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Validation of Instruments for the Development of a Mobile-Based Archival Management Information System

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ABSTRACT: This study aims to validate the instrument for developing a **mobile-based Archival Management Information System** at **SDN 14 Sungai Limau.** The research method used is **Research and Development (RnD),** adapting the **Borg and Gall model**, which consists of five main stages: **analysis, initial product development, expert validation and revision, small-scale field trials, and large-scale field trials**.

The research instrument was validated by three experts using a **Likert scale** and analyzed using **Aiken's V coefficient**. The validation results show that the developed instrument achieved an **Aiken's V value of 0.88**, indicating that the instrument is **valid and feasible** for use.

KEYWORDS: Instrument Validation, Management Information System, Archival Management.

1. INTRODUCTION

The advancement of **science and technology** has changed how people **access and manage information**. Time and location constraints are no longer significant obstacles, making it easier for various sectors, including **education**, to operate efficiently. By leveraging **information technology**, traditional manual data management can be replaced with **computer-based information systems** that are **more efficient, accurate, and reliable**.

A **Management Information System (MIS)** facilitates school administration, providing **quick access, improving efficiency, and streamlining data management for students and teachers.** However, implementing such a system requires **expert personnel** to ensure **data security** (Puspitasari et al., 2024).

MIS also plays a crucial role in **enhancing communication and organizational behavior**. It ensures **stable workflows and effective decision-making** by integrating **top-down leadership with bottom-up skill development,** maintaining organizational performance (Wadjdi & Yuliza, 2023).

Developing a **mobile-based** management information system improves **accessibility and efficiency**, optimizing its functionality within organizations (Puspitasari et al., 2024). Research by **Agustiandra & Sabandi (2019)** supports this, indicating that mobile-based MIS enhances **school management efficiency** by offering **flexibility, responsiveness, and real-time data processing** to support **faster decision-making**. A **user-friendly interface and stable network** are key factors for successful adoption in modern education.

A **computerized, web- or mobile-based** information system accelerates **data retrieval, simplifies record-keeping, and enhances storage efficiency**. It addresses the limitations of manual systems, increasing **work effectiveness, accessibility, and flexibility,** making it an **innovative solution for modern management** (Anisah et al., 2021).

According to **Pebriyanti et al. (2022)**, a **digital web-based archival system** improves **document management effectiveness**, reduces dependence on **physical storage**, and ensures **document security**. With flexible access unrestricted by time and location, a **mobile-based system** is proposed to further enhance **user mobility and accessibility.**

The study by **Jayusman & Mahardika (2024)** designed a **mobile-based inbound and outbound document archiving system for village administration,** aiming to enhance **efficiency, accessibility, and transparency.** Using the **Waterfall method,** this system **speeds up search, storage, and data updates** while ensuring **better transparency for the public** and addressing inefficiencies in **traditional archival management**.

Technology enables **educational and organizational services** to become more **targeted and responsive**. Its adoption brings **structural changes** in **work processes, supervision, and task distribution**. Beyond **enhancing managerial productivity**, technology also **reduces the need for middle management**, creating **flatter and more efficient organizational structures**.

Effective **archival documentation** is essential in **education** as a foundation for **decision-making, assessment, and historical data storage**. However, **dynamic archive management** faces challenges due to **rapid changes**, necessitating **specialized management approaches. Digitalization** significantly improves **school operations**, especially in **accreditation processes** (Pramono et al., 2021). According to **Purnomo et al. (2024), mobile-based e-archiving** significantly **improves efficiency and effectiveness in archival management** at **SMK Negeri Purwokerto.**

Modern archivists must be skilled in **information technology** to manage **dynamic, sustainable, and standardized** archival systems. Strong **leadership and competent human resources** are crucial for effective archival management**. Preserving archives** is vital, as institutional records serve as **valuable assets** for **decision-making and long-term organizational sustainability.**

Efficient **archive management** is a key responsibility for **educational administrators.** Proper management transforms archival processes from **conventional methods to systematic digital applications.** An effective **archival system must offer practical solutions**, including **data backup for archived documents** to address field challenges.

