

Needs Analysis for Development of E-Modules as Teaching Materials to Improve Archive Digitalization Competence

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Abstract

The digital era which is developing very rapidly apart from providing convenience also requires village officials to have technological expertise to adjust to environmental changes as a consequence of changes in existing policies. Therefore, this study aims to (a) identify competency problems in digitizing archives and (b) analyze module development needs. This study uses a quantitative design approach, using a survey to collect responses from respondents. Questionnaires were distributed to 10 village apparatus as learning society or training student respondents using random sampling technique. The collected data were analyzed descriptively. The results of the study show that overall the level of problems in the competency of digitizing village archives is high from various aspects. Participants have the desire to develop e-modules with complete content and display that is not monotonous. Therefore, it is proposed that this e-module be developed to meet user needs, so that the goal of implementing archive digitization can be achieved.

Keywords: Needs analysis, e-module, digitization, village apparatus

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INTRODUCTION

The rapidly evolving digital age not only offers convenience but also necessitates that village officials have technological expertise in order to adjust to environmental changes brought on by adjustments to existing policies (Abadi et al., 2020). Utilizing the advancements in science and technology, a good digital information system is essential for enhancing village development (Rohmantika et al., 2022). The digitization of village archives is one example of a scientific and technological advancement that can assist the village government in overcoming many of the weaknesses of conventional village archives. This digitization converts traditional village archives—paper-based—to electronic village archives based on computers and the internet.

Competence in digitalization is regarded as a crucial and essential skill for anyone working in the library, archive, or museum sector. Participating in digitization projects has many benefits, including supporting teaching and research needs, building digital collections, and preserving historical records (O'Hara et al., 2020). To make important information about administration, history, and village community activities more accessible and preserved, the process of digitizing village archives is crucial (Mayowan, 2017). Digitization work is frequently project-based, since each set of documents that needs to be digitized may require a distinct set of devices, specifications, strategies, or workflows. Digitization projects and workflows can be a challenge for a village apparatus in the field of archives. The educational and competency training needs of staff will vary greatly depending on the characteristics of the organization, assigned tasks, project requirements, and personal motivation.

Competency digitization has been researched as a tool for education, recruitment, professional development, and evaluation. Daniel, et al., defined competence as the capacity to use a variety of knowledge, skills, and talents in support of measurable and observable goals, departing from the organizational management literature (2020). Choi & Rasmussen examined the work and polled practitioners to quantify or identify the knowledge, skills, and abilities necessary for digital archive administrators (2009). Project management and technical abilities, such as metadata, workflow creation, digital asset management, and digitalization, are the talents that were examined (Blumenthal & Steeves, 2016). Administrators of village apparatus archives need to be skilled in a number of specialized technological areas, including digital asset management, scanning, metadata, and preservation. So that residents are happy with the services rendered, village authorities need to get education, training, or assistance.

The importance of education in creating a generation with automation skills and the capacity to create technical goods must be highlighted in due to the advancement of technology. Everyone can study and practice independently because to simple access to the internet (Ilias & Ladin, 2016). It turns out, though, that the prevailing explanation continues to conflict with the actual data. According to the researchers' observations, there are still some communities that manage their records using conventional approaches. One of these villages is in Bojonegoro Regency, Indonesia. Even though a file cabinet was planned, there is not enough room for all of the town archives, which have built up to fill the workspace. It also takes a long time to look for the information or data you need in the archive. The administration of village government, which should be functional, efficient, and productive, would be hampered if village archives are still managed using traditional techniques. Additionally, there will be a decline in community satisfaction with the effectiveness of village services. The current scenario is consistent with the local administrators' inability to maintain digital archives. To solve the challenge of digitizing village archives, proper efforts must be made to raise village community proficiency in using information technology. The creation of e-modules as tutorial-based teaching resources is one efficient technique to boost village archive digitization proficiency.

Education and training are typically used to increase one's proficiency in digitizing village apparatus archives. While the course was taking place, several of the learners were unable to finish their assignments due to its execution. Due to the infrequent monitoring and evaluation that occurs after training, participants frequently forget the strategies that were given. This is so that the village apparatus won't have to spend more money on monitoring and evaluating training (Santoso et al., 2023). It is quite simple for someone to learn independently by using technology thanks to today's evolving information technology. E-modules are a digital tool that can enhance the teaching and learning process when it comes to the use of information and communication technology in education.

