# The Use of Technology to Provide Training for Microentrepreneurs in Emerging Economies

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## ABSTRACT

This review explores the impact of using technology to provide training for microentrepreneurs in emerging economies, focusing on different training models and their potential to improve business performance. This review analyses the barriers faced by microentrepreneurs in developing countries due to gaps in infrastructure and digital access, as well as the limitations of technology in providing training. In addition, it examines how theoretically different settings might influence the adoption and influence of digital training. Findings reveal that online training tends to have limited positive effects on business performance, largely due to low digital literacy levels among microentrepreneurs. Due to economic and social constraints, female and rural microentrepreneurs are less likely to adopt digital technologies, limiting the impact of digital training on the most vulnerable microentrepreneurs.

## Introduction

Microentrepreneurs, small-scale business owners who typically have limited resources, play a critical role in the development and well-being of societies (Herrington & Kew, 2017). They often operate in informal sectors, and although they face significant barriers to progress, they contribute to job creation and local economic development. Microenterprises are the primary source of job creation in many less-developed countries, and they tend to be more innovative and sustainable than other firms in the private sector (Sobir, 2020). Sustainable business models provide strong economic opportunities that are worth $12 trillion, and they are projected to create 380 million jobs by 2030, with more than half of these jobs being located in developing countries (*Better Business, Better World,* 2017).

Multiple areas of training are required for microentrepreneurs, such as business and management practices, financial and marketing knowledge, as well as social skills training. This is because many microentrepreneurs in developing countries fail to implement these standard business practices commonly employed by small businesses in developed countries (McKenzie & Woodruff, 2014). This includes keeping formal records, separating household and business finances, having regular marketing strategies, and working towards clear financial targets (McKenzie & Woodruff, 2014).

In addition to facing training gaps, microentrepreneurs in emerging economies also deal with challenges such as limited access to capital, inadequate infrastructure, and limited access to training opportunities. As a result, digital and online training is becoming an increasingly popular mode, especially after the COVID-19 pandemic which forced educational systems to experiment with online teaching (Aristovnik et al., 2023). There are several different types of virtual training, such as online platforms, chat forums, AI and human mentoring, and WhatsApp messaging. These trainings aim to effectively engage participants, encourage the adoption of strong business practices, create meaningful connections between mentors and mentees, and ensure long-lasting impacts.

Through online training and mentoring programs, microentrepreneurs can develop their skills and improve their business performance. However, there are several factors that researchers and policy-makers must consider. There is a significant digital and financial divide between emerging economies and highly developed countries which creates disparities in access to essential financial services that could help elevate microenterprises. There are also

multiple provision methods for training, which should be carefully considered along with the potential limitations of online educational materials. In addition, rural and women microentrepreneurs face unique challenges. As a result, it is important to study the delivery and impact of digital training as it is likely to become more widespread with time.

This paper will review existing research on the effectiveness of online training for microentrepreneurs, focusing on different delivery methods and their various impacts through unpacking the digital and financial divide, the limits of technology in building social connections, the differences between urban and rural entrepreneurship, and female entrepreneurship.

## Methodology

The scope of this review includes the use of digital technologies to support microentrepreneurs by providing mentorship, training, or skill development. The papers focus on microenterprises based in developing countries, with the majority being located within rural areas. Various research databases and journals were searched, such as Google Scholar and EBSCO to find the papers. The keywords, "digital, "microenterprises", "mentorship", "training", and "SMEs" were used when searching in the databases. Additionally, since the scope is niche, the References section of some papers was also used to find more relevant papers to include in the review. Only papers from credible journals and sources were included in this review.

## Key Findings

### Types of Training

Studies that provided different forms of training were included in this review. There were several different areas of focus across the studies, including business performance, community building, and mentorship. Most studies utilised video training models, with some including live training calls such as the study by Davies et al. in 2024. Others utilised online platforms which also included interactive modes such as chatting features. One study that did this was by Lall, Chen, and Mason in 2022, where researchers aimed to explore how digital platforms can facilitate mentoring relationships for entrepreneurs. Although most studies focused on providing skills development through static training, some studies aimed to build successful mentor-mentee relationships by using interactive models. For example, in the study by Otis et al. in 2024, entrepreneurs were given access to an AI mentor who advised them on business-related issues.

