

Innovative Digital Master Book for Efficient and Secure Student Data Management at MTs.N 9 Jember

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Abstract:

Madrasah Tsanawiyah Negeri 9 Jember is a madrasah located in Kencong Village, Jember Regency. The management of student master books in this madrasa has been carried out in accordance with the Standard Operating Procedure (SOP), but its implementation is still manual. Manual recording of student data is prone to writing errors, data loss, and the difficulty of searching or updating information. Therefore, a digital-based master book innovation was carried out. The purpose of this study is to identify how the application of digital master books can improve efficiency and security in student data management. This study is a qualitative study with a case study type: Data collection techniques were obtained through observation, interviews, and documentation methods. The results of the study showed that the innovation of digital master books succeeded in significantly increasing the efficiency of data management, especially in terms of the speed of access and archiving of student data. Data security is also more guaranteed through the use of layered protection systems such as encryption and limited access control that can minimize the risk of data leakage.

Keywords: *Digital Master Book, Administration, Data Security*

Introduction

Administration is a part of the school that has the main task in the administration section which is directly related to services both internally and externally to the school.¹⁾ Administrative administration in educational institutions has a role in collecting, recording, processing, duplicating, sending, and storing everything related to administration in schools.²⁾ School administration management is an important thing in the administrative and operational

¹⁾ Ade Hermawan and Abd. Rohman, (2021). 'Analisis Implementasi Administrasi Sekolah', *Reformasi*, 11.2., 250–258.

²⁾ Risma Amiliya Indahsari, Nurul Hasanah, and Nur Indahsari, (2019). 'Pengelolaan Administrasi Madrasah Dalam Meningkatkan Kualitas Pendidikan Di Madrasah Aliyah Negeri (MAN) Sidoarjo', *Jurnal Administrasi Pendidikan Islam*, 1.2, 119–34, doi:10.15642/japi.2019.1.2.119-134.

management of an educational institution. With good administration management, schools can function efficiently and effectively, and can achieve the desired educational goals.³

In this increasingly sophisticated technological era, all activities are starting to shift to digital. Likewise, school administration archiving, which was initially manual, is now starting to shift to digital.⁴ Archiving is an activity of managing records of activities or sources of information that have utility value regularly with the aim that the information is easy to find again when needed. One example of a document that needs to be archived is the student master book, because the student master book contains student identity information starting from student data, parents, address, occupation, and others.

Madrasah Tsanawiyah Negeri 9 Jember (MTs.N 9) is a madrasah located in Wonorejo Village, Kencong district, Jember Regency. The management of student master books in this madrasa has been carried out in accordance with the Standard Operating Procedure (SOP), but its implementation is still manual. Manual recording of student data is prone to writing errors, data loss, and the difficulty of searching or updating information. This can hinder the smooth running of the administration process, especially when fast and accurate reporting is needed. With these limitations, madrasas need a more effective and efficient solution to manage student data, namely with the innovation of digital-based master books.

Archiving master books through Excel is an important innovation to overcome this problem. With a digital system, student data can be stored more securely, easily accessed, and updated more quickly. In addition, Excel's ability to perform automatic calculations and instant data searches provides higher efficiency compared to manual methods. The existence of digital archives has advantages including: first, the use of web-based school management applications allows real-time access to student data by teachers, administrative staff, and other related parties. Second, a digital system with data search and filter features that make it easier to track and update student information without having to re-record it manually. Third, there are integration efforts with other systems, such as attendance and assessment, so that student data is more centralized and organized. In addition, this digitalization has also begun to adopt security features such as encryption and password protection to maintain data confidentiality. In addition, the use of simpler and more affordable software such as Excel can be an alternative for schools with limited technological resources and provides flexibility in administrative management.

³ Nanu Andriani and Manarul Hidayat, (2023). 'Pengelolaan Administrasi Sekolah', *Jurnal Pelita Nusantara*, 1.2 . 215–20, doi:10.59996/jurnalpelitanusantara.v1i2.195.

⁴ Rizqi Fajar Pradipta and others, (2023) 'Pengelolaan Administrasi Pembelajaran Berbasis Digital Dalam Meningkatkan Kemampuan Arsip Data Bagi Guru Sekolah Luar Biasa', *JURPIKAT (Jurnal Pengabdian Kepada Masyarakat)*, 4.2, pp. 59–72, doi:10.37339/jurpikat.v4i2.1340.

