



## The Role of Peer-to-Peer Lending Platform on Financial Inclusion: Evidence from Microfinance in Rural Indonesia

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# THE ROLE OF PEER-TO-PEER LENDING PLATFORM ON FINANCIAL INCLUSION: EVIDENCE FROM MICRO-FINANCE IN RURAL INDONESIA

*Research-in-Progress*

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## **Abstract**

*Peer-to-peer (P2P) lending platforms have been considered to overcome restrictions of financial inclusion due to geographical exclusion and high financial transaction costs in developing countries. P2P platforms potentially reshape the financial ecosystem in the supply-demand of microfinance. However, the existing literature on digital transformation and financial inclusion falls short of identifying the role of the P2P model and presenting a balanced view of the barriers and impact of such transformation to financial services serving rural areas in developing countries. This research thus aims to understand the role of P2P lending fintech in transforming the supply (lenders)-demand (borrowers) sides of rural microfinancing in enabling financial inclusion. The data are collected from 65 participants by employing semi-structured interviews, participant observations, and focus groups. Drawing on a qualitative study of a peer-to-peer (P2P) lending platform in Indonesia, this paper demonstrates the important roles of a P2P platform in improving efficiency, growth and sustainability in accelerating financial inclusion. The findings also address the barriers and impacts of transformation to further scale up this nascent business model. This work contributes to the digital transformation and financial inclusion literature by proposing theorisation based on the empirical ground evidence in Indonesia.*

*Keywords: Digital transformation, Peer-to-peer lending platform, Financial inclusion, Microfinance.*

## 1 Introduction

Despite having the greatest number of internet users in Southeast Asia, Indonesia recorded a lower rate of financial inclusion in 2019 (i.e., 76 percent) compared to the neighbour countries, alongside low access to financial services for poor people (Asian Development Bank, 2020; The Financial Services Authority, 2020). *Financial inclusion* means the effort to ensure all households and businesses, regardless of income level, have *access* to and are able to effectively use the appropriate financial services such as bank accounts, credits, and insurance to improve their lives (Demirgüç-Kunt *et al.*, 2015; CGAP, 2017). *Traditional microfinance*, which refers to financial services for low-income people, has been undergoing for three decades as a strategy to foster financial access (Gatto and Sadik-Zada, 2022). In this paper, the *supply side* of microfinance means the ability of microfinance institutions (MFIs) to ensure a sustainable funding source. *Demand-side for microfinance* includes the needs of low-income people for suitable microfinance funds.

One of the primary purposes of financial technology (fintech, hereafter) is to accelerate financial inclusion to reduce poverty. Fintech companies have roles to ensure the financial inclusion of the vast majority of the unbanked population alongside government and financial institutions (Ediagbonya and Tioluwani, 2022). Fintech radically changes the financial sector's landscape by addressing the user's needs for trust, speed, low cost and security (Zeidy, 2022).

Digital technology is thus considered to accelerate financial inclusion through a digital transformation of the existing business areas. *Digital transformation* is the application of technology to build new business models, processes, software and systems, resulting in more profitable revenue, significant competitive advantage, and higher efficiency (Schwertner, 2021). While it brings opportunities and benefits, digital transformation also brings various challenges.

Several studies have discussed *inclusion* topics in rural areas, such as healthcare services (Drobež *et al.*, 2021) and the benefits, drawbacks and risks of digital transformation (Yucel, 2018). Yet, it is only a few research have looked at financial services provisioning financial access in the context of rural areas.

Given the gap in the literature and empirical ground, this research-in-progress (RinP) aims to discuss how digital transformation in a peer-to-peer (P2P) lending fintech company is building a new ecosystem for financial inclusion in rural areas by pivoting traditional microfinance through new technology. Therefore, the paper poses the following question: *'What is the role of peer-to-peer platform in transforming supply-demand of traditional financial practice to accelerate financial inclusion?'*

The paper is structured as follows. The second section of the paper, section two, introduces the theoretical understanding underlying the discussion in the remainder of this paper. Section three explains the methodology of the study. The preliminary findings are analysed in section four, followed by a discussion to address the research question in section five. The final section concludes this paper and remarks on the areas of contribution, limitation, and further analysis plan.

