

SCHOOL MANAGEMENT AUTOMATION: ANALYZING THE IMPACT OF MANAGEMENT INFORMATION SYSTEMS ON THE EFFECTIVENESS OF THE LEARNING PROCESS

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Abstract

School management automation through Management Information Systems (MIS) is the application of technology to automate, integrate and optimise administrative and academic processes within the school environment. The research method used in this study was literature research. The results show that cost challenges are often the biggest barrier, with budget restrictions making it difficult for some educational institutions to support the initial investment and ongoing operational costs of SIM. Solutions include finding alternative funding models, partnering with technology companies, and adopting cloud-based solutions to reduce infrastructure costs. Regarding user resistance, it was found that effective training programmes and awareness campaigns on the benefits of SIM can minimise the discomfort of adapting to new technology. Finally, in the area of data security, the findings emphasise the importance of security audits, user training, and compliance with data protection regulations to maintain the integrity and privacy of institutional data. This research demonstrates that although challenges exist, with the right strategies, SIM implementation can optimise school management functions and enrich the learning process.

Keywords: School Management, Information System, Learning Process Effectiveness.

Introduction

In the last decade, the world of education witnessed a significant transformation with the integration of technology in its various aspects. The growth of information technology has revolutionised the way educational institutions are managed and how the learning process is conducted. Management Information System (MIS) in schools has become an urgent need to improve the efficiency and effectiveness of school operations and support the success of the learning process.

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Manual and time-consuming administrative activities have become a major obstacle in achieving efficiency. With SIM, schools can automatically manage student data, finances, supplies, and other important aspects more easily (Abbad, 2021). This automation is intended to free human resources from routine tasks so that they can focus more on tasks that demand more creative and analytical attention (Abbas et al., 2020).

Automation in school management not only aims to improve operational efficiency but also to ensure more effective resource management. The automation process allows educational institutions to manage student data, attendance, finance, academics, and various other school activities in a more structured and systematic way (Abdul et al., 2024). This directly reduces administrative workload, reduces the possibility of human error, and speeds up information processing (Abuhassna et al., 2020). Thus, automation paves the way for schools to increase focus on the learning and development aspects of students, rather than being burdened with time-consuming administrative tasks.

Furthermore, the implementation of automation in school management provides benefits in terms of increased learning effectiveness. Through the use of efficient management information systems, teachers can access real-time student learning data and analytics, enabling the customisation of teaching methods according to students' individual needs (Al-Fraihat et al., 2020). This supports a more adaptive and personalised approach to learning, which has been shown to improve student learning outcomes. In addition, automation also facilitates better communication between teachers, students and parents, ensuring transparency and active participation of all parties in the Education process (Sitopu et al., 2024); (Guna et al., 2024). In this case, automation not only improves operational efficiency but also directly supports the improvement of the quality of education delivered to students (Alam, 2021).

In addition, the impact of technology use on the learning process is still a topic of debate. On the one hand, there are claims that technology opens up new possibilities for more innovative learning approaches and personalisation of education. On the other hand, there are concerns about the availability, access and effectiveness of technology implementation in pedagogical practice (Alam, 2022).

Given the importance of education in the development of quality human resources, an in-depth analysis of the implementation and impact of SIM on school management and learning processes is important. Research on this theme can provide insights into the benefits and challenges faced by schools in the current era of digitalisation of education.

Education officials, decision-makers and practitioners need a better understanding of the extent to which SIM can influence the effectiveness of school operations and learning processes. Therefore, the main issue of focus in this study is to explore and analyse the impact of the implementation of Management Information

Systems on the effectiveness of the learning process in an automated school management setting.

Research Methods

The study conducted in this research uses the literature research method. The literature research method is an approach in research that focuses on collecting data through the study of written materials and sources such as books, scientific journals, articles, and other documents relevant to the research subject (Afiyanti, 2014). This process involves searching for appropriate keywords in various databases to find relevant material, which is then read, recorded, and analysed to gain an in-depth understanding of the problem under study (Ainiyah, 2021). This method allows researchers to get a general or specific overview related to pre-existing theories, methods, and results related to the research topic (Alaslan, 2022).

Researchers use descriptive analytical methods in literature study research to identify, collect, compile, and analyse the data that has been collected to answer the research questions that have been set. In addition, the results of literature studies are often used to determine gaps in the existing literature, which can form the basis of further research. This type of research is valuable in establishing the theoretical context for empirical studies, thus helping to increase the validity and reliability of the research conducted (Arikunto, 2000); (Assyakurrohim et al., 2022).

Results and Discussion

Management Information System Theory

Management Information System (MIS) is defined as a system that integrates information technology with organisational operations to collect, process, store, and distribute relevant information to stakeholders to support decision-making, coordination, analysis, and visualisation within an organisation (Alfaisal et al., 2024). In the context of schools or educational institutions, SIM is designed to manage various operational and administrative aspects, ranging from managing student data, teaching staff, learning materials, attendance, grades to financial resources. The application of SIM in educational settings aims to increase operational efficiency and improve the quality of students' learning experience through better information management and support for innovative learning strategies (A. AlHamad et al., 2022).

