

# Leveraging artificial intelligence for intelligent student support: An AI-enabled SRM framework for higher education



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**Abstract** The increasing demand for responsive, personalized, and scalable student services has positioned Student Relationship Management (SRM) systems as critical tools in higher education. However, traditional SRM systems are often administrative, static, and reactive—failing to meet the real-time and diverse support needs of today’s students. This study examines how Artificial Intelligence (AI) can be systematically integrated into Student Relationship Management (SRM) systems to improve student engagement, academic advising, and institutional efficiency. The study employed a qualitative descriptive design, utilizing semi-structured interviews, focus group discussions, and document analysis across three public universities. Thematic analysis, facilitated through NVivo 12 software, revealed four key themes: Institutional AI Readiness, Gaps in existing SRM Practices, Perceived Benefits of AI Integration, and Ethical and Governance Concerns. These themes informed the development of a conceptual AI-enabled SRM framework comprising four core layers: AI Services, Student Interaction, Data Infrastructure, and Governance and Ethics. The framework was validated through an expert review, which affirmed its feasibility, ethical grounding, and adaptability across various institutional contexts. Document analysis also highlighted a strategic gap between digital transformation aspirations and the absence of concrete AI implementation policies. The study concludes that integrating AI into SRM can lead to more intelligent, proactive, and student-centered support systems, provided that institutions address infrastructural readiness and adopt robust governance protocols. The findings contribute both theoretically and practically to the field of educational technology by offering a flexible, stakeholder-informed framework that institutions can customize to align with their digital maturity and strategic goals. Recommendations for future research include pilot implementations and comparative evaluations to assess the framework’s impact on student success and institutional performance.

**Keywords:** student support systems, intelligent automation, digital transformation, predictive analytics, educational technology, artificial intelligence

## 1. Introduction

In recent years, colleges and universities have been increasingly utilizing digital tools to address the growing demand for personalized learning, enhanced student services, and informed decision-making. As schools seek ways to keep students engaged and help them succeed, Student Relationship Management (SRM) systems have become crucial tools to support students throughout their academic journey, from application to graduation. However, many traditional SRM systems are outdated. They mainly focus on paperwork and react to problems after they happen. These systems often lack the innovative features necessary to respond to students’ needs in real-time (Sharma & Singh, 2024). As a result, there is growing interest in incorporating Artificial Intelligence (AI) into SRM systems to enhance their functionality, making them more active, helpful, and personalized.

AI technologies are already changing the way schools operate. Tools such as intelligent tutors, chatbots, and data analytics can help identify students who may be struggling, offer personalized learning tips, and enhance communication between students and staff (Marcinkevage & Kumar, 2025; Tozadore et al., 2025). Features such as natural language processing (NLP) and machine learning can help chatbots better understand students, analyze their feedback, and identify patterns in behavior that may require attention (Coughlan & Iniesto, 2025; Habib et al., 2025).

Still, many schools—especially in developing countries—remain uncertain about how to utilize AI effectively. They may lack the technology, trained staff, or explicit rules for using AI fairly and safely (Shalihati et al., 2025; El Khatib et al., 2024). Concerns about data privacy, algorithmic bias, and trust in AI systems also deter schools (Widodo et al., 2024). Although students are already utilizing AI tools like Grammarly and ChatGPT (Biswas et al., 2025), these tools are rarely integrated into the official student support systems in schools, and they often fail to align with the school’s broader objectives.



This study aims to fill that gap by developing an AI-powered SRM framework explicitly tailored for colleges and universities. The goal is to determine how AI can be integrated in a structured manner to enhance services such as academic advising, student support, and early intervention for students who are struggling academically. The primary question this research seeks to answer is: *How can AI be effectively integrated into SRM systems to better support students in higher education?* The idea behind this study is that utilizing AI in SRM will lead to better, faster, and more personalized support for students, which can enhance both their academic success and the school's overall performance.

By combining recent studies and opinions from educators, this research offers both academic and practical value. It also provides a flexible framework that schools can adjust depending on their resources and goals (Isomiddinovich et al., 2024; Edwards & Olugbade, 2024). As AI continues to shape the way education is delivered, having innovative systems that support students effectively is no longer just a desirable option—it is a necessity (Saeed & Rana, 2024; Ateeq, 2024).

