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Data-Driven Decision-Making through Real-time Student Progress Monitoring: Academic Administrators' Perspectives

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Abstract: Academic administrators guide institutions and play a significant role in improving students' academic paths. Realizing this crucial role, data-driven leadership becomes indispensable for school leaders to enhance performance and ensure student success. This data-driven leadership involves a systematic process of making informed and strategic decisions through analyzing relevant available data. Several studies highlight the advantages of data-driven decision-making in fostering administrative collaboration, transparency, and evidence-based decision-making, thus improving institutional effectiveness, elevating student achievement, and enhancing resource management efficiency. This study examined the effectiveness of real-time student progress monitoring and the perceived importance of data-driven decision-making among academic administrators. This study uses a mixed-methods research design to offer greater flexibility in the research process, enhance validity, increase practical applicability, and foster a more in-depth understanding of the phenomena being examined Results showed a high perceived value of data-driven decisions ($\bar{x}$=4.491) and strong acknowledgment of the role of real-time monitoring in academic decision-making and achievement ($\bar{x}$= 4.480). However, the evaluation of existing student information systems was moderate ($\bar{x}$= 3.800), indicating the need for system enhancements to better support informed administrative decisions.

Keywords: Academic Administration, Data-Driven Decision-Making, Student Information System, Real-Time Monitoring, Student Progress

INTRODUCTION

Academic administrators play a crucial role in shaping the direction of educational institutions and significantly impacting students' academic journeys. Their decisions have significant consequences closely tied to the student's academic success. Real-time monitoring systems have been proven to track student progress and contribute to academic achievement (Dolan, 2018; Johnson & Smith, 2019).

Moreover, as key players in seamless institutional operations, academic administrators increasingly recognize the importance of data-driven approaches in executing tasks effectively, ensuring prudent resource allocation, and strategic planning (Kalim, 2021). However, operational inefficiency has become a common problem in many educational institutions due to the manual retrieval of data from diverse offices (Mlangeni & Ruhode, 2017). The manual process of data acquisition leads to operational bottlenecks that hinder swift decision-making and immediate responses to emerging situations, resulting in an inefficient operational flow. Moreover, relying on manual processes due to a lack of automated systems can lead to errors and disrupt the workflow.

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By adopting innovative tools and efficient processes, administrators can use data-driven decision-making to address operational challenges and improve institutional responsiveness.

Benefits of Data-Driven Decision-Making in Education

Data-driven leadership is an essential skill for school administrators in the twenty-first century. It involves collecting, organizing, and analyzing data to gain insights and guide decision-making processes across various aspects of an organization (Atlan, 2023). Technological advances and access to a multitude of data enable organizations to make evidence-based decisions rather than relying solely on speculation and intuition (Brynjolfsson & McElheran, 2016). Research indicates that administrators can tailor educational strategies to meet students' needs, promote academic achievement, and utilize interactive tools for enhanced analysis (Gil et al., 2020; Agasisti et al., 2017).

By leveraging data-driven approaches, academic institutions can gather, analyze, and use information to improve outcomes, as illustrated in the figure below:

Figure 1

Data-Driven Decision-Making for Enhanced Student Success

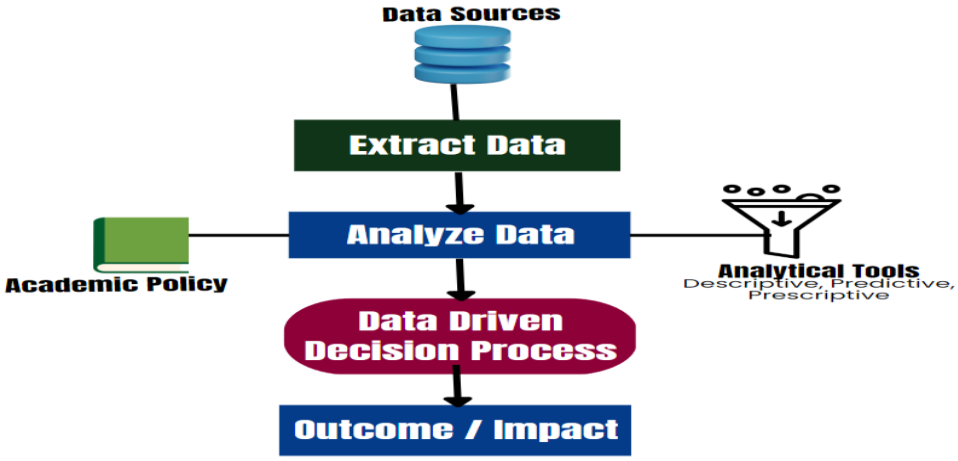

Figure 1 outlines the steps involved in data-driven decision-making in educational institutions. The initial stage involves data collection, which is then analyzed to generate insights that can be implemented. These insights are used to support administrators' and educators' decision-making process to improve outcomes. Institutions can enhance their strategies by integrating advanced analytical tools into academic policies and procedures and adopting efficient and tailored approaches to drive student success and operational reform.

Real-Time Monitoring of Student Progress in Student Information System (SIS)

Real-time monitoring, centered on data collection for immediate analysis, is an essential- tool for effective decision-making. Learning analytics enable timely interventions and support for at-risk students (Ferguson & Clow, 2016). Enrollment trend analysis also provides insights to strengthen promotional strategies and program visibility (Haidich & Ioannidis, 2001; Hardinger et al., 2015).

Digital tools, such as Learning Management Systems (e.g., Google Classroom, Canvas, Moodle, Blackboard), enable the tracking of student progress, including assignments and grades. However, these are often limited to teacher access. Higher-level academic administrators must also access real-time student data to support strategic planning. Real-time tracking of student progress in higher education supports early intervention, feedback, and targeted strategies (Student Tracking System, 2023). Integrating information systems into school administration enhances learning outcomes and reduces dropout rates (Kalay & Chen, 2002).

