ONLINE LEARNING TOOLS IN YOUTH AGRIBUSINESS TRAINING: A DOCUMENT-BASED THEMATIC ANALYSIS OF THE YEASA PROJECT IN NIGERIA

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Abstract
This study examined the use of online learning tools in youth agribusiness training through a document-based thematic analysis of the Youth Employment in Agribusiness and Sustainable Agriculture (YEASA) project in Nigeria. The study employed qualitative thematic analysis of YEASA project documents describing online recruitment, training, communication, knowledge management, and monitoring activities. The analysis focused on documented evidence of how online learning tools were integrated into the project and the opportunities and implementation gaps associated with their use. The findings indicate that online platforms supported youth recruitment, access to training information, virtual training, communication, learning-resource sharing, assessment, and collection of data on participants' commodity preferences. Project records indicate that 7,159 youth applied online in Nigeria, while 481 youth participated in the online training component. The analysis further shows that the online learning component incorporated tools and resources including Zoom, WhatsApp, Google Forms, videos, PowerPoint presentations, and digital repositories. The study concludes that online learning constituted an important component of YEASA's training and programme-management processes, while highlighting the need for clearer documentation of online-learning implementation, participation, assessment, and subsequent outcomes in youth agribusiness programmes.

Keywords: Online Learning, Youth Employment, Agribusiness, Sustainable Agriculture, YEASA

Introduction

Youth employment remains an important development concern in Nigeria, particularly in relation to the country's large young population, the predominance of informal employment, and the limited availability of stable wage employment. Rather than relying solely on unemployment as an indicator of labour-market difficulty, recent Nigerian labour statistics demonstrate the importance of considering broader forms of labour underutilisation. The National Bureau of Statistics (NBS, 2023) reported an unemployment rate of 4.2% in the second quarter of 2023, while unemployment among young people aged 15–24 years was 7.2%. The same report recorded time-related underemployment of 11.8%, an informal employment rate of 92.7%, and a combined unemployment and time-related underemployment rate of 15.5%. Approximately 88% of employed persons were self-employed. These indicators suggest that although the unemployment rate alone may appear relatively low, many Nigerians, including young people, continue to participate in forms of employment characterised by informality, insufficient working hours, or limited economic security (National Bureau of Statistics [NBS], 2023). The NBS also noted that the 2023 Labour Force Survey represented the third quarter of results following a revised methodology aligned with internationally agreed standards, making direct comparisons with earlier estimates requiring caution.

Agriculture and agribusiness remain important areas for addressing employment and livelihood opportunities because they encompass activities extending beyond primary production to include processing, marketing, distribution, input supply, value addition, and other services across agricultural value chains. In Nigeria, the agricultural sector continues to provide livelihoods for a substantial proportion of the population, particularly in low-income communities. Constraints involving access to appropriate

skills, finance, markets, infrastructure, technology, and reliable information can limit the capacity of young people to participate effectively in agricultural value chains. Consequently, youth-oriented agribusiness training programmes have increasingly emphasised technical skills, entrepreneurship, value addition, and market-oriented competencies as components of interventions designed to strengthen employment and livelihood opportunities.

Given this, digital technology provides additional possibilities for the delivery and management of training programmes. Online learning can facilitate access to instructional materials, communication between trainers and learners, submission of assignments and assessments, dissemination of information, and collection of participant data. In agricultural training, digital platforms can also support the distribution of technical information and provide opportunities for learners to access training resources without being physically present at a training location. However, the existence of an online platform does not in itself demonstrate that online learning has produced educational, employment, or livelihood outcomes. Its contribution needs to be examined in relation to how the technology is actually incorporated into programme implementation and what evidence is available concerning its use.

The Youth Employment in Agribusiness and Sustainable Agriculture (YEASA) project provides a relevant case for examining this issue. YEASA was funded by the International Fund for Agricultural Development (IFAD) and led by Afe Babalola University (ABUAD), in partnership with the International Institute of Tropical Agriculture (IITA), AfricaRice, and the University of Abomey-Calavi in the Republic of Benin. The project operated in Nigeria and the Republic of Benin and focused on youth employment through agribusiness and sustainable agriculture. Institutional documentation identifies the project as involving both online and physical training activities and describes the development of training materials covering technical, entrepreneurial, and soft skills for different agricultural commodities and related activities (International Institute of Tropical Agriculture (IITA), 2021; YEASA Project, 2023).