Research by **Dinasari et al. (2020)** highlights the **significant impact of information technology on organizational activities**, particularly in **structuring information systems. Mobile-based digitalization** makes **data more structured, easily accessible anytime and anywhere**, improving overall **management efficiency.**

Several studies support the importance of **digital archive management**. Research by **Siddiq et al.** highlights how **MIS enhances educational services**, helping organizations **coordinate and improve education quality**. Similarly, **Hakiki et al.** developed a **web-based incoming and outgoing mail management system** using **PHP and MySQL. Rapiyanta (2020)** introduced an **Android-based school information system**, which included **school profiles, direct links to Google Maps, and social media integration** for easier accessibility.

The **archival management system proposed in this study** aims to provide **ease of access for education staff, stakeholders, and alumni** by being **compatible with both computers and smartphones**. The **web-based system will be converted into an Android application** for **greater accessibility anytime, anywhere**, supporting **remote work**. This approach is chosen to **maximize system usability across different devices**, allowing **faster access for administrative staff and archivists.**

Initial observations at SDN 14 Sungai Limau revealed that **archival management is still manual**, leading to **inefficiencies, lack of digital backups, limited accessibility, and vulnerability to damage**. The lack of **digitalization further reduces efficiency and security**. Therefore, this study focuses on **developing an integrated MIS for SDN 14 Sungai Limau** to address these challenges.

This research aims to **validate the instrument for developing an archival MIS** and establish a reliable tool for **assessing the feasibility of implementing a digital archival system in elementary schools**.

