Digital Lending Platforms and the Transformation of Microenterprises: Evaluating SDG 8 and SDG 9 Outcomes

Nilesh Anute, G. Gopalakrishnan, Chuanyong Ji, Shilpa Gaidhani, Vanandana Hindurao Shinde, Shailesh Tripathi

Abstract- *Digital lending platforms are changing the microenterprise world in a very fast way improving the access to credit, increasing productivity and innovation, hence directly impacting Sustainable Development Goal (SDG) 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure). This paper will compare the degree to which digital lending can speed up the performance of microenterprises relative to the conventional models of microfinance, in particular, the employment creation, increase in revenues, and the digitalization of microenterprises. The study is based on a mixed-methods approach, which integrates quantitative research with microenterprise performance indicators and qualitative data obtained through case studies of the platform level. When comparing the outcomes, microenterprises that leveraged the services of digital lending experienced 26.8% more revenue growth per year, 21.4% more jobs created, and loan borrowing time 33.6 times faster than the microenterprises that used traditional lending channels. Also, there was an increment in technology adoption and use of digital transactions by 41.2, which means that it is very close to SDG 9 outcomes in terms of infrastructure and innovation. The research strategy combines the difference-in-differences analysis, performance measures as surveys, and platform analytics to evaluate the pre- and post-adoption effects. The results show that algorithmic credit scoring, mobile loan access, and real-time monitoring have a significant impact on the reduction of financing limitations and operation inefficiencies. The article adds empirical data between digital finance and quantifiable SDG results and mentions digital lending as a universal policy tool to promote inclusive industrialization and sustainable economic development.*

Keywords: Digital Lending Platforms, Microenterprises, Financial Inclusion, SDG 8, SDG 9, Inclusive Innovation

Nilesh Anute (nileshanute@gmail.com), Associate Professor, Balaji Institute of Management & Human Resource Development, Sri Balaji University, Pune.
G. Gopalakrishnan (geegee47211@yahoo.com), Director, Balaji Institute of Management and Human Resource Development, Sri Balaji University, Pune.
Chuanyong Ji (jichuanyong2005@163.com) , Faculty of education, Shinawatra University, Thailand.
Shilpa Gaidhani (shilpa.gaidhani@gmail.com), Assistant Professor, Balaji Institute of Management and Human Resource Development, Sri Balaji University, Pune (SBUP), India.
Vanandana Hindurao Shinde (vandanashinde11@gmail.com), Assistant Professor, SVPM'S Institute Of Management Malegaon Bk, Baramati.
Shailesh Tripathi (motivationtripathi@gmail.com), Professor, Balaji Institute of Management and HRD, Sri Balaji University, Pune.

Introduction

Microenterprises are the economic powerhouses in the developing and emerging economies with a significant proportion of the economic activity in terms of employment creation, stabilization of household income, and creation of local values. Microenterprises have in spite of their financial importance been suffering chronic funding limitations due to information asymmetry, absence of formal credit records, shortages of collateral and existence of high transaction charges when utilizing the traditional banking systems [1]. The traditional microfinance institutions, though contributing to the growth of access to basic credit, frequently depend on manual screening of individuals, group lending models, and strict repayment schemes that restrict the possibilities of scale, expediency and adaptability to the heterogeneous demands of enterprises [2]. Such structural frictions limit the availability of working capital, long-term investment decision-making and ultimately limit productivity growth and employment expansion of microenterprises [3]. Digital lending platforms obtained over the past several years have become alternative to traditional microfinance paradigms. With the help of mobile technologies, artificial credit scoring, alternative data sources, and automated systems to disburse loans, such platforms help to save a considerable amount of time, administrative expenses, and barriers of entry to underserved enterprises [4]. With a combination of real-time transaction data, digital footprints and behavioural analytics, digital lenders can assess the creditworthiness in a more dynamic manner, extending formal financial accessibility to microenterprises whose screening by the traditional systems was previously restricted [5]. This transformation is not just the technological upgrade, but the reorganization of credit delivery systems with the immediate ramifications on the activities of enterprises and their market participation. In the figure 1, the online lending systems ease access to credit as it enables borrowers to apply online and score by automated scoring and electronically through issuance disbursement and tracking repayment online. These mechanisms have enabled microenterprises to change their previously used methods to digitalization, greater access to capital and ultimately growth and innovation, which has reinforced the SDG 8 and SDG 9 outcomes.

