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The Role of Digitalization and Automation of Operational Processes as A Key Factor for Diversifying the Product Line in The Microfinance Sector

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Abstract: In the context of the accelerating digital transformation of the financial industry, microfinance organizations (MFOs) are compelled to rethink and restructure their business models in order to maintain competitive advantages and strengthen the social impact of their activities. This study examines how digitalization and automation of key operational circuits serve as a fundamental driver for expanding the product line of MFOs. The purpose of the work is to identify causal links between the implementation of advanced technological tools — including Loan Origination System (LOS) class systems and the use of artificial intelligence (AI) in credit scoring procedures — and the ability of organizations to go beyond classical microcredit, forming a broader product portfolio. Methodologically, the study relies on a systematic review of academic sources, a comparative analysis of the markets of the United States, Europe, and Kyrgyzstan, as well as a detailed case study of comprehensive automation of one MFO in Kyrgyzstan. The results obtained indicate that achieving a threshold level of operational efficiency through automation — expressed in reduced application processing time and lower costs — frees managerial and financial resources necessary for designing and launching more complex products, such as microinsurance, digital savings instruments, and mortgage programs. Thus, the initial hypothesis is confirmed: operational transformation is not an end in itself, but serves as a mandatory precondition for strategic diversification. The conclusions drawn have practical significance for MFO managers, financial market regulators, and researchers in the fields of financial technologies and inclusive growth.

Keywords: microfinance, digitalization, automation, product diversification, credit conveyor, artificial intelligence, scoring, financial accessibility, Loan Origination System, comparative analysis

Introduction

The global financial system has entered a phase of profound structural transformation, with digitalization and fintech innovations acting as key catalysts [1]. For microfinance organizations (MFOs), whose operating model has historically relied on labor-intensive procedures and in-person borrower interactions, technological modernization has shifted from an option to a prerequisite for survival and long-term sustainability [4]. The projected trajectory of the global microfinance market reinforces this logic: the compound annual growth rate (CAGR) through 2032 is expected to reach 10,5–12,5%, and aggregate volume is projected to exceed 500 billion USD [6]. This dynamic closely correlates with technological integration, which expands client reach and enhances the operational efficiency of MFOs [9].

Despite a rich body of literature describing the impact of fintech on financial inclusion and the benefits of automation, a substantial gap remains in the academic discourse [2, 10]. It lies in the absence of a rigorously constructed, empirically verified causal model that directly links the automation of specific operational links (for example, the lending process) to the strategic capability of MFOs to diversify their product portfolio. In addition, there is a lack of cross-comparative studies that identify the specificity of this relationship in markets with sharply contrasting technological maturity and regulatory frameworks—from the United States and Europe to the countries of Central Asia, particularly Kyrgyzstan.

The aim of the study is to analyze and theoretically substantiate how the digitalization and automation of operational processes act as a key driver of product-line diversification in the microfinance sector; the empirical basis is a comparative examination of the markets of the United States, Europe, and Kyrgyzstan.

The author's hypothesis posits that the deployment of integrated Loan Origination Systems (LOS) solutions — credit assembly lines — establishes a critical threshold of operational efficiency (reduction of aggregate costs and acceleration of process throughput), after surpassing which MFIs gain the ability to purposefully reallocate the resources thus freed to the development and administration of a broader and more complex product set (including microinsurance, savings instruments, specialized credit lines). This, in turn, strengthens their competitive positions and increases social impact.

The scientific novelty of the work lies in establishing a direct functional link between the automation of internal (back-end) operations and the diversification of the external (front-end) product strategy in microfinance across heterogeneous global arenas. In the traditional discourse, the digitalization of MFIs is interpreted along two separate axes — enhancement of operational efficiency and expansion of financial accessibility. The study integrates these trajectories, demonstrating that operational efficiency is not a self-sufficient objective (mere cost savings), but a necessary precondition for substantive and sustainable diversification that extends financial inclusion beyond basic lending. Automation not only reduces the costs of the previous business model; it creates an economic and organizational foundation for the transition to a new, more diversified and inclusive configuration, transforming MFIs from single-product organizations into multiprofile providers of financial services.

Materials and methods

To address the research objective, an integrated methodological design is employed, combining complementary analytical tools.

The methodological foundation rests on three key components. First, a systematic literature review with critical synthesis of findings is conducted to construct the theoretical framework. Academic publications from the Scopus and Web of Science databases are considered, as well as technical reports from IEEE and ACM proceedings devoted to the application of artificial intelligence (AI), automation, and fintech solutions in the financial industry. Second, a comparative analysis is applied to juxtapose the drivers, constraints, and effects of digital transformation across three target regions — the United States, Europe, and Kyrgyzstan; this approach reveals both universal patterns and specific regional trajectories of change. Third, a case study is used for an in-depth, context-rich examination of the implementation of advanced digital systems in a specific MFO in the city of Bishkek, which provides empirical verification and illustration of the theoretical propositions.

