

THE ROLE OF INFORMATION TECHNOLOGY IN IMPROVING SCHOOL ADMINISTRATION MANAGEMENT

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Abstract

The rapid development of information technology (IT) has redefined the way schools manage their resources and administrative processes. The purpose of this study is to analyze the role of IT in improving administrative management in schools and identify its significant impact on the efficiency of school organizations. The research method used in this study is the literature method. The results of this study show that IT plays a crucial role in easing the daily operations of schools, such as automated attendance, scheduling, financial administration and student performance tracking. The use of SIS has provided a strong foundation for schools to manage big data more effectively, facilitating data-driven decision-making and transparency in communication. Furthermore, the LMS and online collaboration tools have improved communication between staff, students and parents, enabling a more inclusive and responsive learning environment. Despite significant improvements, challenges related to data privacy, cybersecurity, as well as the need for proper training for staff remain obstacles.

Keywords: Information Technology, School Administrative Management.

Introduction

In today's digital era, the use of information technology (IT) has become an integral part of various aspects of life, including in the education sector. Information technology (IT) in education has revolutionized the way teaching and learning takes place around the world (Sitopu et al., 2024); (Guna et al., 2024). The integration of IT in the educational environment not only opens the door for more interactive and engaging

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teaching methods but also allows personalization of the teaching and learning process according to the needs of each individual (Hairiyanto et al., 2024); (A. & Yudoko, 2023). From the use of online learning platforms, school information system management, to the introduction of cloud-based educational tools, information technology offers the ability to access vast educational resources from anywhere at any time. This significantly increases student engagement and enriches their learning experience by providing more dynamic and interactive subject matter (Alotaibi, 2021).

In addition, IT also plays a crucial role in easing the administrative management of schools through the automation of processes that previously had to be done manually. Through an integrated school management system, schools can manage information on students, staff, timetables, finances and school assets more efficiently and transparently (Alotoum & Hawi, 2023). This not only improves data accuracy and data-driven decision-making but also enables schools to provide better services to students and their parents. Thus, the adoption of IT in school administration paves the way for more strategic and result-oriented management, enabling educational institutions to focus on their main objective of providing quality education (Anggraeni et al., 2023).

IT has shown its potential in improving learning processes and education administration. An efficient school administration management is of key importance in supporting the smooth and effective education process. The need for a system that can automate the recording and management of academic and non-academic data, schedule management, finance, and communication between teachers, students, and parents is crucial (Arabaci, 2024). Good management helps schools not only in saving time and resources but also in improving transparency, data accuracy, and the provision of educational services that are responsive to learners' needs. With an adequate administrative system, schools can focus more on their main educational objectives and ultimately improve the quality of education presented to students (Barko, 2022).

However, despite the many benefits offered by information technology, many educational institutions, especially schools, still face challenges in its implementation (Bidgoli, 2023). Issues such as lack of resources, system maintenance, user training and data security often become obstacles. In addition, resistance from school stakeholders due to the habit of using traditional manual systems also often slows down the adoption of this technology (Birasnav et al., 2021).

Given these conditions, it is important to explore more deeply how information technology can be effectively applied in school administrative management (Bunu et al., 2021). With a better understanding of the role and benefits of information technology in this context, it is expected to provide strong evidence and recommendations to advocate for the adaptation of more robust information technology systems in schools. This research aims to provide insight into best practices and implementation strategies

that can empower schools to manage their operations more effectively and efficiently (Dassanayake et al., 2024).

Thus, the main objective of this study is to describe and analyze the role of information technology in improving school administrative management, identify the challenges faced, and suggest the use of IT that can add value and optimize administrative processes in schools. This research is expected to provide strategic benefits for decision-makers in the education sector to develop and implement IT solutions that can simplify administration and support educational success.

Research Methods

The study conducted in this research uses the literature research method. Literature research method or often referred to as literature study is a systematic process of searching, collecting, and analyzing scientific publications such as books, journal articles, research reports, and other information sources related to a particular research topic. This method is used to gain a deep understanding of the latest developments, theories, and findings in a field of science (Afiyanti, 2008); (Ainiyah, 2021).

Results and Discussion

Concept of School Administration Management

School administrative management is a process of organizing the resources available in a school, including people, finance, facilities and information technology, to create an effective and efficient learning environment (David et al., 2023). This process involves various activities such as planning, organizing, directing, and supervising. The process aims to ensure that all learning and extracurricular activities run smoothly, the needs of students and teachers are met, and the set educational goals are achieved (Dawood, 2023). In this regard, school administrative management plays an important role in creating conditions conducive to student learning and development.