This research is important because student support systems need to become more responsive, personalized, and scalable, especially as schools become more digital. While SRM systems have helped with basic services, they typically cannot provide real-time, personalized assistance. New technologies, such as AI-powered chatbots, innovative data tools, and language understanding systems, can change that. However, many schools lack a clear plan for implementing this. That is why this study proposes a practical AI-enabled SRM framework, grounded in authentic experiences and current research. The goal is to help schools develop more effective, inclusive, and future-ready student support systems.

## 2. Materials and Methods

### 2.1. Research Design and Approach

This study employed a qualitative-descriptive research design, which is suitable for understanding complex issues, such as how Artificial Intelligence (AI) can be integrated into Student Relationship Management (SRM) systems. The goal was to gather the views of various individuals involved in higher education and utilize their input to develop a practical model for an AI-powered SRM system.

A qualitative method was appropriate because it focuses on real-life experiences and fosters a more profound understanding, rather than relying on numbers or statistics. By speaking directly with university leaders, faculty members, IT staff, and students, the study revealed current issues in SRM systems and identified how AI could address them. This process helped build a framework that fits the real needs, capabilities, and ethical responsibilities of colleges and universities.

### 2.2. Data Collection Procedures

To gather data, the researchers used two primary methods: semi-structured interviews and focus group discussions (FGDs). These approaches allowed for flexible and in-depth conversations. A total of 25 participants from three public universities were carefully selected. They included administrators, student affairs staff, IT personnel, faculty, and student leaders.

Interviews and group discussions were conducted both face-to-face and online (using Zoom and Google Meet), making it easier for more people to participate. The discussions covered topics such as how SRM is currently utilized, the readiness of institutions for AI, the potential benefits and risks of AI, and issues related to ethics and operations.

All sessions were recorded with permission, then transcribed word-for-word and anonymized to protect participant privacy. Each participant was assigned a code to ensure that no personal details would appear in the final analysis.

### 2.3. Document and Policy Review

To support the interviews and group discussions, the researchers also reviewed institutional documents. These included student services manuals, digital transformation plans, ICT guidelines, academic support documents, and data privacy policies.

This document review gave additional context about how each school operates and how prepared they are to adopt AI. By comparing the document content with what participants shared, the researchers ensured the framework was grounded in both real practices and policy guidelines.

### 2.4. Data Analysis

The data from interviews, discussions, and documents were analyzed using a method called thematic analysis, assisted by NVivo 12 software. The process began by identifying important points from the data (open coding), then grouping related points into larger themes (axial coding).

Four main themes emerged:

1. AI Readiness and Capacity (such as technical tools and staff skills),
2. Problems with Current SRM Systems (like outdated technology and lack of personalization),
3. Possible AI Applications (like chatbots and early alerts), and
4. Ethical and Governance Concerns (such as privacy and fairness).

To ensure accurate results, the themes were compared across different participant groups and document sources. Additionally, external experts reviewed the coding process to minimize researcher bias and validate the findings.

### 2.5. Conceptual Framework Construction

The conceptual framework for the AI-enabled Student Relationship Management (SRM) system was developed using a design thinking methodology. This approach emphasizes a human-centered, iterative process that is guided by real-world data and user needs. Drawing from the major themes identified in the earlier phases of the study—particularly those related to institutional AI readiness, gaps in existing SRM systems, and ethical concerns—the framework was constructed to reflect both current realities and emerging opportunities in higher education.

The resulting architecture comprises four interconnected layers, each serving a distinct function in delivering intelligent student support. The first is the AI Services Layer, which provides the core intelligent functions, including machine learning models, chatbots, predictive analytics, and recommendation engines. These tools are designed to enable real-time, personalized services for students and help institutions anticipate and respond to student needs more proactively. The second component is the Student Interaction Layer, which encompasses all user-facing features, including student portals, AI-powered communication tools, and adaptive feedback systems. This layer is responsible for facilitating direct engagement between the system and students, ensuring that support services are not only accessible but also responsive and personalized.

