



Qualitative Study of E-Learning Tools Utilization on productivity level among ... Adebayo, M. (2026)

Qualitative Study of E-Learning Tools Utilization on Productivity Level among Extension Agents in Nigeria: A Systematic Approach

ADEBAYO, Mutalib

adebayomutalib1595@gmail.com
+2348033528706

Department of Adult and Continuing Education, Federal University of Education, Zaria, Kaduna State, Nigeria

Abstract

The increasing complexity of extension services has intensified the need for continuous professional development among extension agents. Considering the significance of extension agents as critical intermediaries linking research institutions, government agencies, and rural communities makes improving professional competence in line with occupational demands of extension agents very imperative. With advancement in Information and Communication Technology (ICT) transforming learning processes and professional development practices across various sectors, e-learning has emerged as a transformative tool for enhancing knowledge acquisition, professional development, and productivity of extension agents. Therefore, this paper, anchored on the Human Capital Theory, discussed the role of e-learning tools in enhancing productivity of extension agents in Nigeria. The paper examined the concepts of e-learning, explored the functions of extension agents, and analysed the potential of e-learning tools in strengthening professional competence of extension agents. The paper also identified challenges constraining the effective utilisation of e-learning platforms by extension agents in Nigeria. Such challenges include inadequate ICT infrastructure, poor internet connectivity, limited digital literacy, and insufficient institutional support mechanisms. The paper argued that integrating e-learning into extension training frameworks can significantly improve knowledge dissemination, professional capacity, and service delivery to communities. Hence, the paper recommended the need for adoption of blended learning approaches, institutional collaboration between extension organisations and educational institutions, and the development of specialised digital learning platforms tailored to extension work.

Keywords: E-learning, Extension agents, Extension services, Productivity, and Utilisation

Introduction

Extension services are essential component of community development in developing countries. As an institutional mechanism through which knowledge, technologies, and innovations generated by research institutions are transferred to communities, extension services strengthening community capacities, and enhance socio-economic wellbeing of communities especially in the rural areas (Chiagorom et al., 2023; Yakubu et al, 2025). In Nigeria, extension services are particularly significant because a large proportion of the population depends on agriculture and rural livelihood systems for survival and economic stability. Effectiveness of extension programmes in achieving expected objectives largely depends on the competence, motivation, and productivity of extension agents who serve as the primary interface between research institutions, government agencies, and rural communities. Despite the strategic importance of extension agents, Anderson and Feder (2007) observe that extension services in many developing countries, Nigeria inclusive, face persistent challenges related to inadequate professional development opportunities, weak institutional support, and limited access to updated knowledge resources. These challenges often translate into reduced productivity and limited capacity among extension agents to effectively deliver extension services. Extension services are series of activities geared towards accelerating development and improvement in the standard of living of the target group who are mostly the rural dwellers. In other words,



Qualitative Study of E-Learning Tools Utilization on productivity level among ... Adebayo, M. (2026)

extension services refer to the aggregate of all services provided by extension agents for the purpose of promoting social, economic, political, and cultural wellbeing of the clientele. Although extension services are mostly associated with agriculture, it covers wide range of activities that include agricultural production, home economics, family health and nutrition, population education, community development activities, among others. The numerous activities involve in extension services are complementary and interactive, each contributing to the success of accelerating development and improvement in the standard of living of the people. The dynamics and broadness of extension services call for need to ensure sustainable and continuous professional development for extension agents in order to arrest challenges associated with low professional competence and promote their productivity. Productivity of individuals is a product of many factors ranging from the training process, supervision and performance appraisal patterns, motivation and rewarding systems, and learning opportunities that are available. Vijayaragavan (2021) observes that organisations responsible for provision of extension services in developing countries face the major problems of professional incompetence and lack of motivation among their employees. Problem of professional incompetence is rooted in the quality of pre-service and post-service training programmes available to extension agents. While pre-service training are obtained in formal education settings like colleges, universities, etc., post-service training are usually received on the job through non-formal education settings like workshops, seminars, etc. planned to fill a skill-gap and improve upon the pre-service training (Nzeribe, 2011). This shows that continuous learning is pivotal to promotion of professional competence and improvement of productivities of extension agents. Hence, this paper examines the role of e-learning tools in enhancing productivity of extension agents in Nigeria.