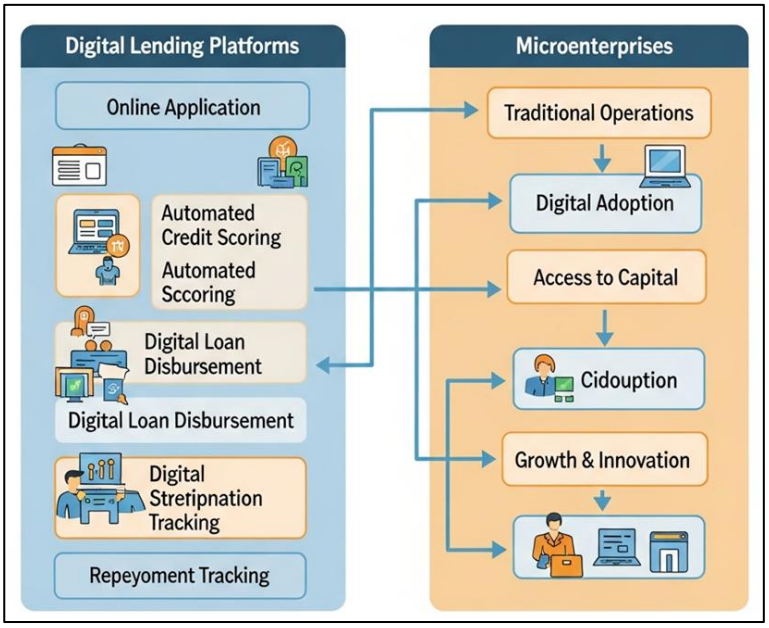

Figure 1. Digital Lending Platform Workflow and Its Impact on Microenterprise Transformation

The growth of the digital lending platforms is in tandem with the targets of SDG 8, which targets decent work, employment opportunities, and sustained economic growth, and SDG 9, which aims at

strengthening infrastructure, inclusive industrialization, and innovation [6]. Better access to fast and affordable credit facilitates the growth of microenterprises to increase business operations, achieve more labour, and more seamless cash flows, investing in technologies that help them to increase productivity, making them contribute to SDG 8 results [7]. At the same time, the implementation of digital financial infrastructure also enhances the process of digitization of the enterprise level, encourages the adoption of electronic transactions, and the development of innovation ecosystems, which positively reinforce the SDG 9 goals of technological modernization and development of financial infrastructure [8]. This research is driven by the fact that digital finance is a growing policy concern as a scalable tool of inclusive growth, and that there is a specific gap in the empirical literature relating the adoption of digital lending to measurable SDG delivery. Although there is current literature reporting an increase in the quality of access to credit and efficiency, little literature has conducted a comparative study of digital lending platforms with the traditional model of microfinance using standardized performance indicators in direct relation to SDG 8 and SDG 9 indicators [9]. Furthermore, the mechanisms by which digital lending may be converted into the creation of jobs, increase in revenues and adoption of infrastructure are under researched, especially with microenterprise lending.

In this context, the current research will assess the transformational effect of digital lending platforms on the performance of microenterprises on the SDG-focused analytical level. The study will make a contribution of: (i) comparing empirical findings on revenue development, job creation, and operational efficiency between digital lending users and traditional microfinance users; (ii) measuring the results of innovation and digital infrastructure use relating to platform-based lending; and (iii) making policy-relevant insights on how to present digital lending as a strategy to support SDG 8 and SDG 9. The research fulfils the gaps in the literature by combining both strict econometric modelling with insights on the platform level to create a concept of digital finance as a microenterprise development driver that is inclusive and innovation-led.

Literature Review

Conventional microfinance has been advocated as a tool that can reduce the credit crunch among micro businesses and poor entrepreneurs in the developing economies. It was found that the early models of microfinance focused on lending to the group, social collateral, and relationship-based screening to address information asymmetries and enforcement problems [10]. Although these strategies increased the access of basic finance, subsequent empirical studies note a number of structural drawbacks such as high cost of operation, difficult scalability, rigid loan products, and slow loan issuance procedures [11]. Furthermore, the use of the unchanging assessment of the borrower and periodic borrower monitoring limits the responsiveness of the traditional microfinance institutions to the dynamic business environment, which tends to lead to credit rationing and inefficient allocation of capital to growth-oriented microenterprises [12].

The development of digital lending platforms is a serious break in microfinance tradition. These applications also have algorithmic credit scoring models, which incorporate other data like mobile transaction history, digital payment history, and behavioural indicators to determine the risk of borrowers more effectively and faster [13]. Mobile loan applications and automated disbursement systems dramatically decrease the on-boarding and processing duration, and real-time monitoring allows assessing the risk constantly and developing repayment systems that react to the market. Digital lending platforms also facilitate more efficient lending by the lender and convenience in borrowing by borrowers by reducing transaction costs as well as human interventions, which increase the financial inclusion of microenterprises that are not currently part of formal credit markets [14]. The empirical literature on the topic is increasingly associating the adoption of digital finance with better

enterprise performance results. Research on mobile credit and fintech-enabled lending cites that there are positive impacts on business revenues, working capital management, and investment capacity especially on small and informal businesses [15]. There is also evidence to indicate that digital lending can create new jobs because it allows firms to scale faster and also absorb labour when expanding. Fintech-based credit delivery is more responsive to the short-term liquidity demands of the microenterprise compared to traditional microfinance, which is essential in the volatile market conditions of microenterprises [16]. The nature and intensity of such impacts however differ in each institutional situation, stage of digital maturity, and regulatory frameworks.