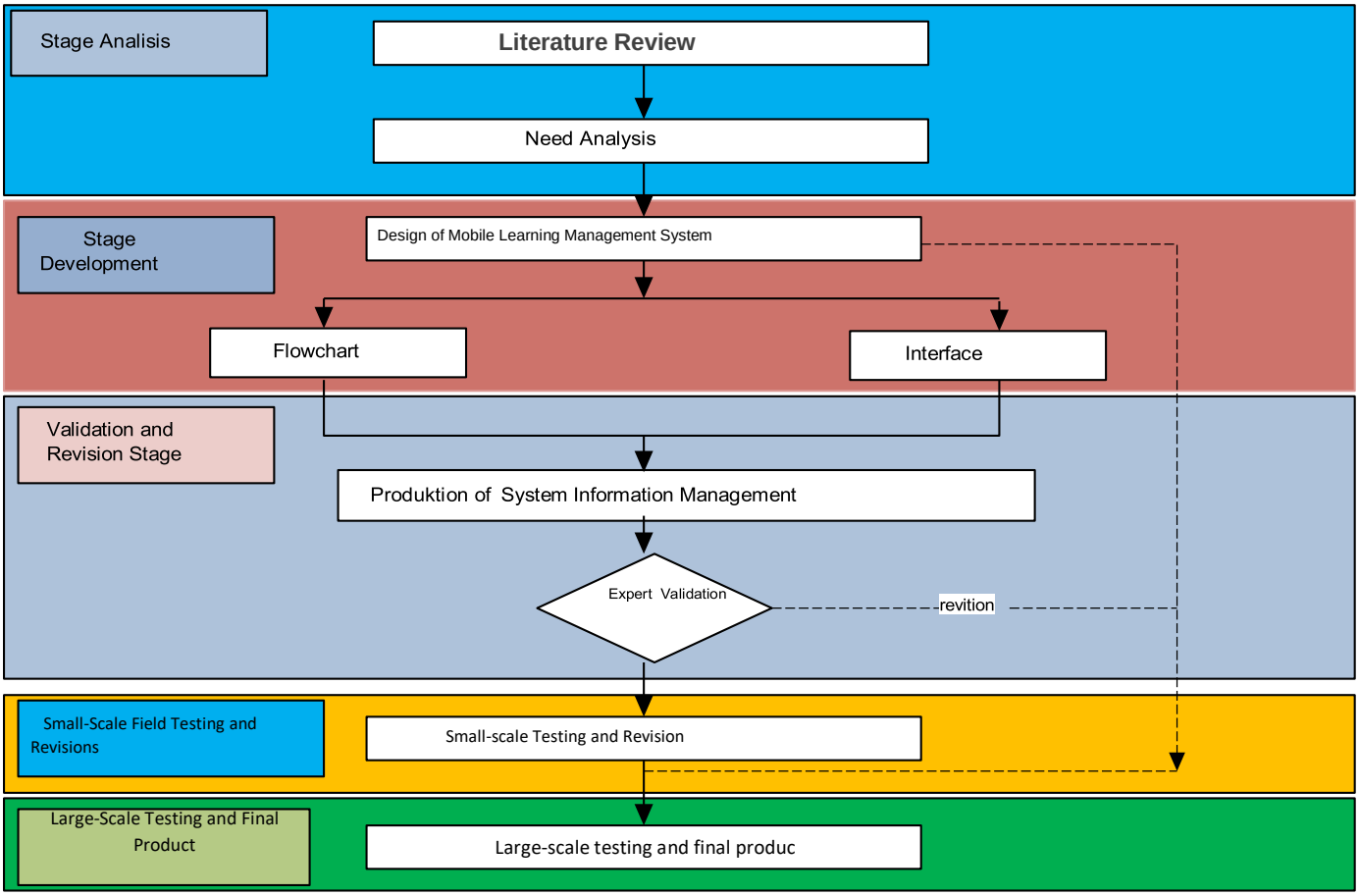
2. MATERIAL AND METHODS

The type of research used in this study is **Research and Development (R&D). R&D** is a research method aimed at **developing a product and testing its effectiveness**. The research design follows the **Borg and Gall (2002) development model**, which consists of several stages: **"research and information collecting, planning, develop preliminary form of product, preliminary field testing, main product revision, main field testing, operational product revision, operational field testing, final product revision, and dissemination and implementation."**

Based on this framework, the research stages proposed by **Borg and Gall** can be **simplified into five key steps** (PUSLITJAKNOV, 2008), which must be fulfilled during the research process:

a. Conducting an **analysis of the product** to be developed
b. Developing the **initial product prototype**
c. **Expert validation and revision**
d. **Small-scale field testing and product revision**
e. **Large-scale field testing and final product implementation**

The researcher adopts this model in developing the **Archival Management Information System** using the **R&D approach**, with the step-by-step development process illustrated in the following diagram.



The five steps outlined in this model are as follows:

1) Analysis Stage

At this stage, the researcher identifies **potential and issues** related to the development of the **archival management information system. Potential** is defined as an aspect that can provide **added value if utilized effectively**. The researcher **analyzes and collects data** to clearly describe the research problem. This process begins with identifying **potential or issues**, where potential is considered as **a factor that, when leveraged, can create significant value**.

Validation Grid for Construct Quality and Development of a Mobile-Based Archival Management Information System

Table 2. Validation Grid for Construct Quality

No	Aspects of Instrument Construct Quality
1.	Clarity of instrument filling instructions
2.	Coverage of construct aspects within the instrument
3.	Clarity of indicators for each aspect
4.	Clarity of item formulation
5.	Appropriateness of indicators with items
6.	Proportion and adequacy of item quantity
7.	Simplicity in item formulation
8.	Ease of understanding the meaning of items
9.	Readability and ease of reading
10.	Standard notation, font format, and layout
11.	Ease of answering the instrument
12.	Avoidance of ambiguous or misleading wording
13.	Efficiency of time and effort in completing the instrument
14.	Correct grammar and spelling according to language rules
15.	Avoidance of leading questions, pressure, or embarrassment in responses
16.	Creativity in instrument design to ensure objectivity, minimize bias, and encourage respondent participation

Table 3. Validation Grid for the Development of the Archival Management Information System

No	Evaluated Aspects
Usability	
1.	The mobile-based archival system significantly facilitates archive management.
2.	The system has an attractive and easy-to-understand interface.
3.	The system effectively improves efficiency in archive management.
4.	The system enhances communication and coordination among staff in archive management.
5.	The system is easy to use for archive management activities.
6.	The system allows users to easily search and access archives.
7.	The system is engaging and encourages the use of digital archiving technology.
8.	The system helps in visualizing and managing archive data more effectively.
Information Quality	
9.	The mobile-based archival system presents easily understandable archive information.
10.	The information provided in the system is relevant to archive management needs.
11.	The system ensures that archive information is regularly updated according to organizational requirements.
12.	The system presents archive information clearly and without confusion.
13.	The system's visual design is appealing and supports archive management comprehension.
Interaction quality	
14.	The system enables direct interaction for searching and managing archives.
15.	The system offers a more effective archive exploration experience compared to manual methods.
16.	The system allows users to manipulate archives (e.g., edit, update, delete, or categorize archives).

2) Development Stage

This stage combines **product design and design validation** by considering the **needs of the school**. The researcher designed a **Mobile-Based Archive Management Information System**, starting with the **creation of a system design**. Development begins with **design validation** through **stakeholder consultations** to ensure that the application meets the **requirements of the school and administrative staff**.