## 2 Literature review

### 2.1 Microfinance's challenges in the rural market

Microfinance is an economic development approach providing financial services, such as savings, credits (called microcredits), loans, insurance, or payment services to achieve greater financial inclusion. As part of microfinance, microcredit advances non-collateral small loans to poor communities to start micro-entrepreneurial activities (Visvanathan and Yoder, 2011). At the initial state, the poor or

marginalised people lack sufficient hard information and collateral to access credit from formal financial institutions such as conventional banks. Microfinance institutions (MFIs), such as Grameen Bank in Bangladesh, offer financial services to the grassroots (rural) market, for which the primary business does not involve saving deposits yet to make loans. Loans are an essential part of informal finance. The rural borrowers are required to form a group of borrowers to enable social collateral-based micro-credit.

MFIs often face various challenges. This paper identifies four main challenges: *intense competition* among MFIs (Kono and Takashi, 2010), *low profitability*, *low stability*, and *high transaction cost* (Muhammad, 2010). The *competition* among MFIs is intense with the introduction of formal microfinance from traditional banks and increasing demand for more services in the rural market. The MFIs need to diversify and intensify their services. Concerning *profitability*, in certain circumstances of the demand side (i.e., poverty and deprivation of education), MFIs cannot charge a high-interest rate, and often the revenue does not equally cover the cost. MFI's operations require a door-to-door visit from MFI's field agents or field officers. The *stability* of MFIs also largely depends upon the banking sector's continuous development. Microcredits' source of funds may also come from conventional banks. Microfinance's *transaction cost* is generally high. The profitability of MFIs largely depends on the volume of microcredit transactions because the fixed costs of those transactions are immensely high, for example, the cost of regularly visiting the borrower's place. The *over-indebtedness* (i.e., failure of borrower repayment) often results critically in the lifetime of the MFIs. Given the existing microfinance industry challenges, it becomes rational for MFIs to leverage technology to cut operational costs and transform their business processes (Shwertner, 2017; Zeidy, 2022).

## 2.2 The role of peer-to-peer (P2P) lending platform in microfinance

Fintech is a new technology that seeks to improve and automate the delivery and use of financial services or alternative finance (Makina, 2019; Zeidy, 2022). The current development of fintech embarks on the emergence of technology to provide affordable financial services to poor people in developing countries (Gabor and Brooks, 2017; Makina, 2019). *Peer-to-peer (P2P) lending platforms*, one development of fintech or often called debt-based crowdfunding, refer to the loan organisation or a new platform of financial transaction that bypasses conventional intermediaries and connects borrowers and lenders directly (Bachmann *et al.*, 2011; Yum, Lee and Chae, 2012; Basha, Elgammal and Abuzayed, 2021).

Recent studies examine the implications of the P2P platform model, such as improving access to financial services (Katsamakas and Sánchez-Cartas, 2022) and accelerating financial inclusion (Makina, 2019; Arner *et al.*, 2020; Kurniasari *et al.*, 2021). P2P lending improves accessing underserved communities or often called prosocial P2P lending (Ravishankar, 2021), by matching low-income borrowers and lenders, enabling more evenly distributed investment, and better-determining number of loans (Katsamakas and Sánchez-Cartas, 2022).

The role of technology brings significant transformation of traditional lending mechanisms on the lender's and borrower's side. P2P platforms enable resourceful borrowers with digitally enabled technology to screen and monitoring of borrowers faster; thus, the borrowers have quicker and more convenient access to loans (Katsamakas and Sánchez-Cartas, 2022). The growing volume and number of P2P issuances indicate the importance of small business lending (Segal, 2015). The development of information technology and digital finance has shifted the informal finance market structure by creating a new microfinance environment that diverse the types of MFIs (Kauffman and Riggins, 2012). Compared to traditional MFIs, P2P lending platforms support balancing the dual goals in informal finance: *outreach* and *sustainability* (Kauffman and Riggins, 2012; Wang *et al.*, 2021). Therefore, P2P lending could reach rural communities while also sustaining a source of funding from a wider range of

lenders (See Figure 1), for example, the Amarth platform, which focuses on facilitating rural and semi-urban women micropreneurs in Indonesia.