This architecture of sources ensures the coupling of

theoretical depth with the analysis of current market data and practical cases, thereby enhancing the internal validity and external relevance of the study's conclusions.

Results and discussion

The first wave of digital transformation in MFOs was driven by the deployment of robotic process automation (RPA), aimed at performing discrete and routine back-office operations — from data entry and payment transaction processing to the preparation of regulatory reporting [13]. The genuine qualitative shift, however, was delivered by the transition to integrated loan conveyor automation platforms — loan origination management systems [28].

LOS are end-to-end software suites that orchestrate the full life cycle of the credit process: from digital application intake and data consolidation to the final disbursement of funds to the borrower. Key LOS functions include:

- Digital application intake: receipt of client data via web interfaces, mobile applications, and partner channels.
- Automated document verification: use of OCR to extract structured data, integration with state registries to confirm authenticity, and application of electronic signature mechanisms.
- Integration with external systems: automated requests to credit bureaus and other sources to enrich the client profile.
- Automated underwriting and decisioning: application of preconfigured business rules and scoring models to assess risk and determine the outcome (approval, rejection, transfer to manual analysis).
- Compliance adherence and document generation: automatic generation of contractual documentation and assurance of conformity with regulatory prescriptions.

Integration of end-to-end platforms eliminates the fragmentation of information circuits and the need for manual transfer of data between departments—key sources of inefficiency, errors, and operational delays inherent to traditional MFI processes [22, 24, 26].

The core of modern LOS is the credit scoring module, increasingly relying on artificial intelligence (AI) and machine learning (ML) methods [2]. Classical scoring schemes such as FICO focus on a formalized credit history, thereby systematically excluding from the formal sector significant groups of borrowers without such a history—the so-called thin-file clients [17].

AI/ML approaches remove this constraint by processing large volumes of alternative data. These include:

- Transactional information: regularity and discipline of payments for utilities, rent, and mobile services [17].
- Mobile network operator and digital wallet data: intensity of mobile money use, frequency and volumes of transfers [18].
- Behavioral features: the user's digital footprint, activity on social networks, and other unstructured sources.

The approach based on nontraditional data sources forms a more accurate, multidimensional, and inclusive picture of credit risk, opening access to finance for previously excluded categories of borrowers. A telling example is the fintech company Tala operating in emerging markets: credit scoring is produced within minutes by analyzing data from the client's smartphone. At the same time, the share of timely repayments among clients receiving a first loan exceeds 90%, which confirms the high predictive power of the corresponding models.

The introduction of an automated LOS initiates a virtuous cycle, serving as a trigger for strategic transformations. The central mechanism is a sharp improvement in operational efficiency, recorded through specific KPIs, which is consistent with empirical observations. For example, Bancamía in Colombia, having automated the field work of loan officers using a mobile application, within a year more than halved application processing time and increased staff productivity by 27%. In another case of a credit conveyor, the time required to serve one third of the customer base decreased from one month to four days [29].

Resource release occurs along two dimensions. First, unit operating costs of loan processing decrease, directly strengthening margins and overall profitability. Second, human resources are reallocated: loan officers are freed from paper routines and concentrate on more complex tasks—management of problem debt, client consulting, and relationship development. These resources are transformed into investment capital for product

diversification: an MFI can direct them toward research, development, piloting, and scaling of more sophisticated financial solutions previously constrained by high operational barriers. The effect is particularly pronounced for repeat loans, which can account for up to 60% of an MFI's monthly disbursements; automating their approval delivers an immediate and substantial productivity increase (see Table 1).

Table 1. Key performance indicators (KPI) of automation in microfinance (compiled by the author based on [12, 14, 16, 29]).

Metric (KPI)	Traditional process (Before)	Automated process (After)
Application processing time (Turnaround Time, TAT)	Weeks / Days	Minutes / Hours (reduction >50%)
Loan officer productivity	Baseline level	Increase by 27%
Operating cost per loan	High (manual labor, paper)	Significant reduction (up to 80% in some models)
Approval rate (Approval Rate)	Depends on subjective assessment	Increase due to consistency and scoring
Conversion rate (Conversion Rate)	Decreases due to duration	Increase (reduction of drop-offs by 60%)
Customer satisfaction (Customer Satisfaction)	Average / Low	High (increase by 40-50%)

By shedding the operational costs of manual application processing, MFOs gain room for the strategic expansion of their product lines. In this context, diversification functions not merely as a mechanism for broadening the revenue base but also as a tool for deepening client relationships through the provision of integrated financial solutions.

