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ENTREPRENEURIAL ECOSYSTEMS AND DIGITAL MONITORING AS DRIVERS OF MAHALLA-LEVEL ECONOMIC DEVELOPMENT

Zafarjon Odiljonovich Tuxtasinov
PhD, independent Researcher, Tashkent Chemical-Technology Institute
ORCID: https://orcid.org/0009-0006-2728-9264
E-mail: tukhtasinovzafar@gmail.com

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Abstract: This article examines the mahalla as an emerging microeconomic institution in Uzbekistan and argues that the sustainable development of local entrepreneurship requires more than the allocation of concessional loans and subsidies. A viable local entrepreneurial ecosystem must integrate needs assessment, capability diagnostics, vocational skills, financial support, market access, digital infrastructure, mentoring, and outcome-based monitoring. The study develops a conceptual management framework that connects external environmental factors, differentiated groups of entrepreneurs, institutional support instruments, digital monitoring, integral assessment, forecasting, and strategic decision-making. It also proposes a Mahalla Entrepreneurship Development Index for classifying local communities according to entrepreneurial potential and support needs. Particular attention is paid to the functions of a "Digital Mahalla" platform, GIS-based mapping, electronic registries, CRM tools, marketplace integration, and real-time feedback mechanisms. The article further substantiates the microcluster approach based on the principles of "one mahalla—one product" and "one mahalla—one priority specialization." The proposed framework is intended to improve the targeting of public resources, reduce the risk of ineffective financing, expand formal employment, strengthen women's and youth entrepreneurship, and transform the mahalla into a practical foundation for inclusive territorial growth.

Keywords: mahalla economy, entrepreneurial ecosystem, local economic development, digital monitoring, entrepreneurship development index, microcluster, targeted financing, inclusive growth, Uzbekistan.

1. Introduction

In contemporary Uzbekistan, the mahalla should no longer be regarded solely as a residential community or a local arena for discussing social problems. It is increasingly becoming a microeconomic space in which household income is generated, self-employment is formalized, small businesses take their first steps, and traditional crafts acquire access to new markets. Every mahalla possesses a distinctive combination of human capital, production traditions, natural resources, infrastructure, and consumer demand. In some communities, garment production and home-based work are well established; in others, handicrafts are transmitted from one generation to another. Elsewhere, service activities, retail trade, livestock breeding, food processing, tourism, or digital services may offer the strongest growth opportunities. The central governance challenge is therefore not merely to identify social need, but to discover economically viable local capabilities and convert them into sustainable sources of income and employment.

The policy relevance of this approach has increased as the mahalla has assumed a more active role in employment creation, poverty reduction, and the coordination of local development initiatives. Presidential Decree No. PF-29 of 3 December 2021 strengthened the priority of entrepreneurship, employment, and poverty-reduction policies at the mahalla level, while

Presidential Decree No. PF-209 of 21 December 2023 aimed to raise the institutional role of the mahalla and make it the first point of response to citizens' problems. These reforms create an opportunity to connect social policy with a more evidence-based model of local economic governance.

However, entrepreneurship cannot be developed sustainably through credit allocation alone. A business may start with money, but it cannot survive solely on money. Its long-term viability depends on knowledge, skills, demand, infrastructure, financial discipline, accounting, marketing, logistics, digital access, and continuous advisory support. In practice, concessional loans and subsidies may sometimes be allocated mainly according to the intensity of applications or the level of household need rather than the commercial viability of the proposed activity. Consequently, financing is provided, but the expected economic and social outcomes do not always materialize. To address this gap, public support should be organized through the sequential chain of "need—potential—business model—financing—monitoring—result."

This article expands the entrepreneurial-ecosystem perspective to the mahalla level. Entrepreneurial ecosystems are generally understood as interdependent configurations of institutions, networks, markets, finance, human capital, culture, and support organizations that enable productive entrepreneurship (Isenberg, 2011; Stam, 2015). At the local-community level, this perspective implies that isolated interventions should be replaced by a coordinated system in which the mahalla, assistant to the khokim, commercial banks, tax authorities, training centers, business associations, digital platforms, and market actors operate as mutually reinforcing components.

2. From Financial Assistance to a Local Entrepreneurial Ecosystem

Before a loan, subsidy, or grant is approved, the prospective entrepreneur's profile should be assessed comprehensively. Such assessment should identify the preferred field of activity, professional skills, previous business experience, household labor resources, expected demand for the product or service, access to premises and utilities, available collateral, financial discipline, and willingness to formalize the activity. This does not imply restricting access to support; rather, it allows support to be matched to the real needs and capabilities of the applicant.