The third component, the Data Infrastructure Layer, supports the secure and seamless flow of information across platforms. It includes data pipelines, integration with learning management systems (LMS), and analytics engines that ensure the system can process and respond to large volumes of data efficiently. This layer is essential for enabling the predictive and automated functions found in the upper layers of the architecture. Finally, the Governance and Ethics Layer provides the necessary oversight mechanisms to ensure the ethical and transparent use of AI within the system. This includes consent management tools, explainability modules, and protocols to mitigate bias and ensure data privacy and integrity.

Overall, the framework was designed to be modular and adaptable, allowing institutions to implement it gradually based on their technological capacity and strategic priorities. Its development was also informed by a comprehensive review of literature on AI integration in education, customer relationship management systems, and intelligent support technologies, ensuring that it is both evidence-based and applicable across diverse higher education settings.

### 2.6. Validation Process

To ensure the proposed AI-enabled SRM framework was practical, relevant, and ethically sound, the study underwent a rigorous validation process through expert review. Five professionals with specialized expertise in artificial intelligence, educational technology, and digital transformation were invited to assess the framework. These experts reviewed the model using structured evaluation criteria that focused on conceptual clarity, contextual appropriateness for higher education, scalability, and ethical safeguards. Feedback was gathered through formal evaluation forms and follow-up discussions, which provided in-depth insights into potential areas for refinement. Based on their recommendations, the framework was enhanced to include explainability modules that improve transparency in AI decision-making, refined interaction flows to improve student usability, and strengthened governance checkpoints aligned with institutional policies and data protection regulations. This iterative validation process not only confirmed the theoretical robustness of the model but also improved its real-world applicability, ensuring it can be responsibly implemented in diverse institutional settings.

### 2.7. Availability of Materials and Data

Since this study focused on developing a conceptual framework rather than building a functional system, no software applications, algorithms, or executable code were produced. However, the primary data collected—including interview transcripts, focus group notes, and institutional documents—are retained securely by the research team. These materials can be accessed upon formal academic request, subject to proper data-sharing agreements and ethical review. Due to institutional confidentiality policies and privacy obligations, no open-access datasets were created or made publicly available. Ethical standards guided the handling of all materials to protect the identities and sensitive information of participants and organizations involved.

### 2.8. Ethical Considerations

The study followed strict ethical protocols to ensure the protection of human participants and institutional data. Ethical clearance was obtained from the University Ethics Review Board prior to the commencement of data collection. All participants were fully informed about the purpose of the study, their rights, the voluntary nature of participation, and how their data would be used and protected. Written informed consent was obtained prior to every interview and focus group discussion. To maintain privacy, all data were anonymized by removing names and identifying details, and all outputs presented in the study use participant codes rather than real identities. The study also respected institutional boundaries by obtaining permission to review internal documents and ensuring that no confidential information was disclosed. All procedures adhered to the ethical principles outlined by the Multidisciplinary Science Journal and aligned with national guidelines for responsible research

involving human subjects, particularly in the areas of data privacy, voluntary participation, and transparency.

### 3. Results

#### 3.1. Emerging Themes from Stakeholder Perspectives

To gain a comprehensive understanding of how Artificial Intelligence (AI) can be integrated into Student Relationship Management (SRM) systems in higher education, the study conducted a thematic analysis of qualitative data collected through interviews, focus group discussions (FGDs), and institutional document reviews. This approach revealed four interrelated themes that reflect the institutional capacity, technological opportunities, and ethical considerations surrounding the integration of AI. Each theme provided critical insights into the current challenges, desired improvements, and guiding principles for future SRM development.

The summary of themes, sub-themes, and corresponding interpretations is presented in Table 1.