As for microinsurance, fintech infrastructure makes insurance services accessible to low-income households. On this platform, new designs take shape—parametric policies (for example, automatic payouts to farmers in the event of drought confirmed by satellite observations) and peer-to-peer (P2P) models in which participants jointly bear responsibility for risk coverage. This makes it possible to offer cost-effective protection products against threats to health, property, and crops.

Digital savings and payments. In this case, integration with mobile banking and digital wallets enables MFOs to complement credit offerings with convenient tools for savings, transfers, and payment for services. As a result, clients develop habits of financial discipline and resilience, while MFOs acquire stable non-credit sources of fee income [11].

Specialized credit products. Process automation and precision scoring create conditions for the customization of loans with risk-based pricing. This opens the way for green microloans for clean technologies [21], educational loans, as well as more sizable and structurally complex products, including micro-mortgages, where a sophisticated yet standardizable underwriting process is required.

Thus, technological evolution moves MFOs from the status of a niche lender to that of a full-scale provider of financial services capable of addressing a wide spectrum of client needs in a targeted manner.

The impact of digitalization on product diversification is heterogeneous and depends on market maturity, regulatory frameworks, and the macroeconomic backdrop. A comparison of three spaces—the United States, Europe, and Kyrgyzstan—makes it possible to distinguish three distinctive trajectories of this process [3, 15].

In the United States, the microfinance ecosystem, whose core consists of leading CDFIs (e.g., Accion Opportunity Fund, AOF), systematically employs technology to scale outreach and deepen financial inclusion. In fiscal year 2024, AOF financed nearly 1,700

small businesses for a total of USD 97 million, corresponding to a 30% increase in capital volume relative to the previous year [27]. The AOF approach demonstrates a mature exploitation of technological potential:

- Scoring modernization: extensive incorporation of alternative data sources to expand access to resources for entrepreneurs considered undervalued who do not meet the standards of traditional banking [27].
- Client experience: deployment of full-featured self-service portals with 24/7 availability and the introduction of chatbots for real-time support [27].
- Product diversification: raising the ceiling on working capital from USD 100,000 to USD 250,000 and streamlining procedures for repeat borrowers, directly demonstrating the link between technological capability and the expansion of the product line [27].
- Assessment of macro effects: application of advanced econometric methods to quantify the contribution to the economy; estimates indicate that each dollar of lending generates about 2 dollars of new economic activity per year (wages, spending, taxes), capturing the multiplier effect of technology-oriented microfinance.

European MFIs are at an advanced stage of digital transformation: 74% of organizations view digitalization as a critically important element of strategy [21]. The priority has shifted toward increasing operational efficiency and improving service quality. At the same time, second-order barriers are on the agenda:

- High capital intensity of implementations: 66% of MFIs cite the cost of technologies as the key constraint [21].
- Talent shortage: 34% face difficulties in attracting qualified IT specialists [21].
- Regulatory burden: data protection requirements (GDPR) complicate the use of alternative data and require significant investments in compliance.
- Product diversification: the emphasis is shifting toward social and environmental objectives; 55% of MFIs already promote green microloans but face low client awareness [21]. In parallel, the development of the digital euro creates new opportunities and challenges, potentially transforming the payment infrastructure.

In other words, the European model indicates that with a high level of technological penetration, further development and diversification are constrained primarily by economic, human resource, and regulatory factors rather than by technical limits.

The microfinance sector of the Kyrgyz Republic currently combines divergent trends: on the one hand, expansive dynamics are observed (in 2024 the volume of loans issued reached 65 billion soms, and the number of borrowers exceeded 1 million people); on the other hand, industry consolidation continues (over the same period, the number of MFIs decreased by 7 entities). Consumer loans predominate in the portfolio (54%), indicating untapped room for a shift toward productive lending — agriculture (19%) and trade (12%) — as well as for the introduction of more sophisticated financial instruments. Under these conditions, technological modernization is shifting from the category of efficiency enhancement to a basic condition for survival and competition [23, 25].

Implementation of advanced digital solutions in an MFO in Bishkek. The presented practical example serves as a clear verification of the central hypothesis of the article in the context of a nascent market.

Against the backdrop of intensifying competition and consolidation of players, the MFO faced the task of moving beyond standard consumer lending to establish a sustainable competitive advantage. The company made targeted investments in building a key technology stack:

- Internal software credit conveyor. A proprietary LOS system was developed and implemented, fully automating the loan path from application to disbursement in line with global best practices; it became the core driver of operational productivity.
- Automated solvency assessment system. An AI scoring module was integrated into the credit conveyor, ensuring rapid, accurate, and unbiased risk analysis while minimizing the human factor.

