# The Role of AI in Shaping the Discharge of Duties of University Administrators: A Systematic Review

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## Abstract

This systematic review examines the implementation of artificial intelligence (AI) in university administration, focusing on AI tools, ethical issues, prospects, and challenges of AI use by university administrators. Drawing from 23 relevant articles published in Scopus-indexed journals between 2009 and 2023, the findings reveal that AI technologies, including chatbots, predictive analytics, machine learning, natural language processing, and student information systems, are increasingly integrated into university operations to enhance decision-making. The findings also highlight ethical issues, particularly those related to data privacy, algorithmic bias, transparency, and accountability. The absence of specific ethical frameworks and legal regulations risks violating individual rights and institutional integrity. The review further identifies that interdisciplinary collaboration, staff training, and structured deployment strategies are necessary to fully leverage AI's transformative potential. Challenges hindering effective adoption, including infrastructure deficits, limited technical expertise, data privacy and security, institutional resistance to change, and unresolved ethical and legal issues, are also discussed. Ultimately, the paper underscores the transformative potential of AI in higher education while emphasizing the need for responsible and inclusive implementation practices.

**Keywords:** Artificial intelligence, systematic review, university, administrators, duties

## Introduction

Artificial Intelligence (AI) essentially refers to the capacity of machines to exhibit intelligent behavior that resembles human cognitive processes, including learning, decision-making, and problem-solving (Collins et al., 2021; Wang et al., 2024). As it has become an essential part of people's lives, it has greatly influenced daily routines and workforce roles (Morandini et al., 2023). Additionally, it has the potential to enhance teaching by offering personalized education to students and making recommendations based on their performance (Farley & Burbules, 2022; Xu et al., 2021). Artificial Intelligence can also impact non-academic functions, including administrative and management activities. The technology is expected to lower workload and improve productivity and governance while dedicating more time to activities such as boosting student satisfaction or enhancing teaching performance (Tiika et al., 2024; Yang, 2022). However, the potential benefits of AI are accompanied by significant challenges. In the academic field, AI's functions have not penetrated deeply enough to significantly affect a typical academic workload. This slow progress can be attributed to costs and employee mindsets (Aldoseri et al., 2023; Xu et al., 2021).

Due to the significant progress in AI, universities are now required to prepare for the "fourth industrial revolution" (Al-Maskari et al., 2024; Ally & Perris, 2022; Gleason, 2018; Intel, 2019). Given the pivotal position that university administrators occupy in a university's growth and administration, it is of paramount importance to comprehend their perspectives on AI and its implications for their responsibilities in the context of the substantial shift currently underway (George & Wooden, 2023; Ocaña et al., 2019; Tsou, 2024). The development and modification of programs must consider the operational requirements of the community. It is essential to comprehend the potential consequences of systemic changes on the responsi-

bilities and roles of university administrators, so that adequate preparations can be made. AI applications can also be utilized for the capacity development of lecturers at the university, as reported as a challenge to newly appointed officeholders in the university (Dogbatse, 2024).

Universities are distinct as they comprise numerous actors and agencies that interact with each other through complex networks of interfaces, both vertical and horizontal. These actors and agencies are interconnected in such a way that no single entity can function independently without affecting the overall operation of the university. The intricate relationships between these actors and agencies ensure that universities operate smoothly and efficiently (Whitley, 2008). University administrators and academics are increasingly employing AI-based models and tools in various areas, including the planning, implementation, monitoring, and evaluation of activities such as operations, academic and administrative processes, financial transactions, research, teaching, and services (Malik et al., 2023; Owan et al., 2023). As universities allocate resources to AI, it is crucial to consider the ethical ramifications and potential deleterious consequences of integrating AI into higher education. The use of artificial intelligence models and tools has sparked contentious discourse.

The emergence of the 2019 pandemic necessitated the adoption of technology to enable remote learning and ensure educational accessibility worldwide. The pandemic significantly challenged traditional operations, leading to the adoption of technology by pre-service teachers in their field of study (Baldomar et al., 2023). Businesses and educational institutions alike have increasingly embraced AI technologies to optimize their operations and enhance interactions in the digital era. This strategic pivot has led to the extensive application of big data and AI-driven tools across diverse global sectors, including telemedicine, e-commerce, recommendation systems, marketing, and information systems (A. Nguyen et al., 2023; Malik et al., 2023; T.K. Nguyen & T.N. Nguyen, 2023).

