



## **Perceptions of Adult Learners Regarding the Use of Digital Technology in Accessing Education in Tanzania**

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### **Abstract**

This study examined adult learners' perceptions of the use of digital technology in accessing education in Tanzania. Guided by the Digital Divide Theory, the study explored how digital technologies facilitate or constrain participation in adult learning. Using a qualitative case study design, data were collected via semi-structured interviews (n=46), focus groups, and observations. Thematic analysis revealed that digital technologies, including mobile phones, online learning platforms, and social media applications enhanced access to adult education by increasing flexibility, reducing travel costs, improving access to learning resources, and strengthening communication between learners and facilitators. Participants further reported that digital technology supported learning continuity beyond the classroom and enabled them to balance educational, work, and family responsibilities. However, several barriers limited effective utilization of digital technologies, including poor internet connectivity, high costs of devices and data bundles, inadequate technological infrastructure, and limited digital literacy skills. Observational data further revealed a gap between learners' positive perceptions of digital technology and their actual access to digital resources, highlighting persistent inequalities in digital learning opportunities. The study concludes that although digital technology offers significant opportunities for expanding access to adult education in Tanzania, its transformative potential is constrained by continuing digital inequalities. The study recommends increased investment in digital infrastructure, affordable internet services, digital literacy training, and supportive policy frameworks to promote equitable access to technology-enhanced adult education.

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### **Introduction**

Adult education is widely recognized as an important instrument for promoting social inclusion, lifelong learning, and socioeconomic development. It enables individuals to acquire knowledge, improve literacy, develop vocational competencies, and respond to changing societal and labour market demands (Teslim, 2024; UNESCO, 2022). In many developing countries, adult education serves as a critical pathway for reducing educational inequalities and empowering marginalized populations who may have missed opportunities for formal schooling.

The rapid advancement of digital technologies has created new opportunities for enhancing educational access and participation. Digital technologies have transformed learning environments by facilitating flexible, learner-centred, and

technology-mediated educational experiences that extend beyond traditional classroom settings (UNESCO, 2023). For adult learners, who often combine learning with employment, family responsibilities, and other social obligations, digital technologies can provide more accessible and convenient pathways to education. Consequently, the integration of digital technologies into educational systems has become an important policy priority in many countries seeking to expand lifelong learning opportunities.

International policy discussions demonstrate an evolving understanding of the role of technology in education. While earlier perspectives primarily emphasized expanding access to learning opportunities, more recent discussions highlight the potential of digital technologies to support flexibility, personalization, and lifelong learning. At the same time, concerns have been raised regarding unequal access to digital resources, digital literacy gaps, and the risk of exacerbating existing educational inequalities if technological interventions are not implemented inclusively (OECD, 2024; UNESCO, 2022). These debates suggest that the effectiveness of digital technology in education depends not only on its availability but also on how learners perceive and utilize it within specific social and educational contexts.

In Tanzania, the government has demonstrated commitment to integrating technology into education through various policy initiatives, including the Education and Training Policy (2023). Despite these efforts, the application of digital technologies within adult education programmes remains relatively limited compared to other educational sectors. Many adult education programmes continue to rely heavily on conventional face-to-face approaches, particularly in rural and resource-constrained settings. As a result, there is limited empirical evidence regarding how adult learners perceive the use of digital technologies in accessing educational opportunities (Raphael, 2025).

Understanding learners' perceptions is important because positive perceptions may facilitate the adoption and effective use of technology-enhanced learning, whereas negative perceptions may hinder participation and engagement. Insights into learners' experiences can therefore inform the design of inclusive and responsive adult education programmes that leverage digital technologies to improve access and participation.

Therefore, this study sought to examine adult learners' perceptions regarding the use of digital technology in accessing education in Tanzania.

### **Research Questions**

1. How do adult learners perceive the use of digital technology in accessing education?
2. What opportunities do adult learners associate with the use of digital technology in education?
3. What challenges do adult learners encounter when using digital technology to access education?

### **Literature Review**

#### **Theoretical Framework**

This study is guided by the Digital Divide Theory, which offers a lens through which to understand disparities in access to and use of digital technology among different populations. As articulated by Norris 2001; Dijk, 2020), the theory explains how socio-economic status, geographic location, and educational background contribute to

unequal access to digital tools, skills, and opportunities. These disparities significantly affect learners' ability to engage with and benefit from digital education.

In the context of adult education in Tanzania, the theory highlights critical issues such as limited internet connectivity, affordability of devices, and low levels of digital literacy especially among adults in rural or marginalized areas (Lupondo et al., 2025). These factors shape how adult learners perceive and utilize digital technologies in accessing education.