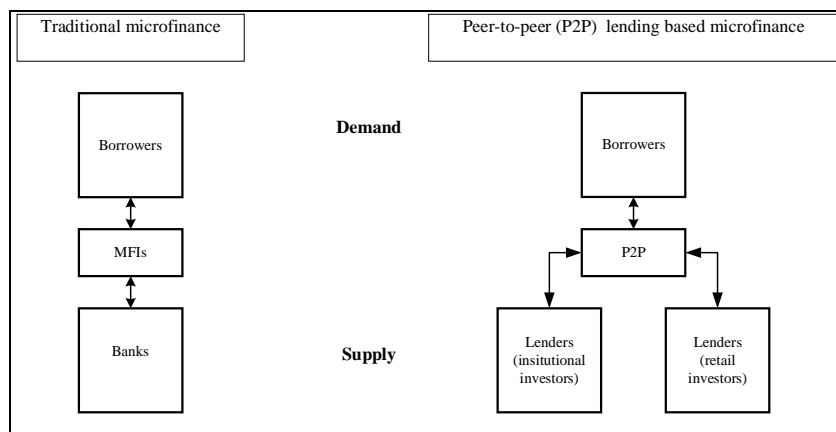


Figure 1. The transformation from traditional-based microfinance to P2P lending-based microfinance.

### 3 Methodology

This qualitative study uses an interpretive lens (Walsham, 1995). The case study method allowed for in-depth analysis to understand the informant's perspectives, meaning and subjective views towards subject matters (Meyer, 2001; Johansson, 2007; Creswell, 2013; Yin, 2018). The empirical case was conducted in Amarth, a P2P lending platform providing microfinance to semi-urban and rural women based in Indonesia.

#### 3.1 The P2P lending model

Amartha was initially established in 2010 as a microfinance institution (MFI). After six years of operation, Amarth switched to a peer-to-peer (P2P) platform-based model. The platform company has been expanding rapidly and manages 1.300.00 borrowers, 100.000 individual lenders, and more than 20 institutional lenders, with USD 492 million in total loans disbursed. The headquarter in Jakarta has approximately 300 employees, while in the fields are around 4.000 employees, including the field officers who perform door-to-door services. The reasons for selecting Amarth are (1) transforming from traditional microfinance to P2P lending, (2) aiming to promote financial inclusion in rural areas in a developing country, (3) operating for more than ten years of operation, (4) promoting digital financial inclusion (i.e., cashless loan disbursement and retail mobile payment for rural women).

While other P2P platforms also claim to promote financial inclusion by allowing funding to rural women through traditional social collateral microfinance, Amarth pioneered in integrating P2P lending and the social collateral model. The grassroots market is challenging mainly due to the huge cost of reaching out to ultra and micro-business loan borrowers and provisioning personal assistance and capability support. On the *supply side*, the P2P lending platform innovation provides a virtual bridge to secure funding. On the *demand side*, the platform adopts the Grameen bank model to reach out and assist borrowers through *field officers* (i.e., full-time field employees) and encourages the adoption of mobile technology.

#### 3.2 Research methods

The data collection stage was conducted across two phases: an online pilot project from May to July 2022 and fieldwork in Indonesia from July to September 2022. Data collection consists of semi-

structured interviews, participant observations, and focus group discussions. Prior to conducting participant observation, the first author built rapport and made sense of being 'inside the culture' with the informants (Oakley, 1981:53). The fieldwork was conducted in a district in West Java across multiple villages to observe the rural one where Amarta first disbursed the microloan in 2010. The district was one of the poorest districts at the time.

Sixty-five participants were interviewed (43 in-person, 22 online), consisting of diverse roles - the platforms, borrowers and family, lender, and expert. The diversity allows this research to gain a rich perspective to understand the supply-demand side of microfinance, forming a 'thick description'(Creswell, 2013) rather than to come into a convergence of participants' viewpoints. On the platform side, 24 interviews were conducted, including two from top management, 15 field officers (i.e., field managers and staff), two social impact and technology managers, and six staff members working on social impact, technology, and data science teams. The total duration of the interviews is 1.847 minutes, with an average of 30 minutes and the longest of 85 minutes. The participant observations were conducted for the researcher to immerse and directly connect to the participants in daily working life (Brannan and Oultram, 2012). Reflexivity notes and a field diary were produced during the fieldwork, resulting in three field diary books, including the researcher's feelings about the occasion and people (Czarniawska, 2007). The interview protocol and observation guidelines are customised to each interviewee's profile and focused on digital transformation, the role of technology, challenges, and impacts. The protocol and guidelines were generated based on the literature on the topic areas and previous relevant research on prosocial P2P Lending (Ravishankar, 2021).