Student Information Systems (SIS) digitize student records, enabling efficient administration and reporting. These systems centralize data from multiple departments, reducing transaction time and enabling administrators and

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faculty to monitor student performance in real-time (Edwards, 2022). SIS platforms have become essential for informed decision-making, improved teaching strategies, and optimized student outcomes.

Collaborative Student Information Systems Development

Effective SIS platforms support both administrative functions and student services. Engaging academic administrators in SIS design ensures that the system aligns with institutional and student needs (Zhao & Sun, 2014). Soriano et al. (2021) emphasized the importance of collaboration between deans and program chairs to ensure seamless academic operations.

Putra and Setiawan (2020) also emphasize that stakeholder insights are crucial for designing educational systems that promote student engagement and success. User involvement improves system functionality and satisfaction (Hsu et al., 2012; Kar & Hengst, 2009). Continuous stakeholder collaboration and evaluation are essential to ensure the system's effectiveness. Considering learners' unique needs and feedback helps refine SIS capabilities (Secreto & Pamulaklakin, 2015).

Customized access levels also enable academic administrators to make data-informed decisions. By regulating permissions, they can manage performance data and assess program outcomes more effectively (Fomenko & Tarasov, 2020; Wolverton et al., 1999). With accessible data, administrators can examine enrollment trends, graduation rates, and faculty evaluations to guide planning and improve institutional performance (Hagen, 2020; Rausch & Gallo, 2021).

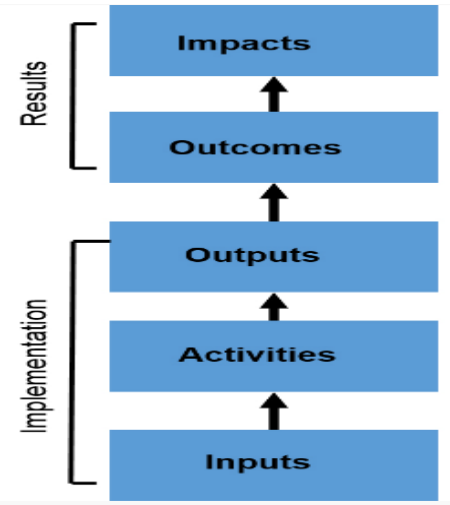
Research Framework

This study is grounded in the Theory of Change framework, which emphasizes the importance of involving stakeholders in the change process. This framework recommended active participation and consultation among individuals and groups that were expected to be affected by the project's outcomes or results. According to Taplin and Clark (2012), the Theory of Change is a participatory process in which stakeholders articulate their long-term goals and identify the necessary conditions for their achievement. This method analyzes various factors that influence program design, encompassing research evidence, professional experience, and stakeholder perspectives. It also allows policymakers and practitioners to engage in a dialogue with evaluators following a reflective learning process. This approach fosters a deeper understanding of how various methods contribute to positive transformation rather than merely seeking evidence of what works (Mason & Barnes, 2007).

Figure 2 presents a framework that utilizes the Theory of Change to provide a structured and concise overview of the project components and their relationships.

Figure 2

Logical Framework of Theory of Change



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As illustrated in Figure 2, the framework is a systematic and visual tool integral to the design, monitoring, and evaluation process. It comprises four key components: **Inputs or preconditions**, encompassing essential resources like funds, staff, equipment, and materials; **Activities**, meticulously planned actions and processes undertaken to achieve project objectives; **Outputs**, immediate tangible results of project activities, often products or services generated during implementation; and **Outcomes**, broader intended changes or benefits resulting from project outputs, signifying the project's contribution to the overall goal, becoming evident after a specific period post-project completion, reflecting the lasting impact.

By synthesizing literature reviews and incorporating the theory of change, the researchers have developed a framework that outlines how data-driven decision-making, using an enhanced Student Information System (SIS), can enhance educational outcomes.

Figure 3

Theory of Change Framework: Enhancing Data-Driven Decision-Making for Academic Administrators