A person with strong practical skills but no business experience may require a small start-up loan combined with bookkeeping and marketing support. A home-based producer may need certification, packaging, branding, and access to an electronic marketplace more urgently than additional debt. A growing microfirm may require logistics, working capital, quality standards, export consulting, or cooperation with larger enterprises. The appropriate policy instrument therefore varies across beneficiaries. Uniform programs may be administratively convenient, but differentiated support is more likely to generate sustainable outcomes.

The post-financing stage is particularly important. During the first six to twelve months, a newly supported entrepreneur should not be left alone. Structured accompaniment can include assistance with tax registration, accounting, cash-flow planning, product costing, customer acquisition, online sales, procurement, loan repayment schedules, quality control, and business expansion. This period is decisive because many microbusinesses face their greatest risks before stable demand and operational routines are established. Continuous mentoring can convert public financial resources into productive assets, whereas the absence of follow-up may turn credit into a repayment burden.

Research on family entrepreneurship in Uzbekistan also highlights its potential contribution to poverty reduction and household income diversification (Ernazarova, 2021). Similarly, practical studies of small-business development in mahallas emphasize the importance of institutional coordination and locally adapted measures (Gafurov, 2025). These observations support the argument that the mahalla economy should be governed as an ecosystem rather than as a collection of isolated credit recipients.

3. A Conceptual Management Mechanism for Mahalla Entrepreneurship

The proposed management mechanism integrates seven interrelated blocks: (1) the external environment; (2) entrepreneurial actors; (3) support and governance instruments; (4) digital data infrastructure; (5) integral assessment; (6) forecasting and feedback; and (7) strategic decisions. The effectiveness of the mechanism depends on the quality of interaction among these blocks rather than on the performance of any single institution.

3.1. External environment

The first block includes macroeconomic conditions, the regulatory framework, institutional quality, demographic characteristics, competition, physical infrastructure, and the level of digitalization. These factors directly shape the opportunities and constraints faced by local entrepreneurs. Reliable electricity, roads, internet access, water supply, production premises, legal protection, and transparent administrative procedures may be as important as the amount of financing. For a modern entrepreneur, timely information, predictable rules, digital public services, and access to markets are critical productive resources.

3.2. Entrepreneurial actors

The second block comprises family businesses, self-employed persons, individual entrepreneurs, microfirms, small enterprises, artisans, service providers, agricultural producers, cooperatives, and cluster initiatives. Their economic needs differ substantially. Family businesses may prioritize microfinance and practical skills; artisans may require design, branding, certification, and tourism-oriented sales channels; small firms may need larger markets, logistics, electronic platforms, and contractual relations with anchor companies. A successful mahalla policy must therefore segment entrepreneurs and design corresponding support packages.

3.3. Governance and support instruments

The third block consists of mechanisms for identifying entrepreneurial initiatives, mobilizing local resources, providing finance, granting tax or credit incentives, organizing training, delivering consulting and mentoring, facilitating cooperation, and expanding marketing and sales channels. At the mahalla level, entrepreneurship management should not be reduced to administrative instructions. It should function as an organizational-economic partnership in which public institutions reduce transaction costs and market participants create commercial value.

Table 1. Differentiated support packages for mahalla entrepreneurs

Entrepreneurial group	Typical constraint	Priority support	Expected outcome
Prospective self-employed persons	Limited skills, capital, and market knowledge	Vocational training, microgrant or microloan, registration assistance, mentor	Formalized income-generating activity
Family businesses and home-based producers	Low productivity, weak packaging and sales	Equipment finance, costing, branding, e-commerce access	Higher household income and market reach
Artisans	Fragmented production and limited commercialization	Design support, certification, tourism channels, collective brand	Preservation of craft and higher value added
Microfirms and small enterprises	Working-capital and logistics constraints	Credit line, procurement links, logistics, quality standards	Business expansion and job creation
Growth-oriented firms	Limited access to large or foreign markets	Export consulting, digital marketing, cluster integration	Scaling, exports, and local supply-chain development

4. Integral Assessment of Mahalla Entrepreneurship Development

Evidence-based allocation requires a multidimensional assessment of each mahalla. Decisions concerning which sector to promote, where finance is needed, where vocational training should be prioritized, and where infrastructure is the binding constraint should be based on indicators rather than intuition. A Mahalla Entrepreneurship Development Index (MEDI) can provide such an analytical foundation.