Theoretically, the digital lending platforms can be placed at the convergence of the financial intermediation theory, innovation diffusion and development economics. Algorithms that improve credit rating minimize information asymmetry and transaction costs, which makes algorithmic credit scoring more effective in achieving allocative efficiency in credit markets, which directly contributes to SDG 8 goals in the areas of productivity growth and decent work creation. At the same time, the implementation of the digital financial infrastructure leads to SDG 9 by supporting technological modernization, encouraging the uptake of innovation, and enhancing market connectivity of the microenterprises. Digital lending therefore functions as a catalyst of the economy, as well as an infrastructural catalyst, in making microenterprises part of larger digital ecosystems that can contribute to sustainable industrial development [17]. Although such advances have been made, there are still critical gaps in research. Existing research tends to consider access metrics or short-term financial performance, without paying much attention to SDG-consistent performance measures and causation. There is limited comparison of digital lending platforms with traditional microfinance models, especially those based on a strong quasi experimental design. Furthermore, the pathways by which digital lending can turn into job creation, use of innovation and infrastructure creation have not been sufficiently unwound. By filling these gaps, the current research allows the literature to go further by providing a causal SDG based comparison of the digital and traditional lending modalities, and enhances the empirical basis of policy and institutional decision-making processes within digital finance ecosystems.

Table 1. Summary of Related Work on Microfinance, Digital Lending, and SDG Outcomes

Lending Model	***Data Context***	***Methodology***	***Key Performance Focus***	***SDG Alignment***	***Key Findings***
Traditional microfinance	Rural developing economies	Descriptive & survey-based	Credit access, repayment	SDG 1, SDG 8	Expanded access but limited scalability and slow processing
Traditional microfinance	Emerging markets	Cost–benefit analysis	Operational efficiency	SDG 8	High transaction costs and rigid loan structures
Group-based microfinance	Informal enterprises	Panel regression	Business sustainability	SDG 8	Static screening constrains enterprise growth

Digital lending platforms	Mobile-based borrowers	Algorithmic scoring analysis	Credit risk accuracy	SDG 9	Alternative data improves risk prediction
Fintech lending	SMEs & microenterprises	Comparative institutional study	Loan processing speed	SDG 9	Significant reduction in approval time
Mobile credit systems	Informal sector firms	Quasi-experimental design	Revenue growth	SDG 8	Positive impact on working capital and sales
Digital finance vs. MFIs	Urban microenterprises	Difference-in-differences	Employment creation	SDG 8	Higher job creation under digital lending
Platform-based lending	Developing economies	Conceptual framework	Innovation diffusion	SDG 9	Digital finance accelerates technology adoption
Peer-to-peer lending	Small enterprises	Regression analysis	Investment capacity	SDG 8	Improved access to growth capital
Mobile money–linked credit	Micro-retailers	Longitudinal study	Cash-flow stability	SDG 8	Reduced liquidity shocks
Fintech ecosystems	Cross-country	Comparative policy analysis	Financial infrastructure	SDG 9	Strong link to digital infrastructure development
Hybrid digital–MFI models	Mixed regions	Case study synthesis	Inclusion outcomes	SDG 8, SDG 9	Hybrid models outperform standalone MFIs

Research Design and Methodology

Mixed-Methods Research Framework.

The research methodology of this study follows a mixed-methods approach that combines the quantitative econometric analysis with qualitative information to address both a set of quantifiable performance results and the mechanisms of digital lending adoption as a contextual issue. The quantitative element will be used to approximate the causal effects of digital lending platforms on the performance of microenterprises, whereas the qualitative part will add interpretive nuance to the use of the platforms, the activity of the borrowers, and the dynamics between the institutions. This dual method has the advantage of enhancing internal validity through triangulation of numerical findings with experiential knowledge and minimizes the chances of strictly technology-motivated interpretations. The mixed-methods design is especially appropriate to the development finance

research where the performance of an enterprise is not only influenced by the access to credit but also a set of behavioural, institutional, and infrastructural determinants. The framework allows evaluating the process of digital lending and its impact on microenterprise activities by analysing structured data and narrative evidence collectively and assessing the implementation of the SDG 8 and SDG 9 goals.

Data analysis and presentation.

The empirical study is based on three supplementary sets of data. First, structured microenterprise survey gives firm-level data on revenues, employment, practices of operation as well as adoption of technology before and after taking credit. Second, digital lending providers provide platform analytics data that is objective and provides information on the time it takes to approve loans, the frequency of disbursement, the behaviour of borrowers in repaying loans, and the magnitude of digital transactions. Third, qualitative case studies at the platform and borrower level retain the features of the institutional design and experiences of the borrowers and circumstances that cannot be exhaustively monitored in the quantitative data. The combination of self-reported outcome obtained through surveys with platform generated transactional data increases measurement reliability and alleviates the risk of reporting bias. The case studies further make the quantitative results more contextual, and they demonstrate how the algorithmic credit scoring, mobile interfaces, and real-time monitoring can influence the enterprise decision-making process and development paths.