The papers span several continents, with the majority focusing on sub-Saharan Africa, Asia, or South America.

### Targeted Outcomes

Most interventions aimed to positively impact microentrepreneurs by improving their business performance. This was measured through tracking business outcomes such as revenue, profits, and management practices. Some studies had a sole focus on business outcomes, such as the study by Koo and Eesley in 2020, where researchers focused on the sales performances of rural and urban sellers. Other studies targeted building strong relationships between participants and mentors. For example, a study done by Lall, Chen, and Mason in 2022 aimed to increase the likelihood of entrepreneurs reaching out to potential mentors and successfully establishing mentoring connections. One of the methods of data collection for this outcome was feedback given to researchers by microentrepreneurs.

Ideally, the practices and skills taught to the entrepreneurs would allow them to continue improving their business practices after the training is completed, however, very few studies were able to achieve this. Some studies that provided mentorship also targeted forming meaningful relationships between mentors and microentrepreneurs.

Findings Related to Different Modes of Delivery

This section of the paper will focus on the various methods of provision of online mentoring and training, stating the general findings from the literature review.

*Main Findings*

Effectiveness: Online mentoring and training can be delivered through various means, each with its own strengths and weaknesses. The effectiveness of the chosen method heavily relies on the digital and financial literacy of the participants. Methods such as Zoom-based training (Davies et al., 2024), and WhatsApp modules (Barros et al., 2024) are beneficial for participants with basic digital literacy or who have experience in engaging with structured content. More advanced methods, such as AI mentors (Otis et al., 2024) and algorithmic tools (Allen & Choudhury, 2021) are only effective when used by entrepreneurs with existing skills and a good foundational understanding of business and technology.

Scalability and Accessibility: Low-tech solutions, such as SMS-based training (Mehmood, 2023), are scalable and cost-effective but have limited impacts due to the lack of interaction between mentors and entrepreneurs. In comparison, mid-tech solutions, such as online platforms featuring role models (Lall, Chen, & Mason, 2022) and WhatsApp modules (Barros et al., 2024) are relatively scalable while still fostering valuable engagement which helps to bridge basic literacy gaps.

Sustainability of Impacts: Interventions like Zoom-based training (Davies et al., 2024) can have significant short-term improvements but struggle to have more long-term impacts. This highlights how follow-up mechanisms could be implemented in order to maintain entrepreneurs' progress. However, AI mentors (Otis et al., 2024) and algorithmic systems (Allen, & Choudhury, 2021) have more potential for long-term impacts but only if the foundational digital and financial literacy skills are met.

Addressing Marginalized Groups: Many interventions fail to help marginalized groups, including women, rural, and digitally illiterate entrepreneurs, overcome their systemic barriers to progress. This limits their effectiveness, indicating that programs should focus on building digital and financial literacy (with cultural and infrastructural barriers in mind) before using more advanced provision modes.

## Understanding Foundational Barriers to Achieving Impact

Digital Divide

The digital divide is a phenomenon that refers to disparities in Information and Communications Technology access, usage, and outcomes (Lythreatis, Singh, & El-Kassar, 2022). This limits individuals' abilities to benefit from participating in the digital economy. The divide is most evident in underserved regions, where inadequate infrastructure, low financial inclusion, and low digital literacy levels create barriers to digital access. This poses additional challenges for entrepreneurs to access digital training programs, potentially resulting in the exclusion of the poorest and most vulnerable entrepreneurs from these interventions (Davies et al., 2024).