E-modules, also known as electronic modules, are a group of modules with different learning experiences that are suited to the skills of the students. According to Lim et al., e-modules are information and communication technology (ICT)-based educational materials with interactive features that make it simpler to browse, see photos and videos, and provide feedback through formative evaluation (2018). As a result, during the module development process, each element mentioned in the e-module must be taken into consideration. Meyer asserts that learning objectives must be modified to meet the needs of each individual student in (1988), (Kiong et al., 2022). The content requirements and design aspects of the e-module component are separated into two categories. The following elements must be included in an e-module's content: (1) a theoretical description; (2) problems to be addressed; (3) a visual representation; (4) illustrations of clearly defined work stages; and (5) activities for reinforcement at the end of each chapter. Next, the e-module design characteristics are as follows: (1) text type; (2) text color; (3) clarifiers or markers; (4) graphic content; and (5) module size. The major goal of creating e-modules to increase competency in digitizing village archives is to give village communities clear, simple-to-follow instructions for understanding and putting the process into practice.

Numerous researchers have also demonstrated the effectiveness of developing e-modules to enhance a person's skills. Fajaryati, et al., study seeks to develop e-modules as teaching resources for measurement instruments and practical measuring in the electronics engineering department (2016). Based on the study's findings, it can be concluded that the e-module is effective and suitable for use. Jarboe, et al., looked at how students felt about using online learning modules (2016). Students are more interested in learning and interacting with teachers as a result. The module was then evaluated by Kelly, et al., as a tool for motivating students to use different forms of transportation in accordance with their requirements (2021). This lesson has a lasting, significant impact on student's familiarity, usability, and awareness of alternate and active transportation methods. Additionally, the research participants had a considerably stronger impact on the student's comprehension of the significance of safe active transportation activities.

This study seeks to carry out a needs analysis for the creation of tutorial-based e-modules to enhance proficiency in digitizing village archives. It is envisaged that the created e-module can offer significant benefits and boost the capability of digitizing village archives as a whole because it was produced with a thorough grasp of the needs and difficulties faced by village communities in adopting archive digitization.

METHODS

This study employs a quantitative methodology and conducts a survey to gather participant responses. The instrument consists of 2 (two) parts, (1) archive digitization competency; (2) module content requirements, and (3) module design features. Parts (1) and (2) used a 5-point Likert scale (1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree). The instruments developed were reviewed by experts to

determine their validity. The preliminary study was conducted in two stages depending on the feedback provided by the respondents. The study was conducted during May 2023. For the initial stage, questionnaires were distributed to 10 village apparatus as learning society or training student respondents. The questionnaire also includes space for comments and recommendations from the teachers. Additionally, interviews with respondents were undertaken to find any misunderstandings or uncertainties regarding the items' meanings. Then, descriptive and inferential analyses of the gathered data were performed. Al-Nouh divided the average value for items in sections (1) and (2) into three levels (2015), based on Table 1.

Table 1. Average score interpretation

Average score	Level
1.00 – 2.33	Low
2.34 – 3.67	Medium
2.68 – 5.00	High

RESULTS AND DISCUSSIONS

Digitalizing archive competency problem

The results of the archive digitization competency questionnaire by respondents are generally presented in Table 2.

Table 2. Archive digitization competence problems.

No	Items	Respondents' answer	
		Mean	Level
1	Participants had difficulty learning and practicing archive digitization skills	4.07	High
2	Participants do not have basic skills regarding digitization	4.10	High
3	Participants do not master the archive digitization skills taught during the training	3.94	High
4	Participants are not able to produce products after conducting training	3.90	High
5	Participants struggled to score high on a product development assignment	3.71	High
6	Participants do not have specific guidelines for making products outside of training	3.93	High
7	Participants often forget about materials and techniques for digitizing archives after training	3.77	High
8	Participants lack experience in using digital applications	3.46	Medium
9	Participants need examples or steps for digitizing archives	4.66	High
10	Participants need modules to learn and practice archive digitization skills	4.46	High
Average		4.00	High