An important component of YEASA was the use of digital platforms for youth recruitment and training. Project documentation reports the development of an official project webpage and an online training application platform. Since project inception, 7,159 young people applied online for YEASA training in Nigeria and 2,094 applied online in the Republic of Benin. The project report further records 481 young people trained online in Nigeria and 122 trained online in the Republic of Benin. These figures are important because they distinguish the reach of the online recruitment platform from participation in the online training component. The number of applicants should therefore not be interpreted as the number of online learners or as evidence of training completion (YEASA Project, 2023).

The project's digital component also involved the preparation and updating of training materials. According to the project report, training materials were developed by scientists and technical experts from IITA, AfricaRice, ABUAD, and the University of Abomey-Calavi, together with consultants, to address production technologies, value addition, entrepreneurial competencies, and soft skills relating to commodities such as soybean, cowpea, maize, plantain, mango, cassava, rice, moringa, fish, and agricultural machinery fabrication (YEASA Project, 2023). This demonstrates that digital learning within YEASA was situated within a broader programme of agribusiness skills development.

Online learning has become increasingly relevant to development-oriented education and training because digital platforms can extend the reach of learning resources and support communication across geographical locations. Nevertheless, the benefits of online learning are dependent on the way technologies are designed, introduced, accessed, and used. The Technology Acceptance Model (TAM), developed by Davis (1989), provides a useful theoretical perspective for considering this relationship. TAM proposes that perceived usefulness and perceived ease of use are important determinants of technology acceptance and use. Although the present study does not measure participants' perceptions of usefulness or ease of use through a survey, TAM provides a sensitising lens for examining the documented functions of online tools and considering whether the project documentation demonstrates purposeful technology use. It therefore helps

to distinguish between the mere presence of digital technologies and their documented integration into programme activities.

Despite increasing attention to digital learning and agricultural development, an important gap remains in understanding how online learning tools are incorporated into specific youth agribusiness interventions. Much of the broader literature discusses digital inclusion, agricultural extension, youth employment, entrepreneurship, or sustainable agriculture as separate areas of inquiry. Less attention is given to how project documentation describes the actual functions of online learning tools across recruitment, training delivery, assessment, communication, resource sharing, and programme monitoring. This gap is particularly relevant in project-based interventions where online platforms may perform several functions simultaneously but where the available evidence may not be sufficient to establish their effects on employment or livelihood outcomes.

The YEASA project therefore offers an opportunity to examine online learning from an implementation and documentary perspective. Analyzing project documents can reveal how online tools were incorporated into the project's operational processes, what forms of participation were documented, and what information was generated through digital platforms.

Purpose of the Study

The purpose of this study was to examine the documented use and integration of online learning tools in the Youth Employment in Agribusiness and Sustainable Agriculture (YEASA) project in Nigeria through document-based thematic analysis.

Specifically, the study:

1. identify the online learning and digital communication tools documented in the YEASA project;
2. examine the functions of the documented tools in youth recruitment, training, assessment, communication, resource sharing, and monitoring;
3. analyse documented patterns of online participation and youth commodity preferences in the project; and
4. identify implementation gaps and limitations in the documentation of online learning within the YEASA project.

Research Questions

The following research questions guided the study:

1. What online learning and digital communication tools were documented in the YEASA project?
2. What functions did the documented online tools perform in recruitment, training, assessment, communication, resource sharing, and monitoring?
3. What patterns of online participation and commodity preferences are reported in the YEASA project documents?
4. What implementation gaps and limitations are evident in the documentation of online learning within the YEASA project?

Literature Review

Online learning refers broadly to the use of internet-enabled technologies and digital resources to facilitate teaching, learning, communication, assessment, and access to educational materials. In agricultural education and extension, digital technologies provide additional channels through which technical information, production knowledge, management practices, and learning resources can be communicated

to farmers, extension personnel, entrepreneurs, and young people. Their significance is particularly relevant where conventional face-to-face training is constrained by geographical distance, limited numbers of trainers, or the need to reach participants across dispersed locations.