The theory also emphasizes the importance of supportive policy frameworks and infrastructure development in narrowing the digital gap (Zickuhr & Smith, 2012). In this study, the Digital Divide Theory helps explain both the opportunities and barriers associated with integrating digital technology into adult learning. It serves as a foundation for analysing learners' perceptions and identifying practical strategies to promote inclusive and accessible adult education through technology.

### **Perceived Benefits of Digital Technology in Adult Education**

Digital technology has increasingly transformed adult education by expanding access to learning opportunities and supporting lifelong learning. Existing literature consistently demonstrates that adult learners perceive digital technologies as valuable tools for enhancing flexibility, convenience, and accessibility in education. Unlike traditional face-to-face instruction, digital learning environments allow learners to access educational resources regardless of geographical location and time constraints, making them particularly suitable for adults who combine education with employment and family responsibilities.

Studies conducted in different contexts have reported positive perceptions of digital learning technologies among adult learners. For example, online learning platforms, distance education systems, and mobile learning applications have been found to facilitate self-paced learning, improve access to educational materials, and promote learner autonomy (Zammit, 2021; Fu et al., 2021; Åkerfeldt et al., 2024). Adult learners value the ability to review learning content repeatedly, engage in self-directed learning, and participate in educational activities without disrupting their personal and professional commitments. Similarly, research in Tanzania has shown that open and distance learning programmes provide opportunities for adult learners to pursue education while maintaining work and family responsibilities (Raphael, 2025).

The literature further suggests that digital technologies enhance learner engagement through interactive features such as multimedia content, online discussions, and mobile applications (Darlin et al., 2026). These technologies support active learning and encourage learners to take greater responsibility for their educational progress. Consequently, digital technology has been widely recognized as a mechanism for improving educational accessibility and promoting lifelong learning among adult populations.

However, although most studies report positive outcomes, they largely focus on learners who already have access to technological resources and sufficient digital skills. This raises concerns regarding whether similar benefits can be realized among adult learners in resource-constrained settings where technological infrastructure remains limited.

### **Challenges Influencing Adult Learners' Use of Digital Technology**

Despite the potential benefits of digital technology, numerous challenges continue to affect its effective utilization in adult education. A recurring theme across the literature is the existence of technological barriers that limit participation in digital learning environments. These barriers include inadequate internet connectivity, limited access to digital devices, high costs of internet services, and insufficient digital literacy skills (Zammit, 2021; Fu et al., 2021; Mtakyawa & Banele, 2024).

Beyond technological constraints, several studies highlight pedagogical and social challenges associated with digital learning. Adult learners frequently report difficulties related to limited interaction with instructors and peers, feelings of isolation, and reduced opportunities for collaborative learning (Åkerfeldt et al., 2024). Similarly, Singh and Datt (2020) found that balancing academic responsibilities with employment and family obligations often creates stress and negatively affects learners' participation in online education. These findings suggest that access to technology alone is insufficient to guarantee meaningful learning outcomes.

Moreover, Maijo (2021) examined adult learners' perceptions and preferences regarding the open and distance learning (ODL) mode. The findings revealed that ODL was particularly suitable for in-service, married, and older learners, as it allowed them to balance work, family responsibilities, and education. Despite these positive perceptions, some learners suggested improvements in technology integration and communication mechanisms to further enhance learning experiences. However, the study by Maijo (2021) did not deeply explore how digital technologies perceptions learners' accessibility, engagement, and overall educational outcomes, thus leaving a gap in understanding the contributions of digital tools in improving adult education accessibility.

Furthermore, the literature indicates that disparities in digital competence significantly influence learners' experiences. Adult learners with limited technological knowledge often encounter difficulties navigating digital platforms, accessing learning materials, and participating effectively in online learning activities. Consequently, digital technologies may inadvertently reinforce existing educational inequalities by favouring learners who possess stronger technological skills and better access to digital resources.

Although these challenges are widely acknowledged, most existing studies originate from contexts characterized by relatively advanced technological infrastructure. Therefore, the nature and magnitude of these barriers may differ significantly in developing countries such as Tanzania, where resource limitations remain more pronounced.

### **Learner Acceptance and Readiness for Emerging Digital Technologies**

Recent developments in educational technology have expanded beyond conventional online learning platforms to include advanced digital tools such as artificial intelligence (AI), adaptive learning systems, and intelligent educational applications. Research suggests that adult learners' willingness to adopt these technologies depends largely on their perceptions of usefulness, ease of use, trust, and relevance to their educational and professional goals.

