analyze the long-term impact of the hybrid model on MSME growth and regional economic development. Further research could explore other variations of the hybrid model, such as platform-based or ecosystem-based models. A more detailed cost-benefit analysis is also needed to evaluate the economic sustainability of the hybrid model. Comparative research with other countries implementing similar models could provide insights for refining the hybrid model in Indonesia. The environmental and social impacts of the hybrid model also require further research. Evaluating the impact of the hybrid model on women's empowerment, poverty alleviation, and sustainable development could provide a more comprehensive perspective on the socio-economic benefits of fintech-MFI collaboration.

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