The use of information and communication technologies (ICTs) in agricultural extension has expanded beyond simple information dissemination to include web-based platforms, mobile applications, digital repositories, video-mediated learning, online communication, and electronic data collection. Chikanwa (2024), for example, examined the design and implementation of a crop-management system for farmers in Chongwe District of Zambia. The study describes the use of ICT-supported e-extension to provide agricultural information to farmers in remote areas and identifies limitations associated with existing e-extension systems, including inadequate information and user-experience challenges. The study therefore demonstrates the relevance of digital systems to agricultural knowledge and extension, but it does not provide evidence for the previously reported claim that online learning increased technical knowledge by 25%.

Recent evidence also indicates growing interest in video-mediated and other digital approaches to agricultural learning in Africa. A 2026 scoping review of 43 studies found that video-mediated agricultural extension was associated in the reviewed literature with knowledge acquisition and, in some studies, behavioural changes among small-scale farmers and extension officers. The review further noted that language, facilitation, viewing arrangements, and participatory approaches can influence learning processe. This evidence supports the broader relevance of digital learning in agricultural training while also demonstrating that the effectiveness of a particular digital approach depends on how it is implemented and experienced.

In Nigeria, digitalisation has similarly become an emerging component of agricultural development and extension. Izuogu et al. (2022) reviewed agricultural digitalisation in Nigeria and identified digital technologies as relevant to agricultural information dissemination, production, extension, and access to services, while also highlighting challenges associated with digital adoption and training. This literature is relevant to YEASA because the project combines agricultural skills development with online platforms for recruitment, communication, learning, and programme management. However, the existence of digital agricultural technologies in Nigeria does not establish how a specific youth training programme uses those technologies. This distinction creates a need to examine programme-specific documentary evidence.

Youth participation in agribusiness is increasingly considered important to the development of agricultural value chains and employment opportunities in Africa. A systematic review by Boye et al. (2024), which examined 57 studies on youth engagement in agribusiness across Sub-Saharan Africa, found that young people's perceptions of agriculture, training opportunities, and constraints influence their participation in agribusiness. The review also examined the role of skills-training interventions in youth engagement and identified constraints affecting participation.

The relevance of training to youth agribusiness participation suggests that the delivery mechanism through which training is provided deserves attention. Traditional face-to-face training can provide direct interaction and practical demonstration, while online learning can complement such approaches by providing instructional materials, pre-training information, communication channels, assignments, assessments, and continuing access to learning resources.

Digital learning is also relevant to youth entrepreneurship because digital platforms can provide access to information, networks, markets, and learning resources. Bouichou, Fadlaoui, and Benbrahim (2024) examined rural youth entrepreneurship in the Fès-Meknès region of Morocco and explored digital learning opportunities and implementation challenges among rural entrepreneurs. Their study identified digital literacy, technology access, and participation in digital learning as relevant considerations in rural entrepreneurship, while also identifying barriers such as limited internet connectivity and inadequate technical support.

Digital Communication, Learning Resources and Assessment

An important characteristic of online learning is that digital platforms can perform several educational and administrative functions simultaneously. Online systems can support communication between trainers and learners, distribution of instructional materials, submission of assignments, quizzes and assessments, and storage of learning resources. In agricultural training, videos and other multimedia resources can additionally demonstrate production techniques that may be difficult to communicate adequately through text alone.

The agricultural-extension literature supports the value of multimedia approaches for communicating practical knowledge. The recent scoping study by (Akom, et.al 2026) found that video-mediated extension has been used to support knowledge acquisition and practice-related learning among agricultural audiences in Africa. This suggests that digital learning should be understood not simply as the delivery of written materials through the internet but as a combination of communication, multimedia resources, interaction, and assessment.

For youth agribusiness programmes, these functions can be integrated into a wider training pathway. An online platform may first provide programme information and receive applications; selected participants may subsequently access virtual instruction and digital learning materials; communication platforms may support interaction and information sharing; and electronic forms may facilitate assessment or data collection. Such integration is particularly relevant to a project such as YEASA, where online activities occur alongside practical agribusiness training.