As a result, the established technological foundation directly opened opportunities for product diversification and achievement of target benchmarks:

- Development and launch of the product Mortgage. Mortgage lending is a complex long-term product that requires reliable and standardized underwriting, the scaling of which is practically unfeasible with manual processing. The automated

credit conveyor created the necessary technological prerequisites for the launch, demonstrating a transition to a more complex and higher-margin product category.

- Achievement of planned portfolio indicators. Increased speed and transparency of processes enabled scaling of operations and fulfillment of annual portfolio growth plans, confirming the payback of investments in technology.

This case clearly shows that in an emerging market, strategic automation serves as a direct mechanism for diversification and strengthening of market position. The three regions under consideration effectively represent sequential phases of the digital transformation lifecycle: Kyrgyzstan — a stage of strategic necessity for survival and growth; Europe — a stage of mature implementation with a focus on costs, staffing, and regulation; the United States — a stage of long-term outcomes expressed in scaling and the assessment of macroeconomic effects. For greater clarity, Table 2 describes a comparative analysis of the drivers and barriers of digital transformation in MFOs.

Table 2. Comparative analysis of drivers and barriers of digital transformation of MFOs (compiled by the author based on [10, 21, 27]).

Factor	**USA (Scaling model)**	**Europe (Maturity model)**	**Kyrgyzstan (Growth model)**
Key driver	Expansion of outreach, measurement of macroeconomic impact, improvement of customer experience	Increase in operational efficiency, compliance with regulatory and ESG requirements	Competitive advantage, survival amid market consolidation
Main barrier	Cybersecurity, bias risks in AI models, capital scaling	High investment cost (66%), shortage of IT personnel (34%), data protection (GDPR)	Access to capital for investment in technology, lack of local IT expertise, digital literacy of clients
Diversification focus	Increase in credit limits, customized products for repeat clients	Green microloans, social products, alignment with sustainable development goals	Shift from consumer loans to productive (business, agriculture) and complex (mortgage)

For the demonstration of the central propositions of the study, four visual components are included below. Fig. 1 reflects the expected trajectory of the global microfinance market expansion: a stable upward trend underscores the intensifying role of the industry and creates an economic incentive to invest in technological solutions aimed at capturing market share in a rapidly growing segment.

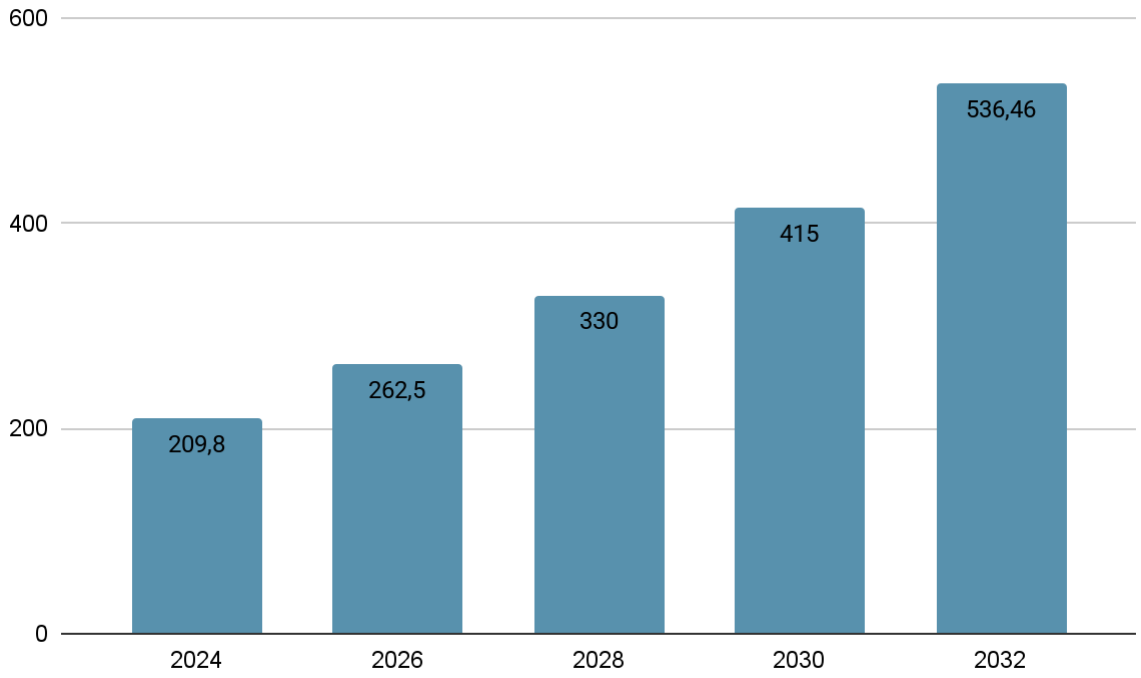

Fig. 1. Global growth of the microfinance market (Forecast until 2032) (compiled by the author based on [5-8]).