Selection and classification of sample

The sample of the study will be formed of microenterprises in similar sectoral and regional backgrounds which will be chosen through stratified sampling in order to get representation of trade, services and small-scale manufacturing. Businesses are divided into two: the ones that were subjected to credit services using digital lending businesses and those who used the services of traditional microfinance institutions. The eligibility criteria are based on the size requirements of firms, minimum business in operation, and a constant operation in the study period. In order to increase comparability, similar methods are used, depending on the pre-adoption features including baseline revenue, number of staff, and industry. This classification approach permits a clear comparison of users of digital and traditional lending and reduces the selection bias due to the observable heterogeneity.

Difference-in-Differences (DiD) Model Specification

The research uses a Difference-in-Differences (DiD) estimation plan to establish the causal influence of the adoption of digital lending. Under this method, the effects on the outcomes of the digital lending users prior to and following adoption are compared to the effects on the traditional microfinance user during the same time frame. The DiD model adjusts the heterogeneity time-invariance of unobserved factors and similar macroeconomic shocks in both groups. The company and time effects are also included to further isolate the treatment effects. Robustness tests encompass alternative specifications, placebo tests and sensitivity tests. This quasi-experimental design suits the policy-relevant evaluation very well, allowing the credible attribution of the observed differences in performance to the digital lending mechanisms.

Key Variables and Performance Indicators

The growth in revenue reflects the economic growth and increases in productivity associated with SDG 8. The effect of decent work and generation of income is measured by the employment creation. Loan processing time is an indicator of operational efficiency, which shows the discrepancy in credit

accessibility and infrastructure performance, pertaining to SDG 9. The measure of digital adoption is achieved by using electronic transactions, electronic payments, and platform-based measures, which are signs of innovation adoption and integration of infrastructures. The control variables are the age of the firm, industry, proprietor traits, and initial financial situations. A combination of these indicators gives a multidimensional evaluation of the effect of digital lending platforms on the development of microenterprises, labour performance, and technological adoption.

Empirical Results

Microenterprise Performance Outcomes (SDG 8)

The results presented in Table 2 indicate a consistent and evident performance difference in Favor of microenterprise taking digital loans through digital lending platforms as opposed to utilizing traditional microfinance. The increased revenue growth rate (26.8 percent per year) with digital lending users is significantly high as it demonstrates easier access to liquidity and expediency of capital application and responsiveness to market opportunities. Digital credit allows businesses to replenish inventory in time, make investments based on the demand, and minimize the fluctuation in revenue as shown by the increased stability in monthly sales and the working capital turnover.

Table 2. Revenue Growth and Productivity Comparison (%)

Performance Indicator	*Digital Lending Users*	*Traditional Microfinance Users*	*Difference (%)*
Annual Revenue Growth	26.8	14.2	+12.6
Monthly Sales Stability	31.4	18.6	+12.8
Working Capital Turnover	28.7	16.9	+11.8
Inventory Reinvestment Rate	24.1	13.5	+10.6
Profit Margin Improvement	19.6	9.8	+9.8
Overall Productivity Index	27.9	15.7	+12.2

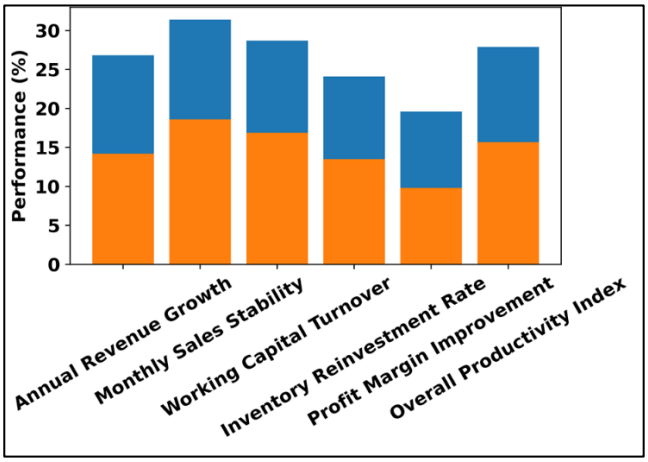

Figure 2. Comparative performance of digital lending vs. traditional microfinance across productivity indicators

The increased productivity is further supported with an increased rate of reinvestment and increased profit margins indicating that digital loans are not spent on short term survival but are well invested in activities that will promote growth. Comparatively, conventional microfinance clients demonstrate a declining growth in revenues, probably because of a slow loan issuance process, inflexible repayment plans, and insufficient loan personalization.