The interviews were stopped when no new insight emerged from the field (i.e., data saturation for each interviewee's role). All interviews and focus groups are recorded, transcribed, and imported to NVivo. The author transcribes the majority of the conversations to keep the sensitive information private, while others are transcribed professionally. A thematic analysis guides the data analysis (Miles, Huberman and Saldaña, 2014; Clarke and Braun, 2022). Detailed data analysis in NVivo has yet to be completed. The rest of the paper presents some preliminary findings and selective evidence from the study.

## 4 Preliminary findings

The preliminary findings revealed important evidence building from diverse views derived from the participant's category. The selective findings demonstrate how the digital transformation is seen from both the supply (i.e., platforms and lender) and demand (i.e., borrowers) side. First, this section presents how the digital transformation was undertaken. Second, the discussion moves to how the role of the P2P lending platform transform and enable financial inclusion, followed by the barriers and the impacts of the transformation.

### 4.1 Digital transformation

Amarta's P2P lending business model radically transformed the supply-demand of their business. After reflecting on the United Kingdom (UK) and the United States (US) markets, the platform's top management initially envisaged the need to modernise microlending. One of the top management mentioned: '*...the concept is how to utilise and modernise microlending... in the USA and the UK, the concept has been running for 5 or 6 years. It has been a proven concept. So, we think it could also work and scale up in Indonesia.*' [TM1]

Changing the business model also opened the opportunities to digitally transform the majority of Amarta's business process to be centralised. Subsequently, digitisation and digitalisation were undertaken. Formerly, the platform managed the loan using spreadsheets, and most of the data entry were manually maintained in printed documents. Management Information Systems (MIS) was built in-house to centralise all the loan data for a complete loan cycle (i.e., from applying to repayment) [TM2,

Tech1]. To capture incoming funding from urban retail lenders, Amarth developed a website in 2016, and three years later, it also launched the mobile application version available in the Android and iOS markets. Retail lenders access Amarth's lender website through the application to select borrowers in a marketplace. The Indonesian lender residing in a European country found it fascinating to select the rural women to invest, imitating in a marketplace: '*...after seeing Amarth performed well, I increased my investment to \$650... I choose [women with] microbusiness's field I prefer ...for example fishing*' [L1].

The financial portfolio of the borrowers can be viewed on the platform as part of risk profiling. Because the low-income borrowers do not possess historical financial data, Amarth builds the rural borrowers' financial footprint by conducting surveys through the field officer. The field officers are equipped with Amarth Partner, an operational mobile-based system for field officers. The survey data act as feed data for credit scoring in the headquarter office. Amarth developed an in-house artificial intelligence (AI) credit scoring for confidentiality and security reasons. Credit scoring is considered the most lengthy and expensive process prior to the transformation [TM1, DS1]. On the other hand, the institutional lenders (i.e., commercial banks, state-owned banks, or regional/rural banks) are still maintained. Amarth supports the selection and management of the investment for this type of lender.

The platform also encourages the borrower to have more exposure to digital tools and other financial services on the demand side [TM1, Impact1, RM3]. For example, the cashless disbursement pilot project requires the borrowers to open a bank account to withdraw the loan from Amarth in the bank or ATM cash machine [RM3]. This project led many borrowers to open a new or even their first bank account in their lives, '*...while other women find it troublesome, I find it [withdraw money from ATM] is less complicated [to manage]...*' [R29]. Another example, Amarth introduces Amarth+, an Android-based application, for women to independently manage their loans. Amarth promotes through the personal assistance of field officers in the weekly visit [Impact 3]. However, the intake of this mobile application usage is still progressing [TM2, Impact 1, Impact 2].

## 4.2 The role of peer-to-peer (P2P) lending fintech

The empirical data suggest the role of P2P lending fintech to promote financial inclusion emerged in three main themes: *efficiency*, *growth*, and *sustainability*.