**Table 1** Summary of Themes, Sub-Themes, and Interpretations.

Framework Layer	Core Features	Functionality
AI Services Layer	Machine learning models, AI chatbots, predictive analytics, and recommendation engines	Enhances real-time support and anticipates student needs through intelligent automation
Student Interaction Layer	Conversational interfaces, personalized dashboards, adaptive notifications	Facilitates engaging and responsive user experiences tailored to student profiles
Data Infrastructure Layer	Data integration pipelines, learning management system (LMS) linkage, analytics engine	Ensures data flow, interoperability, and infrastructure to support AI functionalities
Governance and Ethics Layer	Ethical governance checkpoints, explainability modules, consent, and bias safeguards	Maintains ethical compliance and institutional accountability in AI operations

Institutional readiness emerged as a foundational requirement for any successful AI implementation. Stakeholders reported varying levels of preparedness across institutions. While many universities had existing digital infrastructures, such as Learning Management Systems (LMS) and cloud-based student databases, these were often underutilized and lacked integration with intelligent automation tools. Moreover, several institutions faced limitations in technical capacity, highlighting gaps in staff training, system interoperability, and strategic alignment. Participants emphasized that successful AI integration is not solely dependent on the technology itself but on the institution's ability to support it through leadership commitment, digital culture, and adequate investment. This theme highlights the importance of conducting readiness assessments and implementing capacity-building initiatives prior to deploying AI-driven features within SRM systems.

The second theme highlighted significant shortcomings in the current use of SRM systems. Existing platforms were primarily administrative, used for tracking enrollment, processing documents, or managing basic communication with students. Stakeholders noted that these systems were largely reactive, responding to student concerns only after issues had escalated, and offered little in terms of proactive support. Furthermore, most systems lacked personalization features, such as tailored academic advice or targeted alerts based on student behavior. Manual processes, fragmented data, and the absence of integrated analytics were common barriers that limited institutions' ability to provide timely and customized interventions. These findings suggest an urgent need to reconfigure SRM systems into dynamic, student-centered platforms that can adapt in real-time.

Despite the limitations in current SRM systems, stakeholders expressed optimism regarding the potential of AI to transform student support. Participants identified several practical applications of AI, including the use of intelligent chatbots to respond to routine student inquiries 24/7, predictive analytics to identify students at risk of academic or emotional difficulties, and adaptive learning recommendations tailored to individual performance data. These use cases were viewed not only as enhancements to efficiency but as strategic tools for increasing student retention, improving academic outcomes, and elevating the overall student experience. Some institutions had even piloted basic AI functions, such as automated reminders or FAQ bots, and reported early signs of improved engagement. This theme illustrates a growing recognition that AI can move SRM beyond administrative support and into the realm of personalized, proactive student care.

While there was evident enthusiasm about AI's capabilities, participants also voiced strong concerns regarding the ethical implications of its adoption. Issues related to data privacy, algorithmic bias, consent, and decision transparency were repeatedly raised. For example, some stakeholders questioned how student data would be used, who would have access to it, and how students would be informed about automated decisions affecting their academic paths. Others highlighted the risk of relying on biased algorithms, especially if training data lacked diversity or was not contextually relevant. There was consensus that institutions must adopt ethical governance structures to manage these risks. Recommendations included establishing AI ethics committees, developing clear consent protocols, integrating explainability modules into AI tools, and adhering to national data privacy regulations such as the Data Privacy Act. The theme underscores the importance of responsible AI use that aligns with institutional values and protects students' rights.



Together, these four themes shaped the foundational logic of the AI-enabled SRM framework developed in this study. The AI Services Layer addresses the need for predictive and intelligent tools that support timely interventions. The Student Interaction Layer reflects calls for better communication and personalized engagement. The Data Infrastructure Layer addresses challenges related to integration and data management. Finally, the Governance and Ethics Layer ensures that all technological advancements are balanced with fairness, transparency, and regulatory compliance.

The themes not only capture current institutional realities but also highlight the strategic direction required for future-ready student support systems. By identifying both the potential and the pitfalls of AI integration, this thematic analysis provides higher education leaders with a roadmap for planning, implementing, and governing intelligent SRM solutions in a manner that is both innovative and ethically sound.