Many AI tools are being developed for academic purposes, many of which are not subject to conventional technological evaluations such as systematic reviews. The researchers conducted a qualitative systematic review to address this gap, incorporating various approaches to report their findings. The significance of this study lies in providing a comprehensive understanding of the importance of AI in the daily tasks of university administrators. This understanding of AI is critical because it shapes how resources are allocated, administrative processes evolve, and decisions are made in higher education. Specific tasks include student admissions, performance monitoring, scheduling meetings, financial budgeting, and human resource management. Administrators must not only adopt these technologies but also comprehend their implications. The absence of this understanding could lead to ineffective implementation and ethical and privacy risks.

This study aimed to investigate the growing trend of using AI tools for non-academic tasks, despite limited empirical evidence supporting their effectiveness. We examined the role AI plays in influencing how responsibilities are carried out by administrators of higher education institutions. The study addressed the following questions:

1. How do specific AI tools enhance the efficiency and effectiveness of university administrators' core duties?

2. What are the primary ethical and legal issues hindering AI adoption in university administration?

3. What are the prospects and challenges of implementing AI for administrative management in universities?

The potential of AI to personalize education and enhance real-life learning experiences makes it a valuable tool in higher education. It can be highly beneficial for officials who have a visual or tactile learning style. AI in higher education is expected to continue developing and becoming an essential teaching aid. To effectively utilize

AI, administrators must understand its capacities and limitations before incorporating it into education.

## Literature Review

### The Landscape of Artificial Intelligence

In recent times, the development of artificial intelligence (AI) has gained considerable interest, as evidenced by the surge in scholarly literature aimed at exploring the contemporary possibilities offered by AI and examining the ethical and social implications that arise from these opportunities. It is worth noting that the essence of intelligence lies in the biological process that enables living beings to adapt to environmental changes through a sophisticated network of solutions, which is often referred to as intelligence.

Artificial intelligence, on the other hand, encompasses the theory, design, development, and application of systems that exhibit intelligent characteristics such as natural language processing, knowledge representation, reasoning, and problem-solving. Deep learning and machine learning are terminologies that are typically interchangeable with artificial intelligence. However, there is a clear distinction between the two. The relationship between the terminologies is shown in Figure 1. The prominence of AI appears to be escalating, given the substantial growth in knowledge and technology in contemporary society. Furthermore, AI, big data, the Internet of Things, and blockchains are expected to serve as catalysts for the emerging techno-centric world. Figure 2 shows the increasing trend of published work on AI in the dataset downloaded.

**Figure 1:** *Deep Learning, Machine Learning and Artificial Intelligence Relationship*
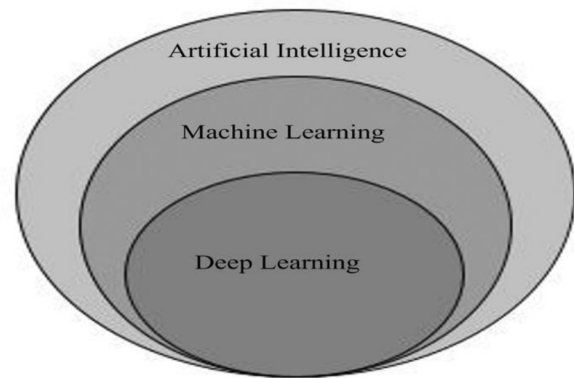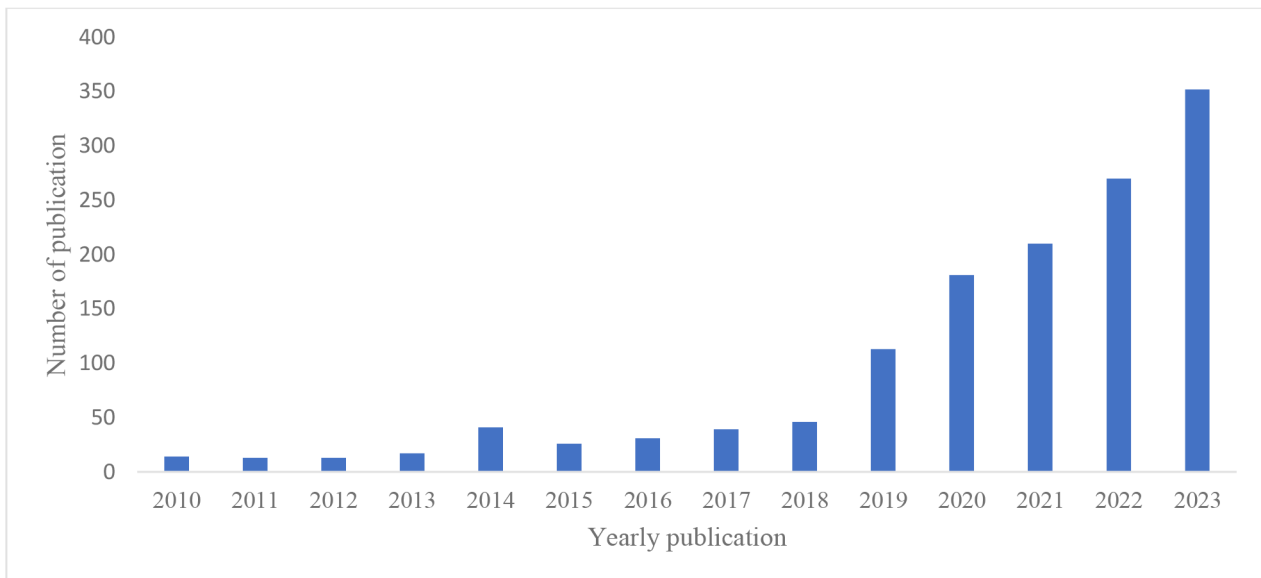