Michel (2025) found that although adult learners regularly interact with AI technologies in everyday life, many lack confidences in applying such technologies for

educational purposes. Concerns regarding trust, privacy, digital competence, and ethical implications often influence learners' acceptance of emerging technologies. Similarly, previous studies have shown that adult learners are more likely to embrace digital innovations when they perceive clear benefits for learning, career advancement, and personal development.

These findings support the argument that successful technology integration requires more than technological availability. Learners must also possess the confidence, skills, and motivation necessary to engage effectively with digital learning tools. Consequently, understanding learners' perceptions becomes essential for designing technology-enhanced educational programmes that respond to their needs and expectations.

Nevertheless, research examining adult learners' perceptions of emerging technologies remains limited, particularly within African adult education contexts. Much of the existing evidence originates from developed countries, leaving uncertainty regarding how adult learners in developing countries perceive and respond to new digital learning technologies.

### **Research Gap**

Across the world literature demonstrates that digital technologies have considerable potential to enhance flexibility, accessibility, learner autonomy, and participation in adult education. At the same time, studies reveal persistent challenges related to technological infrastructure, digital literacy, learner support, and technology acceptance. Although these findings provide important insights into adult learners' experiences with digital technologies, several gaps remain evident.

In the United States, online and distance learning platforms have played a key role in widening access to adult education and supporting workforce development by enabling learners to acquire new knowledge and skills regardless of their location or personal circumstances (U.S. Department of Education, 2023). Likewise, Canada has strengthened adult learning through technology-supported lifelong learning programmes and community-based digital literacy initiatives designed to improve digital skills among diverse populations (Council of Ministers of Education, Canada [CMEC], 2022). Nevertheless, in the United Kingdom have increasingly embraced digital technologies to expand access to adult education. Through the use of online learning platforms, mobile applications, and distance learning programmes, adult learners are now able to access educational opportunities more flexibly and conveniently. In the United Kingdom, digital learning initiatives have encouraged greater participation in lifelong learning by offering flexible online courses and open learning opportunities (Department for Education, 2023).

In Tanzania studies available have primarily focused on specific technologies or individual institutions. For example, previous research has examined open and distance learning programmes and learning management systems within particular educational settings (Raphael, 2025; Mtakyawa & Banele, 2024). However, these studies provide limited understanding of adult learners' broader perceptions regarding the use of digital technology in accessing education. The mentioned studies have extensively documented the benefits and challenges of digital learning, there remains insufficient evidence regarding how adult learners themselves perceive the role of digital technology in

improving educational access within adult learning institutions in Tanzania. Understanding these perceptions is particularly important because learner attitudes influence technology adoption, participation, and educational outcomes.

Therefore, this study was conducted to examine the perceptions of adult learners regarding the use of digital technology in accessing education in Tanzania by focusing on learners' experiences and viewpoints, the study contributes context-specific evidence that can inform policies and practices aimed at enhancing accessibility and effectiveness in adult education through digital technologies.

### **Methodology**

This study was conducted in Mwanza region of Tanzania focusing on two key adult education institutions namely The Agency for the Development of Educational Management (ADEM) and The Institute of Adult Education and Community Development Luchehele Mwanza, located on the shores of Lake Victoria, is Tanzania's second-largest city and a hub for economic and educational development. The city encompasses both urban and rural areas, offering a rich context for exploring digital technology use in adult education. Urban institutions often have greater access to digital infrastructure, while rural centres face significant barriers. This geographical diversity enabled the study to examine varied experiences with digital technology integration (Creswell & Clark, 2023).

This study adopted a qualitative case study design to explore adult learners' and facilitators' perceptions and experiences of integrating digital technology in adult education in Mwanza, Tanzania. The design was guided by the intent to generate an in-depth understanding of participants' lived experiences within their educational context (Creswell & Clark, 2023). Data were collected through semi-structured interviews, focus group discussions, and structured observations conducted in the selected adult education institutions. The study therefore employed an interpretive qualitative approach that emphasizes meaning-making from participants' narratives and observable learning practices, enabling a comprehensive understanding of challenges, opportunities, and contextual factors shaping the integration of digital technology in adult education (Silverman, 2020; Tashakkori & Teddlie, 2021).