Fig. 2 illustrates the key outcome of automation implementation—a sharp decrease in the loan application processing time. This metric serves as a direct indicator of operational efficiency and creates preconditions for resource reallocation and release.

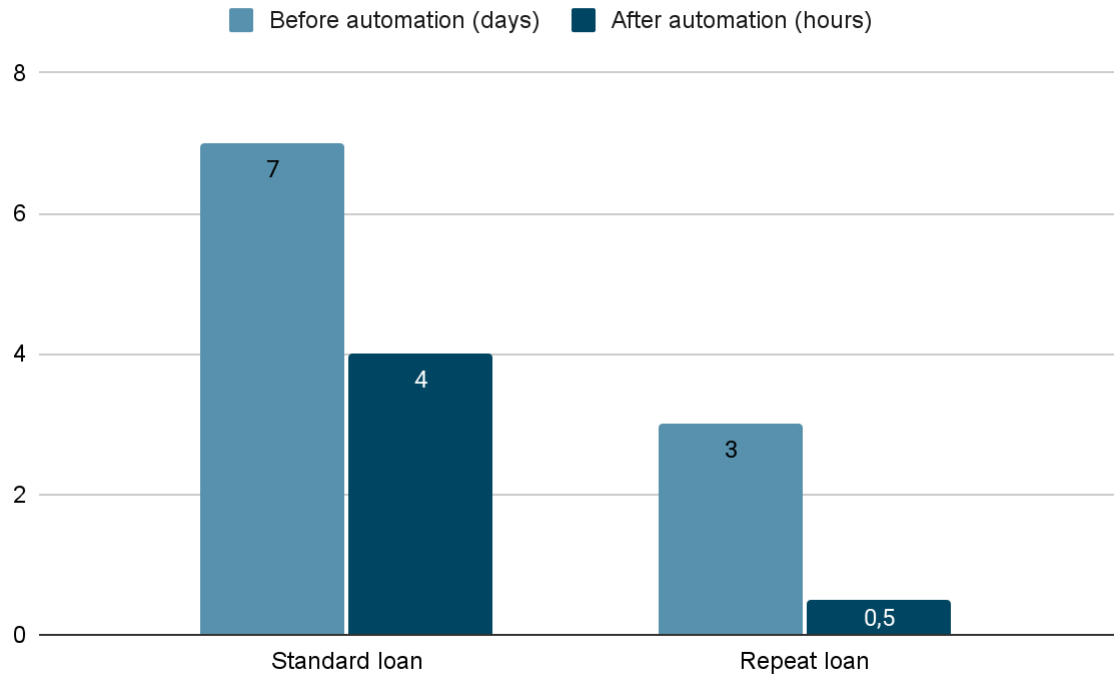

Fig. 2. Comparative reduction in the processing time of a loan application (TAT) (compiled by the author based on [10, 19, 29]).

Fig. 3 records the composition of target directions of microcrediting in Kyrgyzstan. The visualization confirms the dominance of consumer loans, which, on the one hand, represents the current market profile, and on the other hand indicates a substantial reserve for expansion in the segments of entrepreneurship financing, agricultural production, and construction, that is, within the domain of product diversification.