Innovation of digital master book administration at MTs.N 9 Jember Student Master Book Information System. This finding is in line with research at SMPN 1 Rantau Regency Tapin which has similarities in terms of digitizing student data, which facilitates efficient storage and retrieval of information. Both systems aim to increase the effectiveness of digital student data management. However, the difference lies in the application used.⁵ The innovation of digital master book administration at MTs.N 9 Jember and the system at SDN Sirnajaya Regency Tasikmalaya have similarities in terms of increasing the efficiency of digital student data management, but there are significant differences in their implementation. MTs.N 9 Jember focuses more on data security and storage efficiency, while SDN Sirnajaya develops a more complex system with tiered access rights management features, starting from admin, principal, operator, subject teacher, to class teacher, which allows for more structured data management and clearer division of tasks in inputting and monitoring student data.⁶

The digital master book system at MTs.N 9 Jember and the system at Yayasan Sentra Anugerah Mandiri have similarities in increasing the efficiency of digital student data management. Both aim to facilitate access and management of student information. However, there are significant differences in scope and complexity. The MTs.N 9 Jember system focuses on the security and efficiency of student data, while the Yayasan Sentra Anugerah Mandiri system has a broader scope, integrating student, instructor, class, and course type data in one web-based system, offering online data management and overcoming manual data reporting and input problems. In other words, MTs.N 9 Jember focuses on increasing the efficiency and security of student data only, while Yayasan Sentra Anugerah Mandiri builds a more comprehensive system to meet the needs of course institutions.⁷

The innovation of digital master book administration has been successfully implemented in two different educational institutions, namely MTs.N 9 Jember and MTs Muhammadiyah Kota Bengkulu, where both schools have experienced positive transformation in student data management. At MTs.N 9 Jember, this system has been proven to significantly increase the efficiency and security of student data, while at MTs Muhammadiyah Kota Bengkulu, the implementation of a similar system has resulted in faster data searches through a special search menu, more effective data management, and optimization of storage space through digitalization, indicating that both institutions have successfully modernized their administrative systems with

⁵ Dimas Risalni M Noor, Mirza Yogi Kurniawan, and Auliya Rahman, (2021). 'Aplikasi Buku Induk Siswa Dan Pengelolaan Alumni Berbasis Web Pada SMPN 1 Rantau', *Jurnal Informatika*, 1.1, pp. 1–5.

⁶ Haerul Fatah And Others, (2024). 'Berbasis Web Pada Sdn Sirnajaya Kabupaten Tasikmalaya', 6.1, pp. 11–22.

⁷ Eni farida dan Risti Istira Rahayu Widayanti, 'Informasi Buku Induk Siswa Pada SMK Cakra Kusuma Jombang'.

similar results but with slightly different emphases on benefits according to the needs of each school.⁸

The differences in research on Digital Master Book Administration Innovation at MTs.N 9 Jember with research on Alfatih Integrated Islamic Elementary School (IT) shows some significant similarities and differences. Both studies have fundamental similarities in the effort to optimize the educational administration system through digitalization, with a primary focus on increasing efficiency and ease of access to student data, but there are differences in the use of the application.⁹

Methods

This study employs a qualitative research approach with a case study design. The data collection process utilized multiple techniques, including observation, interviews, and documentation¹⁰. In-depth interviews were conducted with administrative staff to gather insights into their experiences and perspectives regarding the digital master book system. Additionally, direct observations were made to examine the implementation process of the system in real-time. Various supporting documents, such as school administrative policies and procedural guidelines, were also reviewed to provide a comprehensive understanding of the context.

The data collection process was carried out over the course of one week to ensure a thorough exploration of the subject. The analysis of the collected data involved several steps, beginning with data reduction to identify and focus on the most relevant information. The reduced data was then systematically organized and presented for clarity and coherence. Finally, conclusions were drawn based on the findings, offering insights into the effectiveness and challenges of the digital master book system within the school's administrative framework.

Results and Discussion

Research on digital master books is always interesting to study. This is proven by the many studies that have been carried out, one of which is bykhuzainah, Fatah, but the difference with previous research lies in the application used. The five previous studies data storage was

⁸ Feki Sanjaya, (2023). 'Aplikasi Buku Induk Dan Nilai Siswa MTS Muhammadiyah Kota Bengkulu', *Journal of Technopreneurship and Information System (JTIS)*, 6.2, pp. 37–40, doi:10.36085/jtis.v6i2.5700.