Theoretical Framework

This paper is hinged on the Human Capital Theory (HCT) which views investment in education as a productive investment involving integration of human development into the economic development policies to enhance productive capacities of individuals, economic growth and national development. The development of HCT was propelled by the works of Theodore, W. Schultz in 1961 and Gary, S. Becker in 1964, who postulated that investment in education is akin to investment in human capital rather than mere social consumption (Ross, 2025). The term human capital refers to the personal qualities that are beneficial to improved productivity. Therefore, provision of continuous learning opportunities to extension agents will enhance their effectiveness and contributes to broader development outcomes (Swanson & Rajalahti, 2010). Such investment transcends beyond just social investment for human consumption; it is an economic investment that improves productivity, enhances career progression, and economic development. The focus of HCT is the need to enhance productivity, boost earning potentials, and overall economic growth through acquisition of knowledge, skills, and competencies. This was corroborated by Deming (2022) submission that education, training, and other forms of learning are capital investments whose costs are paid up-front and the benefits are earned later in the future. Within the context of extension services, extension agents represent an important category of human capital whose productivity significantly influences the effectiveness of extension programmes. Their ability to deliver relevant information, facilitate behavioural change, and promote community development initiatives largely depends on their level of knowledge, skills, and professional competence (Psacharopoulos & Patrinos, 2018; Swanson & Rajalahti, 2010). Continuous professional development therefore becomes an essential investment in human capital within extension systems. Training programmes, workshops, and educational opportunities serve as mechanisms for enhancing the knowledge base and technical capabilities of extension agents. The integration of e-learning platforms into extension training



Qualitative Study of E-Learning Tools Utilization on productivity level among ... Adebayo, M. (2026)

systems can be understood as a strategic investment in human capital development. By providing flexible and accessible learning opportunities, e-learning enables extension agents to continuously upgrade their knowledge and skills, thereby improve their productivity and professional performance. Applying this theoretical perspective to extension services suggests that strengthening the capacity of extension agents through e-learning tools would significantly enhance the effectiveness of extension systems and efficiency of extension agents.

The Extension Agents

Extension agents are professionally trained development practitioners employed by governmental or non-governmental extension systems to facilitate the transfer of knowledge, innovations, and advisory services to defined client groups or communities. They function as critical intermediaries linking research institutions, policy systems, and local populations, translating scientific knowledge into practical and context-specific solutions that enhance productivity and social wellbeing (Alabi, et al, 2021; Jones & Garforth, 1997). Given the educational and participatory nature of extension work, extension agents operate within multiple and often competing role expectations covering educators, communicators, facilitators, change agents, and community mobilisers. Effective performance in these roles, according to Alabi, et al (2021) and Chiagorom et al (2023), requires acquisition of multidisciplinary competence base training to facilitate technical expertise in the sector of operation, communication proficiency, adult education principles, group facilitation skills, and problem-diagnosis capabilities to extension agents. This echoed the centrality of extension agents as critical actors whose effectiveness success of extension programmes hinged. As a critical determinant of extension programme success or failure, continuous professional training and capacity development thus become essentials in enhancing extension agents' competencies in information dissemination, collective learning facilitation, and sustainable behavioural and technological change among target populations (Oladele & Tekana, 2010). Therefore, extension agents must possess good attributes that will be of positive values to attainment of extension programme objectives. Adebayo (2018) identifies the following as essential qualities which extension agents must possess:

Commitment: Good extension agents must be committed to extension work. They must be prepared and ready to work in isolated rural areas, with high sense of dedication and determination of introducing, monitoring and implementing extension programmes.