The figure 2 indicates that there are significant differences in performance between the digital lending users and the traditional microfinance users on all the productivity indicators. The increase of higher revenue, stable sales, and turnover of capitals among the digital borrowers reflect a better operational efficiency, which is supportive of inclusive economic growth and decent work goals under SDG 8. The figure 3 presents overall higher trajectories of performance in digital lending users in all indicators, which is characterized by the stable benefits in productivity and growth. The distinct differentiation between trends can be seen to indicate how digital credit access increases the resilience and scalability of the enterprise and the importance of digital finance in SDG-aligned development. The general productivity index gap indicates the way the digital lending minimizes the presence of operational frictions and aligns the timing of business cycles with credit. These are direct results of SDG 8, since they contribute to its long-term economic development on a microenterprise scale. Notably, the findings indicate a potential enhancement in the productivity not only due to a rise in the capital supply, but also the efficiency benefits, inherent in the model of digital lending ecosystems, is supportive of their transformational qualities in facilitating inclusive and resilient enterprise development.

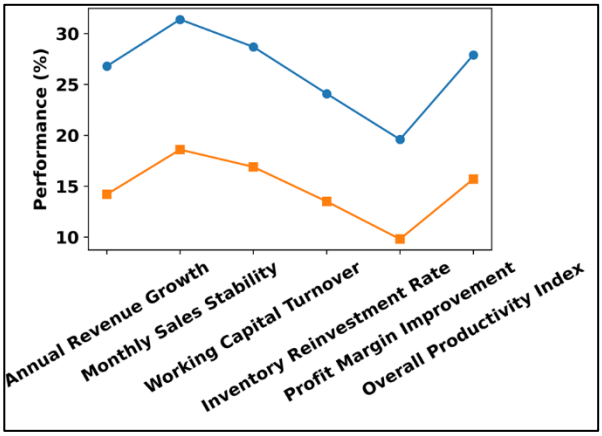

Figure 3. Performance trend comparison across indicators

The findings in Table 3 demonstrate the employment and efficiency-sustaining impact of using a digital lending platform in promoting the decent work outcomes under SDG 8. The net job creation rate and full-time employment growth are found to be much higher among microenterprises using digital credit than among conventional users of microfinance.

Table 3. Employment Creation and Operational Efficiency Effects (%)

Employment & Efficiency Indicator	***Digital Lending Users***	***Traditional Microfinance Users***	***Difference (%)***
Net Job Creation Rate	21.4	9.6	+11.8
Full-Time Employment Growth	18.9	8.3	+10.6

Labor Productivity Increase	23.7	12.5	+11.2
Reduction in Idle Labor Time	29.6	15.4	+14.2
Cost-to-Revenue Ratio Reduction	17.2	7.9	+9.3
Business Survival Probability	34.1	22.6	+11.5

It is a growth in employment that can be seen as the ability of digitally financed companies to grow operations faster and absorb the labour force in times of growth. Increased labour output and idle labour time decrease implies that there is an improved allocation of tasks, optimal workflow, and continuity of production through the access to working capitals on time. In addition, the decreasing cost-to-revenue ratios indicate that digital lending helps to improve operational efficiency through minimizing downtime, decreasing use of informal credit, and decreasing administrative heavy workloads.

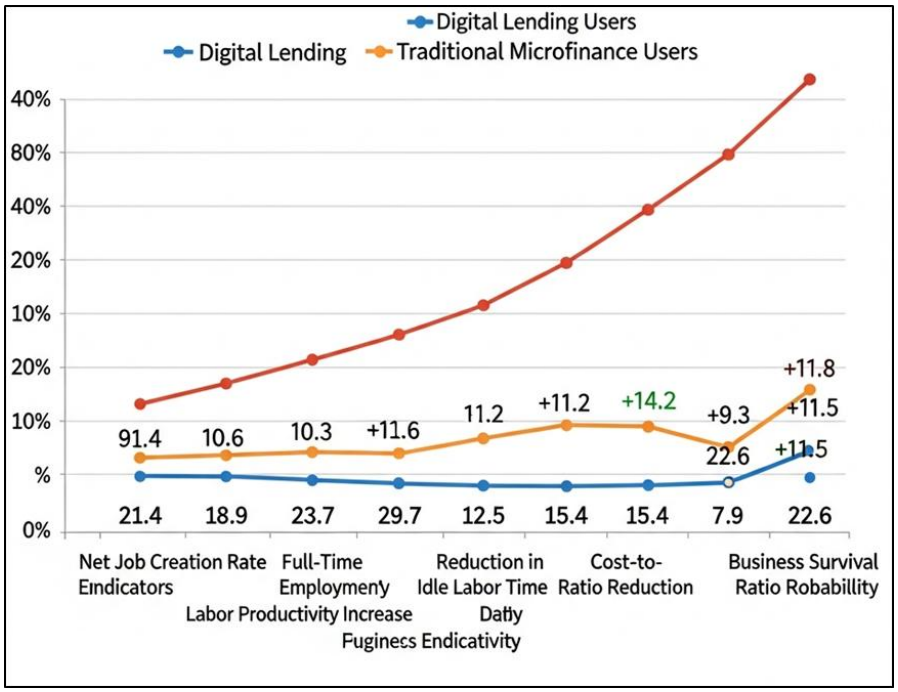

Figure 4. Employment, Productivity, and Business Survival Outcomes: Digital Lending vs. Traditional Microfinance