$MEDI^{-} = \Sigma_i w_i z_{ij}, \quad \Sigma_i w_i = 1$

where MEDI_j denotes the composite entrepreneurship-development score of mahalla j; z_ij is the normalized value of indicator i for mahalla j; and w_i is the weight assigned to indicator i. Normalization may be performed through min-max transformation, while weights can be determined by expert assessment, the Analytic Hierarchy Process, entropy weighting, or a combined method. The formula is proposed as a methodological extension and should be empirically calibrated before official application.

Table 2. Proposed structure of the Mahalla Entrepreneurship Development Index

Dimension	Illustrative indicators	Indicative weight	Policy interpretation

Dimension	Illustrative indicators	Indicative weight	Policy interpretation
Business activity	Active enterprises per 1,000 residents; new businesses; survival rate; family-business share	20%	Intensity and sustainability of entrepreneurship
Employment and inclusion	Employment rate; jobs created; women and youth participation; formalization of informal work	20%	Social effect and inclusiveness
Finance and efficiency	Credit access; repayment discipline; subsidy/grant effectiveness; investment per job	15%	Quality of financial intermediation
Market and digital access	E-commerce use; marketplace participation; sales beyond the mahalla; digital payments	20%	Ability to reach customers and scale
Human capital and support	Training completion; mentoring coverage; business literacy; advisory-service use	15%	Entrepreneurial capability
Infrastructure and institutions	Internet, electricity, roads, premises, registration time, coordination quality	10%	Enabling environment

On the basis of the composite score, mahallas may be classified into four management categories: high-potential, medium-potential, low-potential, and priority-support mahallas. The purpose of classification is not to label communities permanently, but to select the most appropriate intervention. A high-potential mahalla may need export promotion, branding, e-commerce, logistics, and investment facilitation. A priority-support mahalla may first require skills training, basic infrastructure, start-up capital, and intensive advisory services. Thus, the index supports equitable targeting rather than mechanically equal distribution.

The classification should be dynamic. Scores must be updated periodically, and changes should be interpreted in relation to the interventions implemented. A declining loan-repayment rate, for example, may signal weak business selection, an external market shock, or inadequate mentoring. A rise in the number of registered businesses without corresponding growth in sales and

employment may indicate formal registration without genuine economic activity. For this reason, output indicators should be complemented by outcome and sustainability indicators.

5. Digital Monitoring and the "Digital Mahalla" Platform

The proposed system cannot function effectively without integrated digital governance. A "Digital Mahalla" platform should combine the mahalla economic passport, GIS mapping, an electronic registry of entrepreneurs, a customer-relationship-management module, training records, credit and subsidy information, infrastructure data, marketplace links, and real-time monitoring dashboards. The objective is not to create another isolated database, but to establish a single decision-support environment.

The platform should register residents who intend to start a business, active entrepreneurs, recipients of loans and subsidies, participants in vocational courses, infrastructure needs, and project results. Each supported project would have a digital profile containing the applicant's capabilities, business plan, type of support, milestones, repayment information, employment outcomes, sales dynamics, identified problems, and corrective measures. Authorized institutions could then see which projects are operating, which are delayed, and where additional intervention is required.

GIS mapping would reveal the spatial distribution of businesses, unemployed residents, infrastructure gaps, raw-material sources, transport connections, and market facilities. Such visualization can prevent the excessive concentration of identical businesses in areas with insufficient demand and can help identify opportunities for complementary activities. For example, a community with several garment producers may benefit from a shared cutting center, design service, packaging facility, or logistics hub rather than another uncoordinated sewing workshop.

Digital monitoring should also strengthen accountability. Each problem can be recorded through the chain "problem—cause—responsible institution—solution—deadline—result." Delays in credit disbursement, collateral difficulties, registration barriers, tax questions, weak sales, or rising raw-material costs should trigger an assigned response and a measurable resolution status. This converts monitoring from retrospective reporting into an active management process.

6. The Microcluster Approach: One Mahalla—One Priority Specialization

The microcluster approach offers substantial potential for revitalizing the mahalla economy. Under the principles of "one mahalla—one product" or "one mahalla—one priority specialization," the natural, historical, and economic advantages of a territory are identified and organized into a coordinated value chain. Entrepreneurs engaged in identical or complementary activities can share raw-material procurement, training, equipment, branding, marketing, logistics, quality control, and sales channels.