Reliability: Good extension agents must be trustworthy that the target group will have confidence in their advice and support. They must also be someone whose agency or superior officers can rely on their ability and competence to discharge their responsibilities without close supervision.

Humility: Good extension agents must be sensitive, understand and appreciate the socio-cultural diversity of the target group. They must also be sensitive to the wishes and feelings of the target group and respect them as people who have meaningful knowledge and ideas to contribute to achieve success.

Confidence: Good extension agents must believe in their own abilities and determination to achieve set objectives. They must be able to work in isolation without supervision.

Competence: Good extension agents must understand the technical subject they wish to extend and demonstrate competence in the required technical and practical skills needed for executing the extension programme.



Qualitative Study of E-Learning Tools Utilization on productivity level among ... Adebayo, M. (2026)

Eloquence: Good extension agents must be proficient public speakers. The principal task of extension agents is communication; this inevitably involves public speaking to explain ideas, conduct demonstrations or take part in discussion.

The essential characteristics expected of extension agents are testaments of the centrality of extension agents to success of extension services. As people with multiple roles and expectations, they are expected to perform the following functions:

Functions of Extension Agents

Change agent: As change agents, they are expected to help get the target group into a frame of mind, attitude and behaviour conducive for acceptance of changes. As change agents, they are expected to set a process of change in motion after realising and convince that such changes are necessary for the society.

Educator/facilitator: As educators or facilitators, extension agents engage in transfer of knowledge, skills and information that will enable the target group to understand and make rational decisions that will improve their productivity and standard of living. In doing this, extension agents find out which skills or areas of knowledge are lacking or needed by the target group and then arrange suitable learning experiences through which the clientele can acquire them.

Disseminator of information: Extension agents disseminate to their clientele results of research and also carry feedback from the clientele to research organisations. Extension agents being in contact with the target group can help research workers to understand problems and challenges of the target group so that appropriate solution can be provided.

Administrators and inculcate administrative skills: A successful change from subsistence production to commercial production requires good administrative acumen. Extension agents do not only exhibit administrative shrewdness but also inculcate it to the target group.

Intermediary between stakeholders: Extension agents serve as link between all stakeholders in extension services. There are many groups of people involve in extension. These include government ministries, research organisations, field workers and the target group. Extension agents serve as linkage between all these stakeholders in extension services.

Considering the expectations and functions extension agents are expected to efficiently perform towards accelerating development and improvement in the standard of living of the people, it becomes imperative to devise sustainable means for continuous facilitation of improvement in their productivity. Because there is no individual knowledgeable or competent beyond the need for improvement as underscore by the truism that “you start dying the moment you stop learning” (Adebayo, 2022). Therefore, there is need for flexible and wide learning opportunities that will enable extension agents expand horizon of their knowledge. To this end, there is need to explore and exploit opportunities provided by the development of information and communication technology (ICT) powered e-learning.

E-Learning

E-learning represents one of the most significant technological innovations in contemporary education and professional training systems. The concept broadly refers to the utilisation of electronic technologies and digital platforms to facilitate teaching, learning, and knowledge dissemination. Unlike conventional face-to-face learning systems, e-learning enables individuals to access educational resources through digital devices and internet-enabled platforms irrespective of geographical and temporal constraints. Consequently, e-learning has become an increasingly influential factor in learning and improvement of professional competence. Because access to



Qualitative Study of E-Learning Tools Utilization on productivity level among ... Adebayo, M. (2026)