**Figure 2.** *Yearly Trend of Published Research Work on AI Applications*

## Artificial Intelligence in Higher Education

Artificial intelligence has greatly impacted all business operations, including university educational systems. It has been used to analyze extensive datasets of students and faculty, such as collecting admission applications, analyzing students' statements, determining potential success and dropout rates for the upcoming semester, managing libraries, handling admission and registration requests, and addressing student inquiries. The term "AI in education" encompasses a broad range of intelligent applications where computers interact with learners on a global scale, providing various types of knowledge, reasoning, speech recognition and generation capabilities, and tutoring and guidance for a wide range of topics (George & Wooden, 2023; Owan et al., 2023; Tsou, 2024).

Understanding machine learning and other AI technologies will shed light on fundamental concepts and their limitations. The integration of AI technologies, including machine learning, big data, and personalization, has revolutionized the development and application of learning technologies. These technologies have enabled universities to move beyond traditional e-learning to professional modules. AI technologies, including machine learning models, natural language processing, chatbots, recommendation systems, and analytics-driven decision-making, have become increasingly prevalent in education. This trend has resulted in the generation of a large volume of literature on this subject. Previous research has demonstrated that role-based technology utilizing Artificial Intelligence (AI) has been effectively incorporated into computer-based learning environments in recent years, enhancing achievement rates and fostering social interaction within these systems (Martínez-Monés et al., 2020).

Thus, the current systematic review restricts itself to senior management personnel of the university, as these individuals are ultimately accountable for the institution's successful operation. Their actions can have a significant impact on the university's success. Hence, the present study focuses solely on administrators who are responsible for guiding the university following the governance modalities established by the university, higher colleges, or other higher education institutions.

Contemporary human resource management practices and innovation culture in public universities are improving administrative practices (Dellova & Tian, 2024; Shiferaw, 2022). Artificial Intelligence (AI) still has the potential to revolutionize how we work, study, and teach in Higher Education. AI has already been implemented in the management of complex administrative services in universities using systems such as IBM's Watson (Akinwalere & Ivanov, 2022; Bhattacharjee, 2019; Saputra et al., 2023; Tang, 2024). With such AI systems, campus administrators can easily access the necessary data and insights to streamline decision-making, reducing the need for as many administrative staff as possible. This provides more time for the staff to assist students. Educational applications of AI offer numerous opportunities, such as the ability to analyze and interpret large datasets to help administrators identify areas for refinement in student recruitment, enhance student retention, or predict the need for specific course offerings. Despite the considerable potential applications of AI in educational operations and administrative services, the future is not as daunting or transformative as anticipated (Malik et al., 2023; Owan et al., 2023; Tsou, 2024; Whitley, 2008).

Advancements in AI have ushered in a new era of potential applications across various domains, including higher education. In this field, AI has brought about significant consequences that have transformed how educational processes are conducted. Artificial intelligence in higher education pertains to computer systems that can mimic human-like processes, such as learning, adaptability, and the utilization of data to perform intricate tasks. These systems can provide personalized learning experiences inside and outside the classroom and are accessible to students at any time. AI can perform a range of educational functions, including answering admission-related queries and providing personal tutoring services. Despite its potential to create

abundant opportunities, AI presents substantial challenges in education.