### 3.2. Validated Features of the AI-Enabled SRM Framework

Following the development of the conceptual framework, the study conducted an expert validation process to ensure the model was both theoretically sound and practically applicable. Five experts, each with established experience in artificial intelligence, educational technology, and institutional digital transformation, were engaged to assess the framework’s design, layers, features, and alignment with real-world needs in higher education. Their feedback was instrumental in confirming the framework’s structure and enhancing its usability and relevance across diverse institutional settings.

The AI Services Layer was universally acknowledged as the core engine of the framework. Experts emphasized that this layer plays a crucial role in delivering intelligent, real-time interventions through tools such as predictive analytics, AI chatbots, and personalized recommendation engines. These features were noted for their ability to automate routine queries, flag students who may be at academic or emotional risk, and deliver tailored learning support. According to the reviewers, the scalability and versatility of this layer make it essential for institutions seeking to modernize their student support systems without overburdening staff.

The Student Interaction Layer was recognized for its focus on improving the student experience. This layer includes personalized dashboards, conversational interfaces (such as chatbots or virtual assistants), and adaptive alerts that respond to each student’s profile, behavior, and academic journey. Experts emphasized that this layer is crucial for fostering sustained student engagement, as it creates opportunities for meaningful and timely interactions that extend beyond standard administrative communications. By enabling a user-friendly and responsive system, this layer bridges the gap between technology and human-centered support. The validated features of the AI-enabled SRM framework are presented in Table 2.

**Table 2** Validated Features of the AI-enabled SRM Framework.

Framework Layer	Core Features	Functionality
AI Services Layer	AI chatbots, machine learning models, predictive analytics, and recommendation tools	Enables automated communication, predictive student risk alerts, and tailored support pathways
Student Interaction Layer	Personalized dashboards, conversational interfaces, and adaptive alerts	Improves user engagement through real-time, responsive, and personalized experiences
Data Infrastructure Layer	Integrated databases, LMS/API connectivity, analytics pipelines	Supports seamless data flow, enhances interoperability, and enables real-time decision-making
Governance and Ethics Layer	Consent management tools, bias detection, and explainability modules	Ensures ethical AI deployment, transparency, and compliance with institutional data protection policies

The Data Infrastructure Layer was validated for its importance in ensuring system-wide data integration and interoperability. Experts emphasized the importance of reliable data pipelines, database connectivity, and real-time analytics capabilities to ensure the accuracy, speed, and consistency of AI-driven functions. This layer is particularly critical in institutions where student information is stored across disconnected platforms. By linking learning management systems (LMS), institutional databases, and AI tools, this layer empowers institutions to make informed, data-backed decisions about student engagement, risk, and success.

Lastly, the Governance and Ethics Layer received strong support from the reviewers for addressing institutional accountability, fairness, and transparency. As AI tools increasingly influence student pathways and decision-making, experts emphasized the importance of integrating ethical safeguards. This layer encompasses features such as consent management systems, bias detection tools, and explainability modules that enable users and administrators to understand how AI-generated decisions are made. Reviewers agreed that this component is essential not only for compliance with privacy laws and institutional policies but also for building trust with students and staff who interact with AI-enabled systems.

Together, these four layers were validated as both comprehensive and adaptable, forming a modular architecture that institutions can implement progressively. The expert validation reinforced the model’s utility and confirmed that it aligns well with the strategic goals and operational realities of modern higher education institutions.

### 3.3. Strategic Gap Between Aspirations and Implementation



To assess how well institutional goals align with their actual readiness to adopt AI-powered student support systems, the study reviewed institutional documents, including digital transformation plans, ICT manuals, operational strategies, academic support policies, and data governance guidelines. This analysis revealed a significant gap between the stated aspirations for digital transformation and the practical mechanisms in place to support the integration of AI. The document review and analysis output is presented in Table 3.

**Table 3** Document Review and Analysis Output.

Document Type	Key Observations	Implication
Digital Transformation Roadmap	A broad commitment to digitalization was evident, but AI-specific strategies were lacking.	Strategic gap between vision and actionable AI integration
ICT Policy Manual	Focus on infrastructure and cybersecurity, with limited guidance on intelligent systems.	Need to update policies to reflect AI tools and student data analytics.
Student Affairs Operational Plan	Emphasis on student engagement, but lacking in automation or personalization strategies	Potential to integrate AI for proactive, scalable student engagement
Academic Support Guidelines	Outlines basic support services, does not reference predictive tools or AI-enabled advising	Existing frameworks can be enhanced to support data-driven academic interventions.
Data Privacy and Ethics Policy	Highlights compliance with privacy laws, but no provisions for algorithmic transparency	Ethical frameworks must evolve to accommodate AI decision-making and fairness.