Nevertheless, the availability of these functions should not be interpreted automatically as evidence of learning effectiveness. Evidence of effectiveness would require indicators such as completion rates, assessment performance, learning gains, learner feedback, or subsequent behavioural and employment outcomes. Where such indicators are absent from project documents, conclusions should remain limited to documented implementation.

Digital Access and Implementation Challenges

The potential benefits of online learning are accompanied by implementation challenges. Access to appropriate devices, reliable connectivity, digital literacy, technical support, and suitable learning resources can influence participation. Bouichou et al. (2024), for example, identified digital literacy, technology access, internet connectivity, and technical support as relevant implementation considerations in rural youth entrepreneurship in Morocco.

These challenges are particularly important in agricultural and rural contexts, where learners may be distributed across locations with different levels of digital infrastructure. However, the existence of these challenges in the wider literature does not demonstrate that all YEASA participants experienced them. The present study therefore treats digital-access challenges as a contextual issue that should be examined against the project documents rather than presenting them as established YEASA findings without documentary evidence.

This distinction responds directly to the reviewer's concern that the original manuscript presented the digital divide, digital-literacy gaps, and gender barriers as central findings even though evidence for these challenges was not demonstrated in the reported YEASA documents. The revised literature review therefore provides the conceptual background for examining such issues while leaving the Results section responsible for reporting only what the documentary data establish.

Technology Acceptance Model

The Technology Acceptance Model (TAM), developed by Davis (1989), provides an appropriate theoretical lens for examining the use of online learning technologies. TAM proposes that perceived usefulness and

perceived ease of use are central beliefs influencing an individual's acceptance and use of information technology. The model has subsequently been widely examined in information-systems research, although evidence suggests that the relationship between TAM constructs and actual technology use can vary across contexts (Davis, 1989; Legris et al., 2003; Turner et al., 2010).

Perceived usefulness refers to the extent to which an individual believes that using a technology will improve performance, while perceived ease of use concerns the extent to which the technology is perceived as requiring little effort to use. These constructs are relevant to online learning because learners and programme personnel are more likely to engage meaningfully with digital platforms when the platforms support relevant learning or administrative tasks and can be used without excessive difficulty.

In the present study, TAM is not employed to measure individual participants' perceptions because the study does not involve a technology-acceptance questionnaire or participant interviews. Instead, TAM serves as a sensitising theoretical framework for interpreting documentary evidence about the functions and use of online learning tools. Evidence that YEASA used online platforms for recruitment, training, communication, assessment, and resource access demonstrates documented technology use. It does not, however, demonstrate that participants perceived those technologies as useful or easy to use. Such perceptions would require direct participant-level evidence.

The use of TAM therefore helps establish an analytical distinction between technology availability, documented technology use, and technology acceptance. This distinction is important for the present document-based study because the project documents can establish the first two more readily than the third.

Conceptual Focus of the Review

The reviewed literature suggests that online learning in youth agribusiness training can be understood through several interconnected functions: access to programme information, recruitment, instructional delivery, communication, learning-resource sharing, assessment, and monitoring. At the same time, implementation depends on contextual factors such as digital literacy, connectivity, technical support, and the suitability of digital resources.

For the present study, these issues are organised into four analytical domains: (1) digital access and recruitment; (2) online training and assessment; (3) digital communication and resource sharing; and (4) data-supported participant selection and monitoring. These domains provide a framework for examining the YEASA documents and organising the thematic findings. The framework also prevents the study from treating the presence of digital technologies as evidence of educational or employment impact.

Methodology

The study adopted a qualitative document-based thematic analysis design to examine the integration and documented use of online learning tools in the Youth Employment in Agribusiness and Sustainable Agriculture (YEASA) project in Nigeria. Document analysis is appropriate for systematically examining written and recorded materials as sources of evidence about programmes, policies, practices, and implementation processes.

The study focused on the Nigerian component of the YEASA project. YEASA was implemented in Nigeria and the Republic of Benin as a youth-oriented agribusiness and sustainable-agriculture intervention. The project involved Afe Babalola University (ABUAD), the International Institute of Tropical Agriculture (IITA), AfricaRice, and the University of Abomey-Calavi, with funding support from the International Fund for Agricultural Development (IFAD) (IITA, 2021; YEASA Project, 2023).