The scope of Management Information Systems in education is broad and multifaceted. It includes, but is not limited to, automation and management of student enrolment processes, monitoring and evaluation of student academic performance, financial and resource management, administration of school inventory and equipment, and communication and interaction between students, parents and teaching staff (M. AlHamad et al., 2021). In addition, it can also provide a platform for schools to organise online examinations, virtual teaching and distance learning, something that is becoming

increasingly relevant in the digital age. Thus, SIM offers a comprehensive framework for educational institutions to not only manage day-to-day operations more efficiently but also to foster innovation in the learning and teaching process (Almaiah et al., 2020).

In a management information system (MIS), there are several key components that play an important role in organising and integrating various functions and processes. These components include hardware that supports data processing and storage, software that runs applications and processes information, databases that store data in a structured manner, procedures that define how the system works and instructions for users, and human resources that operate and manage the entire information system (Almarzouqi et al., 2022). The continuity of interaction between these components enables the SIM to operate effectively and achieve organisational goals in managing information and supporting strategic decision-making (Almazova et al., 2020).

In conclusion, Management Information System (MIS) is an important tool in integrating information technology with organisational functions and operations. By using a SIM, organisations can improve efficiency in data and information management, support strategic decision-making, and improve the quality of interaction between various stakeholders. The main components of SIM include hardware, software, databases, procedures and human resources, all of which work synergistically to ensure smooth business processes. The scope of SIM especially in the context of education includes the management of student data, finances, inventory and more, allowing educational institutions to focus more on developing the quality of learning. Thus, implementing and managing an effective management information system is key for organisations to overcome the challenges of the digital era and achieve their strategic goals.

Effectiveness of the Learning Process

The concept of effectiveness in education can be defined as the ability of an educational institution, including schools and universities, to optimally achieve its educational goals. These objectives usually include the achievement of high student learning outcomes, the development of skills and competencies, and the formation of desired characters and values (Almusharraf & Khahro, 2020). Educational effectiveness is not only measured through student academic outcomes, but also through student engagement and satisfaction, teaching quality, and the relevance of learning materials to real needs in society. Strategies to improve education effectiveness include innovations in teaching methods, the use of technology in the teaching and learning process, supportive education policies, and partnerships with all stakeholders to create a conducive and inclusive learning environment (Alqahtani & Rajkhan, 2020).

Indicators of learning process effectiveness are basically measurement tools that allow teachers and educational institutions to evaluate how well the learning process is

achieving the set educational objectives (Hairiyanto et al., 2024). Some of the main indicators include the level of achievement of student learning outcomes, which refers to the extent to which students understand the learning materials delivered and can apply them in real situations (Amin & Sundari, 2020). Other indicators include students' active participation and engagement during the learning process, both in classroom activities and other learning activities, which shows students' interest and motivation towards the material taught. Success in the learning process can also be measured through students' increased creativity, critical and analytical thinking (Amir et al., 2020).

In addition, the feedback given by students to the learning process is also an important indicator of learning effectiveness. This evaluation can include aspects such as the relevance of learning materials to educational objectives, the quality of teaching methodology, and the effectiveness of learning media or technology used (Baber, 2021). Another indicator often considered is students' retention rate, which refers to the ability of students to retain learnt information and skills over a long period of time. Students' socio-emotional well-being and the development of non-academic competencies, such as social and leadership skills, are also important aspects that indicate the success of the learning process (Bahasoan et al., 2020). Through continuous measurement and evaluation of these indicators, educational institutions can identify areas that require improvement and strategically implement changes to enhance learning effectiveness (Basilaia & Kvavadze, 2020).

In conclusion, the effectiveness of the learning process depends on various indicators that include student learning outcomes, student engagement and participation, the application of creativity and critical thinking, and the receipt of feedback from students. The quality of teaching methodology, the use of learning media, the level of retention of material by students, as well as emotional well-being and the development of non-academic competencies are also an important part of the effectiveness assessment. Through evaluation of these indicators, educational institutions can make continuous improvements to the learning process to ensure that educational goals are achieved and students have a quality learning experience that is relevant to their future needs.

Impact of Management Information Systems on School Management

Management Information Systems (MIS) have a significant impact on school management. In this digital era, SIM allows schools to automate various administrative and academic processes, improving efficiency and productivity. With the presence of SIM, schools can manage data related to students, staff, finances and resources more accurately and systematically (Benavides et al., 2020). For example, the process of student registration, class scheduling, attendance tracking, and grade management can be done electronically quickly and precisely. This reduces manual workload, minimises

errors, and allows school staff to focus on more strategic and analytical tasks rather than administrative ones (Benbya et al., 2020).

