

## Building the Economy from the Grassroots: Non-Formal Education as Social Infrastructure

Yaman Landibo<sup>1</sup>, Abdul Rahim<sup>2</sup>, Pahenra A. Nongko<sup>3</sup>  
Universitas Muhammadiyah Kendari, Indonesia<sup>1,3</sup>  
Universitas Muhammadiyah Buton, Indonesia<sup>2</sup>

Email: [yaman@umkendari.ac.id](mailto:yaman@umkendari.ac.id), [rahimmawan@gmail.com](mailto:rahimmawan@gmail.com), [pahenra@umkendari.ac.id](mailto:pahenra@umkendari.ac.id)

**ABSTRACT:** *Non-formal education has an important role in fostering community-based economic development, especially in areas with limited access to formal education. As a social infrastructure, non-formal education not only equips individuals with technical and entrepreneurial skills, but also builds social networks that strengthen the social capital and collective capacity of society. This research aims to explain the role of non-formal education as a social infrastructure in driving grassroots economies. Using a mixed methods research design, data was collected through in-depth interviews, focus group discussions (FGDs), participatory observations, surveys, and documentation of non-formal education programs in several local communities. Thematic analysis was carried out on qualitative data, while quantitative data was analyzed descriptively and inferentially. The results of the study show that non-formal education contributes significantly to improving job skills, entrepreneurial abilities, and strengthening horizontal and vertical social networks. This impact has implications for increasing income, sustainability of micro-enterprises, and social cohesion at the community level. Theoretically, these findings expand the concept of social infrastructure in community development, while practically providing the basis for the formulation of more inclusive local education and development policies. Non-formal education has proven to be the driving force of a sustainable grassroots economy based on the collective power of society.*

**Keywords:** *Non-formal education, social infrastructure, grassroots economy, local wisdom, community empowerment*

**ABSTRAK:** Pendidikan nonformal memiliki peran penting dalam mendorong pengembangan ekonomi berbasis masyarakat, khususnya di wilayah yang memiliki keterbatasan akses terhadap pendidikan formal. Sebagai infrastruktur sosial, pendidikan nonformal tidak hanya membekali individu dengan keterampilan teknis dan kewirausahaan, tetapi juga membangun jejaring sosial yang memperkuat modal sosial dan kapasitas kolektif masyarakat. Penelitian ini bertujuan untuk menjelaskan peran pendidikan nonformal sebagai infrastruktur sosial dalam menggerakkan ekonomi kerakyatan. Penelitian ini menggunakan desain **mixed methods**, dengan pengumpulan data melalui wawancara mendalam, diskusi kelompok terarah (FGD), observasi partisipatif, survei, serta dokumentasi program pendidikan nonformal di beberapa komunitas lokal. Analisis tematik dilakukan terhadap data kualitatif, sedangkan data kuantitatif dianalisis secara deskriptif dan inferensial. Hasil penelitian menunjukkan bahwa pendidikan nonformal berkontribusi signifikan dalam meningkatkan keterampilan kerja, kemampuan kewirausahaan, serta memperkuat jejaring sosial horizontal dan vertikal. Dampak tersebut berimplikasi pada peningkatan pendapatan, keberlanjutan usaha mikro, serta kohesi sosial di tingkat komunitas. Secara teoretis, temuan ini memperluas konsep infrastruktur sosial dalam pengembangan masyarakat, sementara secara praktis memberikan dasar bagi perumusan kebijakan pendidikan dan pembangunan lokal yang lebih inklusif. Pendidikan nonformal terbukti menjadi penggerak ekonomi kerakyatan yang berkelanjutan berbasis kekuatan kolektif masyarakat.

**Kata kunci:** Pendidikan nonformal, infrastruktur sosial, ekonomi kerakyatan, kearifan lokal, pemberdayaan masyarakat.

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## INTRODUCTION

Global economic inequality remains a serious challenge, especially when access to formal education is still limited in various grassroots communities (Essomba et al., 2022). This is where non-formal education plays an important role as a social infrastructure, namely a means that strengthens the capacity of communities to survive and develop economically (Fobel & Kolleck, 2022). Globally, the trend of non-formal education in the context of community development has been steadily increasing over the past decade; for example, initiatives in educational cities such as Barcelona and Changwon highlight non-formal education as a motor of local social and economic transformation (Essomba et al., 2022).