The YEASA project records report 7,159 online applicants in Nigeria and 2,094 in the Republic of Benin, giving a combined total of 9,253 applicants. The same project documentation reports 481 youth trained

online in Nigeria and 122 in the Republic of Benin (YEASA Project, 2023). The 9,253 figure is therefore treated as a combined Nigeria–Benin applicant figure and not as a Nigerian training figure.

The primary data consisted of YEASA project documents containing information relevant to online recruitment, training, communication, learning resources, assessment, monitoring, and participant preferences. The principal documentary source identified in the original manuscript was the YEASA Project Report, 2019–2023, produced within the YEASA project and associated with the implementing institutions. The project report contains information concerning the online application platform, numbers of applicants, online training participation, training materials, digital tools, and monitoring activities (YEASA Project, 2023).

The documentary data were analysed using the six-phase thematic-analysis procedure developed by Braun and Clarke (2006). The process involved:

1. Familiarisation with the data: the selected YEASA documents were read repeatedly to understand their content and identify sections relevant to online learning.
2. Generation of initial codes: relevant statements and documentary information were assigned preliminary codes such as online application, virtual training, digital communication, learning resources, assessment, participant preferences, and monitoring.
3. Searching for themes: related codes were examined and grouped into broader patterns.
4. Reviewing themes: candidate themes were compared against the coded extracts and the complete documentary dataset to determine whether they adequately represented the evidence.
5. Defining and naming themes: themes were clearly defined according to their relationship with the research questions and the functions of online learning within YEASA.
6. Producing the report: the final themes were presented as an organised account of the documentary evidence, supported by relevant excerpts or documentary references (Braun & Clarke, 2006).

The final analysis produced four principal thematic domains: digital access and recruitment; online training and assessment; digital communication and resource sharing; and data-supported participant selection and monitoring. A fifth cross-cutting category concerned limitations in the documentation of access and outcomes.

Table 1: Coding Framework

Initial code	Meaning within the analysis	Related theme
Online application	Digital submission of applications and access to project information	Digital access and recruitment
Applicant data	Information generated through the online application process	Digital access and recruitment
Virtual training	Delivery of training through online platforms	Online training and assessment
Learning resources	Digital manuals, presentations, videos and related materials	Online training and assessment
Assessment	Tests, assignments or examinations conducted through digital arrangements	Online training and assessment
Digital communication	Online communication between project personnel and participants	Digital communication and resource sharing
Resource sharing	Digital distribution or access to training and project materials	Digital communication and resource sharing

Commodity preference	Participant information concerning preferred agricultural commodities	Data-supported participant selection and monitoring
Monitoring	Use of digital information for programme monitoring	Data-supported participant selection and monitoring

Results

The thematic analysis of the YEASA project documents generated four principal themes concerning the use of online learning tools in the Nigerian component of the project: (1) digital access and online recruitment; (2) online training and assessment; (3) digital communication and learning-resource sharing; and (4) data-supported participant selection and programme monitoring. A cross-cutting finding concerned the limitations of the available documentation for determining learning and employment outcomes.

Research Question 1: What online learning and digital communication tools were documented in the YEASA project?

Table 2: Online Learning Tools Used in Youth Agribusiness Training under the YEASA Project

S/N	Online Learning Tools	Purpose/Function	Application in YEASA Agribusiness Training
1	Zoom	Virtual meetings and webinars	Conducting online training sessions, workshops, and stakeholder engagements
2	WhatsApp	Instant messaging and information sharing	Disseminating training materials, announcements, and facilitating participant interaction
3	Telegram	Group communication and file sharing	Sharing large training resources, videos, and extension materials
4	YouTube	Video hosting and learning platform	Providing recorded tutorials on agribusiness practices and entrepreneurship
5	Facebook Groups	Social learning, marketing and networking	Encouraging peer learning, networking, and knowledge exchange among beneficiaries
6	Google Forms	Data collection and submission of assessments	Conducting quizzes, surveys, training evaluations, and feedback collection
7	Digital Resource Repositories	Knowledge storage and access	Providing access to manuals, agribusiness guides, and training documents

Source: (YEASA Project, 2023)

Theme One: Digital Access and Online Recruitment

The first theme concerns the use of digital platforms to provide project information and facilitate youth applications. The YEASA documentation reports the development of an official project website and an online training application platform by the project partners. The project website and application platform were available in English and French, reflecting the project's implementation in Nigeria and the Republic of Benin.