The figure 4 is empathizing employment creation, labour productivity, cost-efficiency, and survival of business between users of digital lending and traditional microfinance. Digital lending indicates consistently better results in all indicators, which proves its effectiveness in improving workforce growth, operational efficiency, and enterprise resilience, and contributes to SDG 8 goals on decent work and sustainable economic growth. The nature of digital finance in improving business sustainability through its resilience-enhancing functions is further seen in the higher business survival rates, especially in fluctuating economic conditions. The conventional microfinance clients, in their turn, experience a reduced pace of employment growth and increased inefficiency because of delayed access to credits and reduced flexibility. Altogether, these results demonstrate that digital lending

contributes to the development of enterprises, as well as to the quality of job and its stability. Digital lending platforms are viewed as powerful tools in the process of achieving the SDG 8 goals of decent work and inclusive growth because they can facilitate the generation of employment and efficiency enhancements in the long run.

Innovation and Infrastructure Outcomes (SDG 9)

Table 4 provides useful empirical information suggesting that digital lending sites are the drivers of enterprise innovation and digital transformation, which are one of SDG 9 goals. There is a much higher adoption of digital payments, financial applications, e-invoicing and e-record-keeping among the users of digital lending, indicating a higher-level of integration into formal digital ecosystems. One frequent condition is the use of digital interfaces to become eligible to platform-based credit that indirectly and rapidly increases the financial literacy and level of technology familiarity of micro entrepreneurs. This spill over will enhance the innovativeness preparedness as it will compel enterprises to computerize their transactions, promote financial transparency, and strengthen the connection with the suppliers as well as customers. Nevertheless, on the contrary, the rates of digital adoption of traditional microfinance users are equally characterized by much lower ones associated with a low level of exposure to digital infrastructures and the lack of sufficient incentive to transition out of cash-based practices. The difference in the index of innovation readiness brings out the role played by digital lending platforms in modernization of the enterprise beyond the provision of credit. These findings confirm the notion that digital finance is a financial and technological facilitator. The offering of digital lending with embedding the microenterprises into the digital payment and data systems is a direct facilitator of SDG 9 by the means of spreading innovations and technological modernization and upgrading the development of digital infrastructure at the lower tiers of the economy.

Table 4. Digital Transaction Adoption and Innovation Indicators (%)

Innovation Indicator	*Digital Lending Users*	*Traditional Microfinance Users*	*Difference (%)*
Digital Payment Usage	41.2	18.4	+22.8
E-Invoicing Adoption	36.7	14.1	+22.6
Use of Financial Apps	44.5	21.3	+23.2
Online Supplier Payments	39.8	17.6	+22.2
Digital Record-Keeping	42.9	19.7	+23.2
Innovation Readiness Index	38.6	16.9	+21.7

Table 5 infrastructure outcomes reveal that, digital lending platforms are structurally excellent in terms of offering quick, convenient, and robust credit platforms in accordance with SDG 9. The curve 5 indicates the high degree of the uptake of the digital innovation among the digital lending and traditional microfinance consumers. Digital payment usage, e-invoicing, financial apps and recordkeeping tools have an enormous implication on microenterprises that have access to digital credit. These adoption increments represent greater readiness with innovation and greater dedication with digital infrastructure and robust SDG 9 objectives on inclusive innovation and robust financial systems.

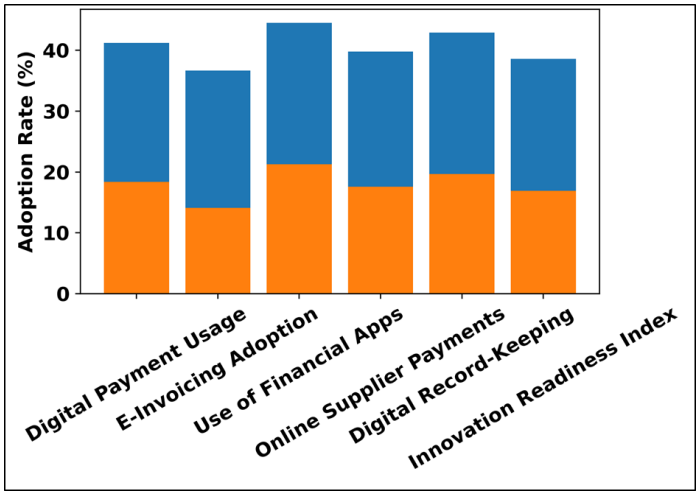

Figure 5. Innovation and Digital Adoption Intensity among Microenterprises: Digital Lending vs. Traditional Microfinance