The first-level digital divide considers disparities in physical access to digital technologies, which should disappear over time with market liberalisation and deployment of telecommunications (Girollet, 2023). In contrast, the second-level digital divide recognises the divide as a more complex phenomenon, where disparities in quality of access, digital skills, and actual usage of digital technologies are the causes of digital inequalities rather than only infrastructure (Hargittai, 2002).

## Digital Access

A fundamental foundation for the efficacy and delivery of online training programs is having adequate digital access. Although are an increasing number of initiatives aimed at building infrastructure to facilitate more digital access, there are still significant disparities in internet connectivity and access to digital devices. These disparities influence the potential extent of the impacts, particularly in less developed contexts where infrastructure tends to be scarce.

Ilavarasan (2019) aimed to understand the current use and impact of Information and Communications Technology (ICTs) in informal microenterprises in India, and had valuable insights into the integration of ICTs in microenterprises. The paper found that mobile phones had become more accessible, and they were being used mainly for communication and networking. However, a key finding was the limited impact of the ICTs on business growth—due to the small business size, and the majority of clients being walk-in customers, businesses did not benefit much from the implementation of ICTs. Although mobile phones were the predominantly used technology, they were mainly used only in personal contexts.

Several factors influence the adoption of ICTs in small businesses, such as the demographics of the owner, company characteristics, legal practices, and social capital (Duran & Castillo, 2023). Larger and older businesses with more computer equipment are more likely to adopt ICTs, whereas smaller businesses tend to find this harder. Additionally, business formalisation practices, social capital, size, and business infrastructure positively influence ICT adoption.

As many microentrepreneurs in emerging economies operate in the informal sector, the digital divide between informal firms is crucial in understanding the constraints of providing online training. Within informal firms, there are significant disparities in functions such as bilateral coordination, social media usage, online transactions, and financial technologies (Girollet, 2023). In this study, Girollet identified three segments of informal firms: top performers (businesses that have had the capacity and the motivation to grow in the past and currently have the highest profits), constrained gazelles, and survivalists. The study found that top performers were able to use digital technologies more diversely and extensively compared to constrained gazelles and survivalists. The firms with higher levels of informality, lower profits, precarious operating conditions, lower access to financial services, and lesser-developed value chains were less likely to use digital technologies.

## Digital Literacy

Digital literacy has been defined as the competencies and skills required for navigating a fragmented and complex information ecosystem (Eshet, 2004; Tinmaz et al., 2022). Digital literacy can be considered in the following clusters: (a) finding and consuming digital content; (b) creating digital content; (c) communicating and sharing digital content (Loewus, 2016). As this paper is focused on the effect of online training on microentrepreneurs, the two most important digital literacy groups are (a) and (c).

In order for entrepreneurs to successfully engage and interact with the online training, they must be comfortable navigating and operating their digital devices. Online platforms are one way of delivering online training to microentrepreneurs, which could include videos or reading material focused on improving business practices or models. When entrepreneurs lack information or skills, such as understanding the potential benefits of the training, being able to reach out to mentors, or navigating the online setting, they are typically unable to engage successfully with the platform (Lall, Chen, & Mason, 2022).

One study that focused on providing online training through WhatsApp messages trialled three different provision modes: static training module with no interaction; interactive training module with automated chatbots; and interactive module with automated chatbots and human agents. It was found that the digitally literate entrepreneurs who had high levels of interaction with the chatbots were able to benefit from increased financial literacy, but the digitally illiterate entrepreneurs were unable to engage effectively with the program, causing them to receive limited impacts on financial literacy (Barros et al., 2024).

## Financial Inclusion Gap

Financial inclusion can be defined as the process of ensuring that individuals, households, and businesses in a community have adequate and sustained access to formal financial services and products, including transactions, credit cards, payments, savings, and insurance (Singh & Kondan, 2011). The financial inclusion gap refers to unequal access to financial services, such as banking, credit, and insurance, which disproportionately affects underserved populations. The gap is more pronounced in less developed contexts, where systemic barriers such as high service costs, limited financial literacy, and insufficient infrastructure hinder individuals and small businesses from participating fully in the formal financial system. This affects microentrepreneurs who may face restrictions in accessing the resources needed for them to invest in their businesses and improve efficiencies (Duran & Castillo, 2023).

