

# Optimization and Challenges of Implementing Academic Service Management Information Systems in Muhammadiyah Higher Education: A Multiple-Case Study

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## ABSTRACT

**Purpose** – This research aims to analyze the implementation of the Academic Services Management Information System (MIS) at Muhammadiyah Higher Education Institutions (PTM) in Cirebon and Bandung, evaluate its effectiveness in improving the quality of learning, and identify and address challenges in its implementation.

**Design/methods/approach** – The study employs a qualitative approach within an interpretive paradigm, with a multiple-case study design at PTM Cirebon and Bandung during 2022. Primary and secondary data were collected through interviews, observations, and documentation, followed by data analysis, including information reduction and data validation.

**Findings** – The results indicate that the Academic Services MIS at PTM has not been optimally implemented, particularly in planning and information distribution. The main challenges include limited information access and lack of effective coordination. However, the universities have taken strategic steps to address these issues, including efficient budget allocation and utilizing MIS as a learning tool.

**Research implications** – These findings provide important insights for higher education managers in optimizing the use of Academic Services MIS. Implications include enhanced resource allocation, human resources training, and improved coordination and communication systems. The study also suggests the need for more inclusive policy strategies to address resource disparities between institutions.

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## 1. Introduction

One of the keys to success in an educational institution, in addition to being supported by adequate facilities and infrastructure as well as high-quality and competent teaching staff, also needs to be supported by a management information system (MIS) that is accurate, timely, relevant, complete, and clear. Fully supported with the utilization of information systems and technology for service speed and efficiency is one of the generic advantages that private higher education institutions must possess in their quality improvement programs. According to Jhon Burch and Gary Grudnitski (Jogiyanto, 2003: 10), the quality of information depends on three things: the information must be accurate, timely, and relevant.

In today's information era, information has become a crucial aspect in various levels of life, including in diverse organizational environments such as politics, business, society, education, health, and research (Darmawan Deni, 2012). Management Information Systems (MIS) play a crucial role in supporting decision-making through the interrelation of components that collect, process, store, and distribute information. In the context of higher education, MIS functions to increase efficiency and



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facilitate the processing of educational data, in line with government policies in PP 19 of 2005. Higher education institutions are given autonomy in managing academic, operational, personnel, financial, and other management functions (Laudon, 2002).

However, based on observations, the implementation of Academic Services MIS in higher education institutions has yet to be optimally carried out, especially in terms of planning and information distribution. There are still difficulties in obtaining information through the intranet or internet, causing students to have often to visit staff directly, leading to inefficiency in the processing of academic data. Ideally, MIS should enable automatic information updates between the academic administration and financial departments, updating student statuses to support teaching and learning activities without the need for manual updates, indicating the need for improvements in the financial and academic systems for better efficiency and effectiveness.

Based on interviews and observations at both PTMs, efforts were found to develop the quality of future learning, especially to produce outputs and outcomes, with the following facts and information obtained: Accreditation is one of the indicators of quality management in higher education institutions and remains an issue at PTMs in Cirebon and Bandung. Data shows that accredited programs include B-accredited S1 (Bachelor) Information Technology and S1 (Bachelor) Industrial Engineering. This indicates that the quality of learning at these higher education institutions is running quite well. PTM in Cirebon West Java is located at Soekarno-Hatta Street No. 777 Bandung, 40293. Telephone: (0231) 320740, E-mail: ti1@umc.ac.id, Website: <https://ti.ft.umc.ac.id/kontak/>. Information Technology at the Bachelor's degree (S1) level. With BAN-PT Accreditation C, Number: 1953/SK/BAN-PT/Akred/S/VII/2018, it has 144 credits. The total duration is 8 semesters, consisting of 7 semesters of lectures and 1 semester for thesis preparation to obtain the Academic Degree of Bachelor of Engineering (S.T.). There are four study program concentrations: Software Engineering, Information Technology Development, Web Design, and Multimedia and Animation. Information Technology at the Bachelor's degree (S1) level. With BAN-PT Accreditation B, Number: 2507/SK/BAN-PT/Akred/S/IX/2018, it has 144 credits. The total duration is 8 semesters, consisting of 7 semesters of lectures and 1 semester for thesis preparation to obtain the Academic Degree of Bachelor of Computer Science (S.Kom.).

The concentrations include Information System Development, Database Management, E-Business, and Health Information Systems. At the Faculty of Science and Technology at Muhammadiyah Higher Education Institution (PTM) Bandung, there are seven diverse programs, ranging from S1 (Bachelor) Electrical Engineering to S1 (Bachelor) Agribusiness. Data indicates that two programs, Industrial Engineering and Information Technology, have achieved level B accreditation, signifying that the quality of learning at this university is quite good. Considering various phenomena occurring at PTM, both in Cirebon and Bandung, it becomes important to conduct an in-depth study to identify and address challenges in the implementation of the Academic Services Management Information System (MIS). This is aimed at improving and developing the relationship between Academic Services MIS and the quality of learning at these private higher education institutions.