This stage aims to develop an **archive management application** that aligns with **the needs of the school and administrative staff**, including:

- **Designing the development of an archive management information system** based on a **mobile application**.
- **Defining system requirements** for application design, including **mobile-based archive management system concepts, user-friendly interface design, and easy-to-navigate menus** to ensure that administrative staff can use the application **without requiring specialized skills.**
- **Building a database** to serve as a **storage system** for archived data within the application.
- **Developing research instruments** to **validate the product.**

3) Development Stage: Expert Validation and Revision

This stage includes **product revision and testing** based on input from **stakeholders** in the school. Researchers refine the system design by **enhancing key features** to improve **functionality and efficiency**. **Design validation by experts** is conducted to **assess the system's effectiveness,** particularly in **database management.**

Initial testing is performed by **experts who evaluate the product** to identify **its strengths and weaknesses**. The results of this validation **serve as the basis for system revisions and improvements** before being tested by users.

Once **design validation is completed,** the **enhanced product** is tested **directly by users in schools** to evaluate **ease of use and system effectiveness in archive management.** The findings from these trials **inform further refinements,** ensuring the system better aligns with user needs. **Final revisions** are made based on **feedback from both users and experts** before the system is **fully implemented.**

4) Small-Scale Field Trial and Product Revision

At this stage, a **small-scale field trial** is conducted to test the system developed during the **initial product development and expert validation stages**. The **results of this trial** will guide **further revisions and refinements**.

5) Large-Scale Field Trial and Final Product

This stage involves **final product trials and revisions** to **optimize system performance** based on input from **field implementation trials.** If the trials demonstrate that the system is **effective and feasible**, it will be **deployed for broader use.**

The **research instrument** is designed to **validate the Mobile-Based Archive Management Information System before full implementation.** This validation assesses **three main aspects:**

1. **Utilization**
2. **Design**
3. **Operation**

Each aspect is **evaluated using a Likert scale** ranging from **1 to 5**, where **validators** complete a **validation sheet** provided for assessment.

The **data collected from expert validation questionnaires** serves as **evidence of the validity of the mobile-based archival management information system.** The results of the **validation sheets, which were distributed to several expert validators, are analyzed to determine the overall validity of the instrument.**

3. RESULTS AND DISCUSSION

Validation conducted by the validator on the research instrument includes the Construct aspect. Validation was conducted by three experts or validators, namely 1) Dr. Adlia Alfi Riani, M.Pd 2) Dr.Evrialiani Rosba, M.Pd 3) Dr. Lili Perpisa, M.Pd. All validators also assessed or validated the overall instrument developed.

For scoring of the construct quality validation questionnaire, see the following table :

Table 4. Scoring rules for construct quality validation questionnaires

Information	Score
Very Poor (SK)	1
Less (KR)	2
Doubt (RG)	3
Good (BK)	4
Very Good (SB)	5

The results of the validator's assessment of this instrument can be seen in the table below:

Table 5. Validation Instrument Assessment

Assessed aspects	Validator			s1	s2	s3	∑s	n(c-1)	Aiken's V	Information
	V1	V2	V3							
Item 1	5	4	4	4	3	3	10	12	0,83	Valid
Item 2	4	4	5	3	3	4	10	12	0,83	Valid
Item 3	4	4	5	3	3	4	10	12	0,83	Valid
Item 4	4	4	4	3	3	3	9	12	0,75	Valid
Item 5	5	5	5	4	4	4	12	12	1,00	Valid
Item 6	4	5	5	3	4	4	11	12	0,92	Valid
Item 7	4	5	5	3	4	4	11	12	0,92	Valid
Item 8	4	4	4	3	3	3	9	12	0,75	Valid
Item 9	5	4	5	4	3	4	11	12	0,92	Valid
Item 10	5	4	5	4	3	4	11	12	0,92	Valid
Item 11	5	5	5	4	4	4	12	12	1,00	Valid
Item 12	4	4	5	3	3	4	10	12	0,83	Valid
Item 13	3	4	5	2	3	4	9	12	0,75	Valid
Item 14	5	4	4	4	3	3	10	12	0,83	Valid
Item 15	4	4	4	3	3	3	9	12	0,75	Valid
Item 16	4	4	4	3	3	3	9	12	0,75	Valid
Jumlah	**69**	**68**	**74**	**53**	**52**	**58**	**163**	**192**	**0,85**	**Valid**