There are many reasons why microentrepreneurs and small business owners are excluded from the formal financial system. In one study, villagers were given one safety pamphlet that focused on protecting people from mobile banking scams and one growth pamphlet that focused on enabling people to use advanced services (Walsh, 2023). The villagers were then asked to pass the pamphlets on to socially distant or socially close peers. The results showed that participants favoured informal finance over mobile banking due to their fear of fraud and user error. This indicates that digital initiatives must also focus on building trust between financial services and microentrepreneurs.

A paper focused on how digitalisation has addressed financial inclusion in India, specifically reviewing access to payments and credits, found that digitalisation is helping to close India's financial inclusion gap (Khera, 2023). As a result of increasing digitalisation initiatives in India, financial inclusion has increased significantly, with the percentage of adults owning a bank account increasing from 35% in 2011 to 80% in 2017. This provides evidence for the effectiveness of digital initiatives in improving financial access, which could have wide-reaching impacts in supporting micro-entrepreneurship.

## The Role of Social Interactions in Mentorship: Digital vs. In-Person

Technology has significantly expanded access to education and training by providing people in the most rural places with access to online learning (Devaux et al., 2017). However, there are also key limitations in replacing human-centred approaches with technology. This section of this paper aims to understand and evaluate the use of technology in comparison to human interaction in providing online training.

### *Improving Existing Skills vs Creating New Skills*

The emergence of nearly zero marginal cost generative AI "mentors" brings the potential to greatly improve productivity and performance for microentrepreneurs. However, although online tools and platforms often excel at enhancing knowledge in certain areas, the creation of new skills, that often require significant contextual knowledge, may not be easily done by AI. This is due to the nature of AI business advice in comparison to its other uses, such as writing assistance—the benefits of the advice cannot simply be reaped through copying and pasting it, instead, it must be understood and implemented by the entrepreneur themselves (Otis et al., 2024). Therefore, although the advice could be useful in theory, the entrepreneur may lack the complementary skills and resources to implement the suggestions (Brynjolfsson, Rock, & Syverson, 2021).

In a study that focused on the impact of generative AI on entrepreneurial skills, researchers provided an AI mentor to assist in business-related tasks and decision-making for entrepreneurs in Kenya, an emerging economy (Otis et al., 2024). The study found that for those who already had above-median business performance before treatment, there was a 15% increase in profits and revenue, providing weak evidence that access to the AI mentor increased business performance. However, for those with below-median business performance before treatment, access to the AI mentor reduced business performance, causing a 10% decrease in profits and revenue. These results indicate that although the AI tool was able to augment existing capabilities to a certain extent, it was not able to create new skills for participants starting at a lower level.

*Digital vs Human Mentors*

Effectiveness: One study provided workers at an IT firm with an algorithm tool to help them resolve tickets (technical problems submitted by customers) and they compared it with their previous manual ticket resolution system (Allen & Choudhury, 2021). The study found that algorithmic tools were effective when the workers had enough experience to be able to use the program, but not so much experience that they developed an aversion to it. High-experience workers tended to reject the algorithmic advice due to their belief that they had a superior understanding of the area and because they held a greater sense of accountability for their actions. The low-experience workers rejected the algorithmic advice as they were unable to assess and use the algorithmic recommendations when they were too complicated. Therefore, only moderately experienced workers felt comfortable and wanted to use and implement the algorithmic advice.

Forming Meaningful Connections: One key aspect of mentoring is building strong relationships between mentors and mentees. Online platforms with AI mentors are not always able to achieve this and this can have effects on the success of the training. In a study which utilised an online platform to provide training, researchers found that showing entrepreneurs a video of a successful mentor-mentee relationship (effectively creating role models) increased the chances of them reaching out, but did not increase their chances of forming meaningful connections (Lall, Chen, & Mason, 2022). This limits their engagement with the platform since oftentimes having stronger mentor-mentee relationships increases the effectiveness of learning (Pianta, Hamre, & Allen, 2012). This was especially true for women—showing women examples of other successful women led to increased engagement.