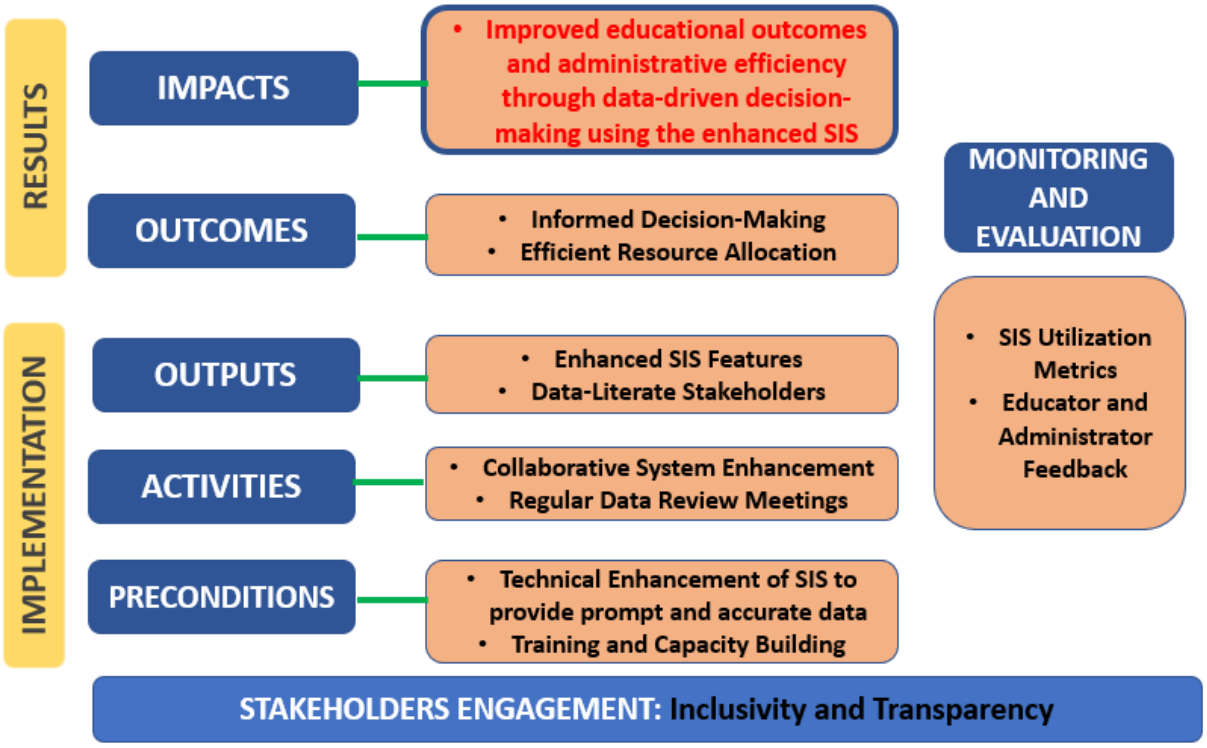

Figure 3 illustrates the ultimate goal of enhancing educational outcomes and administrative efficiency through data-driven decision-making, utilizing a well-designed Student Information System (SIS). Several key steps are outlined to achieve this. First, preconditions involve technically upgrading the SIS for real-time data handling and providing training to administrators and educators. Activities include collaborative development involving IT experts and stakeholders, as well as comprehensive training programs. The desired outputs are an advanced, real-time SIS and users who effectively utilize its features. This will lead to efficient data management and increased productivity for educators and administrators, made possible by real-time access to student data. Improved student outcomes, engagement, and user satisfaction will be used to gauge the impact. Monitoring and evaluation rely on SIS usage metrics, user feedback, and student performance indicators. Stakeholder engagement is emphasized through inclusivity, involving students, parents, teachers, and administrators, as well as transparency in communication, which fosters trust and ensures that the enhanced SIS effectively meets diverse needs.

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This study examines the effectiveness of real-time monitoring and tracking of student progress in achieving academic success, particularly from the perspective of academic administrators. The research provides valuable insights into how administrators can leverage data-driven decision-making, offering implications for optimizing educational processes. This paper contributes to the existing body of knowledge by providing empirical evidence, insights, and practical recommendations for leveraging data-driven strategies, particularly through an enhanced SIS, to enhance decision-making in academic administration and ultimately improve student outcomes.

Objectives

1. To assess the perception of academic administrators on the importance of using a data-driven approach to decision-making in ensuring academic success
2. To assess the perceived significance of real-time student progress monitoring in decision-making among academic administrators.
3. To identify the perceived usefulness of real-time student progress monitoring to support academic success.
4. To evaluate the features of the current student information system in providing real-time monitoring and tracking of student progress as perceived by academic administrators.

The findings of this study are specific only to the context and participants involved. This study acknowledges that academic participants may have varied perspectives and experiences across different institutions, educational settings, and cultural contexts. The study did not explore the challenges that may arise in implementing data-driven decision-making and real-time student progress tracking.

RESEARCH DESIGN & METHODS

This section outlines the methods and procedures employed to gather and analyze data, enabling readers to understand how the research was conducted. It outlines the research design, study site, participants, data collection methods, and data analysis techniques employed in the study.

Research Design

This study uses a mixed-methods research design. This method was employed to offer greater flexibility in the research process, enhance validity, increase practical applicability, and foster a more in-depth understanding of the phenomena being examined. Using quantitative data, researchers can identify patterns, trends, and relationships through statistical analyses and numerical measurements. Qualitative data, on the other hand, provide the researchers with deeper analyses and more comprehensive descriptions of participant experiences, opinions, and behaviors.

Study Site

The study site, Laguna State Polytechnic University, is a state university in the Philippines with four campuses in San Pablo City, Siniloan, Los Baños, and Sta. Cruz. LSPU comprises 12 colleges, offering a diverse range of 50 programs. As part of its core objectives, it places great importance on student welfare, implementing relevant programs, and providing comprehensive support services. The administrators at the college level oversee administrative duties, which include setting college goals, coordinating research and extension programs, supervising academic policies, designing faculty development plans, and managing budgets and resources. They work towards implementing strategic initiatives aligned with the university's vision and mission while ensuring faculty involvement in achieving the college's objectives.

Participants

The study focused on the academic administrators whose responsibilities included providing academic and administrative support to students. This includes deans, associate deans, unit heads, and program chairs from the different colleges and campuses in the state university. A purposive sampling technique was used to gather diverse perspectives and deepen understanding of the research topic. Purposive sampling involves the deliberate selection of individuals with specific experiences relevant to the research topic. In this study, the academic administrators possess extensive knowledge and experience in providing academic support to students.

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Data Collection

The quantitative data were collected through a questionnaire administered to participants, which included deans, associate deans, unit heads, and program chairs. The research instrument used underwent internal and external validation by experts from three state universities to assess the validity and reliability of the measurements or items employed in the study. Participants were asked to rate their level of agreement or disagreement with specific assertions and provide numerical ratings. On the other hand, open-ended questions were included in the research instrument to gather qualitative data and determine the factors influencing the effectiveness of real-time monitoring and tracking of student progress, which can assist in academic success. These open-ended questions enabled participants to express their opinions and offer recommendations based on their knowledge and firsthand experiences as academicians and administrators.