From Table 5, the validity test results of the research instrument for the Construction aspect were found to be **valid**, with an **Aiken's V value of 0.88**. Aiken's calculation results range from **0 to 1**, where a value of **0.600 is considered to have a fairly high coefficient.** Since **a V value of 0.88 > 0.600**, the instrument falls into the **valid category.**

Based on the **suggestions provided by the validator**, revisions were made by **adding items related to time and energy efficiency.** As a result, **a valid and reliable research instrument** was obtained, which is **feasible for further testing.**

4. CONCLUSION

Based on this study, the validation of the mobile-based archive management information system development instrument has been proven to be valid and feasible for use. Expert validation indicates that the developed instrument has high reliability, with an Aiken's V value of 0.88, categorized as very practical. The implementation of a mobile-based archive management information system facilitates data processing and ensures the preservation of archive data as a backup for archived files.

Further research is recommended to develop and test the archive management information system to assess its effectiveness on a broader scale. To optimize its use, school personnel should receive training on integrating this technology into the archiving system.

Schools must also ensure the availability of supporting infrastructure, such as adequate devices and stable internet access, to enhance the system's functionality. Periodic evaluations of the archive management information system are necessary to improve its effectiveness based on feedback from school administration staff and teachers. By implementing these recommendations, the archive management information system is expected to play an increasingly significant role in improving the quality of school archiving.

REFERENCES

1) Aini, AN, Prasetyowati, D., Prayito, M., Nugroho, AA, & Ariyanti, L. (2021). *Augmented Reality Application Development Using Unity* . PGRI Semarang University.
2) Arikunto, S. (2006). *Basics of educational evaluation* . Bumi Aksara.
3) Darmawan, D. (2016). *Mobile Learning: An Application of Learning Technology* (1st ed., 1st ed.). Jakarta: Rajawali Pers: Rajagrafindi.
4) Haryanto. (2015). *Educational Technology* (First). UNY Press.
5) Hidayati, K. (2009). *Validation of Non-Test Instruments in Mathematics Education Research* .
6) Pd, M., & Widodo, A. (2015). LEARNING TECHNOLOGY. *Nizamia Learning Center* .
7) Pratomo, IWP, & Wahanisa, R. (2021). *Utilization of Learning Management System (LMS) Technology at Unnes During the Covid-19 Pandemic* .
8) Putra, FR (2021). *Submitted as One of the Requirements to Obtain a Bachelor of Education Degree (Strata 1)* .
9) Singarimbun, M., & Effendi, S. (1995). *Survey Research Methodology* (2nd ed.). LPPPES.
10) Sugiyono. (2013). *Educational Research Methods Quantitative, Qualitative and R&D Approaches* . Alfabeta.
11) Tasya Yunisha Zuana, Enoh, & Helmi Aziz. (2023). The Influence of Augmented Reality Media on Learning Outcomes of Islamic Cultural History. Journal of *Islamic Religious Education Research* , 149–154. https://doi.org/10.29313/jrpai.v3i2.3059
12) Welli, AP (2022). Development of Android-based Augmented Reality Learning Media on Virtual Local Area Network (VLAN) material at SMK Negeri 1 Ampek Angkek. *UPGRISBA* .
13) Wiliyanti, V., Ayu, SN, Noperi, H., & Suryani, Y. (2024). A SYSTEMATIC LITERATURE REVIEW: THE EFFECT OF AUGMENTED REALITY-BASED LEARNING MEDIA ON STUDENTS' CONCEPT UNDERSTANDING AND LEARNING INTERESTS. *Journal of Science Education* .
14) Wulandari, AP, Salsabila, AA, Cahyani, K., Nurazizah, TS, & Ulfiah, Z. (2023). The Importance of Learning Media in the Teaching and Learning Process. *Journal on Education* , *5* (2), 3928–3936. https://doi.org/10.31004/joe.v5i2.1074
15) Ngalim Purwanto, M. 1927-. (1990). *Educational psychology / Ngalim Purwanto* . Bandung :: Rosdakarya Youth.
16) Singarimbun, Masri; Sofian Effendi. (1982). *Survey research methods / editor, Masri Singarimbun, Sofian Effendi* . Jakarta :: LP3ES,.