The scope of school administrative management covers various aspects, such as academic administration, human resource management, financial management, facilities and infrastructure management, and coordination with external parties such as parents and communities. Academic administration is concerned with curriculum management, subject scheduling, evaluation and assessment of student achievement (Dei, 2024). Human resource management includes recruitment, teacher professional development and performance evaluation. Meanwhile, financial management concerns the management of school budgets, expenses and revenues. Facilities and infrastructure management relates to the maintenance and improvement of the school's physical condition. Coordination with external parties involves communication and cooperation with parents, communities, and government agencies to support school activities (Dinari et al., 2021).

In the era of globalization and the rapid development of information technology, the demands on school administrative management are increasing. Schools are required not only to manage administration traditionally but also to integrate information technology in the process to improve management efficiency and effectiveness (Tubagus et al., 2023); (Aslan & Shiong, 2023). This includes the utilization of school management information systems for academic administration, finance, and communication. Thus, modern school administration management must be able to adapt to the times, in order to improve the quality of education and provide the best learning experience for students and the school community.

In school administration, there are several important components that form the backbone of running an effective and efficient education system. These components help in creating a conducive learning environment, supporting students' academic needs and managing resources optimally (Doehmann, 2020). One of the key components is human resource management which includes teachers, administrative staff and school leadership. Effective human resource management involves the processes of recruitment, training, professional development and performance evaluation. This component is crucial as the quality of human resources directly affects the quality of the teaching and learning process. In addition, effective leadership from school principals or education managers contributes significantly to setting the school's vision, mission and values (Efendi et al., 2023).

The second important component is school financial management. Good financial management includes budget planning, auditing, financial reporting and managing funds with transparency. In this context, schools need to ensure that budget allocations are directed to support student learning needs, infrastructure development and extracurricular activities (Font & Pérez-Durán, 2020). Strict financial control and accountability keep schools operating in accordance with applicable regulations and standards while ensuring that quality education is accessible to all students (Gamayuni, 2020).

The third component is administrative and operational management which includes student data management, lesson schedules, school inventory, and facilities maintenance and management. An integrated school management information system can facilitate efficient data and information management. This allows the school administration to operate more smoothly and reduces the possibility of errors (Gandrita, 2023). In addition, maintaining the safety and comfort of the school environment is also an important part of administrative management, which aims to create a safe and supportive environment for learning. Through effective management of these components, schools can provide high-quality education and prepare their students for successful academic achievement (Garrido-Moreno et al., 2024).

Next, an important component of school administration that should not be overlooked is information technology management. In today's digital era, the

integration of technology in the teaching and learning process is crucial (Girsang, 2023). This includes the utilization of software for school management, e-learning platforms to support distance learning, and other technological aids that can enrich students' learning experience (Gul et al., 2022). A school's ability to adapt and apply educational technology effectively can significantly improve learning interactions, expand access to learning resources, and provide more dynamic assessment methods. Good management of information technology enables schools to present learning that is relevant to the needs of today's generation and prepare students with the skills needed in the future (Gutsalenko & Popova, 2022).

In addition, effective communication and collaboration between all school stakeholders including students, teachers, parents and the community are also important components of school administration. Good relationship building and open communication channels ensure that important information can be conveyed effectively and input from various sides can be utilized for learning quality improvement (He & Yin, 2022). Collaboration with external communities and institutions can open up opportunities for additional learning resources, financial support, and development programs that benefit students and schools.

In conclusion, school administrative management is about effectively managing resources to create a conducive and inclusive learning environment. Components such as human resource management, finance, administration and operations, information technology, and communication and collaboration are key elements that must be managed well. Integration and synergy between these components help in achieving the broader goal of education, which is to provide high-quality education that is able to meet the needs and aspirations of students in the global era. Therefore, the development of comprehensive strategies and policies in school administrative management is essential to support students' academic achievement and overall school development.

The Role of Information Technology in Education

The history of the use of information technology in education stems from efforts to improve the efficiency and effectiveness of the teaching and learning process. Since the 20th century, various tools and methods have been developed and implemented, starting with the use of slides and educational films, then growing to the use of television as a means of educational communication in the 1950s (Nurdiana et al., 2023); (Haddar et al., 2023). The next significant innovation was the introduction of personal computers in schools in the 1980s, which marked the beginning of a new era in educational technology. Computers and self-learning software allowed students to interact with subject matter directly and obtain immediate feedback, charisma that marked a turning point in the way material was presented and consumed by students (Herbst & Hausberg, 2023).

The next development in information technology in education occurred with the advent of the internet and web technologies in the late 20th century, which paved the way for e-learning and online education. This allowed students from all over the world to access course materials, take virtual classes, and participate in online discussion forums, thus breaking down geographical and time barriers that previously limited learning potential (Holobutovskyi, 2022). Social media, MOOCs (Massive Open Online Courses), and online learning platforms such as Khan Academy and Coursera, have further expanded the scope and availability of educational materials. At the same time, the use of big data and adaptive learning systems have begun to provide a more personalized approach to learning, adapting materials and learning pace based on individual student needs. To date, the integration of AI, VR and AR technologies is being explored to provide a more immersive and interactive learning experience (Hu et al., 2022).