The Digital Transformation Roadmaps of most institutions expressed a clear commitment to modernization and innovation. However, these documents lacked specific strategies for AI integration, with no mention of timelines, investment plans, or system specifications related to intelligent automation in student services. This suggests that while institutions are aware of the need for digital evolution, they have yet to operationalize AI as a core component of their transformation goals.

ICT Policy Manuals were primarily concerned with infrastructure, network security, and software acquisition. Although essential, these documents did not address the implementation of AI tools, data analytics platforms, or the management of intelligent systems. There was little guidance on handling student data for AI applications, which signals a disconnect between technical planning and the future demands of AI-enhanced services.

Student Affairs Operational Plans often emphasized student engagement and support but relied on traditional methods such as counseling services, student events, and generic communication channels. These plans did not incorporate automation strategies, AI-driven personalization, or predictive tools to manage student well-being or academic risk proactively. This limits the ability of student services units to scale their interventions or address student concerns promptly.

Similarly, Academic Support Guidelines were found to be grounded in conventional support models such as tutoring and mentoring programs. However, they did not reference the potential use of predictive analytics, early warning systems, or AI-driven advisories. This reflects a missed opportunity to enhance academic advising and intervention efforts with data-driven insights.

The Data Privacy and Ethics Policies, while aligned with national laws such as the Philippine Data Privacy Act, also showed a significant limitation. Most policies focused on basic compliance and data protection for users. However, they failed to address emerging issues related to algorithmic transparency, fairness in AI decision-making, or consent protocols for automated services. There was little evidence that institutions were preparing for the ethical complexities associated with AI.

These findings underscore a strategic gap between what institutions aim to achieve through digital transformation and what they are currently prepared to implement. Without actionable plans, updated policies, and AI-specific strategies, the adoption of intelligent SRM systems remains aspirational rather than operational. This disconnect is a critical barrier to progress and reflects the need for more deliberate, cross-functional planning that involves IT, academic affairs, student services, and policy-making bodies.

The proposed AI-enabled SRM framework addresses this implementation gap by offering a modular, ethically guided architecture that institutions can adopt progressively. It supports incremental adoption based on existing infrastructure, while also embedding ethical safeguards and adaptability into each layer. By doing so, it helps bridge the divide between strategic vision and technological action, making the digital transformation of student support systems more attainable and sustainable.

### 3.4. Implications for Practice and Policy

The proposed AI-enabled Student Relationship Management (SRM) framework presents significant implications for both practical implementation and institutional policymaking. On the practical side, the framework provides a clear pathway for higher education institutions to modernize student services using artificial intelligence. It encourages a phased adoption strategy, starting with low-risk applications such as AI-powered chatbots that can manage general student inquiries. These entry-level tools offer immediate benefits by streamlining administrative tasks, reducing staff workload, and improving the timeliness of student engagement. Over time, institutions can scale their AI integration to include more advanced capabilities, such as predictive analytics to identify at-risk students and automated recommendation systems that personalize academic support based on individual performance and behavioral data.



Beyond implementation, the framework calls for institutional leaders and education policymakers to establish robust governance structures for AI. These should include formal guidelines that promote the ethical use of AI, mechanisms for algorithmic transparency, procedures for managing sensitive student data, and clearly defined consent protocols. Equally important is the development of feedback and redress systems that allow students to understand, question, or challenge AI-driven decisions that affect them. Moreover, institutions should invest in AI literacy programs to ensure that faculty, staff, and students can effectively and responsibly interact with intelligent systems. Building awareness about the potential and limitations of AI is essential for fostering informed use and establishing institutional trust.