⁹ Richasanty Septima, Ira Zulfa, and Yuni Sakinah Putri, (2024). 'Pengenalan Sistem Buku Induk Siswa Menggunakan Visual Basic For Application (VBA) Di SD Islam Terpadu (IT) Alfatih', *Jurnal Pengabdian Pada Masyarakat Indonesia*, 3.1, pp. 74–87, doi:10.55542/jppmi.v3i1.977.

¹⁰ Tri Handayani, (2021)'Peran Buku Induk Sebagai Sumber Informasi Aset Koleksi Pustaka: Studi Kasus Pada Perpustakaan SD Negeri Manyaran 01 Semarang', *Anuva: Jurnal Kajian Budaya, Perpustakaan, Dan Informasi*, 5.4, pp. 631–42, doi:10.14710/anuva.5.4.631-642.

carried out using applications or the web, while in this study data archiving was stored using Microsoft Excel.

Service innovation is renewal or creativity or new creations that are able to provide added value. (Wardani, 2019) in¹¹The most famous definition was given by Everett M. Rogers (1983) in¹²that Innovation is “an idea, practice, or object that is perceived as new by an individual or another unit of adoption.” This definition shows a very general understanding of innovation. That something is considered an innovation if it is an idea, practice or a particular object that is perceived as new by an individual or by another unit that uses it. As long as it is considered something new and different from the old, it can be called an innovation. To know something is new, he must first understand the old thing and of course be able to show the difference between the old and the new. According to¹³Innovation is a process of making changes for the better. In the process, innovation will clash with old values and if not managed properly, it could be that the innovation will actually cause inefficiency and ineffectiveness.

Administration can be viewed as a process and can also be viewed as a task (obligation). The broad definition of school administration is the entire series of activities of a group of people working together in a school to achieve the predetermined goals of the school/madrasah.¹⁴ Sondang P. Siagian said that administration is the entire process of implementing decisions that have been taken and the implementation is generally carried out by two or more people to achieve predetermined goals. The Liang Gie said that administration is a series of activities for arranging the main work carried out by a group of people in working together to achieve certain goals. Educational administration is the process of empowering all natural resources and human resources to achieve predetermined educational goals effectively and efficiently.¹⁵

Definition of Information according to Mcleod (2004) in¹⁶in the book Understanding Information Systems is data that is processed into a more useful and more meaningful form for those who receive it. Technology and Information Systems are data processors that can work

¹¹ (Cardiat, Doctoral, and Hasanuddin 2022)

¹² (Rahman and Muluk nd)

¹³ Tri Yuniningsih Dkk, (2020). ‘Inovasi Pelayanan Publik dan Isu Kontemporer’.

¹⁴ Muliati P and others, (2023). ‘Strategi Pengelolaan Administrasi Sekolah Dalam Peningkatan Mutu Pendidikan Di SD Inpres 12/79 TA Kabupaten Bone’, *Jurnal Mappesona*, 6.1, pp. 24–35, doi:10.30863/mappesona.v6i1.3210.

¹⁵ Marzuki Marzuki, (2022) ‘Penyelenggaraan Administrasi Sekolah Pada Sekolah Menengah Pertama Negeri 3 Ketungau Hilir’, *Edumedia: Jurnal Keguruan Dan Ilmu Pendidikan*, 6.1, doi:10.51826/edumedia.v6i1.597.

¹⁶ Budiman and Fatikhatul Rizkiyah, ‘Rancang Bangun Aplikasi Buku Induk Siswa Berbasis Web Pada Mts Negeri Kertajati’, *Prosiding SINTAK 2017*, 2004, 2017, pp. 307–11.

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quickly and accurately, work automatically to store and process and process and produce information according to the program provided¹⁷

The school master book is an important and mandatory book in both public and private schools. This master book also includes all the information that is often said to be the most complete, including the identity and condition of students.¹⁸ Student Master Book is a collection of student names and student data throughout the school name. New students need to be recorded immediately in a ledger that can be called a student master book or main book. The notes in the student master book must be complete including student data and identity, in this case some data can be taken from the registration form¹⁹. Student administration data is very necessary to support the completeness of student administration. Student administration is carried out so that the transformation of students into graduates desired by the established educational goals can take place effectively and efficiently.