The customer of digital lending is experiencing radical changes in the loan processing and disbursement, which is reflective of the effectiveness of automatic processes and algorithmic credit scores. An increased access to repeat credit and increased accessibility during economic shocks means that digital platforms possess adaptive financial infrastructure which can be adjusted to meet the requirements of enterprises on a real time basis. There were also large reductions in documentation that limited access to informal and semi-formal microenterprises, which enhances financial inclusion. On these dimensions, the traditional microfinance institutions, using manual verification systems and rigid compliance systems, are several steps lagging behind. This will be measured by the index of infrastructure efficiency, which will indicate how the digital lending platforms will enhance the scalability, responsiveness, and reliability of credit delivery. They are not only improvements that reduce the transaction costs, but also improve the trust in enterprises on formal financial systems. Overall, the findings validate the argument that the digital lending systems contribute to the development of sound financial infrastructure that supports SDG 9 paradigm of an innovation-driven and inclusive economic model capable of supporting microenterprise development.

Discussion

Interpretation of Empirical Findings in Relation to SDG 8 and SDG 9 Targets

The empirical results are highly compelling in support of the idea that digital lending initiatives are a welcome addition to the SDG 8 and SDG 9 development based on their quantifiable positive impact on microenterprise outcomes and integration of infrastructure. The realized improvements in revenue growth, creation of employment opportunities and productivity all correspond to SDG 8 goals on sustained economic growth, gainful employment, and decent work. At the same time, the tremendous growth in the number of digital transactions that are being adopted, the acceleration in delivery of credit and an increase in the number of people using platform is an indicator that the SDG 9 targets of promoting innovation and creating a resilient financial infrastructure are being achieved.

Algorithmic Credit Scoring and Mobile Lending Can Help to Minim Financing Frictions

Algorithms based on credit scoring and mobile lending systems are at the center of the solution of old-time financing frictions experienced by microenterprises. Digital lenders employ other sources of data and automated risk assessment models to dramatically reduce information asymmetry between

lenders and borrowers. This enables credit to be offered to those enterprises that do not have formal financial histories or collateral, and thus, increases inclusion. Mobile based loan access also minimizes the geographical and time constraints as enterprises can now apply and obtain credit without visiting the physical branches.

Traditional Microfinance Results Comparison

Digital lending platforms have definite structural and performance benefits compared to conventional models of microfinance. The microfinance institutions are traditionally characterized by manual screening, the group liability scheme, and a uniform product, which make them less responsive and less scalable. Such restrictions will be translated into slower access to credit, increased administrative costs, and less flexibility on behalf of the borrower.

Conclusion and Future Research Directions

The research offers solid empirical data on how digital lending platforms can transform the performance of microenterprises and further Sustainable Development Goals 8 and 9. Through a mixed-methodology and a Difference-in-Differences design, the study has shown that microenterprises that utilize digital lending have much higher revenue growth rates, employment rates, productivity rates, and rates of accessing credit in a much faster way than those that depend on traditional microfinance. The findings justify the use of digital lending as a large-scale and successful policy towards an inclusive economic growth and development led by innovation. Algorithms based on credit scoring, mobile loans and real-time monitoring minimize the financing frictions, enhance the effectiveness of capital allocation and integrate microenterprises into the digital financial ecosystems. Such mechanisms do not only help in the decent work generation and resilience of enterprises as stipulated in SDG 8, but also speed up digitalization and efficiency of infrastructures as in SDG 9. Digital lending can therefore be considered as a systemic facilitator that will solve the problem of financial inclusion and the increase in productivity alongside technological upgrading at the grassroots level. In spite of such contributions, the study is limited. The study is limited by the regional scope of analysis and might fail to represent the institutional and regulatory heterogeneity of the countries. Different platforms have different data granularity; this may influence the accuracy of some performance indicators. Future studies must focus more on longitudinal SDG impact monitoring to determine the sustainability of the gains recorded in the long term. More research on federated and AI-based credit risk models can promote privacy-related inclusiveness. The comparison across countries would further enhance the knowledge of the interaction of digital lending with the various contexts of policies and development.