Data Analysis

The quantitative data were analyzed using descriptive statistics, which included computing the mean and standard deviation. On the other hand, qualitative data were analyzed using thematic analysis. For most studies, thematic analysis enhances the overall quality of qualitative research by identifying patterns and generating insights, thereby contributing to the advancement of theoretical knowledge. Using a mixed-methods approach, this study aims to provide a comprehensive understanding of the research topic, employing descriptive statistics for quantitative data and thematic analysis for qualitative data.

Ethical Considerations

The researchers obtained informed consent from the participants prior to data collection. Confidentiality and anonymity were maintained throughout the study. The data was securely safeguarded and only available to authorized researchers. Participants received detailed information on the research's purposes, their involvement, the types of data collected, and how their information would be used.

RESULTS AND DISCUSSION

This section analyzes both the quantitative and qualitative data gathered from the respondents. The impact of real-time student progress monitoring on decision-making processes, the challenges encountered in implementing real-time student progress monitoring in practice, and the suggested enhancements and modifications required to improve the current SIS and empower academic administrators are summarized in Tables 1-4.

Socio-Demographic Profile of Respondents

Table 1 presents the participants' socio-demographic profiles. These details enhance research understanding, providing insights into diverse social contexts.

Table 1

Sociodemographic Characteristics of Respondents

Baseline Characteristic		n	%
Sex			
	Female	18	35.29%
	Male	29	56.86%
	Not indicated	1	1.96%
	Prefer Not to Say	3	5.88%
Total		51	100.00%

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Table 1 (continued).

Age Range		
30-39	23	45.10%
40-49	15	29.41%
50 and Bove	12	23.53%
Under 30	1	1.96%
Total	51	100.00%
Campus		
Los Banos	15	29.41%
San Pablo	17	33.33%
Siniloan	8	15.69%
Sta Cruz	11	21.57%
Total	51	100.00%
Academic Rank		
Assistant Professor	22	43.14%
Associate Professor	17	33.33%
Instructor	7	13.73%
Not indicated	5	9.80%
Total	51	100.00%
Designation		
Associate Dean	12	23.53%
Dean	4	7.84%
Not indicated	19	37.25%
Program Coordinator	16	31.37%
Total	51	100.00%
Years of Experience in the current designation		
1-2 years	10	19.61%
3-4 years	12	23.53%
5-6 years	5	9.80%
6-7 years	3	5.88%
Less than 1 year	5	9.80%
More than 7 years	12	23.53%
Not indicated	4	7.84%
Total	51	100.00%

The results present a comprehensive analysis of 51 participants and their demographic characteristics. In terms of sex, the participants comprised a mix of 29 males (56.86%) and 18 females (35.29%), demonstrating a relatively balanced gender distribution. Moreover, three participants (5.88%) chose to keep their gender undisclosed, while one participant (1.96%) opted not to reveal their gender identity. Age-wise, a substantial portion of the participants fell within the 30-39 age bracket, covering 45.10% of the total sample. A significant 29.41% were in the 40-49 age group, while participants aged 50 and above constituted 23.53%, highlighting a mature demographic. This suggests the presence of experienced professionals, adding depth to the study's insights.

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The participants' diverse academic backgrounds showed a variety of roles within the field of education. A significant portion, 43.14%, held the title of Assistant Professor, 33.33% held the title of Associate Professor, and 13.73% held the title of Instructor. This reflects substantial academic experience and considerable expertise among the participants. Furthermore, the study summarizes the participants' institutional roles, revealing that 23.53% are Associate Deans, 7.84% are Deans, and 31.37% are Program Coordinators or Chairs, indicating a substantial participation of individuals holding various important administrative positions.

Geographically, participants came from multiple campuses, including Los Baños (29.41%), San Pablo City (33.33%), Siniloan (15.69%), and Sta. Cruz (21.57%). This demonstrates the participants' diverse educational backgrounds, geographical locations, and inclusion from various academic cultures.

The participants' backgrounds varied widely in terms of experience with the current designation. A notable 23.53% claimed to have worked for more than seven years, while 23.53% also had worked for three to four years. To provide more insight into the experience spectrum, the survey also included participants with 1-2 years of experience (19.61%) and those with less than a year of experience (9.80%). Additionally, 5.88% of participants had 6-7 years of experience, and 9.80% had 5-6 years of experience.

In summary, the diverse participants from various age groups, academic levels, and roles provided comprehensive insights into the value of data-driven decision-making by leveraging real-time monitoring of student progress in education.

Perceived Value of Data-Driven Decisions in Academic Administration

This section explores the perceived value of data-driven decisions in academic administration. Table 2 presents key indicators that reflect administrators' views on the critical role that data plays in informing their decisions.

Table 2

Perceived Value of Data-Driven Decisions

Indicators	M	SD
It is essential for me to properly carry out my role as an academic administrator to use data to guide decision-making.	4.609	0.954
My judgments in academic administration are more accurate and of higher quality after using a data-driven strategy.	4.304	1.008
Making judgments based on facts guarantees that I take an impartial and unbiased approach to academic administration.	4.565	0.910
I can easily see and effectively address areas for improvement when decision-making is data-driven.	4.500	0.888
A data-driven approach improves transparency and accountability in educational administration by offering decision-making evidence based on facts.	4.565	0.886
I can more effectively and efficiently manage resources in our unit or institution by using data in my decision-making.	4.522	0.960
To enhance student performance and academic results, academic administrators must emphasize the use of data in decision-making.	4.435	0.958
The use of data-driven decisions greatly decreases transaction time across the institution.	4.500	0.937
Making decisions based on data decreases operational inefficiencies within our organization.	4.348	1.016
Data-driven decision-making greatly enhances departmental interaction and collaboration.	4.565	0.910
Average	4.491	0.943

The survey results reveal a notably positive outlook among academic administrators on the importance of data-driven decision-making in educational institutions. The data indicates a strong consensus that utilizing data is essential for effectively executing their roles ($\bar{x}$ = 4.609). They also believe that data-driven approaches lead to accurate and high-quality judgments in academic administration ($\bar{x}$ = 4.304), fostering an atmosphere of reliability and trust in decision-making processes. This finding is consistent with those of Talha et al. (2020), who opined that data-driven approaches in academic administration foster an environment of reliability and confidence in decision-

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making processes. Furthermore, the results support the administrators' view that using factual data encourages objective and unbiased methods ($\bar{x}$ = 4.565), improving organizational transparency and accountability.