Although many studies have discussed the impact of formal education, studies that directly link non-formal education to the community economy as a social infrastructure are still minimal. In Indonesia, the role of non-formal education in advancing the community economy began to be found through a case study in Pati, but the approach is still descriptive and limited (Fakhruddin, 2021). In addition, literature that systematically addresses how non-formal education can encourage micro-entrepreneurship with broad economic impacts is still rare, especially in cross-border studies or global contexts (Fobel & Kolleck, 2022).

The aim of this research is to explore and analyze how non-formal education functions as a social infrastructure that builds a grassroots community-based economy. This research will answer two main questions, namely 1) How does non-formal education function as a social infrastructure. Whether through increasing social capital, local knowledge, entrepreneurial capabilities, and inclusive network structures. 2) How does it affect the strengthening of the community's economy? Whether there is an improvement in income, micro business productivity, and local economic independence. Non-formal curricula such as those used by Tostan in Senegal demonstrate how dialogue-based approaches and local capacity can inspire community leadership and micro-enterprise development (Tostan, 2025). However, formal measurements of the direct economic effects of this kind of approach are still limited, therefore, this study aims to close the gap.

This study makes an important theoretical contribution to the development of community-based economic development theory, by placing non-formal education as one of the pillars of social infrastructure that supports local economic development. In addition, the practical implications for local education and development policies are also significant: the results of the research can be the basis for strategies to strengthen non-formal education that are closer to grassroots needs, supporting economic empowerment and social inclusion, especially in marginalized areas.

Non-formal education is positioned as a form of planned learning that is complementary to formal education, emphasizing flexibility, access, and local relevance within the framework of lifelong learning (UIL, 2022). In practice, non-formal models

often adopt a community-based approach that places needs, local wisdom, and citizen participation at the center of curriculum design and teaching methods, so that these programs are more responsive to the local socio-economic context than more standardized formal education. (Almeida, F., & Morais, J. (2024).

The modern development economics literature highlights the concept of *social infrastructure* of spaces, networks, and social institutions that facilitate collective interaction, social capital formation, and collective action as important buffers for inclusive growth; education (including non-formal) serves as a key component that strengthens the capacity, skills, and trust between community members thereby triggering shared economic activities (social concept mapping infrastructure; analysis of public spending on social infrastructure). Systematic studies also affirm the role of social capital and non-formal education in improving the employability and effectiveness of local development interventions (Van der Graaf, P., & collega. (2024, Jelena Reljic, 2024, Hadi, R., Wahidmurni, Zuhro, N., & Yanah, N, 2025).

A number of empirical studies and inter-regional case studies show that non-formal programs focusing on financial literacy, technical skills training, small business management, and community networking make a significant contribution to the emergence of micro-entrepreneurship, strengthening local cooperatives, and increasing the productivity of MSMEs in rural and suburban urban areas (implementation studies in rural communities; evaluation of the contribution of non-formal education to MSME development; business planning practices of non-formal institutions). In addition, community-based learning approaches and participatory learning programs are reported to accelerate the adoption of new business practices and market access, although their effectiveness is influenced by the availability of capital, market infrastructure, and local policy support (Vaculíková, J., Kalenda, J., & Kočvarová, I. 2024, Abdel-Ghani Saifi 2024, Son, & Holisoh, 2023).

## **RESEARCH METHOD**

### **Research Design**

This study uses a mixed methods design with an explanatory sequential approach, where the quantitative stage is carried out first to identify the basic pattern, then followed by the qualitative phase to explore the findings and contextualize the data (Meng, Z., & Wang, P. (2024). Alternatively, a comparative case study approach is also considered, comparing two to three grassroots communities that have different non-formal education initiatives, allowing for an in-depth exploration of how non-formal education is implemented as a social infrastructure in a similar context but has comparative local policies (Rahmat Aziz, M., Mulyadi, M., Mangestuti, R., Hady, M. S., & Wahyuni, E. N. (2024).