First, Amarth leverages the transformation to improve *efficiency* in the supply and demand of the microlending process. On the *supply side*, the platform is able to spend less in cost structure and effort compared to operating in a manual process. Amarth, for instance, could reduce the cost of operation by aiding field officers with the Amarth Partner apps and centralised MIS [TM2]. The loan approval process and disbursement can also be faster *on the demand side*. For example, formerly, the manual loan approval took about two to three weeks; subsequently, after the transformation, the process can be reduced as early as three days [TM1, BM1, RBp1].

Second, the P2P model enables Amarth to expand and expects significant *growth*. The driver of the digital transformation initially was the slow growth within the six years of operation. One of the top managements explained: '*... we could capture the specific amount of funds from specific numbers of borrowers; however, our growth was largely slow...We see technology as a catalyst for a-faster-growth*' [TM2]. While Amarth could only gain four or nine more branches in its first six years, after five years of transformation, the number of branches increased to 500 [TM2].

Third, while the previous business model relied on traditional bank funding, the new business model allows Amarth to have more *sustainable* funding channels [TM1, TM2]. It enables Amarth to sustain multiple sources of funding and maintain business survival. Many MFIs collapse due to intense competition and the unavailability of funds.

Amid the transformation, some *impacts and barriers* are also identified from the empirical data. In the manual system, the data was collected on paper documents, such as the loan application form filled out

by the borrowers. Through the transformation, the data entry was no longer recorded on paper. Consequently, the whole daily process can be halted in the case of *security loopholes*. The daily business process then largely depends on the technology maturity of the organisation.

Furthermore, while new technologies enable opportunities, yet come with new challenges. The platform finds *the rural areas' poor infrastructure the most significant challenge*: limited transportation facilities, internet blind spots and poor phone reception signals [Bm2, RBp1, RBp2, RBp3, RBp4]. The field officers run the Amarthia Partner application locally on the phone and then update the data to the MIS using the office's Wi-Fi once they arrive at the branches. However, on many occasions, various poor infrastructures in rural areas have become an everyday challenge.

## 5 Discussion

This paper then explores the important emerged themes from the preliminary finding to correspond to the existing challenges in the microfinance market: *efficiency-growth-sustainability (the role), security and infrastructure (barriers)*. On the one hand, the significant improvement in *efficiency, growth and sustainability* assists the platform in some extent in addressing the market's challenges, such as *intense competition, low stability, low profitability and high transactions*. In one district alone, as many as ten MFIs operate in the grassroots market. However, many MFIs are not able to last due to multiple circumstances; some of them are due to an unstable source of funds with international donors (Siwale, Ritchie and others, 2011) and macroeconomic instabilities (Boateng and Acheampong, 2016). In Amarthia case, P2P technology shows its role in securing funding amid intense competition and high operational costs. Hence the platform can sustain its profitability in this high-risk market.

On the other hand, *security and infrastructure* have become substantial issues owing to digital transformation. Companies must ensure the integrity, quality and security of the data flow in their information systems (Henriette, Feki and Boughzala, 2016) to encounter the risk of fraud, hacking, data compromise and other cyber vulnerabilities (Makina, 2019). The company needs to invest in security and maintain backup plans continuously. The platform needs to maintain sustained proper data management and analysis (Zeidy, 2022). Unequal access to digital and non-digital infrastructures in rural areas, such as lack of basic infrastructure and poor connectivity, remains the main barriers facing the platforms (Makina, 2019; Katsamakos and Sánchez-Cartas, 2022). Strategic collaboration with the government is necessary to unlock the potential of P2P technology.

## 6 Conclusion, contributions and limitations

The study shows the role of the P2P lending platform in building new ecosystems in financial inclusion initiatives and addressing the existing challenges in the microfinance market. The digital transformation also demonstrates how technology shapes new financial ecosystems in rural markets that have not existed before. Technology plays a significant role in improving *efficiency, growth, and sustainability* for a microfinance institution. However, the barriers and impact should be further addressed to scale up the new business model. This study contributes to theorising the role of the P2P platform in enabling financial inclusion in the rural market. The limitation of this study is that the analysis was built from a single MFI-based platform in Indonesia. It restricts a generalisation to other social and geographical contexts. The next step of the analysis is expected to reveal a more complex and rich analysis of fintech, digital transformation and inclusion, in particular from the borrowers' and lenders' perspectives.



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