A total of 46 participants were purposively selected from two adult education institutions ADEM and the Institute of Adult Education and Community Development (Luchehele Mwanza) to obtain rich and relevant information for understanding digital technology use in adult education. Purposive sampling was used to identify participants who had direct involvement and practical exposure to digital technology-related activities within adult education settings. Participants comprised 2 adult education institutions, 13 adult facilitators, and 33 adult learners, selected to represent varied levels of engagement with digital technology (e.g., frequency of use, familiarity with digital platforms, and exposure to ICT learning environments). This sampling strategy supported purposeful inclusion of information-rich cases to address the study objectives.

Data collection proceeded iteratively, and data saturation was used to determine the point at which no substantial new insights were emerging. Saturation was assessed through continuous comparison of incoming interview, focus group, and observation data with existing codes and developing themes (Braun & Clarke, 2025). Specifically, saturation was considered to have been reached when additional

interviews/focus group sessions produced redundant (i.e., substantially similar) information in relation to the study objectives and themes, and when new codes were no longer consistently identified across participant groups. Therefore, the final sample of 46 participants was deemed sufficient to capture the main patterns of meaning and practices related to digital technology integration in adult education within the Mwanza context. Table 1 provides the sample size for institutions and each category of respondent and the sampling strategy used.

**Table 1**

*Sample Size and Sampling Technique*

S/N	Category of Study Participant	Sample size	Sampling Strategy
1	Adult education institutions	2	purposive
2	Adult facilitators	13	purposive
3	Adult learners	33	purposive

Purposive sampling was employed to identify individuals with relevant experience in using digital technology within adult education contexts Samuel and Merkebu, (2026). This non-probability method is commonly used in qualitative research to ensure the inclusion of participants who can provide rich, in-depth information (Khan et al., 2025). Participants were selected based on their familiarity with digital platforms and active involvement in teaching or learning. The aim was to gather diverse views from individuals with different levels of exposure to technology in education. Thus, the adult education centres, adult education facilitators and adult education learners were purposively chosen as they were information rich.

Data were analysed by using thematic analysis, a flexible method for identifying, analysing, and interpreting patterns of meaning within the qualitative data (Braun & Clarke, 2025). The approach adopted was thematic analysis, which focuses on the explicit content of the participants' narratives without inferring beyond what is directly stated. This analytical strategy was appropriate for the study's aim to explore the experiences, perceptions, and practices surrounding the use of digital technology in adult education in Tanzania.

To achieve trustworthiness, credibility was enhanced through triangulation of data collection methods, including interviews, focus group discussions, and observations. Member checking was also used by sharing preliminary themes with the participants to confirm accuracy and representation of their views (Ahmed, 2024). To ensure that the study measured what it was required to measure, the researcher cooperated with the supervisors and other experts with the wide knowledge and awareness in developing the research tools. The study also used a combinations of data collection methods (triangulation) which strengthened each other and minimised the weaknesses of each method.

Regarding transferability thick descriptions of the research context, participant characteristics, and settings in which the study took place were provided. These details help the reader determine the relevance of the findings to other adult education contexts.

Furthermore, dependability was ensured by maintaining a detailed audit trail that documented each step of the research process from data collection to coding and

theme development thus allowing external review and repeatability. To ensure confirmability, the researcher maintained a reflexive journal throughout the study to record biases, decisions, and reflections. Peer debriefing sessions were also held to review the data analysis process and interpretations. By systematically addressing these four criteria, the researcher ensured that the study was conducted with rigor and transparency, thereby enhancing its trustworthiness and overall credibility within the field of qualitative adult education research.

The study adhered to the highest ethical standards throughout the entire research process, ensuring that all activities were conducted with integrity, transparency, and respect for the participants. Ethical clearance was first obtained from the Institutional Research Review Ethics Committee (IRREC) to ensure that the research proposal met all the national and institutional ethical requirements. Upon receiving ethical approval from IRREC, the researcher sought and obtained formal permissions from relevant institutions involved in the study. Letters of request were sent to the ADEM Campus Manager in Mwanza and the Principal of the Institute of Adult Education and Community Development, Luchehele Mwanza. Both institutions granted permission for the study to be conducted within their premises. These approvals ensured institutional support, compliance with internal policies, and a smooth data collection process. Additionally, a research permit was obtained from the Vice Chancellor's office on behalf of the Tanzania Commission for Science and Technology (COSTECH), the national regulatory body responsible for coordinating and overseeing research activities in Tanzania.

Before commencing data collection, all of the participants were provided with comprehensive information regarding the study's purpose, the types of data to be collected, research procedures, methods of data analysis and reporting, and the potential benefits of the study to both the participants and the nation. This process was aimed at ensuring that participants fully understood the nature of the study and could make informed decisions about their involvement. Adult facilitators, learners, and other participants were all asked to sign informed consent forms, thereby confirming their voluntary participation and their understanding of the study. Participants were also assured that their privacy and confidentiality would be strictly maintained throughout the research process. To safeguard anonymity, no participant names were included in any research reports or publications, and data were securely stored and handled only by the researcher.