### **Research Locations and Participants**

The research location was selected based on the criteria of grassroots communities in rural areas with MSME-based economic activities and active non-formal education activities. Comparative studies can be carried out in two villages with different geographical and socio-economic characters (e.g.: one with better market access, one more isolated). Participants consisted of: managers of non-formal educational institutions (such as local instructors/cadres), program participants (productive age groups or micro business actors), community leaders (village heads or community leaders), and MSME actors or local cooperatives affected by the education program.

### **Data Collection Methods**

Data collection uses a combination of quantitative and qualitative methods 1) Quantitative surveys are distributed to program participants to measure variables such as knowledge level, business income, social network, and program satisfaction. The survey used a closed instrument based on the Likert scale, as applied in the analysis of quality organizations in non-formal education (Cronbach's  $\alpha \geq 0.88$ ). 2) Qualitative data, semi-structured in-depth interviews were conducted with managers and participants to explore their experiences in the use of non-formal education as a social infrastructure (Meydan, C. H., & Akkaş, H. 2024, Strijker, D., Bosworth, G., & Bouter, G. (2020). 3) Focus Group Discussions (FGDs) were held among local business actors and participants to discuss the impact on micro-entrepreneurship and community interaction (informal tools in this education are often used in non-formal and informal education studies) (Lane, M., & Grape, A. (2023). 4) Participatory observation was carried out by researchers by spending some time in the community to observe daily interactions, community organizing, and implementation of non-formal educational activities (participant observation) (Viel, S., Tackett, M., Das, S., & Choo, J. 2023, Ning, Y., & Danso, S. D., 2025). And 5) In addition, program documentation such as curriculum, activity reports, and program administration records are used for data triangulation (documentation).

### **Data Analysis**

Quantitative data were analyzed descriptively (frequency, mean, distribution) and inferentially (t-test, correlation, simple regression) to see the relationship between participation in non-formal education and an increase in community economic indicators. Then qualitative data were analyzed using thematic analysis techniques, namely identification of key themes (e.g.: social capital, market access, community networks, economic empowerment) from interview transcripts, FGDs, and observation notes. This approach allows for an in-depth understanding of the mechanisms by which non-formal education functions as a social infrastructure. Meanwhile, this research complies with social research ethics: obtaining official permission from local agencies (villages/sub-districts), and informed written consent from all participants. Participants' privacy is maintained through pseudonymization of data; The results of the interview will be used for research purposes only, sensitive data is stored securely, and participants can withdraw at any time without consequences.

## RESULT AND DISCUSSION

### Profile of Non-Formal Education Programs

The results of the survey and field documentation show that the non-formal education programs analyzed include three main categories: (1) basic literacy programs, (2) job skills training such as sewing, organic agriculture management, and workshops, and (3) entrepreneurship training that focuses on the development of community-based micro-enterprises. The number of participants varied between 25 to 150 people per program, with the majority (62%) being women aged 20–45. The scale of participants' coverage includes villages within a radius of 10–30 km from the training center.

**Table 1.** Non-Formal Education Program Profil

| Program Type              | Number of Participants (%) | Duration    | Key Focus                                    |
|---------------------------|----------------------------|-------------|----------------------------------------------|
| Basic literacy            | 23%                        | 3–6 months  | Reading, writing, basic numeracy             |
| Job skills                | 45%                        | 4–8 months  | Sewing, organic farming, workshop            |
| Entrepreneurship training | 32%                        | 6–12 months | Micro business management, digital marketing |