information is central to success of any learning activity, it expands access unlimited range of learning materials and learning platforms. E-learning also known as digital learning or online learning simply denotes learning conducted via electronic media, through the use of internet. E-learning is a fantastic way to expand horizons of knowledge, learn new skills and access learning materials anywhere, anytime. Shuaibu and Ahmed (2021) describe e-learning as a unifying term for online learning, web-based training and technology-based training. In other words, e-learning may be defined as the convergence of internet enabled learning. It is the use of network technologies to create, foster, deliver and facilitate learning anywhere and anytime. The delivery of individualises, comprehensive, dynamic learning content in real time aiding the development of communities of mastery, linking learners and practitioners with experts. Moore and Kearsley (2012) describe e-learning as instructional processes that are delivered through electronic technologies, particularly internet-based platforms, to support learning activities outside the traditional classroom environment. Similarly, Clark and Mayer (2016) define e-learning as instruction delivered via digital devices designed to support learning through multimedia content such as text, audio, video, animations, and interactive activities. As a rapidly evolving phenomenon, e-learning facilitates effective knowledge delivery, promotes accessibility, and offers opportunities for learners and organisations to adapt to the continuous innovations and accelerated changes characteristic of the internet-driven world. It is a force that gives people and organisations the complete edge to allow them to keep ahead of the rapidly changing global economy (Alharthi, & Plunkett, 2019; Shuaibu & Ahmed, 2021). The idea behind electronic learning is to empower learners to study without being confined to the four walls of classrooms or schools. As integration of learning with technology, e-learning are of different types.

Types of E-learning

The conglomerations of methods through which e-learning can be delivered can be grossly classified into two: synchronous methods also known as interactive methods and asynchronous methods also known as static methods.

Synchronous methods (Interactive methods): These are instructor-facilitated Web-based learning and it requires all the participants to be present, albeit virtually, at the same time. Examples of synchronous e-learning methods include the use of scheduled and timed online tests, virtual classrooms, web conferencing technology or interactive shared whiteboards like Skype and Zoom that learners can use to collaborate (Lutkevich, 2020).

Asynchronous methods (Static methods): These are self-directed and self-paced methods which enable participants to learn individually at their own pace and time through CD-ROM-based, network-based, intranet-based and internet-based. Examples of static methods include the use of learning portals, hyperlinked pages, streaming audio/video and digital materials like PDF documents, slideshows and word documents (Lutkevich, 2020). Asynchronous methods give learner freedom to choose the pace at which they consume the learning materials.

Irrespective of the methods, e-learning has revolutionised the educational system and expanded scope of options of instructional delivery strategies. It has offered new possibilities to inform, stimulate attention and actively involve learners in the learning processes to improve their knowledge, skills and performance. The importance of e-learning in promoting diverse and accessible learning opportunities cannot be overemphasised. The versatility of e-learning can be adapted to suit the divergent educational needs, learning styles and instructional methodologies of individuals. With this, it would therefore prove helpful to exploit accessibility of e-learning to facilitate improvement in productivity of extension agents.



Qualitative Study of E-Learning Tools Utilization on productivity level among ... Adebayo, M. (2026)

Importance of E-Learning in Enhancing Productivity of Extension Agents

E-learning will play significant importance towards facilitation of improvement in the productivity of extension agents in Nigeria. Internet has become a first port of call for many motivated learners and extension agents need to take advantages of easy access to availability of large information on internet to acquaint themselves with new discovery and development in extension services. This will enable them acquire knowledge and skills that will translate to improvement in their professional competence and productivity. E-learning has been recognised as an effective means of expanding affordable learning opportunities for individual and national development. To this end, extension agents should maximise opportunities provided by e-learning to access varied learning materials wherever they are at any time. This provides opportunities for extension agents to acquire functional relevant knowledge based on needs. This will promote development of individuals' unique natural endowment and their ability to contribute to development of their clientele and the clientele's communities.

The uniqueness of e-learning is rooted in the use of multimedia devices to continuous bridged the gap of space and time that exist between the learners and the teacher. This is done through a wide spectrum of technologies, such as: videotaped lectures, the internet, the compressed video, teleconferencing, video conferencing, computer conferencing, among others. Thus, e-learning promotes lifelong learning and improvement in productivity of extension agents. Furthermore, e-learning provides opportunities for extension agents to develop a self-paced training schedule. The learners-oriented system of e-learning allows flexibility in learning. This will enable extension agents to overcome impairment to continuous educational pursuit imposed by the constraints of time and demands of extension services. Moreover, the scalability of learning content and duration can be reasonably measured (Vijayaragavan, 2021). This will be beneficial to those extension agents who feel nervous and uncomfortable learning in groups by enabling them to learn without leaving the comforts of their homes and thereby promote higher degree of coverage and consistency in learning. Although, e-learning has become indispensable part of the mainstream educational system by bringing learners, tutors, and other interest groups together, some challenges may limit its utilisation for facilitating improvement in productivity of extension agents.