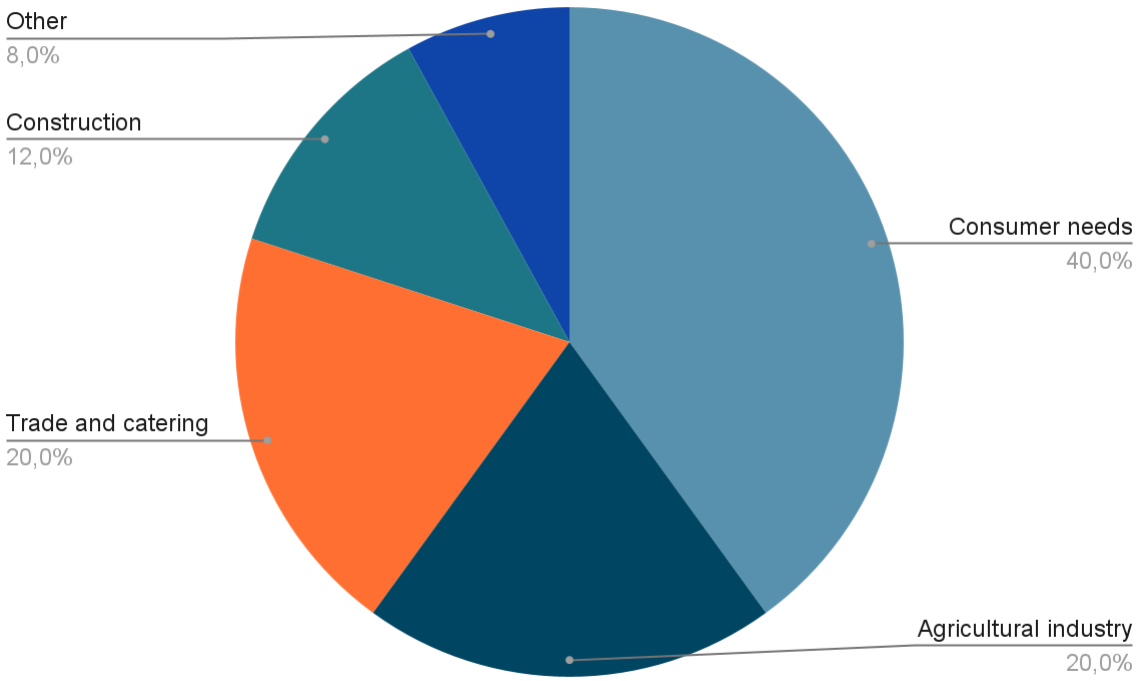

Fig.3. The structure of microcredit goals in Kyrgyzstan (2024) (compiled by the author on the basis of [15, 20, 29]).

Fig. 4 presents a conceptual construct integrating the study's core hypothesis. The diagram explicates the chain of cause-and-effect relations from the implementation of technological solutions to the attainment of strategic objectives, demonstrating that automation functions as a systemic catalyst that initiates processes of diversification and subsequent growth.

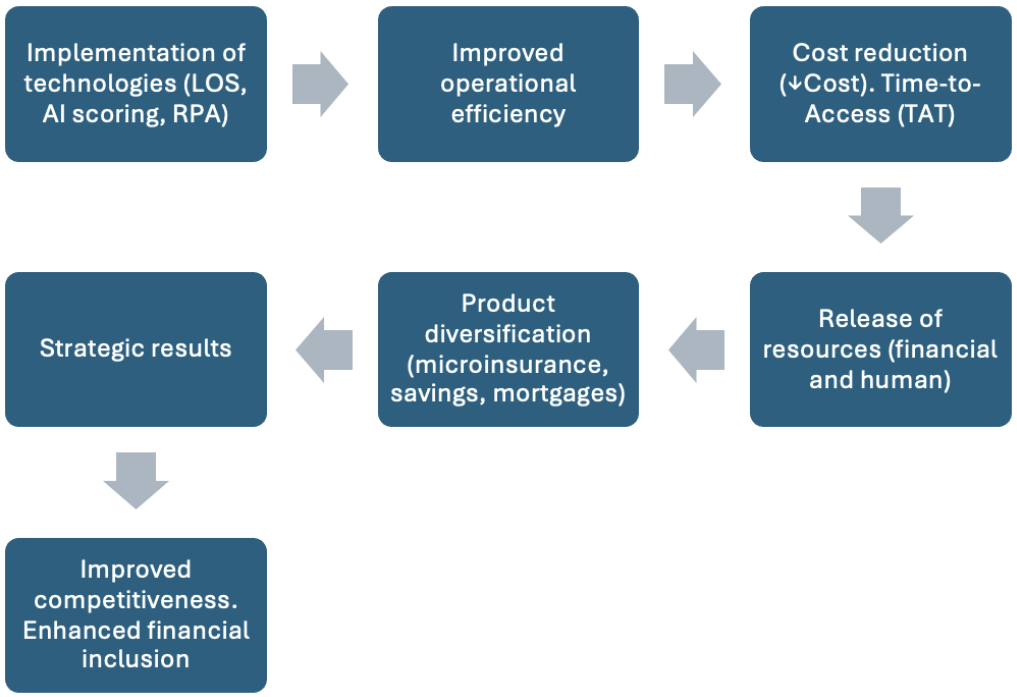

Fig. 4. A model of the catalytic effect of automation on product diversification in MFIs (compiled by the author on the basis of [17, 19, 20]).

Despite the obvious benefits, the digital transformation of MFIs faces numerous obstacles and vulnerabilities that

can slow its progress or even cause it to fail. A calibrated assessment of the situation requires careful analysis of these factors.