# Entrepreneurship Settings: Rural, Urban, and Gender Considerations

Rural vs Urban Environment

The rural-urban divide plays a critical role in the access to resources, infrastructure, and opportunities for skill development. Microentrepreneurs in urban areas typically benefit from better connectivity, advanced technology, and access to sources that can provide information and clarification for ambiguous issues (Galloway, Mochrie, & Deakins 2004). Due to these disparities, the effectiveness and reach of online training programs can vary significantly depending on the geographical context of microentrepreneurs.

*Disparities in Skills*

There are differences in the skill levels of rural microentrepreneurs which affect their ability to compete with urban sellers. When researchers changed the design of an e-commerce platform's search ranking algorithm, they noticed a difference between the abilities of rural and urban sellers to adjust to the change. Initially, the rural sellers were able to learn and self-correct to increase their category focus (Koo & Eesley, 2020). In the first 5 months, rural sellers had greater category focus than urban sellers, but this gradually decreased over time as urban sellers successfully maintained or increased their category focus. Rural sellers disproportionately responded with misaligned strategies to tackle the new algorithm, and due to their lack of access to resources that could help them clarify doubts, they were often unable to recover. This highlights the need for online training programs to adapt their delivery methods based on the context of microentrepreneurs by designing simpler, more user-friendly platforms for rural areas.

*Social Behaviours*

Another factor that online training programs must consider is the differences in social behaviours between rural and urban microentrepreneurs. In the study involving the distribution of safety and growth pamphlets, villagers were more likely to share pamphlets when their identity was hidden (Walsh, 2023). This is due to concerns about offending a peer or being blamed if there were negative effects of using the pamphlets.

## Female Entrepreneurship

The growth of female entrepreneurship, though integral to the development and well-being of societies (Herrington & Kew, 2017), has not kept up with the pace of men in most developing countries. Cultural norms play a significant role in low female employment in developing countries, limiting women's autonomy and workforce participation (Jayachandran, 2021). This includes women facing harassment and violence in public spaces, restrictions in their social interactions and freedom of movement, control over household finances, and traditional gender roles, where women are expected to bear the responsibility for household chores and child care (Jayachandran, 2021). These social and familial constraints limit women's ability to grow their businesses, due to them having less time to spend on improving their businesses (Jaychandran, 2020). They typically also receive lower returns on grants and capital compared to men due to the financial pressure to use business resources for household needs, leaving them with less money to reinvest into their businesses.

Research has also found that women tend to enter entrepreneurship for different reasons than men (Carranza, Dhakal, & Love, 2018). Women tend to have lower expectations and goals for their business growth and expansion, which may lead to them limiting their own potential. One study found that female MBA students have lower preferences for advancement and wealth creation as they have a stronger preference for family and lifestyle aspects (De-Martino & Barbato, 2003). Another study in Canada found that they often set lower business size limits for the extent of their expansion than men do (Cliff, 1998). Therefore, it is integral that online training programs targeted at female entrepreneurs take into account their unique societal and cultural limitations.

One study that implemented an automated forum discussion group to facilitate online mentoring relationships found that female participants had more supportive communication with each other than male participants (Kalbfleisch & Ekley, 2003). Future research directed towards female entrepreneurs may take this into consideration when designing their platforms by including more opportunities for communication between participants to foster healthy environments for learning.

Studies have identified a digital divide between female-led and male-led firms in the informal sector, finding that female-led firms are less likely to use digital technologies (Girollet, 2023). Due to isolation, lack of like-minded peers, lack of mentors, and lack of access to networks, women running rural enterprises face more barriers, including digital ones, than their male counterparts (Wiesner, 2018). Additionally, younger and male business owners are more likely to adopt ICTs (Duran & Castillo, 2023).