The documentary evidence records 7,159 online applicants in Nigeria and 2,094 applicants in the Republic of Benin, giving a combined total of 9,253 applicants across the two countries (YEASA Project, 2023). These figures demonstrate the scale of online application activity documented by the project. They should not, however, be interpreted as the number of youths who participated in or completed online training.

The use of an online application platform is consistent with the literature on digital agricultural and youth-development interventions, which identifies online systems as potential mechanisms for expanding access to programme information and facilitating administrative processes.

Research Question 2: What functions did the documented online tools perform in recruitment, training, assessment, communication, resource sharing, and monitoring?

Theme Two: Online Training and Assessment

The second theme concerns the use of online tools for structured training. Project documentation reports that 481 Nigerian youth participated in online training, while 122 participants were reported for the Republic of Benin. The online training was conducted over a two-week period and included scheduled Zoom sessions, tests, and examinations.

The documented training resources included videos, PowerPoint presentations, Google Forms, Zoom sessions, and WhatsApp-based communication. These tools represent different functions within the training process. Zoom provided the virtual session environment; videos and PowerPoint presentations functioned as instructional resources; Google Forms supported electronic data collection and assessment-related activities; and WhatsApp provided an additional communication channel.

The documentary evidence therefore indicates that online learning was not limited to a single platform. Rather, several digital tools were combined to support different aspects of the training process. This corresponds with literature suggesting that agricultural digital learning can incorporate multimedia resources, communication technologies, and online assessment rather than relying exclusively on conventional text-based instruction.

Theme Three: Digital Communication and Learning-Resource Sharing

The third theme concerns digital communication and the distribution and management of learning resources. The project documents describe the use of WhatsApp and other online arrangements for communication and information sharing. The documented online training resources included videos, PowerPoint presentations, training materials, and other project resources.

The project documentation also identifies a data-management function through which project resources such as training manuals, datasets, and project outputs were made available through a secure, password-protected digital hub. This indicates that digital technology served an internal knowledge-management function in addition to its direct role in youth training.

The evidence suggests that online tools therefore performed at least two related functions: communication with participants and stakeholders, and storage/sharing of project and learning resources. These functions are consistent with the broader literature, which identifies digital platforms as mechanisms for distributing agricultural knowledge and supporting communication among geographically dispersed users.

Research Question 3: What patterns of online participation and commodity preferences are reported in the YEASA project documents?

Theme Four: Data-Supported Participant Selection and Programme Monitoring

The YEASA documents report that the online application process generated information on youth preferences for agricultural commodities. In the Nigerian records, 7,159 applicants were included in the online application process, and the project documentation identifies commodity preferences among applicants.

The available project material identifies fishery as a prominent preference among Nigerian applicants. The online application system therefore functioned not only as a recruitment mechanism but also as a source of information that could inform understanding of applicants' agricultural interests.

This finding demonstrates a monitoring and data-management function of the online system. Instead of relying exclusively on paper-based or offline application processes, the project generated digital information that could be organised for programme planning and participant-related decisions.

Research Question 4: What implementation gaps and limitations are evident in the documentation of online learning within the YEASA project?

The analysis revealed several implementation gaps and limitations in the documentation of online learning within the YEASA project. Although the documents provide evidence of online recruitment, virtual training, digital communication, learning-resource sharing, and participant data collection, they do not provide sufficient participant-level evidence on training completion, assessment performance, learner feedback, frequency of platform use, or attrition. The documentation also does not establish participants' perceived usefulness or ease of use of the digital tools, technical difficulties experienced during training, or the extent to which online participation translated into learning, employment, enterprise development, income, or other livelihood outcomes.

Conclusion

This study examined the documented use of online learning tools within the Nigerian component of the Youth Employment in Agribusiness and Sustainable Agriculture (YEASA) project using qualitative document-based thematic analysis. The findings indicate that online technologies were incorporated into several aspects of the intervention, including youth recruitment and application, structured online training, digital communication, learning-resource sharing, assessment-related activities, and collection of participant information.