The implementation of the Academic Services Management Information System (MIS) in higher education institutions has become a primary focus in improving academic services. According to field findings, universities have adopted specific strategies and policies to develop programs, budgets, and procedures that support this MIS. As stated by Akdon (2011) and Wheelen and Hunger (2003), the primary goal of this MIS implementation is to optimize resource allocation and achieve goal rationality. This implementation process often involves changes in culture, structure, and management systems in higher education institutions. In this context, serious attention to academic service issues becomes a priority, given the complexity of challenges faced, including the need for adequate resources such as students, staff, hardware, and funding.

The Management Information System (MIS) is considered a vital tool in processing data and supporting decisions in organizations. According to Gordon B. Davis, MIS is a system that integrates humans and machines to provide information for the operation and management of organizations. Joseph F. Kelly adds that MIS combines human and computer resources for efficient data processing. MIS aims to process data into useful information for management decision-making, both for routine and strategic decisions. MIS also provides data and information for the execution of organizational tasks, including important internal and external data for decision-making in achieving organizational goals (Rochaety, 2009).

In the context of academic services, MIS plays a crucial role in education, including in the learning curriculum. Academic services include various activities such as face-to-face services, structured assignments, and independent learning. MIS in academic services not only serves as a source of information but also as a medium of communication between lecturers, students, and campus staff. According to the concepts of Deming and Crosby, the quality of learning is measured based on customer satisfaction, i.e., how well the educational services meet or exceed customer expectations. This includes how the services perceived by students meet or surpass their expectations (Sobahi K, Hanafiah, Suhana C. 2010; Crosby, 1999; Yakub, 2013).

This research aims to explore two important aspects in the context of Muhammadiyah Higher Education Institutions (PTM). First, to provide a detailed analysis of how the Academic Services Management Information System (MIS) is implemented and effectively utilized by various stakeholders at PTM, including university leaders, lecturers, administrative staff, and students. This objective aims to evaluate the role of MIS in supporting the enhancement of learning service quality. Second, the research will explore the efforts made by PTM in addressing challenges that arise during the development and implementation of Academic Services MIS.

The significance of this research lies in its ability to provide a deeper understanding of the role of information technology in enhancing educational services in higher education institutions. By identifying best practices and challenges in MIS implementation, this research is expected to offer valuable insights for PTM and other educational institutions in their efforts to optimize the use of information systems in the academic context. The outcomes of this research are not only important for the development of internal policies at PTM. Still, they can also contribute to academic literature and serve as a guide for other higher education institutions wishing to improve or adopt similar management information systems.

## 2. Methods

This study focuses on the implementation and challenges of the Academic Services Management Information System (MIS), as well as the strategies used to address these issues, by collecting data from 2022, from January to December. The research locations are Muhammadiyah University of Cirebon (UMC) and Muhammadiyah University of Bandung (UMB), with a special focus on the Information Technology study program at both universities (Karim et al., 2019; Qodriah et al., 2019).

This research uses an interpretive paradigm with a qualitative approach, a case study type, and a multi-case design. Research data comes from two sources: primary and secondary data. Primary data were collected from the head of the bureau and Academic Services MIS operators, while secondary data were obtained from lecturers, MIS-related staff, and relevant documentation studies (Karim, 2016; Fikriyah et al., 2021). Data collection methods include interviews, observations, and documentation. Interview instruments about the implementation, problems, and MIS solutions were directed to the head of the bureau and MIS operators, while observations and documentation were conducted not only on primary subjects but also on secondary subjects and relevant documentation (Karim & Afnan, 2020; Widiantari et al., 2022).

Data analysis was conducted with an information reduction stage, namely filtering and sorting broad information to be more specific according to the research object (Karim & Wajdi, 2019; Syabibi et al., 2021). Data validation was conducted by cross-checking the information obtained with other sources and confirming with primary subjects before presenting the data (Karim et al., 2022; Mansir & Karim, 2020).

### 3. Results and Discussion

#### 3.1. Implementation of Academic Services Management Information System

This research explores the implementation of the Academic Services Management Information System (MIS) at Muhammadiyah Higher Education Institutions (PTM) in Cirebon and Bandung, highlighting its programs, the challenges faced, and their resolution efforts. These programs, which include long-term, medium-term, and short-term, are designed to translate the vision and mission of higher education into actual activities. A Strategic Plan (Renstra) lasting 5 to 10 years is used as a framework for long-term programs, while medium and short-term programs are adjusted according to existing conditions (Hidayat & Syam, 2020; Mustomi, 2017; Cayeni & Utari, 2019).

In terms of budgeting, the study found that universities have allocated budgets according to planned needs. The educational budget, which is a quantitative operational plan, is designed to achieve educational goals by illustrating expected expenses and income. Effective and efficient budgeting stages include identifying activities, funding sources, budget formulation, budget proposal, and budget approval (Yuono, 2014; Ricardianto et al., 2020; Fattah, 2009; Fatah, 2002).