At the policy level, the framework emphasizes the need for national regulatory bodies and accrediting agencies to develop standardized guidelines for integrating AI in education. These national frameworks should strike a balance between encouraging innovation and upholding principles of equity, inclusivity, and accountability. By providing consistent policy direction and safeguards, national authorities can help institutions adopt AI in a strategic and responsible manner. Ultimately, the proposed framework not only supports the modernization of student services but also advances the conversation on ethical and sustainable digital transformation within higher education.

### 3.5. Contribution to Literature and Future Research

This study makes a significant contribution to the growing body of literature on artificial intelligence in education, particularly in the underexplored area of AI-enabled Student Relationship Management (SRM). Unlike previous studies that often focus on isolated tools or technology pilots, this research presents a comprehensive, validated framework that integrates the technical, operational, and ethical dimensions of AI integration into a unified model. By adopting a layered and modular architecture, the framework is adaptable to various institutional contexts, making it a practical guide for both technologically advanced and resource-constrained environments.

The study also adds value by grounding the framework in empirical data collected from multiple stakeholder groups, including administrators, faculty, IT personnel, and students. This stakeholder-informed approach ensures that the proposed system is not merely theoretical but addresses real-world needs, expectations, and concerns. It bridges a critical gap in current research, which often overlooks the intersection of strategic planning and operational realities in the deployment of AI in educational settings.

Looking ahead, future research is essential to test and refine this framework in real institutional environments. Pilot implementations across various types of institutions, such as public and private universities, urban and rural campuses, and research-focused versus teaching-focused schools, will provide valuable data on the model's effectiveness. Key indicators to evaluate may include student satisfaction, academic performance, retention rates, operational efficiency, and staff workload reduction.

Longitudinal studies are also recommended to assess how AI-supported SRM systems perform and evolve. These studies can help identify best practices, measure long-term impacts, and highlight any unintended consequences of automation in student services. Additionally, comparative research across different countries or regions can provide insights into how cultural, economic, and policy differences impact the success and acceptance of AI in education.

Ultimately, this study lays the groundwork for a future where AI-enabled SRM systems are not just functional but also ethical, inclusive, and aligned with institutional missions. It invites researchers, educators, and policymakers to collaborate in refining, expanding, and responsibly implementing intelligent systems that genuinely support student success.

## 4. Discussion

The findings of this study underscore the evolving role of Artificial Intelligence (AI) in transforming Student Relationship Management (SRM) systems in higher education. Through thematic analysis of stakeholder interviews, focus group discussions, and institutional document reviews, four key themes emerged, each highlighting critical factors that shape the integration of AI technologies into student support systems. First, institutional readiness was identified as a foundational element. While many universities had basic digital infrastructures, such as learning management systems (LMS) and centralized student databases, these resources were underutilized and lacked integration with intelligent automation tools. The success of AI integration, therefore, depends not only on technological availability but also on institutional capacity, digital literacy, and administrative commitment. This finding reinforces the need for readiness assessments and capacity-building initiatives as prerequisites for the implementation of AI.

Second, the study revealed that current SRM systems are largely reactive, administrative in nature, and not designed to provide proactive or personalized support. Stakeholders consistently noted the limitations of traditional SRM tools, which primarily serve as platforms for enrollment tracking and documentation rather than as engines for student engagement. This gap presents a strategic opportunity to transition from manual, fragmented systems to dynamic platforms that leverage AI to anticipate and respond to student needs in real-time. Third, there was widespread optimism about the potential of AI to address these gaps. Stakeholders highlighted use cases such as chatbots for routine inquiries, predictive analytics for identifying

at-risk students, and recommendation systems for personalized learning support. These tools were seen not only as ways to enhance operational efficiency but also as transformative strategies to improve academic outcomes and student retention.

Despite the enthusiasm, stakeholders also raised valid concerns regarding the ethical implications of AI adoption. Issues surrounding data privacy, algorithmic bias, consent, and decision transparency were emphasized. These concerns highlight the importance of incorporating strong ethical governance into any AI-enabled system. Participants called for the establishment of ethics committees, the development of explainable features, and strict adherence to national data protection regulations, such as the Data Privacy Act. This aligns with broader concerns in the AI community regarding the need to ensure fairness, accountability, and trustworthiness in automated decision-making processes.