Collective organization reduces the isolation of small producers. Joint purchasing can lower input costs, shared services can improve product quality, and a collective brand can increase consumer trust. Cooperation also enables microproducers to fulfill larger orders that would be impossible individually. The role of the public sector is not to administratively impose specialization, but to facilitate cooperation where market evidence, skills, and local traditions justify it.

Microclusters should be linked to anchor buyers, tourism routes, regional wholesale markets, public procurement opportunities, and online marketplaces. Their performance should be measured not only by the number of participants, but also by sales growth, productivity, quality improvements, new jobs, women's and youth participation, and the proportion of output sold outside the local community.

7. Social and Inclusive Outcomes

The performance of mahalla entrepreneurship should not be measured only by profit or by the number of registered firms. Its most important value lies in its social and territorial effects. When entrepreneurship develops, household income rises, unemployment and underemployment decline, the economic participation of women and young people expands, poverty risks are reduced, and confidence in earning income through productive work increases.

Accordingly, the monitoring framework should include the number of sustainable jobs created, the share of women and youth among entrepreneurs, income growth among low-income households, the transition from informal to formal employment, business survival after twelve and twenty-four months, and improvements in repayment discipline. These indicators allow decision-makers to distinguish temporary activity from durable local development.

Inclusive entrepreneurship also requires attention to accessibility. Training schedules, collateral requirements, digital interfaces, business premises, and market information should be designed so that women with care responsibilities, young first-time entrepreneurs, persons with disabilities, and residents of remote areas can participate effectively. A local ecosystem becomes socially valuable when it expands opportunity rather than merely rewarding those who already possess stronger resources and networks.

8. Implementation Algorithm and Institutional Responsibilities

The proposed framework may be implemented through an eight-stage cycle. First, the mahalla's economic profile and household capabilities are mapped. Second, entrepreneurial ideas and existing businesses are segmented by sector, maturity, and support need. Third, market demand, infrastructure, and financial viability are assessed. Fourth, an individualized support package is prepared. Fifth, financing and non-financial services are delivered simultaneously. Sixth, the entrepreneur receives structured accompaniment during the early operating period. Seventh, digital monitoring measures financial, business, employment, and social outcomes. Eighth, results are evaluated and used to redesign the next cycle of local interventions.

Institutional responsibilities should be clearly distributed. The mahalla and the assistant to the khokim can identify households, local resources, and emerging problems. Banks can assess financeability, design suitable products, and monitor repayment. Tax authorities can provide advisory support on formalization and compliance. Training centers and universities can develop practical business skills and mentoring programs. Chambers, associations, and large firms can facilitate market access, cooperation, and supplier development. Local government should coordinate the system, address infrastructure bottlenecks, and ensure that data are used for decisions rather than only for reporting.

The effectiveness of the mechanism depends on feedback. When a project fails, the central question should not be limited to whether the borrower repaid the loan. Decision-makers should

determine whether the failure arose from weak selection, insufficient skills, low demand, inadequate infrastructure, delayed financing, poor mentoring, or an external shock. Such diagnostic learning enables the support system to improve over time.

9. Conclusion

A new model of mahalla entrepreneurship development requires a transition from the simplified sequence of "individual initiative—credit—activity" to the more comprehensive system of "needs identification—potential assessment—resource integration—business launch—market access—digital monitoring—result evaluation." In this model, the mahalla becomes a microinstitution that activates local economic potential; local government becomes a coordinating center; banks become financial partners; tax authorities become advisory institutions; and training organizations become drivers of human-capital development.

The central contribution of the proposed approach is the integration of the entrepreneurial-ecosystem concept with a digital, indicator-based mechanism of local governance. The Mahalla Entrepreneurship Development Index can help classify communities and target resources, while the "Digital Mahalla" platform can provide continuous feedback on projects, constraints, and outcomes. The microcluster model can reduce fragmentation, create local brands, lower costs, and connect small producers to larger markets.

Ultimately, the mahalla can become more than a unit of social administration. With differentiated support, coordinated institutions, reliable data, and outcome-based management, it can serve as a practical foundation for inclusive territorial growth, sustainable employment, household income generation, and the development of competitive local entrepreneurship.

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