Results also show that administrators agree that data-driven initiatives can effectively identify areas for improvement ($\bar{x}$ = 4.500), allowing the institution to improve continuously. Administrators perceived that data-driven approaches extend to resource management, resulting in more efficient resource allocation ($\bar{x}$ = 4.522) and improved collaboration among departments ($\bar{x}$ = 4.565). These results are consistent with the findings of various studies that emphasize the critical role of data in improving institutional teamwork and streamlining processes (Hao et al., 2019; Bachman et al., 2022).

The results show a positive overall picture, indicating that academic administrators overwhelmingly recognize the value of data-driven decision-making. The respondents show enthusiasm for the data-driven approach because it enhances the institution's transparency, accountability, and efficiency. While challenges exist in specific areas, the prevailing positive attitude underscores a commitment to leveraging data for informed, collaborative, and progressive educational administrative practices.

Empowering Education Through Real-Time Student Progress Monitoring

This section explores the vital role of real-time student progress monitoring in informing educational decision-making and academic advancement, as perceived by academic administrators.

Table 3

Perceived significance of real-time student progress monitoring in decision-making and promoting academic achievement.

Indicators	M	SD
Real-time monitoring of students' progress improves the accuracy and reliability of my decision-making.	4.543	0.887
Because I have immediate access to student progress information, I can identify and effectively address educational issues	4.370	0.903
Real-time monitoring enables the customization of instruction to meet each student's needs, thereby improving academic outcomes.	4.522	0.836
Real-time tracking provides information about student performance, making it easier to identify areas that require improvement.	4.522	0.836
I can provide targeted guidance and interventions to enhance academic achievement by leveraging timely data on students' development.	4.370	0.951
Real-time progress data monitoring of student motivation and engagement impacts my decision-making.	4.413	0.979
Real-time student progress monitoring enhances the capacity to establish and manage academic standards.	4.457	0.936
Real-time monitoring enhances stakeholder communication, fostering collaboration to enhance academic achievement.	4.522	0.937
Through real-time monitoring, learning gaps can be quickly identified, allowing for prompt remediation and academic support.	4.543	0.912
The availability of real-time student progress data has increased confidence in using data for decision-making.	4.543	0.912
Average	4.480	0.909

The survey findings in Table 3 underscore a strong consensus among respondents about the fundamental role of real-time student progress monitoring in decision-making processes and the advancement of academic achievement. Notably, the statement affirming that real-time monitoring of students' progress enhances the accuracy and reliability of decision-making obtained the highest mean score ($\bar{x}$ = 4.543). The high mean result and the comparatively low standard deviation (0.887) indicate a strong agreement among respondents. Additionally, the findings align with previous research, which indicates that real-time progress tracking of students facilitates the prompt identification of educational issues, allowing for customized guidance and interventions (Chen et al., 2005; Minović & Milovanović, 2013).

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The survey's findings indicate that respondents generally agree on the importance of real-time student progress in facilitating informed decision-making that enables customized interventions tailored to each student's unique needs. These results underscore the pivotal role that real-time data plays in shaping instructional strategies and promoting collaboration among diverse stakeholders.

Assessing Student Information System Effectiveness

This section provides a comprehensive analysis of the current SIS, highlighting areas for development, identifying strengths, and evaluating effectiveness.

Table 4

Evaluation of the Existing Student Information Systems.

Indicators	M	SD
Administrators, educators, and IT staff work together to regularly assess and enhance the functionality and efficiency of the student information system.	4.130	1.024
There is regular feedback and communication between administrators, educators, and system developers to address any issues or suggest improvements in the student information system.	3.913	1.050
College Deans/Associate Deans, College Secretaries, and Program Chairs have administrators access to the current student information system to monitor student progress	3.957	1.299
The student information system can be implemented and maintained successfully due to the availability of resources, including the necessary technological infrastructure and data management assistance within the university.	3.870	1.310
The current student information system provides accurate and current real-time data on student progress.	3.609	1.291
I readily have access to individual students' real-time grades and academic performance indicators for all students in my college.	3.761	1.303
The existing student information system provides timely notifications and alerts for academic milestones and deadlines.	3.717	1.455
The existing student information system allows administrators to generate real-time customizable reports and descriptive analytics on student progress.	3.674	1.230
The existing student information system tracks and monitors student progress across multiple academic programs and courses in real-time.	3.761	1.139
The current student information system adequately meets the needs of real-time monitoring and tracking of student progress.	3.609	1.164
Average	3.800	1.227

The survey results offer a comprehensive overview of the perceptions and evaluations of the existing SIS. One of the key strengths highlighted in the results is the collaborative approach taken by administrators, educators, and IT staff to assess and enhance the system regularly ($\bar{x}$=4.130). There is a strong agreement that collaborative effort is crucial for continuously improving any educational technology system, ensuring that it evolves to meet the changing needs of staff and students. Involving users in information system development enhances the system and user satisfaction (Hsu et al., 2012; Kar & Hengst, 2009).