In terms of decision-making, SIM gives school management access to comprehensive and real-time data. Principals and decision-makers can leverage the analytics provided by SIM to review academic performance, identify trends, and recognise areas that require improvement (Berdik et al., 2021). The ability to conduct in-depth analyses based on accurate data allows schools to make evidence-based decisions that impact learning strategies and school policies. This can include classroom management policies, resource allocation, as well as intervention plans for students who need additional support (Bradley, 2021).

In addition, SIM also strengthens communication between schools, students and parents. The parent and student portal that is part of SIM provides a platform for quick and efficient information exchange. Parents can easily access information regarding their children's learning progress, attendance, and other school information, which increases their involvement in the education process (Bustani et al., 2022). The integrated system also facilitates collaboration between school and teaching staff, which improves continuity and consistency in the educational approach. Thus, the implementation of Management Information Systems contributes greatly to improving the quality of management and educational processes in schools (Butnaru et al., 2021).

Impact on the Effectiveness of the Learning Process

The use of Management Information Systems (MIS) can improve the effectiveness of the learning process in schools by providing a platform that facilitates the planning, management, and assessment of learning. With SIM, teachers can more easily design learning syllabus, prepare teaching materials, and monitor students' achievement of learning objectives (Castro & Tumibay, 2021). Information regarding students' learning progress can be systematically recorded and analysed to identify the needs of each student, allowing teachers to adjust teaching methods and provide relevant supporting resources. This contributes to the personalisation of the learning experience, which is highly regarded as a key principle in strengthening educational effectiveness (Chatterjee & Bhattacharjee, 2020).

Furthermore, Management Information Systems help ensure that learning is student-centred by using data to inform curriculum development and educational interventions. Data such as students' learning styles, their preferences, and their evaluation results can be used to design learning activities that are more engaging and relevant to their interests and needs (Chege et al., 2020). Through access to comprehensive data analysis, schools can identify areas where students may be struggling and respond with additional learning resources or specific support. In addition, online assessment tools that are often integrated in SIMs facilitate testing and feedback, which are crucial in an outcome-oriented learning process (Chen et al., 2020).

Finally, SIM complements the learning process by providing an effective means of communication between all parties involved. Teachers can communicate with students and parents quickly and easily, conveying important information or feedback on students' assignments and projects. With this transparency, parents can be more involved and supportive in their children's learning process. Students' ability to access learning resources and get support independently through the student portal also demonstrates their learning independence and responsibility. These facilities enable a dynamic and interactive learning environment, which ultimately enriches the learning experience and supports the achievement of better learning outcomes.

Challenges in Management Information System Implementation

The implementation of Management Information Systems (MIS) in educational institutions is often faced with several challenges, among which is the issue of cost. Procuring and installing an effective SIM requires considerable initial investment, including for hardware, software, and staff training (Chen et al., 2020). Ongoing operational costs, such as system maintenance, software updates and technical support, also need to be considered. For many schools, especially those in resource-constrained areas, this cost burden can be very challenging. The importance of guaranteeing ROI (return on investment) is critical for educational institutions to justify spending on these systems (Cheng, 2022).

In addition, resistance from users is a common challenge that often arises in the implementation phase. The habit of using a long-established manual system makes some staff and teachers feel uncomfortable about switching to a new digital system. This inertia can be mitigated by effective training and clear communication of the benefits to be gained from using SIM (Collins et al., 2021). However, the process of adopting new technology and changing day-to-day operations to fit a more technologically advanced system often requires considerable time and resources, especially in terms of training and technical support (Coombs et al., 2020).

Finally, the issue of data security is another one of the critical challenges in the implementation of Management Information Systems. Schools store highly sensitive information, including students' personal data, academic records, and financial information. Protecting this data from unauthorised access and cyber-attacks is a top priority. Educational institutions must ensure that the implemented SIM has strong security protocols and complies with applicable data protection regulations. Information security-related training to all system users is also vital to ensure that the risk of data leakage or misuse is minimised.

Conclusion

The results indicated that the use of SIM has assisted educational institutions in automating administrative tasks, improving the accuracy and efficiency of data

processing, and facilitating better communication among staff, teachers, students and parents. Furthermore, the study highlighted significant improvements in the management of learning resources, including more organised and timely distribution of course materials and assessment of student performance thanks to the use of SIM. The analytical tools provided by the system allow teachers to identify students' learning needs more accurately and design more individualised learning strategies. The impact on the learning process is very positive, with increased student engagement and better learning outcomes. Additionally, the accessibility of information and transparency offered by SIM contribute to a more collaborative and responsive learning environment.

However, despite its many benefits, the study also revealed some challenges in implementing SIM in schools, including technical barriers, the need for intensive user training, and data security issues. However, with careful planning and strong technical support, these barriers can be overcome. In conclusion, this study confirms that school management automation through management information systems results in substantial improvements in the effectiveness of the learning process, leading to more student-centred education and improved learning outcomes.

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