In the implementation of Academic Services MIS, cooperation between leaders and stakeholders is crucial for developing necessary programs, budgets, and procedures. Standard Operating Procedures (SOPs) play a key role in determining steps to complete tasks or jobs. The educational budget includes two aspects, namely income and expenditure, both of which are important for achieving educational goals (Ministry of Finance of the Republic of Indonesia, 2019; Sholeh, 2017).

Field research found that PTM has implemented budget policies in Academic Services MIS, including financing budgets in the Financial Revenue and Expenditure Plan (RPP) for three years. Budgeting is given to the information system development team and related fields to support smooth implementation, including hardware and software needs (Rahardja et al., 2019; George, 2013).

These findings also highlight alignment with higher education funding policies in RENSTRA 2015-2020. Aspects of leadership and commitment, educational relevance, academic atmosphere, and internal management all support the transition toward financial autonomy. Universities allocate budgets for the development of Academic Services MIS, ensuring the sustainability of funding sources and prioritizing the development of curriculum, academic infrastructure, and educational quality standards (Government Regulation Number 22, 2015).

The research also revealed that coordination and communication in implementing Academic Services MIS are crucial for system management. Regular monthly meetings of the information system development team are held, and students are given opportunities to provide input. Policy information is disseminated through various channels, including institutional websites, email, SMS, and coordination meetings (Sulistyo, 2005; Yuliati, 2019).

Lastly, the research found several areas for improvement in the implementation of Academic Services MIS, such as system capacity limitations and challenges in database management, work mechanisms, and maintenance. To address these weaknesses, high priority

is given to MIS development in the Strategic Plan 2015-2020. The main strategies of the university include diversifying education, improving quality and competitiveness, resource development, reorganization, and improving governance towards Good Governance (Arianto, 2006).

### 3.2. Efforts to Overcome Academic Services MIS Issues

To win the competition, Muhammadiyah Higher Education Institutions (PTM) in Cirebon and Bandung rely on their competitive advantages. These advantages are obtained from a better position compared to other universities, including the ability to attract and retain customers and withstand competitive pressures. In the context of implementing the Academic Services Management Information System (MIS), PTM adopts a MIS-based learning governance system that includes system regulation mechanisms, content management, transactions, and system maintenance. Computer field management involves operators, computer programmers, and system analysts, with a focus on structured system design and effective implementation (Violita, 2011; Arianto, 2006; Ahmad Atabik, 2016).

PTM's effectiveness also depends on leadership's ability to mobilize resources to achieve goals. Effective leadership at PTM includes determining the type and development of the university and leading it well. Teamwork at PTM is prioritized to enhance competitiveness, which is a key element in the performance of higher education institutions (Haryono, 2018).

In addressing human resource issues in the implementation of Academic Services MIS, PTM has taken strategic steps. These steps include ability-based recruitment, performance-based promotion, and career development, as well as clear and accountable performance assessment. Human resource capacity development is carried out through education, training, and creating a conducive work environment for optimizing management and organizational management (Hersey & Blanchard, 1995; Yusuf, 2008).

PTM leaders in Cirebon and Bandung are committed to addressing issues and making improvements in the quality of MIS-based learning services. Initiatives include motivating lecturers to innovate in teaching, inviting parents or guardians of students to monitor internet use by students, imposing strict sanctions for lecturer laziness, improving lecturer capabilities in the use of ICT through training, and involving lecturers in ICT-related seminars and training in learning.

## 4. Conclusion

The implementation of the Academic Services Management Information System (MIS) in higher education institutions highlights the importance of budget policies, coordination, and communication. Budgets have been effectively allocated, especially for MIS development, according to each university's Strategic Plan (Renstra). However, there are significant differences in resources between universities, including differences in the number of computers, human resource competence, educational levels, student numbers, and library facilities. Coordination and communication, although recognized as critical aspects in system management, often run differently than expected, especially in regular meetings scheduled at the end of each month. Universities have begun utilizing Academic Services MIS as a learning tool, although its use has yet to be optimal.

The implications of this research for policy are the need for improvements in resource allocation and human resource training to optimize the use of Academic Services MIS. The government and university managers need to consider budget adjustments and strategies to ensure that resource differences between institutions can be minimized. Additionally, this research also indicates the need for improvements in coordination and communication systems, which can strengthen efficiency and effectiveness in academic management. The limitation of this research lies in its focus on a few universities, so the results may only partially represent the conditions in some higher education

institutions. Further research involving a variety of universities with different resources would be very helpful in understanding the challenges and solutions more broadly in the context of implementing Academic Services MIS.

## Declarations

### Author contribution statement

The author contributed to this work and wrote research reports at each stage.

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### Data availability statement

The datasets generated during and analyzed during the current study are available from the corresponding author upon reasonable request.


### Declaration of Interest's statement

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

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