The survey results also highlight areas where improvements are needed. The lower mean scores and higher standard deviations indicate that respondents lack unanimous agreement regarding system accessibility, real-time data accuracy, and customization. The results further highlight concerns about a lack of necessary resources, technical limitations, or inadequate user training. The specific issues to be addressed are discussed in the subsequent sections. These aspects are fundamental for a student information system to be practical and user-friendly. A Student Information Management System must efficiently handle all types of student information, allowing for quick inquiry, modification, addition, and deletion, while providing strong support for higher education.

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Administrator's Approach and Tools for Ensuring Academic Success

Ensuring academic success is a priority that demands strategic planning and effective decision-making among academic administrators. This discussion highlights some of the methods and tools administrators use to ensure the achievement of academic goals. The following approaches and tools employed by administrators to ensure academic success are categorized and summarized below:

1. ***Regular monitoring and feedback***

One of the key methods emphasized by academic administrators is the significance of regular monitoring and feedback. This involves personal monitoring of the students' performance, as well as employing face-to-face discussions and classroom interactions. This direct engagement enables collaborative assessment and monitoring of students' progress.

> *"Academic success is ensured through regular monitoring and feedback."*
> *"Clear target setting, monitoring of feedback for the external and internal client"*
> *"Regular monitoring and evaluation of the students by conducting a survey to the students, faculty, and staff"*
> *"Ask faculty members to submit an inventory of their failed students along with the reasons for their ... and an inventory of incomplete grades (INC) and the reasons for them. This information is crucial so that if a faculty member leaves the university, the office is aware of the compliance status."*

2. ***Alignment of the curriculum with industry trends and student needs***

Moreover, ensuring academic success involves aligning the curriculum with industry trends and the needs of students. Curriculum assessment, goal setting, and outcome analysis are vital. Administrators emphasized the importance of evaluating students' work, conducting thorough analysis, and intervening when necessary. Clear communication of goals and objectives to subordinates was also emphasized to maintain a shared vision of excellence.

> *"As an academic administrator, it is imperative that this is a curriculum assessment regularly to ensure alignment with industry trends."*
> "*… establishing a clear and shared vision of excellence for the college. Its faculty, staff, and students provide leadership and support for the academic programs, curriculum development, and accreditation."*

3. ***Leveraging technology and university tools***

Another approach identified is the utilization of relevant data, the incorporation of technology, and the employment of university tools, which were highlighted. Real-time data management, utilization of university manuals and systems, and implementation of advanced technology were emphasized. This highlights the importance of accurate data analysis for informed decision-making and the effective implementation of advanced technological tools to enhance monitoring.

> "*through monitoring and evaluation of the current pedagogical practices, academic administrators may use the existing tools of the university (e.g., ISO-compliant forms) and the guidelines and policies stipulated in handbooks and manuals."*
> *"utilization of relevant memorandum order (i.e., CMOs), and university manuals, in consultation as well with concern officer"*
> *"Currently, limited data are available for us to use in decision-making. Hence, MS Excel applications and the current developed system are used."*
> *"Ensuring academic success depends on the quality management system, services and process, likewise engaging in the advancement of technology for easy access and monitoring."*

4. ***Interactive communication and collaboration***

Lastly, interactive communication and collaboration were crucial for academic success. Open communication lines, interactive approaches such as brainstorming, and feedback mechanisms were

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emphasized. Engaging with students and faculty members, fostering a supportive learning environment, and maintaining an open dialogue were essential for academic achievement.

"I make sure that the line of communication is well open and transparent."
"goals and objectives of every plan and proposal must be clearly communicated to the subordinates."
"Hear the voices of both students and faculty."
"an interactive communication approach like brainstorming and feedback. I think this would keep to ensure academic success."

These results highlight the diverse strategies that academic administrators employ to ensure student success. Administrators strive to foster a climate that supports learning, growth, and achievement for faculty and students through interactive communication, curriculum alignment, regular monitoring, and data utilization. According to Desselle and Shane's (2019) research, academic administration can identify mechanisms to facilitate a conducive learning environment.

Impact Of Real-Time Student Progress Monitoring on Decision-Making

Participants perceived that real-time monitoring of student progress can enhance decision-making in academic settings by providing immediate insights into student performance. According to them, a data-driven approach enables educators and administrators to make timely and informed decisions that cater to the individual needs of each student. Administrators who also served as teachers emphasized the importance of having firsthand knowledge of students' situations and needs. Real-time monitoring allowed them to make immediate adjustments and interventions, ensuring that decisions could be made swiftly to address specific student requirements.

" Immediate actions can be formulated, but other factors still need to be considered."
"effectively and efficiently improve decision making."
"Quicker decisions can be made."
"It will give me updated data that are timely to respond in a situation in which I need to take action."
"Monitoring student progress in real-time minimizes problems, backlogs, and inefficient processes. Real-time ensures effective and efficient operation of the unit."
"it will make the transactions and queries easy and faster"
"it would help in making timely and sound decisions."

Moreover, participants view real-time monitoring as a tool to **enhance their teaching strategies**. Educators can adapt their lesson plans and instructional methods to meet students' needs better. Additionally, it was noted that real-time feedback facilitated the identification of students who required additional support, enabling the development of tailored teaching approaches.

" A real-time progress monitoring of my students' progress allows me to easily decide how to adjust my teaching methods to suit my students best. Real-time monitoring makes my lessons more effective, as I can quickly identify the appropriate tools and parameters for further development and improvement of my students."
"Following the data in real-time can help the teacher change their lesson plans or make other instructional decisions to better fit their students' needs. It can also assist in identifying students that may need additional support."
"I could track the student's engagement, motivation, and satisfaction with the course and intervene when necessary to prevent dropout failure. Evaluate the effectiveness of the teaching methods, material, and activities and improve based on the students' outcome and feedback."
"I would make decisions by identifying relevant learning interventions and, of course, make instructional strategies parallel to learning needs."