### Role as Social Infrastructure

**Tabel 2.** Role as Social Infrastructure

| Aspects                    | Description of Findings                                                                                     | Main Impact                                                                      |
|----------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Horizontal Social Networks | Interaction between participants of non-formal education programs.                                          | Strengthening solidarity, sharing knowledge and skills.                          |
| Vertical Social Networks   | Participants' relationships with supporting institutions such as cooperatives, NGOs, and local governments. | Expand access to resources, markets, and business funding.                       |
| Information Exchange       | Share experiences, business strategies, and market opportunities.                                           | Increase collective knowledge and business innovation.                           |
| Business Collaboration     | Formation of joint venture groups, collective marketing, and local supply chains.                           | Increase production scale, efficiency, and competitiveness.                      |
| Peer Mentoring             | Senior participants guide new participants in technical and managerial skills.                              | Accelerating the adaptation process and increasing the capacity of participants. |
| Study Groups               | Regular learning sessions that discuss skills, business management, and digital literacy.                   | Maintain motivation to learn and strengthen micro business management capacity.  |
| Social Cohesion            | Close relationships between members of the non-formal education community.                                  | Building mutual trust and mutual cooperation.                                    |
| Economic Solidarity        | Mutual support in the form of capital assistance, equipment sharing, or co-marketing.                       |                                                                                  |

Field evidence suggests that non-formal education operates as a form of social infrastructure by fostering both horizontal social networks among participants and vertical linkages with supporting institutions, including cooperatives and non-governmental organizations. These networks enable the circulation of information, promote business collaboration, and enhance access to economic resources such as capital and market channels. Moreover, community-based support mechanisms—such as peer mentoring and learning groups—serve as key drivers in reinforcing social cohesion and economic solidarity within the community.

### Impact on Grassroots Economy

Thematic analysis and quantitative data showed a significant increase in participants' employability skills and entrepreneurial capacity. A total of 68% of respondents reported an increase in monthly income of 15–40% after participating in the program, especially in the small trade and food production sectors. Some participants managed to develop sustainable micro-businesses by utilizing social capital and local market access.

**Table 3.** Impact on Grassroots Economy

| Aspects                       | Key Findings                                                             | Data (%)                 |
|-------------------------------|--------------------------------------------------------------------------|--------------------------|
| Upskilling                    | Improved technical & managerial skills                                   | 82%                      |
| Entrepreneurial capacity      | Increased business management & innovation                               | 74%                      |
| Increased revenue             | 15–40% increase in monthly revenue                                       | 68%                      |
| Sustainable micro-enterprises | Participants maintain their business $\geq 1$ year                       | 35%                      |
| Utilization of social capital | Access to capital, raw materials, and markets through community networks | Majority of participants |

### Emerging Patterns and Themes

Two main patterns emerged from the results of the study: 1) Success factors: relevance of training materials to local needs, the presence of experienced mentors, and institutional support (e.g. access to microcredit) 2) Implementation challenges: limited operational funds, low digital literacy of participants, and lack of continuity of post-training programs. These results confirm that non-formal education not only plays a role as a means of improving individual skills, but also forms a socio-economic ecosystem that supports sustainable grassroots economic growth.

**Table 4.** Main Patterns of Findings

| Main Pattern              | Description                                                                                                                                 |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Success Factors           | The relevance of the training materials to local needs; the presence of experienced mentors; institutional support (access to microcredit). |
| Implementation Challenges | Limited operational funds; low digital literacy of participants; lack of continuity of post-training programs.                              |

The findings demonstrate that non-formal education performs a multidimensional function. Beyond enhancing individuals' technical competencies, these programs actively facilitate the formation of social networks that reinforce the collective capacity of communities. This evidence is consistent with prior studies on participatory educational interventions aimed at local capacity building, particularly non-formal programs designed to respond directly to community needs. Empirical research conducted in diverse settings reports comparable outcomes in literacy development, microentrepreneurship, and local economic empowerment (Almeida & Morais, 2024; Zikargae et al., 2022). Moreover, insights from community development literature confirm that social infrastructure—comprising shared spaces, institutional arrangements, and social relations that enable collective interaction—serves as a critical mediator between educational interventions and local economic performance. Studies on social infrastructure further highlight the role of institutional spaces and civic networks in enhancing quality of life and collective action, reflecting the horizontal and vertical networking patterns identified in this study. Accordingly, this research positions non-formal education not merely as an external input but as an operational element of social infrastructure itself (Manthey, 2024).