Furthermore, the study adhered to rigorous academic and ethical standards by following APA 6th edition guidelines for all citations and referencing, and by complying with the 2018 University of Dodoma (UDOM) Plagiarism Policy. The research maintained a final similarity index not exceeding 30%, demonstrating adherence to academic integrity and originality. Through these ethical measures, the study ensured respect for the participants' rights, promoted trust and transparency, and enhanced the credibility, reliability, and validity of the research findings.

## **Findings**

### **Adult Learners' Perceptions of the Use of Digital Technology in Accessing Education**

Analysis of interview, focus group discussion, and observation data revealed five major themes regarding adult learners' perceptions of digital technology in accessing

education: (i) cost and time efficiency, (ii) flexibility for work and family life, (iii) improved access to learning resources, (iv) peer interaction and networking, and (v) learning continuity beyond the classroom. Additionally, participants identified several barriers that constrained effective use of digital technologies, including limited internet connectivity, inadequate digital devices, and insufficient digital skills.

### **Cost and Time Efficiency**

Participants consistently perceived digital technology as a mechanism for reducing the financial and logistical challenges associated with pursuing education. Adult learners reported that online learning enabled them to participate in educational activities without incurring transportation and accommodation expenses that would otherwise be necessary for face-to-face attendance.

One participant explained:

*Technology has given us opportunities and helped us avoid the cost of accommodation and travel. I no longer have to rent a room near the learning centre or spend money on daily transport. I can now attend classes from home using my phone and internet. (Participant A3, Interview, April 2025).*

Similarly, participants reported that digital learning reduced disruptions to employment because classes and learning materials could be accessed outside working hours. This flexibility enabled them to maintain their jobs while continuing their studies.

Another participant stated: *“I can attend classes after work without affecting my regular job. This flexibility helps me balance work responsibilities and learning”* (Participant A4, Interview, April 2025).

Participants also perceived digital teaching tools as enhancing instructional efficiency. Technologies such as projectors, recorded lessons, and digital presentations were viewed as reducing time spent on routine classroom activities while improving content delivery.

Despite these positive perceptions, some learners reported that internet costs remained a significant challenge. Although digital learning reduced travel-related expenses, the affordability of internet bundles sometimes limited participation in online activities.

### **Flexibility for Work and Family Life**

A dominant theme emerging from the data was the flexibility afforded by digital technology. Participants emphasized that digital learning enabled them to combine educational activities with employment responsibilities and family obligations. This flexibility was particularly important for adult learners who were simultaneously fulfilling roles as workers, parents, and caregivers.

During focus group discussions, participants explained that digital platforms allowed them to access lessons at convenient times, including evenings and weekends. Recorded sessions enabled learners to revisit content that they had missed due to work schedules or domestic responsibilities.

One participant noted: *“Technology has helped us balance our education and family duties more effectively. We can now attend online sessions while still performing household responsibilities”* (Group Member K, Focus Group Discussion, April 2025).

Another participant emphasized: *“Technology supports learning activities by allowing us to study while handling other duties. We can attend virtual classes while still fulfilling job tasks”* (Group Member H, Focus Group Discussion, April 2025).

These findings suggest that digital learning creates opportunities for adult learners to integrate education into their daily lives without requiring substantial changes to existing work and family commitments.

### **Access to Learning Resources**

Participants perceived digital technology as significantly improving access to educational resources. Through digital platforms such as WhatsApp, email, Zoom, and institutional e-learning systems, learners could receive assignments, access learning materials, communicate with facilitators, and obtain feedback in a timely manner.

One participant explained: *“We receive questions and assignments through online platforms, which has made learning more accessible and timelier”* (Participant A3, Interview, April 2025).

Similarly, participants reported that online resources provided opportunities to access textbooks, videos, presentations, and other learning materials beyond those available in traditional classroom settings.

A focus group participant stated: *“Digital technology makes learning easier for me by allowing access to various learning resources online. I can find textbooks, videos, and interactive materials anytime”* (Group Member S, Focus Group Discussion, April 2025).

These findings indicate that digital technologies promote learner autonomy by enabling adult learners to access information independently and study at their own pace.

### **Peer Interaction and Networking**

Participants highlighted the role of digital technology in strengthening communication and collaboration among learners. Digital platforms enabled interactions with peers and facilitators regardless of geographical location, thereby creating opportunities for knowledge sharing and collaborative learning.