Challenges of E-Learning to Facilitating Improvement in Productivity of Extension Agents

Despite the benefits of e-learning to facilitation of productivity of extension agents in Nigeria, some challenges are undermining its utilisation. These challenges include:

Low proficiency in ICT usage: Learning via e-learning requires learners to be proficient in usage of ICT devices and software applications such as computer, internet, Zoom, Skype, etc. According to Isuji (2010) 45.80% of learners in Open and Distance Education in Nigeria lack computer literacy skills. Acquisition of proficiency in the usage of ICT and software applications comes with a cost. Other problems militating against the usage of ICT facilities to facilitation of productivity of extension agents in Nigeria are high cost of ICT gadgets and services, poor internet access, low internet bandwidth, irregular power supply and absence of alternative source of power especially in the rural areas. While it is easy for learners facing technical issues in a physical class to access help from the IT department and experts, learners in online classes have to try to find solution by themselves.

Inadequate interaction and engagement: Considering the fact that extension activities are directed mostly to people in rural areas, extension agents are more likely to work individually in remote areas. It is difficult for extension agents to interact with and adequately get to know each other. This is because interaction via Zoom, Google Meet or Skype is not the same as physical



Qualitative Study of E-Learning Tools Utilization on productivity level among ... Adebayo, M. (2026)

interaction. According to Burton (2022), the absence of course mates and teachers in the immediate learning environment can cause learners to feel isolated and disconnected from the class and make them not to engage the way they would have engage in a physical setting. Consequently, attendance, participation and academic performance may decline and this would negatively impact on their professional performance.

Inadequate availability of relevance learning materials: Learning materials are the totality of information carrying devices that are used to ease, encourage, improve and promote learning activities. Despite that learning materials exist in prints, visual, audio and audio-visual forms, accessing relevant learning materials suitable to promote productivity of extension agents remains a challenge. E-learning materials for extension agents should not be a one-size fits all (Shanahan, 2023) because different extension agents working in different fields have varied knowledge and skill-gap needs. Regrettably, the materials needed by extension agents to bridge professional knowledge and skill-gap needs for improve productivity are always not adequately available and accessible.

Less practical training: E-learning mostly provides provide learners with the theoretical aspect of a training exercise while little provision is made available for practical training. Considering the fact that extension activities are mostly practical oriented in nature, it becomes difficult for extension agents to acquire the needed practical knowledge and skills needed for professional efficiency thorough e-learning. Therefore, there is need for integration of traditional face-to-face training into e-learning.

Conclusion

Overcoming challenges associated with utilisation of e-learning instructional facilities by extension agents is paramount to stimulate improvement in professional competence and productivity of extension agents as well as to accelerate development and improvement in the standard of living of the beneficiaries of extension services who are mostly the rural dwellers. Hence, recommendations offer by this paper should be systematically implemented.

Recommendations

1. To overcome the challenges associated with low proficiency in ICT, there is need to employ people who are computer literates and those who are willing to acquire more proficiency in computer utilisation as extension agents. In addition, regular periodic training in computer applications should always by organised for extension agents. This will enable the extension agents to be conversant with latest development in ICT and versatile with usage of different ICT gadgets.
2. To overcome the challenges associated with inadequate interaction and engagement, there is need to infuse opportunities for social networking and interaction in e-learning programmes designed for extension agents. This can be done by incorporating group discussion and interactive session into the learning process.
3. To overcome the challenges associated with inadequate availability of relevance learning materials, there is need for extension organisations to subscribe with learning institutions and research data base all over the world in order to access learning materials from them. Subscribing to the data base of some learning institutions and research organisations require payment and most extension agents may not be able to afford the payments.
4. To overcome the challenges associated with low practical training, there is need for extension organisations to always collaborate with extension training institutions to provide opportunities to put what is leant into practice. Practical sessions cab be organised on a geo-political zone or region or state basis for extension agents with provision made for their transportation, accommodation and feeding allowances.