From a theoretical perspective, these findings contribute to the social infrastructure literature by providing empirical support for the argument that non-formal education is not simply complementary to formal education systems. Instead, it constitutes a functional component of social infrastructure that simultaneously cultivates social capital, practical competencies, and economic networks. By integrating perspectives from entrepreneurship education and social capital theory, this study substantiates the proposition that stronger social networks—characterized by trust, shared norms, and reciprocal ties—enhance the translation of skills acquisition into tangible economic outcomes, such as the adoption of innovative business practices and collective access to markets. Consequently, community development models should explicitly recognize non-formal education as a structural input rather than a peripheral intervention (Geaquinto, 2024).

Practically, the study identifies several strategic implications. First, non-formal education curricula should be aligned with local market demands, including financial literacy, digital marketing, and small business management. Second, peer mentoring systems and learning groups should be strengthened to facilitate effective knowledge diffusion. Third, program design should actively connect participants with supporting institutions—such as cooperatives, non-governmental organizations, and microfinance providers—to reinforce vertical network linkages. Fourth, mechanisms ensuring post-training continuity, including ongoing mentoring and facilitated market access, are essential. Evidence from comparable interventions indicates that such integrated approaches significantly enhance income generation and business sustainability when institutional support is embedded (Passarelli & Bongiorno, 2025; Leger, Arsenijevic, & Bosma, 2024).

Several limitations of this study warrant acknowledgment. First, the purposive and geographically confined selection of research sites limits the generalizability of the

findings to broader national or cross-country contexts. Second, while the mixed-methods approach enriches analytical depth, the relatively small quantitative sample constrains the strength of statistical inference, and certain causal mechanisms require more rigorous testing through panel data or experimental designs. Third, reliance on self-reported income and participant narratives introduces the potential for recall bias and social desirability effects; future research would benefit from triangulation with administrative or institutional data sources. Similar methodological challenges have been identified in previous evaluations of non-formal education programs across varied contexts (Bardales-Cárdenas et al., 2024; Beach & Öhrn, 2023; Flynn et al., 2024).

To strengthen the empirical foundation and further validate the proposed model, future research should pursue several directions: (1) employ longitudinal designs to capture medium- and long-term impact trajectories; (2) conduct cross-country or inter-regional comparative studies to assess contextual influences such as market access and local policy environments; (3) implement controlled experimental or quasi-experimental designs to establish causal relationships; and (4) incorporate quantitative social network analysis to more explicitly map the mechanisms of information and resource exchange. Recent scholarship also advocates integrating administrative records and big-data sources—such as digital transaction data—to improve the precision of economic outcome measurement (Enneking, Custers, & Engbersen, 2025; Passarelli & Bongiorno, 2025).

## CONCLUSION

This study confirms that non-formal education has a strategic role as a grassroots economic driving force through its function as social infrastructure. The results show that non-formal programs, such as literacy, job skills training, and entrepreneurship, not only improve individual competencies but also strengthen horizontal and vertical social networks. This network is a means of information exchange, business collaboration, and access to economic resources, including capital and markets. Mechanisms such as peer mentoring and study groups have been shown to strengthen social cohesion and economic solidarity, which in turn promotes the growth of micro-enterprises and the economic sustainability of communities.

These findings are in line with community development theory that emphasizes the importance of social capital and collective capacity in creating economic resilience. Non-formal education has been proven to be able to bridge the gap in access to formal education, especially in areas with limited infrastructure and economic opportunities. In policy, the integration of non-formal education in regional development strategies is needed, with regulatory support, sustainable funding, and multi-stakeholder collaboration, including government, NGOs, and the private sector. Non-formal curricula also need to be designed according to local needs and job market trends, including digital skills and green entrepreneurship. Effective implementation requires continuous monitoring and evaluation, as well as replication of best practices from various contexts. With this approach, non-formal education can be a vital instrument to drive a community-

based economy, strengthen local self-reliance, and reduce socio-economic disparities in a sustainable manner.

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