## Artificial Intelligence Limitations in Administration

Artificial intelligence is not a universal solution for all educational concerns. Although AI has made significant advancements, it still struggles with intricate contextual tasks, such as detecting irony, sarcasm, and humor. It lacks the specificity and complexity required to interpret the mixed signals in group conversations. Moreover, tasks that require genuine personal connections and a deep understanding of temporal and complex learning processes cannot be accomplished using AI. Therefore, educators must recognize the limitations of AI in problem-solving in education and avoid adopting AI technologies, which could result in significant limitations and unexpected setbacks (Saputra et al., 2023; Tang, 2024; Udupa & Koch, 2023).

## Role of Artificial Intelligence in Enhancing University Administrators' Duties

University administrators are responsible for ensuring that decisions regarding the provision and maintenance of physical facilities that support university operations are made across faculties and departments. These decisions are regularly assessed by the decision-makers. This approach closely aligns with the rational decision-making model. In this model, consensus solutions are favored, as reported in the literature, or every unit is allocated decision credit based on its priority. Maintaining a cordial working relationship and environment in the workplace is a key duty of administrators (Cheng et al., 2023; Yanty et al., 2024).

Most university administrators are responsible for making and implementing decisions, managing resources and personnel, communicating, and representing the institution publicly (Anwar & Abdullah, 2021; Dogbatse, 2024). Furthermore, administrators handle other responsibilities including managing the institution's relationships with external organizations and companies, overseeing research and development projects, admitting international students, organizing related events, and handling logistical tasks such as building maintenance, road repairs, and opening new pathways (Del Favero, 2003). Additional responsibilities, such as managing the budget and staff development, are also included (Su & Baird, 2023).

## Methodology

This study conducted a systematic review of the literature following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines (V. Mishra & M. P. V.Mishra, 2023; Page et al., 2021). Conducting systematic literature reviews is a well-established scientific approach to synthesize current research, recognize emerging trends, and pinpoint areas needing further investigation, thereby informing both practice and policymaking (Page et al., 2021; Peters et al., 2021; Tricco et al., 2018).

## Database Search Strategy and Selection Criteria

The academic database employed was Scopus (www.scopus.com), which is renowned for its stringent indexing methodology and ease of retrieving bibliometric data. Additionally, the database has been referenced by academics for its rigor, quality, dependability and comprehensive information, incorporating substantial content from other databases (Issahaku et al., 2024). The search for articles was conducted using article title, abstract, and keywords. The specific search queries were recorded using the search syntax shown in Table 1.

**Table 1**. *Search of Scopus Database*

| Search documents | Advanced Query |
|---|---|
| ''university OR administrat* AND "discharge duties" OR "artificial intelligence" OR " machine learning" | TITLE-ABS-KEY (''university OR administrat* AND "discharge duties" OR "artificial intelligence"OR" machine learning") AND PUBYEAR> 2009 AND PUBYEAR <2024 AND (LIMIT TO (SUBJAREA,"busi") OR LIMIT-TO (SUBJAREA, "mult") OR LIMIT TO (SUBJAREA,"soci")) AND (LIMIT-TO (LANGUAGE,"English")) |

Inclusion and exclusion criteria were established to align with the research scope. The selected articles have undergone peer review and focus on AI and its applications within the academic environment of a university, with a focus on administrators. To restrict the scope and filter for the most recent developments, the publication date had to range from 2009 to 2023, as a high influx of published literature started in 2009. Articles written in languages other than English were excluded. The subject areas included social science, multidisciplinary studies, business, management, and accounting.

Additionally, duplicate studies were excluded to enhance the efficiency of the review and prevent the inclusion of redundant results. Finally, publications discussing methods for implementing and managing the automation of internal processes were also excluded from the review, as they were assumed to provide information on queueing systems focused solely on internal processes. The initial search process produced 4797 documents. All identified papers were exported and managed using Microsoft Excel, and any missing bibliometric information was removed. The titles and abstracts were then screened for relevance according to the above criteria. This process reduced the number of papers to 152 remaining studies for review. A full-text assessment was used to evaluate the fit of the requirements, and 129 papers were excluded. A standard research paper screening was conducted. In the final stage of the review, 23 was used to conduct a full-text review. The details of the number of articles considered in the PRISMA statement flow diagram are shown in Figure 3.