Real-time monitoring was also perceived as a means to **provide enhanced student support.** According to the respondents, it enabled the timely identification of issues and concerns, leading to immediate interventions and a

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basis for accurate assessment and proactive support, thereby ensuring students' academic progress and overall satisfaction.

> *"Real-time data can reveal the effectiveness of academic programs or initiatives, allowing administrators to modify or discontinue if they are not delivering desired outcomes."*
> *"You can easily identify deficiencies within the department and also discern the specific needs of the students."*
> *"real-time monitoring of student progress would enable a more dynamic, responsive, and student --- approach to education by allowing for a more effective and personalized learning experience for our students."*

The findings demonstrate how real-time student progress can transform decision-making in educational settings. Real-time monitoring is crucial in developing successful and responsive educational practices, as it enables prompt decisions, promotes data-driven approaches, refines teaching strategies, and enhances student support (Vanlommel et al., 2020; Miller, 2004). Educators and administrators can leverage these insights to design a more individualized and dynamic learning environment for students, guaranteeing academic success.

Challenges in the Implementation of Real-Time Student Progress Monitoring

Real-time student progress monitoring in academic administration offers both opportunities and challenges in the educational landscape. The participants identified potential difficulties when integrating real-time monitoring technologies into academic administration procedures in their pursuit of data-driven decision-making and improved student outcomes.

The respondents cited **technological constraints** as one of the primary challenges, including difficulty navigating monitoring systems, time-consuming processes, slow internet connections, and conflicting laws and policies. These restrictions made it more difficult for real-time monitoring systems to be implemented smoothly.

> *"Slow internet connection"*
> *"the laws, policies/guidelines which are contradicting to each other"*
> *"The capability to sustain due to technology and infrastructure requirements"*
> *"lack of equipment and intermittent internet connection hinder the progress of implementing real-time monitoring."*
> *"immediate access to their performance is highly affected by the different factors such as management of data and network capability."*
> *"data volume and velocity"*
> *"network model and IT equipment"*

Ensuring the security and privacy of real-time data also emerged as a significant challenge. Participants stressed the importance of protecting sensitive information from unauthorized access or breaches. Respondents expressed concerns about striking a balance between accessibility and security and addressing issues such as non-transparency and potential data misuse. According to Prinsloo et al. (2022), student data privacy is not only a technological problem to be solved but should also be understood as a social problem.

> *"Ensuring the security of real-time data is crucial to protect sensitive information from unauthorized access or breaches."*
> *"Data privacy concerns, technological infrastructure, and technology-related challenges"*
> *"I think potential challenges will be on the integrity and security of the data due to insufficient technological infrastructure for real-time monitoring of students' progress.*
> *"privacy concerns, ethical use of data, technology reliability, teacher training support, student anxiety, and stress"*

Resource limitations, both human and financial, were also highlighted as obstacles. Real-time data collection and analysis require substantial resources, from IT infrastructure to human expertise. Challenges related to

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budget constraints, staff overload, and insufficient technological infrastructure could have hindered the effective implementation of real-time monitoring systems.

"Real-time data collection and analysis require sufficient human and financial resources to design, implement, and maintain the tools and process. Effective communication and coordination among the various stakeholders involved."
"human resource and budget"
"the other work/overloading of works of the faculty"
"Conceptualizing the programs, tapping expert IT professionals and implementing & dissemination to the stakeholders."
"Assigning an administrator to monitor the implementation of real-time monitoring of students."

Lastly, **integrating real-time monitoring systems into existing structures** posed considerable challenges. Issues such as inadequate system access for relevant personnel, connectivity problems, and difficulty in coordinating with multiple stakeholders emerged as hurdles. Furthermore, concerns regarding the reliability of student responses and the need for comprehensive teacher training were highlighted.

"Web-based data analysis is an essential tool for monitoring to ensure success, and accurate technology must be used for continuous monitoring."
"The current system has encountered many problems until now."
"non-transparency"
"The challenge lies in the level of commitment."

The participants' feedback highlights the diverse challenges faced by academic administrators when implementing real-time student progress monitoring. Addressing these challenges necessitates a comprehensive approach, including technological upgrades, robust data security measures, sufficient resource allocation, and meticulous integration planning. Overcoming these hurdles is crucial for maximizing the benefits of real-time monitoring, ultimately enhancing the educational experience and ensuring students' academic success.

Student Information System (SIS) Enhancements for Informed Academic Decisions and Enhanced Success

Evaluating and enhancing the current Student Information System (SIS) to empower academic administrators is crucial for achieving academic excellence. The participants expressed hope in establishing a robust platform to help them make informed decisions and promote academic success for all students by identifying areas that need improvement and change. Here are some recommended improvements:

1. **Data Visualization and Analytics**

Participants emphasized the importance of data visualization, advocating for data summaries categorized by year level, gender, and program to facilitate effective trend monitoring. They emphasized the need for dashboards to display data visually, enabling straightforward interpretation for academic administrators.

"implement advanced analytics tools to provide real-time insights into student performance, engagement, and other relevant metrics. Dashboards should display data visually for easy interpretation."
"There could be a summary of data per year level, sex, and per program to monitor the trends."

2. **User-Friendly Interface and Accessibility**

The SIS's usability was a significant concern, with respondents pointing out accessibility issues, security concerns, and overall confusion within the system. Suggestions included a single portal for all functions, with an emphasis on a user-friendly interface and mobile accessibility.

" A better IT interface, program"
"A system to be shared for viewing by the academic units."
"Should have only one portal for everything."