One participant remarked: *“Technology has enabled us to gain learning experience through discussion with people from different locations”* (Participant A3, Interview, April 2025).

Another participant noted: *“We are able to discuss and share knowledge with others even if they are far away. This makes me understand things better through different perspectives”* (Participant B3, Interview, April 2025).

Participants described online discussion groups, messaging applications, and virtual meetings as important channels for exchanging ideas, seeking academic support, and maintaining engagement with learning activities.

### **Learning Continuity Beyond the Classroom**

Participants perceived digital technology as enabling learning to continue beyond the physical classroom environment. Through digital communication tools and online learning platforms, learners remained connected with facilitators and educational resources regardless of location.

One participant explained: *“Technology helps us learn while outside the classroom. We are connected to the teacher even when far apart”* (Group Member V, Focus Group Discussion, April 2025).

Participants reported that recorded lessons, online assignments, and digital learning materials allowed them to continue learning during periods when attendance at physical classes was not possible. Consequently, learning was no longer confined to specific times or locations.

### **Barriers to Effective Use of Digital Technology**

Although participants generally expressed positive perceptions regarding digital technology, several challenges emerged from interviews and observations. Observation data revealed that while electricity was available in both institutions, internet connectivity was unreliable and access to digital devices was limited. Many learners lacked personal computers, tablets, or smartphones capable of supporting educational activities.

Furthermore, observations indicated that the use of digital technologies by facilitators was inconsistent. Although platforms such as Zoom, WhatsApp, and institutional e-learning systems were available, their utilization varied considerably across sessions.

Several learners also reported difficulties associated with internet costs and inadequate digital skills. These challenges restricted their ability to participate fully in online learning activities despite their positive attitudes toward technology.

One learner explained: *“Sometimes I fail to participate in online activities because internet bundles are expensive and network coverage is not reliable.”*

The findings therefore suggest that positive perceptions of digital technology coexist with significant structural barriers that affect learners’ actual participation and engagement.

## **Discussion**

### **Digital Technology as a Mechanism for Expanding Educational Access**

The findings indicate that adult learners perceive digital technology as a significant enabler of educational access. Participants consistently reported that digital learning reduced transportation and accommodation costs, minimized disruptions to employment, and provided opportunities to engage in learning without relocating from their homes or workplaces. These findings suggest that digital technologies have become important tools for overcoming traditional barriers to adult education, particularly for learners who must balance educational participation with work and family responsibilities.

The findings are consistent with studies conducted in Tanzania and elsewhere, which have highlighted the potential of digital technologies to expand educational opportunities for adult learners. For instance, Singh & Datt (2020) found that Information and Communication Technologies (ICTs) in Open and Distance Learning (ODL) reduced transportation and accommodation costs while enabling learners to access educational materials remotely and at their convenience. Similarly, Maijo (2021) reported that adult learners in Geita valued digital learning because it allowed them to continue their studies alongside employment and family responsibilities. Likewise, the EdTech Hub Tanzania

Country Scan (2020) emphasized that digital learning platforms improve accessibility and affordability by reducing reliance on physical attendance and printed learning materials.

The present findings also resonate with international studies. Research conducted in Kenya has shown that mobile learning technologies enhance access to education among adult learners by providing flexible learning opportunities that accommodate work and family commitments (Matere & Oranga, 2025). Similarly, studies in Rwanda have demonstrated that digital platforms support lifelong learning by enabling learners in remote areas to access educational content without geographical constraints (Jang, 2025). These findings collectively suggest that digital technologies are increasingly transforming adult education by making learning more accessible, flexible, and responsive to learners' diverse needs (Mugiraneza, 2021).

However, the contribution of the current study extends beyond confirming the benefits of digital learning. While participants expressed overwhelmingly positive perceptions regarding the role of technology in improving access to education, observational findings revealed persistent inequalities in access to devices, internet connectivity, and digital skills. This observation aligns with the Digital Divide Theory Zickuhr and Smith, (2012), which argues that unequal access to digital resources can limit the benefits derived from technological innovations. Similar challenges have been reported by EdTech Hub (2020), which identified inadequate infrastructure, high internet costs, and limited digital literacy as major barriers to digital learning in Tanzania. Therefore, digital technology should not be viewed solely as a mechanism for expanding educational opportunities but also as a potential source of exclusion when supporting infrastructure and digital competencies are lacking.