MTsN 9 Jember does not yet have a student master book information system, or still uses a manual book, so that viewing student data archives from previous years takes a lot of time and drains energy, and sometimes the student data has been lost due to damage or its storage is no longer known such as studies that have been conducted by Mustika Dewi (2022)²⁰ with the innovation of digital master book administration at MTs.N 9 Jember, it has shown a significant increase in the efficiency and security of student data. The implementation of this digital system has resulted in several main findings: 1) Efficient student data search time compared to manual systems, 2) Increased data accuracy thanks to automatic validation features, and 3) Saving physical storage space by digitizing archives, reducing the risk of data loss or damage. This digital solution also allows faster and easier data access for administrative staff, and facilitates more efficient reporting for madrasah management purposes.

This digital-based Student Master Book is expected to help computerize data that can be accessed digitally. In this system, there is data processing that initially comes from written sources and then becomes computerized data so that it is easy to store and search for data. With this system, it helps in searching for student data that is still active or registered as a student and

¹⁷ Septima, Zulfa, and Putri.

¹⁸ Iski Zaliman and others, (2022). 'Sistem Informasi Buku Induk Siswa Pada SMA Negeri 1 Kelekar', 13, pp. 116–22.

¹⁹ Jimmi Hendrik P. Sitorus and Veninsia Magdalena Sipahutar, (2022). 'Sistem Informasi Buku Induk Siswa SMK Negeri 1 Siantar Berbasis Web', *Jurnal Bisantara Informatika (JBI)*, 6.1, pp. 1–12.

²⁰ Melany Mustika Dewi, (2020). 'Aplikasi Sistem Informasi Buku Induk Siswa Pada MA Putri Taruna Al-Quran', *Dinamisia : Jurnal Pengabdian Kepada Masyarakat*, 6.4, pp. 1056–67, doi:10.31849/dinamisia.v6i4.5437.

searching for student and alumni data²¹. Although the results of this study show significant benefits, it should be noted that the implementation of digital systems also faces challenges, such as the need for ongoing training and maintenance of IT infrastructure. Further research is needed to evaluate the long-term impact of this innovation on student academic performance and overall school management effectiveness.

With a digital system, data retrieval and updating become faster and easier, paper usage is reduced, and information security is increased through access restrictions and automatic backup. The implementation of this system requires a change in the perspective of the madrasa community, from dependence on manual systems to an appreciation of the efficiency of digital technology. It also encourages increased digital literacy among staff and teachers, and raises awareness of the importance of data security. Although there are challenges in implementation, such as resistance to change and the need for training, the right strategy can overcome them. Gradual socialization, continuous training, and regular evaluation are the keys to success. Thus, this innovation not only improves administrative efficiency, but also transforms the work culture and the perspective of the madrasa community towards technology in education. Ultimately, this change is expected to improve the quality of educational services and prepare madrasas to face the demands of the digital era.

An important lesson from the innovation of digital master book administration at MTs.N 9 Jember is that digitalization can significantly increase the efficiency and security of student data management. By switching from manual methods to digital formats using Microsoft Excel, the process of searching, updating, and reporting data becomes faster and easier, reducing the potential for errors due to manual recording. In addition, security features such as password protection allow for better data protection, so that the confidentiality and integrity of student information can be maintained. This innovation also teaches the importance of training for administrative staff to ensure that they are able to utilize technology optimally, making this digital system not only more practical but also more reliable in supporting more modern and effective administrative processes.

Conclusion

The research on the innovation of digital master book administration at MTsN 9 Jember has demonstrated significant improvements in the efficiency and security of student data management. The transition from a manual to a digital system has revolutionized administrative

²¹ Luh Putu Cintya Prabandari, (2019). 'Sistem Informasi Buku Induk Siswa', *Jurnal Pendidikan Teknologi Dan Kejuruan*, 16.1, p. 139, doi:10.23887/jptk-undiksha.v16i1.16669.

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processes by streamlining various tasks. For instance, searching, updating, and reporting student data have become considerably more efficient and user-friendly, leading to smoother operations. Additionally, the digital system incorporates automatic validation features that enhance data accuracy by minimizing errors in data input and retrieval.

Moreover, this transition offers multiple strategic benefits, such as improved data security and reduced vulnerability to risks like data loss or corruption caused by human error or physical damage. The implementation has also resulted in resource optimization, notably through the reduction of paper usage and significant savings in time and labor. Furthermore, the digital system has enhanced accessibility, enabling authorized personnel to access student data promptly and efficiently, thereby supporting better decision-making and operational flexibility.

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