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"mobile access"
"User interface for easy navigation, mobile accessibility, data security features, analytics and reporting tools"
"Develop a student information system that is user-friendly, can be accessed easily, and provides real-time data about the students."

3. Integration of AI and Advanced Analytics

Participants advocated for integrating Artificial Intelligence (AI) and advanced analytics into the Student Information System (SIS). They highlighted AI's potential for providing real-time insights, predictive analytics, and personalized learning paths for students.

"Integrating AI and machine learning capabilities to provide predictive analytics and recommendations for students' success, such as identifying at-risk students, suggesting interventions, and personalizing learning paths."
"I think artificial intelligence must be considered"

4. Real-Time Monitoring and Reporting

Real-time monitoring and reporting were deemed essential for effective management. To minimize potential threats, the focus was on improving the SIS and computerization. Participants stressed the importance of consolidating data and continuously monitoring the platform and internet connectivity.

" Real-time monitoring and reporting of data is derived further; there is a need to improve our MIS and computerization system to minimize potential threats."
"regular monitoring of the platform, internet, and data consolidation."
"system access for administrators to monitor and analyze students' performance."
"The use of better connectivity and strong technology for real-time monitoring in various aspects must intensify."
"inclusion of real-time tracking of students' performance"

5. Student Support and Communication

Enhancements related to student support and communication were highlighted. These included feedback mechanisms, a direct connection to subject teachers via built-in messaging, and notifications for a grade of 4.0 and incomplete grades (INC) lapses. Clear communication channels were emphasized.

"…. recommend the student to proceed to the right office when a particular issue has been toggled to the student."
"notifications (either email or PMS) on INC that will lapse"
"proper dissemination of communication and functions"
"The system should allow easy subject dropping, enable direct messaging with teachers and all student services, and include a feedback mechanism."

The participants' feedback emphasizes the urgent need for a thorough redesign of the SIS. Academic institutions can develop a technologically cutting-edge, user-friendly, and encouraging academic environment by integrating advanced analytics, AI capabilities, intuitive interfaces, real-time monitoring, and practical communication tools. To easily track student growth and achievement, the school can gather data points from various departments using SIS (Edwards, 2022). Ismail et al.'s (2019) emphasis on the impact of university (SIS) on students' satisfaction and trust in the university is also noteworthy. Thus, these enhancements are crucial for streamlining administrative processes, ensuring academic success, and enhancing overall student satisfaction. According to Kalay and Chen's 2002 study, incorporating an information system into the school management decision-making process significantly improved decision-making.

This study highlights the need for an upgraded Student Information System (SIS) with advanced analytics and communication tools, emphasizing technology as a vital component of the intervention strategy. The positive feedback about the impact of information systems on decision-making aligns with the expected outcomes of the

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Theory of Change. The study's results support the Theory of Change by recognizing the significance of interventions, such as an improved Student Information System (SIS) and a comprehensive approach, along with the necessary conditions for enhancing student outcomes through data-driven academic administration.

CONCLUSION

The study reveals diverse participants from various age groups, academic levels, and roles. Thus, it provides crucial insights into the value and challenges of data-driven strategies and real-time monitoring in education. Their feedback highlights the significant benefits of data-driven decision-making while assessing the need for improvements in current systems.

The study gathered both quantitative and qualitative data. Results showed a high perceived value of data-driven decisions (M = 4.491) and strong acknowledgment of the role of real-time monitoring in academic decision-making and achievement (M = 4.480). However, the evaluation of existing student information systems was moderate (M = 3.800), indicating the need for system enhancements to better support informed administrative decisions.

The study highlights the need for a redesigned Student Information System (SIS) with enhanced analytics and improved communication tools. There is also a need to expand its accessibility to academic administrators, who are key decision-makers in making informed decisions. Such upgrades are crucial for streamlining administrative processes, improving student satisfaction, and ensuring academic success.

Lastly, the findings validate the Theory of Change, demonstrating that enhanced Student Information Systems (SIS) and a collaborative approach are crucial to improving student outcomes through effective data-driven administration. This paper contributes to the existing body of knowledge by providing empirical evidence, insights, and practical recommendations for leveraging data-driven strategies, particularly through an enhanced Student Information System, to enhance decision-making in academic administration and ultimately improve student outcomes.

FUTURE CONSIDERATIONS

Academic administrators require a data-driven approach to enhance performance, with the Student Information System (SIS) playing a crucial role in real-time monitoring of student progress. A well-designed Student Information System (SIS) providing access to various roles, especially for academic administrators, is crucial for informed decision-making. Therefore, maintaining an ongoing dialogue with faculty, staff, and students is crucial for continually enhancing learning outcomes.

In this light, the following are recommended:

1. **Improve the current SIS**. Specifically, specialized access to detailed reports and facilitating data-driven decision-making were assigned to academic administrators based on their specific administrative and academic roles. Providing decision-makers with real-time insights into admission, student performance, enrollment, and course evaluation data will empower them to effectively address various challenges and allocate resources efficiently within their respective colleges and departments.
2. **Strengthen collaboration and consultation among SIS users**. Various stakeholders must be involved to ensure that crucial data requirements are identified and that the system can provide timely and accurate information. Access to vital data streamlines transactions and allows prompt decisions based on actual data, thus enhancing the university's overall operational efficiency.
3. **Conduct regular consultations and conversations with faculty, staff, and students on a continuous basis.** Incorporating these qualitative interactions into the data-driven decision-making process empowers administrators to address academic issues and the social, emotional, and environmental factors that impact learning outcomes.

Author's Note on AI Assistance

This paper benefited from the use of artificial intelligence (AI) tools, specifically ChatGPT and Grammarly, to enhance clarity, grammar, organization, and writing style. The content, analysis, and interpretations are the sole

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