The findings therefore point to a perception reality gap. Although learners generally recognized the value of digital technologies and expressed positive attitudes toward their use, their actual ability to engage effectively in digital learning was often constrained by structural and socioeconomic barriers. This suggests that expanding access to adult education through technology requires more than the provision of digital platforms; it also necessitates investments in infrastructure, affordable internet services, device accessibility, and digital literacy programmes to ensure that all learners can benefit equitably from technological advancements.

### **Flexibility and the Changing Nature of Adult Learning**

The study found that flexibility was one of the most valued characteristics of digital learning among adult learners. Participants emphasized that technology enabled them to combine educational activities with employment responsibilities, childcare obligations, and other social commitments. This flexibility reflects the evolving nature of adult education, where learning is increasingly integrated into daily life rather than confined to specific institutional settings.

Adult learners often face competing responsibilities that limit their ability to attend regular face-to-face classes. The ability to access recorded lectures, digital learning materials, and online discussions enabled participants to continue learning at times and locations that suited their personal circumstances. These findings suggest that digital technologies contribute to the development of learner-centred educational models that accommodate diverse learning need.

Similar findings have been reported in other developing countries. Studies conducted in Kenya have shown that mobile learning technologies enable working adults to pursue educational qualifications while maintaining employment. According to Matere and Oranga, (2025) the adoption of Information and Communication Technologies (ICT) has expanded significantly across both individual and institutional settings. Various sectors, including education and agriculture, have increasingly integrated ICT into their daily operations to enhance efficiency and effectiveness. The growing use of these technologies has transformed how organizations and individuals perform their activities by streamlining processes, improving communication, facilitating access to information, and enhancing service delivery. As a result, ICT has become a powerful tool for innovation and organizational transformation, enabling institutions to execute their functions more effectively and respond to emerging demands in a rapidly changing environment.

Likewise, research in Rwanda by Jang (2025) demonstrated a notable discrepancy between the objectives of the Digital Ambassadors Programme (DAP) and the approaches used to assess digital literacy outcomes. Furthermore, challenges such as inadequate training of Digital Ambassadors and insufficient institutional support were identified as significant barriers to the long-term effectiveness and sustainability of the programme. The inconsistency of these findings across different contexts highlights the importance of flexibility as a key factor influencing adult learners' acceptance of digital technologies.

### **Access to Learning Resources and Learner Autonomy**

Another important finding was that digital technologies expanded access to learning resources and strengthened learner autonomy. Participants reported accessing textbooks, videos, assignments, and other educational materials through online platforms. This increased availability of resources enabled learners to study independently, revisit content, and seek clarification when needed.

The findings suggest that digital technology supports self-directed learning, which is widely regarded as a central principle of adult education. By providing immediate access to information and learning materials, digital platforms empower learners to take greater responsibility for their educational progress (Reinders & White, 2011). The ability to learn at one's own pace is particularly important for adult learners whose educational participation is often interrupted by work and family commitments.

Nevertheless, access to learning resources does not automatically translate into effective learning outcomes. The study revealed that some learners struggled to utilize available digital resources because of limited technological skills and inadequate access to devices. Consequently, the benefits of expanded educational resources may be realized only when learners possess the competencies and infrastructure necessary to engage with digital technologies effectively.

### **Peer Interaction, Social Learning, and Knowledge Sharing**

The findings further demonstrate that digital technologies facilitate interaction and collaboration among adult learners. Participants described how online platforms enabled them to communicate with peers and facilitators from different locations, exchange ideas, and participate in collaborative learning activities. Such interactions contributed to increased motivation, confidence, and engagement in learning.

These findings support social constructivist perspectives, which emphasize that learning occurs through interaction and shared experiences. Digital platforms extend opportunities for collaboration beyond physical classrooms and create virtual communities of practice where learners can support one another. For adult learners, who may experience isolation due to work and family commitments, such interactions are particularly valuable.

Research from Kenya and Rwanda similarly indicates that online learning communities strengthen learner engagement and improve educational experiences by fostering collaboration and peer support. The present study therefore suggests that digital technology not only provides access to educational content but also creates opportunities for meaningful social learning experiences.

### **The Perception-Reality Gap: Positive Attitudes Amid Persistent Barriers**

A noteworthy finding emerging from the study is the apparent gap between learners' positive perceptions of digital technology and the realities observed within the learning environment. Although participants overwhelmingly described technology as beneficial, observational data revealed substantial challenges related to internet connectivity, device ownership, and digital literacy.