# Key Takeaways

## Main Findings

While mobile phones can be a gateway to integrating ICTs into business operations, this alone does not cause significant business growth due to financial barriers, the nature of informal businesses, and infrastructural limitations. Entrepreneurs who lack digital literacy often are not able to engage with online training as effectively as those who are more literate. Digitalisation improves financial inclusion by increasing access to banking and credit services. However, trust issues, fear of fraud, and lack of infrastructure impede the widespread adoption of mobile banking and online access to financial services.

Digital tools like AI mentors enhance existing skills but struggle to improve performance for those starting at a lower baseline. Similarly, algorithmic tools are effective for mid-level experience users but are often rejected by low- and high-experience users. Video demonstrations and examples of successful mentor-mentee relationships encourage participation but do not ensure the creation of lasting and meaningful connections.

Rural sellers are able to adapt to changes initially but struggle with long-term changes which can lead to them having decreased sales in comparison to urban sellers. Rural entrepreneurs often prefer informal finance over digital

solutions due to their fear of errors or scams. Additionally, community dynamics (e.g. peer sharing and trust) heavily influence the adoption of technologies.

Women face specific societal and economic constraints, such as caregiving responsibilities and the financial pressure to redirect business resources towards household needs. Female-led firms are also less likely to adopt digital technologies due to systemic biases and lower access to resources.

## Gaps in Existing Literature

Although many of the interventions had positive impacts, almost none of them had sustained long-term effects, indicating the need for future research to focus on implementing strong procedures to maintain the benefits of the training for entrepreneurs. Even though many studies stress the necessity of digital literacy, many also lack clear strategies on how to address this. Future studies may consider using the blended approach detailed below or implementing similar means of improving digital literacy for entrepreneurs alongside the training. A few studies research the effect of blending different interventions, such as human and AI mentors, but very few studies utilise different interventions as different stages of training. Most importantly, due to the self-selective nature of training programs, many of the interventions were not able to reach the poorest or least-educated microentrepreneurs. They also had limited strategies on how to tackle the context-specific challenges that women and rural entrepreneurs face.

## Recommendations

Governments may consider focusing on improving infrastructure and creating more accessible digital literacy programs in order to decrease the digital divide between rural and urban populations. More research needs to be done into ways to tackle gender-based setbacks that female entrepreneurs face, as well as ensuring that the impacts of the training on business practices are more long-lasting.

Furthermore, based on the findings from different provision modes, no single method has been completely effective. Therefore, blending the approaches may yield the most effective and impactful outcomes. A proposed blended approach is detailed below.

Training programs could start by introducing videos of relatable role models to inspire participation and engagement with the program. These videos could be tailored towards underserved groups, like women, through providing videos of successful women entrepreneurs. There could then be the provision of two different platforms. First, entrepreneurs would have access to more user-friendly modes, such as WhatsApp modules or Zoom-based training, which aim to develop practical skills and provide low-level interactions in order to build foundational digital and financial literacy. Then, they could be paired with AI mentors or algorithmic tools that are designed to offer assistance with challenges they may face, enabling them to have high-level interactions. In order to increase the likelihood of long-term impacts, entrepreneurs could receive follow-up support through regular check-ins or having an online forum (Schou, Bucher, & Waldkirch, 2021) which combines entrepreneurs who have completed the training with entrepreneurs still in the program. This could allow for stronger communication and trouble-shooting between entrepreneurs, potentially leading to communities where they could help and uplift each others' businesses.

# Conclusion

In conclusion, there are definite benefits to employing technology in the training of microentrepreneurs in less developed countries. In order for more entrepreneurs to reap the benefits of online training, digital and financial literacy must be addressed alongside interventions. In order to reach the most underserved groups, interventions should take into account social and cultural barriers to progress and design clear strategies to tackle these issues. Future research

may consider taking a blended approach with different methods in order to provide the most effective and impactful training.

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