Qualitative Study of E-Learning Tools Utilization on productivity level among ... Adebayo, M. (2026)

References

- Adebayo, M. (2018). ANF 114: Extension education. Unpublished lecture reading material for Adult and Non-Formal Education students, FUE, Zaria
- Adebayo, M. (2022). Continuing education, teachers' improvement and national development: The tripod. *Ilmi Multi-Disciplinary Journal of Education* 3(1), 231-237
- Alabi, O. S., Ajayi, A. O., Fapojuwo, O. E., & Alabi, T. O. (2021). Knowledge and skill of agricultural extension agents in research and data management in Southwest Nigeria. *Ife Journal of Agriculture*, 33(3). 10-19
- Alharthi, H., & Plunkett, M. (2019). E-learning adoption and implementation: Factors and challenges. *Journal of Information Technology Education: Research*, 18(1), 57-83.
- Burton, C. (2022). 7 top challenges with online learning for students (and solutions) Access on <https://www.thinkific.com/blog/challenges-with-online-learning/>
- Chiagorom, V. C., Osuchukwu, L. C., Nzereogu, I. K., & Akojuru, A. T. (2023). The role of agricultural extension services in Nigeria. *ASRIC Journal of Agricultural Sciences*. 155-158
- Jones, G. E., & Garforth, C. (1997). *Improving agricultural extension: A reference manual*. FAO.
- Lutkevich, B. (2020). E-learning (online learning). Retrieved 22 May, 2023 from <https://www.techtarget.com/whatis/definition/Web-based-training-e-learning>
- National Open University of Nigeria. (2023). *Agricultural extension and rural development course material*.
- Nzeribe, T.A.K. (2011). Critical challenges of pre and post service extension education and training in Nigeria. *Journal of Agricultural Extension*, 15(1), 93-98
<http://dx.doi.org/10.4314/jae.v15i1.10>
- Oladele, O. I., & Tekana, S. S. (2010). Determinants of extension agents' competencies in dissemination of agricultural innovations. *Journal of Human Ecology*, 30(1), 1-6.
<https://doi.org/10.1080/09709274.2010.11906262>
- Osuji, U.S.A. (2010). An assessment of the computer literacy level of Open and Distance Learning students in Lagos state, Nigeria. *Turkish Online Journal of Distance Education-TOJDE*, 11(4), 149-158 ISSN 1302-6488
- Psacharopoulos, G., & Patrinos, H. A. (2018). Returns to investment in education: A decennial review of the global literature. *Education Economics*, 26(5), 445-458.
- Shanahan, A. (2023). The top 10 e-learning challenges L&D professionals face every day. Accessed at <https://www.docebo.com/learning-net/blog/elearning-challenges>
- Shuaibu, A. and Ahmad, M. A. (2021). The need for improved e-learning programme for effective secondary school curriculum delivery in time of insecurity in Nigeria. *Journal of Special, Adult and Non-Formal Education (JOSANFE)* 1(1), 190-195
- Swanson, B. E., & Rajalahti, R. (2010). *Strengthening agricultural extension and advisory systems: Procedures for assessing, transforming, and evaluating extension systems*. World Bank.
- Vijayaragavan, K. (2021). Managing human resources within extension. Accessed at <https://www.fao.org/3/W5830E/w5830e0g.htm>
- Yakubu D.H., Douseifa G.G.B., Anjo A.K., and Alhassan J. (2025). Socioeconomic determinants of agricultural extension needs among yam farmers in Nasarawa State, Nigeria. *Journal of Agricultural Extension*, 29(1), 126-132