For example, observations showed that both institutions experienced shortages of computers, tablets, projectors, and reliable internet services. Furthermore, while facilitators occasionally utilized digital tools such as Zoom and WhatsApp, the integration of technology into teaching practices was inconsistent. Many learners also demonstrated limited digital skills, restricting their ability to benefit fully from available technologies. This discrepancy suggests that positive attitudes toward technology do not necessarily reflect actual levels of access or usage. Adult learners may appreciate the potential benefits of digital learning while simultaneously facing substantial obstacles that limit participation. In this sense, the study reveals a perception–reality gap in which enthusiasm for digital learning coexists with persistent structural barriers.

One possible explanation for this phenomenon is self-selection bias. Participants in the study were already enrolled in programmes utilizing digital technologies and may therefore represent learners who are particularly motivated to continue their education despite existing challenges. Consequently, their positive perceptions may not fully reflect the experiences of adult learners who have been excluded from digital learning opportunities altogether.

### **Interpreting the Findings through Digital Divide Theory**

The findings can be effectively understood through the lens of Digital Divide Theory. The theory argues that inequalities in access to digital technologies create disparities in opportunities for participation, learning, and development. The first level of the digital divide concerns physical access to technological infrastructure, including internet connectivity, electricity, and digital devices. The second level relates to differences in digital skills and competencies required for effective technology use. As suggested by Aswani (2026) that as education increasingly relies on digital technologies, equitable access to technological resources has become a critical requirement for meaningful participation in learning. Nevertheless, considerable disparities persist in the availability and use of digital tools, creating barriers for many students. Such inequalities, often conceptualized as the educational digital divide, have significant implications for

educational attainment and may further exacerbate existing socioeconomic disparities within society.

The current study provides evidence of both levels of the digital divide. Although electricity was available in the participating institutions, many learners lacked reliable internet access and ownership of appropriate digital devices. Additionally, some learners reported difficulties navigating online learning platforms due to limited digital literacy. These barriers restricted their ability to benefit fully from digital learning opportunities despite expressing positive attitudes toward technology.

The findings therefore suggest that efforts to expand digital learning in adult education should focus not only on increasing technological availability but also on strengthening learners' digital competencies and ensuring equitable access to infrastructure. Without addressing these issues, digital learning initiatives may unintentionally reinforce existing educational inequalities.

### **Study Limitations**

Several limitations should be considered when interpreting the findings of this study. First, the study was conducted in only two adult education institutions, which may limit the transferability of the findings to other educational contexts. Second, the research relied heavily on participants' self-reported experiences, which may be influenced by social desirability bias. Third, the study focused primarily on learners who were already participating in technology-supported learning environments and may therefore underrepresent the perspectives of individuals who lack access to digital education altogether. Despite these limitations, the study provides valuable insights into adult learners' perceptions of digital technology and highlights important opportunities and challenges associated with digital integration in adult education.

### **Implications for Policy and Practice**

The findings have important implications for policy and practice. While adult learners generally view digital technology positively, successful implementation requires more than the provision of digital platforms. Policymakers and educational institutions should invest in reliable internet infrastructure, increase access to affordable digital devices, and provide continuous digital literacy training for both learners and facilitators.

Furthermore, blended learning approaches that combine face-to-face and digital instruction may be particularly effective in addressing the challenges identified in this study. Such approaches can maximize the flexibility and accessibility of digital learning while reducing the exclusion of learners who face technological barriers. Ultimately, achieving equitable digital learning requires coordinated efforts to address both technological access and digital competence among adult learners.

### **Conclusion**

The study demonstrates that adult learners in Mwanza generally perceive digital technology as beneficial for adult education, particularly in relation to cost and time efficiency, flexibility for work and family responsibilities, improved access to learning resources, and enhanced learning continuity beyond the classroom through online communication and resource-sharing. However, these positive perceptions are not experienced uniformly; rather, they coexist with significant access constraints identified in the study context, including limited availability of ICT devices, unreliable

internet connectivity, and insufficient digital skills among some learners. This central tension means that while digital technology is valued as a pathway to improved learning experiences, its effectiveness is constrained by persistent infrastructure and capability gaps.

Based on these findings, we recommend that implementation should prioritize both technology access and capability-building. Specifically, the study proposes that the Ministry of Education should allocate the adult education budget to digital infrastructure and connectivity support, with funds that will be used to the provision of devices in adult learning centres, subsidized data and learning connectivity, and maintenance of ICT equipment to ensure sustained usability. In parallel, the same responsible agencies together with ADEM and local institute management like Luchebele Mwanza should introduce a funded and time-bound digital facilitation and learner-skills training plan in order to reduce uneven technology use and improve learners' ability to participate effectively in digital learning activities.

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