Information technology has changed the face of education by providing various tools and platforms that enhance students' learning experience and assist teachers in classroom management. One obvious example is the use of learning management systems (LMS) such as Moodle, Blackboard, and Canvas that allow teachers to organize course materials, assign tasks, and grade student work online (M. Ibrahim, 2023). These systems also facilitate class discussions and collaboration between students, enriching the learning experience with interactive resources. Platforms such as Google Classroom have made communication between teachers and students easier, providing a space for class announcements, assignment submission and feedback. This technology supports structured learning and gives students the flexibility to learn at their own pace, anywhere and anytime (B. A. Ibrahim & Hasan, 2021).

On the other hand, augmented reality (AR) and virtual reality (VR) technologies are being applied to create more immersive and interactive learning experiences. For example, AR applications can allow students to observe 3D models of the solar system in their classrooms, while VR can take students on a virtual tour of the Colosseum in Rome without leaving school (Ikonne & Salihu, 2022). Information technology also enables adaptive assessment tools that adjust question difficulty based on students' previous answers, offering a more personalized approach to learning evaluation. The use of artificial intelligence in smart tutors and virtual academic advisors now provides 24/7 accessible learning support for students, identifying weaknesses and suggesting relevant learning resources to improve their academic performance. The overall implementation of these technologies not only enriches the learning experience but also opens up new opportunities in education that are inclusive and accessible to anyone from any background (Imani et al., 2020).

In addition, the use of big data and predictive analytics in education opens up opportunities for educational institutions to better understand and predict student learning outcomes. By collecting and analyzing data from students' interactions with

online learning materials, educational institutions can identify learning patterns, students' strengths and weaknesses, and provide necessary interventions to improve learning outcomes (Iqboljonovich, 2022). This method enables deeper personalization of learning, where curriculum and learning materials can be tailored to meet students' individual learning needs in real-time (Isfahani et al., 2021).

Furthermore, the integration of information technology in education also contributes to the development of 21st century skills, such as problem-solving, critical thinking, collaboration and digital literacy, all of which are essential for students' future success (Tuhuteru et al., 2023). The use of digital tools and online platforms not only assists students in accessing information but also teaches them how to collaborate effectively with others, work on projects together, and communicate their ideas digitally. These skills become an important foundation in students' preparation for a career in the technology-driven global economy (Aslan & Pong, 2023).

It can be concluded that the utilization of information technology has brought about a revolution in the education sector, changing not only the way learning is delivered and received but also the way teachers manage classes and assess students. Technology has expanded the boundaries of traditional learning, providing opportunities for all students to access high-quality education, regardless of geographical location or economic background. While challenges remain, particularly in terms of access and the digital divide, the potential of information technology in supporting inclusive and adaptive learning is enormous. Achieving this potential requires collaboration between educators, technologists and policymakers to ensure that all students have access to the technology and resources they need to succeed in the digital age.

The Influence of Information Technology on School Administration Management

The influence of information technology on school administrative management has been one of the most significant aspects of transformation in recent decades. The implementation of school management information systems, such as student administration information systems and financial management systems, has enabled schools to automate and integrate various daily administrative processes (Jumria, 2021). Now, school administration can monitor student attendance, manage academic records, and process school payments more quickly and accurately. This not only improves operational efficiency but also strengthens data accuracy and easily accessible records, reducing the administrative burden on teachers and staff (Jurkowska-Gomułka et al., 2020).

Furthermore, the utilization of information technology in school administration also has a positive impact on communication and collaboration among all stakeholders in the education ecosystem. Digital communication platforms and parent portals have facilitated the exchange of information between schools, students and parents or

guardians (Kadariah, 2020). Parents can now receive immediate notifications regarding their children's academic progress, attendance and other school activities, allowing them to be more actively involved in their children's educational process. This contributes to the creation of a more transparent and collaborative educational environment, where information can be shared in real-time and decisions can be made based on accurate and up-to-date data (Karanja & Malone, 2021).

The impact of information technology on school administrative management also has long-term implications for strategic planning and decision-making. With the availability of rich data analytics, schools can now conduct trend analysis, predict future needs and allocate resources more effectively (Kelly, 2023). This enables school leaders to make data-driven decisions that can improve education quality and operational efficiency. In the long run, the utilization of information technology in administration can lead to innovations in learning practices and school management, putting educational institutions in a better position to respond to future challenges and capitalize on emerging opportunities in the changing educational landscape (Kimani & Ibuathu, 2022).