- Economic barriers: The most significant constraint is the high upfront investment in the development, acquisition, and integration of comprehensive technological solutions, which is critical for small MFIs with a narrow capital base. European practice indicates that 66% of organizations identify this factor as key. The consequence may be the formation of a digital divide within the microfinance sector: large and technologically mature participants will crowd out smaller and more conservative institutions.
- Organizational and human resource barriers: Effective implementation of technologies requires not only financing but also a profound restructuring of managerial and operational processes. Resistance from employees oriented toward established practices can effectively sabotage change. In parallel, there is an acute shortage of qualified IT personnel capable of designing, implementing, and maintaining complex financial platforms, which is particularly characteristic of developing jurisdictions.
- Technological risks: Increased dependence on digital infrastructure generates new classes of risks. Cybersecurity threats come to the fore — unauthorized access, system compromise, and leaks of client data. Issues of privacy, especially when alternative data sources are used for scoring, require the construction of reliable protection contours and strict compliance with regulatory requirements. Additional complexity is created by potential hyperdependence on black-box AI models with nontransparent decision-making logic, which complicates subsequent audit and risk management.
- Algorithmic bias risks: This is one of the most significant ethical challenges. Models trained on historical datasets can reproduce and even amplify existing social prejudices. If past credit decisions are systematically discriminated against certain social or demographic groups, the algorithm can inherit such patterns and generate biased recommendations, which contradicts the mission of financial inclusion. Mitigating this risk requires the development and implementation of strict frameworks ensuring fairness, accountability, and transparency in AI (Fairness, Accountability, and Transparency in AI) [20, 28, 29].

Conclusion

The conducted study allows several fundamental conclusions to be formulated. The digitalization and automation of basic operational circuits—above all through the deployment of integrated loan origination systems (LOS) and the use of artificial intelligence algorithms in scoring modules—serve not so much as a tactical instrument for efficiency gains as a foundational strategic driver. It is precisely these tools that open for microfinance institutions the possibility of expanding their product lines and moving toward deliberate product diversification.

A comparative analysis of the markets of the United States, Europe, and Kyrgyzstan, supported by a detailed examination of a practical case, demonstrates that the effects of automation—reductions in operating costs, acceleration of decision-making, and the release of human capital—translate directly into the ability of MFIs to design, launch, and manage a broader set of financial solutions. The shift from a mono-product model focused on microcredit to a diversified portfolio that includes savings, insurance, and specialized credit products simultaneously strengthens the competitive positions of MFIs and substantially deepens their social impact, turning them into full-format financial partners for population groups previously underserved by banking services.

The practical significance of the research is multidimensional. For leaders of microfinance organizations, the results presented can serve as a basis for shaping a long-term technology strategy, setting investment priorities, and demonstrating a direct relationship between operational modernization and the emergence of strategic market opportunities. For regulators and lawmakers, the work emphasizes the need for an institutional environment that, on the one hand, stimulates technological innovation in the sector (including co-financing mechanisms and technical assistance programs), and, on the other hand, establishes clear ethical and legal boundaries for the use of AI and data governance, so that digital transformation serves genuine financial inclusion and systemic resilience. The findings presented will be useful to financial-sector managers, technology strategists, and

academic researchers studying the intersection of finance, technology, and economic development.