Based on Table 2, there are many challenges to competent archive digitalization with high level ($m=4.00$). This showed the challenges associated with learning and mastering archive digitization skills. The highest score indicates that participants need examples or steps of digitizing archives ($m = 4.66$) and participants need modules to learn and practice archive digitization skills ($m = 4.46$). This result is consistent with statement of Sahaat & Nasri that learning modules are necessary (2020). Next,

participants did not have basic skills regarding digitization ($m = 4.10$) followed by participants having difficulty learning and practicing archive digitization skills ($m = 4.07$). This result is consistent with the findings of Kiong et al., who discovered that participants originally lacked fundamental abilities, which prevented them from mastering the competency (Kiong et al., 2022). In addition, participants often forgot about materials and techniques for digitizing archives after training ($m = 3.77$). Forgetting behavior can be caused for two reasons, namely the time lag from previous interactions, and the number of trials or practices from previous interactions (Nagatani et al., 2019). The problem that often occurs in learning is that students easily forget knowledge from their learning experience over time (Huang et al., 2020). As a result, there needs to be treatment or support such as utilizing media to be used by participants to recall the knowledge they have learned. These results suggest that participants need complete support in order to continue developing their archive digitization skills.

The need for module content requirements

The findings of the participants' e-module need survey are shown in Table 3 as the contents/module content that needs to be generated.

Table 3. Module content requirements.

No	Items	Respondents' answer	
		Mean	Level
1	Contains descriptions of theories and implementation of archival digitization competencies	4.29	High
2	Contains problems and descriptions of steps in digitizing archives	4.33	High
3	Have a visual description of the steps in digitizing archives	4.34	High
4	Have examples of clear work steps from planning to the end of the archive digitization process	4.36	High
5	Have a reinforcement activity at the end of the chapter	4.43	High
Average		4.35	High

The module's requirements are listed in Table 3 along with its contents. Overall, all the content expressed high criteria ($m = 4.35$). The findings show that the highest requirement is that the module has strengthening activities at the end of the chapter ($m = 4.43$) followed by the need for clear examples of work steps from planning to the end of the archive digitization process ($m = 4.36$). Furthermore, the module must also have a visual description (4.34) and show problems and descriptions of steps in digitizing archives ($m = 4.33$) and descriptions of theories and implementation ($m = 4.29$). Therefore, during the module creation process, each element indicated in the item must be considered. Meyer suggested that reinforcement exercises at the conclusion of a topic be created as modules to gauge participants' mastery of the topic's goals (Meyer, 1988). E-modules are arranged based on the module components described in (Hernawan et al., 2008). The main part of the e-module consists of basic competency mapping, instructions for using the e-module, content, video lessons, summaries, practice questions, and bibliography. E-modules can suitable for use if the main part of the e-module can support learning and training (Rahmatsyah & Dwiningsih, 2021). E-

modules that are developed interactively can also be supporting media in the education and training programs of village officials.

Requirements for module design features

Along with the module's content, the e-module participants are taken into account while adjusting the module's design characteristics, which determine how it will seem. Table 4 displays the results of the module design feature requirements.

Table 4. Module design features.

No	Items	Criteria	Percentage (%)
1	Font or text type	Times	41.4
		Roman	58.6
		Arial	
2	Multi-colored fonts	Multi-colored	94.3
		Monotone	5.7
3	Description in the form of points	Poin	95.7
		Text only	4.3
4	Graphic content	With pictures	97.1
		No pictures	2.9
5	Module size	A4	90.0
		A5	5.7
		B5	4.3

Beside from the e-module content, the design of the e-module also needs attention. E-modules as learning media in education and training must be able to adapt the characteristics of their users (Aini et al., 2020). The e-module design will be considered based on age, level of education, material being taught, and other considerations (Arwin et al., 2022; Setiyani et al., 2022). The results of the e-module design needs questionnaire can be used as a reference in developing e-modules to improve the skills of digitizing village apparatus archives. E-modules can be flexible teaching media for use inside and outside the education and training class.

An analysis of the needs of e-module development is a crucial first step to make sure that the information presented in the e-module can effectively meet the needs of the village community. In order to adopt digital archives, the village community must first identify and comprehend its needs, abilities, and challenges. Through a comprehensive needs analysis, e-module developers can design content according to the level of understanding and ability of the village community.

CONCLUSION

The results of this study have revealed the importance of module development to improve village apparatus proficiency in digitizing village archives. The findings indicated a high level of problems in archive digitization competence caused by a lack of capacity in the village apparatus and a lack of textual and graphical support following training. As a result, the research's implications allow for the development of high-quality modules that make it easier for village officials to digitize records on their own without having to wait for training. Village officials can use the created e-module to implement procedures for digitizing archives to enhance the caliber of village services. It is hoped that this research can be continued for a wider population. Furthermore, they can also design and develop modules with good quality. Finally, further studies on the effectiveness of the module in increasing archive digitization competence can be carried out.

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