Furthermore, information technology also helps in managing school assets and resources more efficiently. The existence of a centralized database for school inventory facilitates the tracking of equipment, books and other assets, minimizing the possibility of loss or inappropriate use. Technology-based purchasing and maintenance modules allow schools to maintain and update their facilities and equipment more easily, ensuring an optimal learning environment for students (Kochumadhavan & Gunasekaran, 2023). Cloud-based systems allow school administration to manage important data from anywhere at any time, providing greater flexibility and accessibility. This is especially crucial in situations that require quick access to school information, such as in emergencies or crisis management (Kusa et al., 2024).

The conclusion of the impact of information technology on school administrative management is that it has played a key role in the transformation of school administrative processes, resulting in increased productivity, efficiency and accuracy. This not only provides benefits in day-to-day administrative handling but also in improved communication and decision-making. Integrated information systems have opened the door to smarter resource management and data-driven strategic planning. Ultimately, these efforts lead to an educational environment that is more responsive and adaptive to the needs of students and the educational community as a whole. To maximize these benefits, it is important to ensure that the use of information technology is managed wisely, provide adequate training for users, and protect student data and privacy. With a careful and strategic approach, information technology can continue to be a valuable tool in modernizing management practices in schools around the world.

Information Technology Challenges and Solutions to School Administrative Management

While information technology has revolutionized school administrative management, its adoption also brings some challenges. One of the main challenges is data security and privacy. Schools store a wide range of sensitive information regarding students and staff, including personal data and academic records (Lee et al., 2023). Cyber threats, such as hacking and viruses, pose a great risk to the integrity and confidentiality of such data. In addition, awareness and understanding of good data security practices are often lacking among users in school environments (Livina et al., 2020).

The solution to this challenge lies in the strong implementation of IT security policies and continuous cyber awareness training. Schools should adopt strict security standards such as data encryption, two-factor authentication, and firewalls to protect their networks and systems. Regular training for teachers, administrative staff, and students on good cybersecurity practices is also important to minimize security risks from internal sources (Madhi, 2024).

Limited IT infrastructure is another challenge that schools often face, especially in resource-constrained regions. Uneven access to hardware and fast, stable internet connectivity can hinder the implementation and utilization of information technology. This often results in the inability to fully utilize the benefits of technology in administrative management (Merhi, 2022).

As a solution, strategic investments in IT infrastructure by the government and private sector are urgently needed. Programs and initiatives to provide schools with affordable hardware, software, and internet access need to be prioritized (Morah & Judah, 2023). In addition, the adoption of cloud computing can offer a more economical and scalable solution for schools with limited resources, allowing them to access applications and data storage via the internet without the need for large investments in on-site IT infrastructure (Mukhopadhyay, 2023).

In addition, training and continuous professional development for teachers and staff in using IT tools and systems is a significant challenge. Lack of skills and confidence in using technology can hinder the adoption and effective use of information technology in administrative management (Nadeem, 2022).

To address this, schools should provide comprehensive and continuous training for all staff members, ensuring that they have the necessary skills to utilize technology effectively. Developing an organizational culture that supports technological exploration and innovation is also important to encourage the active and positive use of technology in the school environment (Naser, 2023).

By paying attention to solutions to these challenges, schools can more effectively utilize information technology to strengthen administrative management,

enhance learning experiences, and prepare their students for an increasingly digitized future.

Conclusion

The role of information technology in improving school administrative management is an important aspect that has changed the way schools operate and interact with students, staff and communities. One of the key findings is the increased efficiency and productivity in school administrative processes. With the implementation of school information management systems (SIS), tasks such as attendance recording, scheduling and grade management become more automated and accurate, reducing administrative workload and allowing teachers and staff to focus on teaching and learning. In addition, information technology enables better data integration, facilitating analysis and reporting that guides data-driven decision-making at the school level.

Then, the role of information technology in facilitating better communication and collaboration among all stakeholders is another important finding. Online platforms and learning management systems (LMS) enable more efficient interactions between teachers, students and parents, offering access to subject matter, assignments and real-time feedback. This strengthens parental involvement in their children's educational process and supports distance education, which has become especially important in situations such as the COVID-19 pandemic. Information technology also supports professional collaboration among teachers through resource sharing and communication tools, enriching professional development and teaching practices.

Finally, information technology plays a role in improving access and inclusiveness in education. Technology-based solutions, such as assistive listening devices and screen reader software, remove barriers for students with special needs, ensuring that every student has the opportunity to learn and succeed. In addition, information technology expands access to quality educational resources through open education initiatives and online courses, enabling lifelong learning and inclusive education beyond traditional geographic and economic boundaries. By utilizing these technological advances, schools are able to create a more adaptive, responsive and inclusive educational environment for all students.

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