References

1. Wang S., Li J., Zhao E. Exploring the role of financial technologies and digital trade in shaping trade-adjusted resource consumption in E7 countries //Resources Policy. – 2024. – Vol. 88. https://doi.org/10.1016/j.resourpol.2023.104495.
2. Pattanayak S. K. The Impact of Artificial Intelligence on Operational Efficiency in Banking: A Comprehensive Analysis of Automation and Process Optimization //International Research Journal of Automation and Process Optimization. – 2021. – Vol. 8 (10). – pp. 2049-2061.
3. Afzal A. M. et al. The Impact of Fintech on the Stability of Middle Eastern and North African (MENA) Banks //Risks. – 2025. – Vol. 13 (6). https://doi.org/10.3390/risks13060106.
4. Fersi M., Boujelbéne M., Arous F. Microfinance's digital transformation for sustainable inclusion //European journal of management and business economics. – 2023. – Vol. 32 (5). – pp. 525-559.
5. Microfinance Digitization - CGAP [Electronic resource]. - Access mode: https://www.cgap.org/topics/collections/microfinance-digitization (date accessed: 14.08.2025).
6. Microfinance Market: Global Industry Analysis and Forecast (2025-2032) [Electronic resource]. - Access mode: https://www.maximizemarketresearch.com/market-report/microfinance-market/230628/ (date accessed: 14.08.2025).
7. Microfinance Market Size & Outlook, 2025-2033 [Electronic resource]. - Access mode: https://straitsresearch.com/report/microfinance-market (date accessed: 14.08.2025).
8. Microfinance Market Size, Global Share and Growth 2032 [Electronic resource]. - Access mode: https://www.marketresearchfuture.com/reports/microfinance-market-24895 (date accessed: 18.09.2025).
9. Microfinance Market - Market Size, Sustainable Insights and Growth Report 2024-2031 [Electronic resource]. - Access mode: https://www.datamintelligence.com/research-report/microfinance-market (date accessed: 18.09.2025).
10. Digital Payments and Finance - International Monetary Fund (IMF) [Electronic resource]. - Access mode: https://www.imf.org/en/Topics/digital-payments-and-finance (date accessed: 20.09.2025).
11. Afi S. Digital transformation of microfinance and digitization of microfinance services to deepen financial inclusion in Africa. – 2018. - pp.1-30.
12. Masłoń-Oracz A., Eso A. Financial Inclusion in Smart Cities in the European Union: The Role of Marketplaces and Financial Technology //Studia Europejskie-Studies in European Affairs. – 2024. – Vol. 28 (1). – pp. 189-203.
13. Hartley J. L., Sawaya W. J. Tortoise, not the hare: Digital transformation of supply chain business processes //Business Horizons. – 2019. – Vol. 62 (6). – pp. 707-715.https://doi.org/10.1016/j.bushor.2019.07.006.
14. Jain R. Role of artificial intelligence in banking and finance //Journal of management and science. – 2023. – Vol. 13 (3). – pp. 1-4. https://doi.org/10.26524/jms.13.27.
15. Abdinova M.H. EXPERIENCE IN THE USE OF DIGITAL TECHNOLOGIES IN INNOVATIVE SERVICES OF COMMERCIAL BANKS - 2023. - pp.11-19.
16. AI, Tell me your protocol: The Intersection of Technology and Humanity in the Era of Big Data [Electronic resource]. - Access mode: https://www.researchgate.net/publication/391890748_AI_Tell_me_your_protocol_The_Intersection_of_Technology_and_Humanity_in_the_Era_of_Big_Data (date accessed: 18.09.2025).
17. Umeaduma C. M. G., Adedapo I. A. AI-powered credit scoring models: ethical considerations, bias reduction, and financial inclusion strategies //Int J Res Publ Rev. – 2025. – Vol. 6 (3). – pp. 6647-6661.
18. Rehman M. A., Ahmed M., Sethi S. AI-Based Credit Scoring Models in Microfinance: Improving Loan Accessibility, Risk Assessment, and Financial Inclusion //The Critical Review of Social Sciences Studies. – 2025. – Vol. 3 (1). – pp. 2997-3033.
19. Koefer F., Lemken I., Pauls J. Fairness in algorithmic decision systems: a microfinance perspective. – 2023. - pp.1-22.
20. Offiong U. P. et al. FinTech as a digital innovation in

microfinance companies–systematic literature review //European Journal of Innovation Management. – 2024. – Vol. 27 (9). – pp. 562-581.https://doi.org/10.1108/EJIM-04-2024-0462.

21. Botsari A., Gvetadze S., Lang F. The European Small Business Finance Outlook 2024. – EIF Working Paper, 2024. – Vol. 101. - pp. 1-5.
22. Microfinance in Europe: Survey report 2024 [Electronic resource]. - Access mode: https://social-economy-gateway.ec.europa.eu/microfinance-europe-survey-report-2024-2025-07-14_en (date accessed: 20.08.2025).
23. Survey on the revision of the European Code of Good Conduct for Microcredit Provision [Electronic resource]. - Access mode: https://employment-social-affairs.ec.europa.eu/news/survey-revision-european-code-good-conduct-microcredit-provision-2025-05-27_en (date accessed: 20.08.2025).
24. Listen, Learn, Deliver - Accion Opportunity Fund [Electronic resource]. - Access mode: https://aofund.org/listen-learn-deliver/ (date accessed: 20.08.2025).
25. 2024 Annual Report - Accion International [Electronic resource]. - Access mode: https://www.accion.org/2024-annual-report/ (date accessed: 25.08.2025).
26. Intelligent Automation Powering the Future of CX [Electronic resource]. - Access mode: https://www.listen2025.com/event/4e1afbd7-4538-41ab-9680-0b497c56b225 (date accessed: 25.08.2025).
27. Tseng P. L., Guo W. C. Fintech, credit market competition, and bank asset quality //Journal of Financial Services Research. – 2022. – Vol. 61 (3). – pp. 285-318.
28. Andersson C., Hallin A., Ivory C. Unpacking the digitalisation of public services: Configuring work during automation in local government //Government Information Quarterly. – 2022. – Vol. 39 (1). https://doi.org/10.1016/j.giq.2021.101662.
29. About 54 percent of micro-loans issued in 2024 are directed to consumer needs [Electronic resource]. - Access mode: https://stat.gov.kg/ru/news/okolo-54-procentov-vydannyh-v-2024-godu-mikrokreditov-napravleno-na-potrebitelskie-nuzhdy/ (date accessed: 25.08.2025).