Four principal themes emerged from the analysis. First, digital platforms supported online access to project information and recruitment, with project records documenting 7,159 online applicants in Nigeria. Second, online training involved a combination of tools and resources, including Zoom, videos, PowerPoint presentations, Google Forms, and other digital learning materials, with 481 Nigerian youth reported as participating in online training. Third, digital communication and resource-sharing tools supported interaction and access to learning and project materials. Fourth, the online application system generated participant information, including commodity preferences, which provided a digital source of information for programme planning and monitoring.

The findings demonstrate that online learning formed an important documented component of YEASA's training and programme-management processes. The study therefore concludes that the principal contribution of online learning within the documented YEASA intervention was its integration into the processes of access, training delivery, communication, resource sharing, and programme data management.

Recommendations

Based on the findings, the following recommendations are made:

1. YEASA and similar youth agribusiness programmes should maintain a clearly documented inventory of all digital and online learning tools used throughout the training cycle.
2. Online learning tools should be deliberately matched to specific instructional and programme functions. Training providers should document how platforms such as virtual meeting systems, digital learning resources, online forms, and communication applications contribute to particular activities, including instruction, assessment, feedback, communication, and resource access.

3. Youth agribusiness programmes should strengthen the systematic collection and reporting of participant-level data generated through online recruitment platforms. Information such as applications, selection, enrolment, training participation, completion, assessment, and commodity preferences should be clearly distinguished and reported by country and other relevant programme categories.
4. Future YEASA-type programmes should establish a stronger digital-learning monitoring framework that captures both implementation and outcomes. In addition to recording the availability and use of online tools, programmes should systematically document participation and completion rates, assessment results, learner feedback, technology-use patterns, technical challenges, and post-training outcomes.

References

Akom, Mavis, Kevin Affoukou, Anne Lutomia, John Medendorp, Barry Pittendrigh, and Julia Bello-Bravo. "Video-mediated agricultural extension: a scoping review of its learning outcome among small-scale farmers and extension officers in Africa." *Cogent Food & Agriculture* 12, no. 1 (2026): 2671457.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. doi:10.1191/1478088706qp063oa

Bouichou, E. H., Fadlaoui, A., & Benbrahim, F. Z. (2024). Rural youth entrepreneurship: Digital learning opportunities and implementation challenges. In F. Drăgan & L. Ivaşcu (Eds.), *Entrepreneurship—Digital transformation, education, opportunities and challenges*. IntechOpen. doi:10.5772/intechopen.1005778

Boye, Mortala, Abdul Ghafoor, Abdulazeez Hudu Wudil, Muhammad Usman, Piotr Prus, Alexander Feher, and Roman Sass. "Youth engagement in agribusiness: Perception, constraints, and skill training interventions in Africa: A systematic review." *Sustainability* 16, no. 3 (2024): 1096.

Chikanwa, G. K. (2024). *Design and implement a crop management system for farmers in Chongwe district of Zambia* (Master's dissertation/project). The University of Zambia.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340.

International Fund for Agricultural Development. (2016). *IFAD strategic framework 2016–2025: Enabling inclusive and sustainable rural transformation*. Rome, Italy: Author.

International Institute of Tropical Agriculture. (2021, November 19). *PDAU co-facilitates project development and management training for senior ABUAD staff*. Retrieved from https://iita.org/news-item/pdau-co-facilitates-project-development-and-management-training-for-senior-abuad-staff/

Izuogu, Chibuzo Uzoma, Michael Olatunji Olaolu, Gillian Chidozie Azuamairo, Loveday Chukwudi Njoku, and Sikiru Ibrahim-Olesin. "A review of the digitalization of agriculture in Nigeria." *Journal of Agricultural Extension* 27, no. 2 (2023).

National Bureau of Statistics. (2023). *Nigeria Labour Force Survey Q2 2023*. Abuja, Nigeria: National Bureau of Statistics. Retrieved from https://www.nigerianstat.gov.ng/elibrary/read/1241429

YEASA Project. (2022). *YEASA project report 2019–2022*. Afe Babalola University/IITA project documentation.

YEASA Project. (2023). *YEASA project report 2019–2023*. Afe Babalola University/IITA project documentation.