The development and expert validation of the AI-enabled SRM framework further reinforced these findings. Experts confirmed that the framework's four core layers, such as AI Services, Student Interaction, Data Infrastructure, and Governance and Ethics, address the technological, operational, and ethical needs of higher education institutions. Each layer was validated for its functionality and alignment with institutional goals. The AI Services Layer was seen as essential for enabling intelligent and scalable interventions. The Student Interaction Layer was commended for fostering user engagement and responsiveness. The Data Infrastructure Layer was deemed critical for ensuring integration and real-time analytics, while the Governance and Ethics Layer was praised for its safeguards around fairness, consent, and transparency.

In addition, the document analysis revealed a strategic disconnect between institutional aspirations for digital transformation and their current readiness to implement AI. While vision documents expressed a commitment to modernization, they lacked detailed plans or policy provisions for the adoption of AI. ICT policies were focused on cybersecurity but offered little guidance on AI governance. Operational plans in student affairs and academic support did not incorporate AI-based personalization or automation, and data privacy policies lacked protocols for algorithmic transparency. This disconnect suggests that while institutions are motivated to innovate, they lack the structural alignment to move from vision to implementation.

The implications of these findings are far-reaching. Practically, institutions should adopt a phased approach to AI integration, starting with low-risk tools and gradually progressing to more complex systems. At the same time, institutional leaders and policymakers must develop comprehensive governance frameworks to ensure the ethical deployment of AI. Investments in AI literacy for staff and students are also crucial to ensure the informed and responsible use of AI. At the national level, regulatory bodies should provide standardized guidelines to promote consistent, inclusive, and accountable adoption of AI in education.

Lastly, this study contributes meaningfully to the academic literature by offering a validated, stakeholder-informed framework that is both theoretically grounded and operationally relevant. Unlike many existing studies that focus on individual tools, this research presents a holistic model that integrates technical capability, user experience, and ethical oversight. Future research should focus on piloting this framework across various institutional settings, evaluating its long-term impact on student outcomes, operational efficiency, and staff workload. Comparative and longitudinal studies could provide deeper insights into its adaptability and scalability across diverse educational environments. Ultimately, the proposed framework serves as a foundation for developing intelligent, ethical, and student-centered support systems in the era of AI-driven education.

## 5. Conclusions

This study explored how artificial intelligence (AI) can be systematically integrated into Student Relationship Management (SRM) systems to enhance student support in higher education. The findings identified key institutional challenges and opportunities through four major themes: institutional readiness, limitations of current SRM systems, perceived benefits of AI, and ethical governance concerns. These insights guided the development of a validated AI-enabled SRM framework.

The framework comprising AI Services, Student Interaction, Data Infrastructure, and Governance and Ethics layers was confirmed through expert validation to be both feasible and adaptable to institutional needs. It demonstrates that AI integration can lead to more responsive, scalable, and personalized student services when aligned with ethical standards and institutional capacities.

Thus, the study concludes that a structured and ethically grounded AI-enabled SRM framework can support intelligent, data-driven student engagement. However, institutions must address policy gaps and establish effective governance structures to ensure the responsible implementation of these policies. Future research should focus on pilot testing and evaluating real-world impacts across varied educational contexts.

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### Ethical considerations

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and compliance with the institutional research ethics guidelines. Prior to data collection, the research protocol was reviewed and approved by the Ethics Review Board. Informed consent was obtained from all participants, who were made aware of the study's objectives, procedures, voluntary nature, and their right to withdraw at any time without penalty. To ensure confidentiality and privacy, all data were anonymized and securely stored. The participants' identities were not recorded in any publication or reporting related to the study. Additionally, the researchers ensured that the use of institutional documents and internal reports was done with proper authorization and in a manner that respected institutional privacy policies. The study adhered to the ethical policies of the *Multidisciplinary Science Journal* and followed the standards for conducting research involving human participants, including data protection, voluntary participation, and transparency in reporting.

### Conflict of Interest

The authors declare no conflicts of interest.

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