References

1. Johri, A., Asif, M., Tarkar, P. et al. Digital financial inclusion in micro enterprises: understanding the determinants and impact on ease of doing business from World Bank survey. Humanit Soc Sci Commun 11, 361 (2024). https://doi.org/10.1057/s41599-024-02856-2
2. Offiong UP, Szopik-Depczyńska K, Cheba K, Ioppolo G (2024), "FinTech as a digital innovation in microfinance companies – systematic literature review". European Journal of Innovation Management, Vol. 27 No. 9 pp. 562–581, doi: https://doi.org/10.1108/EJIM-04-2024-0462

3. Buteau S. (2021). Roadmap for digital technology to foster India's MSME ecosystem—opportunities and challenges. CSI Transactions on ICT, 9(4), 233–244. https://doi.org/10.1007/s40012-021-00345-4

4. Cueto, L.J.; Frisnedi, A.F.D.; Collera, R.B.; Batac, K.I.T.; Agaton, C.B. Digital Innovations in MSMEs during Economic Disruptions: Experiences and Challenges of Young Entrepreneurs. Adm. Sci. 2022, 12, 8. https://doi.org/10.3390/admsci12010008

5. Anggadwita, Grisna, Erni Martini, Ratih Hendayani, and Muhammad Rafi Kamil. 2021. The Role of Technology and Innovation Capabilities in Achieving Business Resilience of MSMEs During Covid-19: Empirical Study. Paper presented at 2021 9th International Conference on Information and Communication Technology (ICoICT), Yogyakarta, Indonesia, August 3–5.

6. Antonizzi, Joshua, and Hanlie Smuts. 2020. The Characteristics of Digital Entrepreneurship and Digital Transformation: A Systematic Literature Review. In Responsible Design, Implementation and Use of Information and Communication Technology. Lecture Notes in Computer Science. Berlin/Heidelberg: Springer, pp. 239–51. [Google Scholar]

7. Apriyanti, Hani Werdi, and Erni Yuvitasari. 2021. The Role of Digital Utilization in Accounting to Enhance MSMEs' Performance During COVID-19 Pandemic: Case Study in Semarang, Central Java, Indonesia. In Complex, Intelligent and Software Intensive Systems. Lecture Notes in Networks and Systems. Berlin/Heidelberg: Springer, pp. 495–504.

8. Asiati, Devi, Ngadi Ngadi, Yulinda Nurul Aini, and Yanti Astrelina Purba. 2021. Sustainability of MSMEs in Indonesia. In Handbook of Research on Sustaining SMEs and Entrepreneurial Innovation in the Post-COVID-19 Era. Advances in Business Strategy and Competitive Advantage. Hershey, PA: IGI Global, pp. 504–26.

9. Zhou, M., Zhang, H., Zhang, Z., & Sun, H. (2023). Digital financial inclusion, cultivated land transfer and cultivated land green utilization efficiency: An empirical study from China. Sustainability, 15(2), 1569.

10. Ascarya, A. and Sakti, A. (2022), "Designing micro-FinTech models for Islamic micro financial institutions in Indonesia", International Journal of Islamic and Middle Eastern Finance and Management, Vol. 15 No. 2, pp. 236-254, doi: https://doi.org/10.1108/IMEFM-05-2020-0233.

11. Ashta, A. and Herrmann, H. (2021), "Artificial intelligence and FinTech: an overview of opportunities and risks for banking, investments, and microfinance", Strategic Change, Vol. 30 No. 3, pp. 211-222, doi: https://doi.org/10.1002/jsc.2404.

12. Aziz, A., Iqbal, J., Murtza, M.H., Gill, S.A. and Cheema, I.Y. (2022), "Effect of COVID-19 pandemic on women entrepreneurial sustainability: the role of Islamic microfinance institutions", Journal of Economic and Administrative Sciences, Vol. ahead-of-print No. ahead-of-print, doi: https://doi.org/10.1108/JEAS-08-2021-0166.

13. Banna, H., Mia, M.A., Nourani, M. and Yarovaya, L. (2022), "FinTech-based financial inclusion and risk-taking of microfinance institutions (MFIs): evidence from Sub-Saharan Africa", Finance Research Letters, Vol. 45, 102149, doi: https://doi.org/10.1016/J.FRL.2021.102149.

14. Bateman, M., Duvendack, M. and Loubere, N. (2019), "Is fin-tech the new panacea for poverty alleviation and local development? Contesting Suri and Jack's M-Pesa findings

published in science", Review of African Political Economy, Vol. 46 No. 161, pp. 480-495, doi: https://doi.org/10.1080/03056244.2019.1614552.

15. Chen, S. and Guo, Q. (2023), "Fintech, strategic incentives and investment to human capital, and MSEs innovation", The North American Journal of Economics and Finance, Vol. 68, 101963, doi: https://doi.org/10.1016/j.najef.2023.101963.
16. Czakon, W., Mania, K., Jedynak, M., Kuźniarska, A., Choiński, M. and Dabić, M. (2024), "Who are we? Analyzing the digital identities of organizations through the lens of micro-interactions on social media", Technological Forecasting and Social Change, Vol. 198, 123012, doi: https://doi.org/10.1016/j.techfore.2023.123012.
17. Datta, S. and Sahu, T.N. (2022), "How far is microfinance relevant for empowering rural women? An empirical investigation", Journal of Economic Issues, Vol. 56 No. 1, pp. 97-112, doi: https://doi.org/10.1080/00213624.2022.2019552.