**Figure 3:** *PRISMA Statement Flow Diagram for the Study*
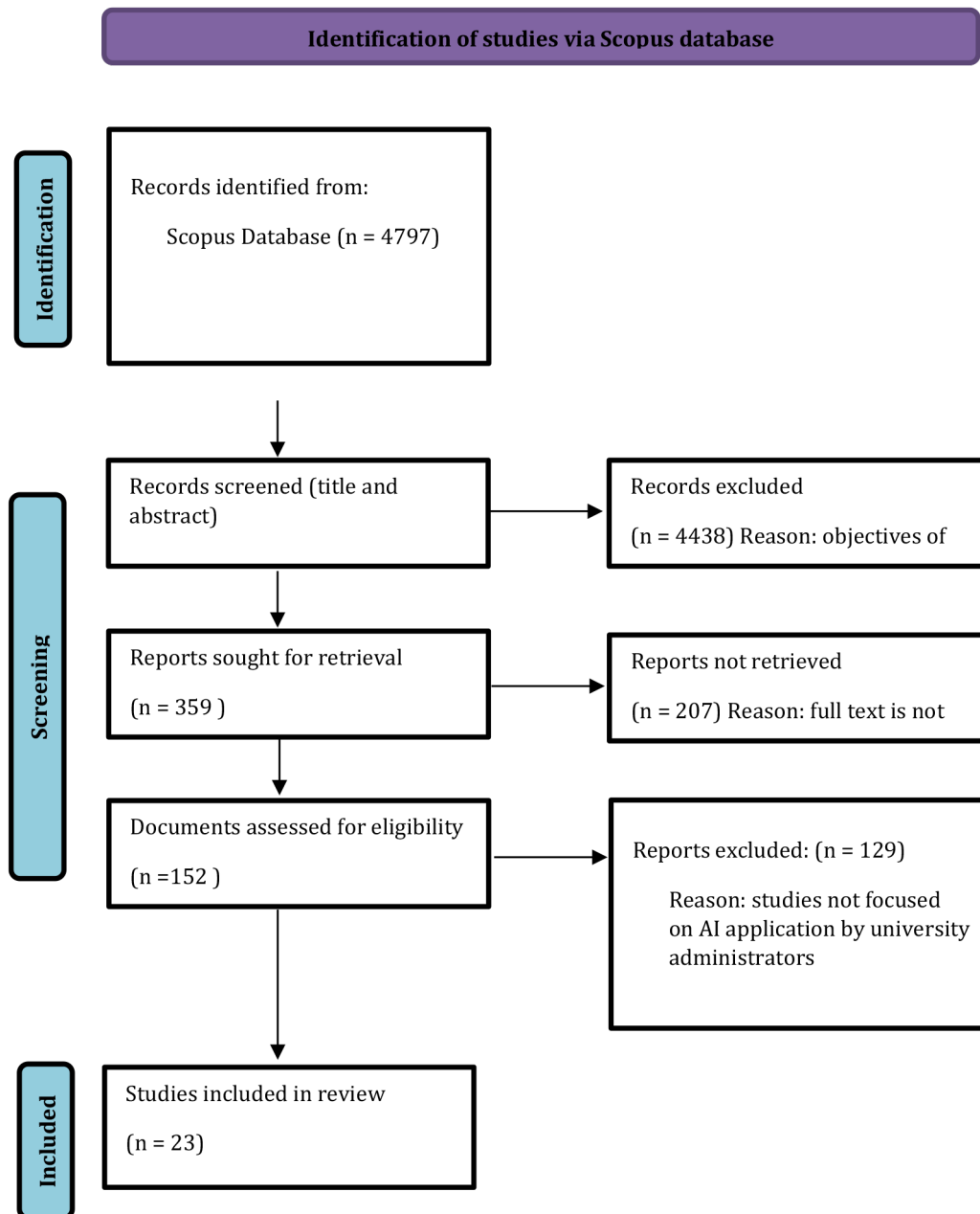


## Quality Assessment Approach

Evaluating the quality of research studies incorporated into systematic reviews is undoubtedly one of the most critical aspects of the review process. Thus, the quality of these studies was evaluated with utmost precision, utilizing the inclusion and exclusion criteria established previously in the study. To ensure the integrity of the review, documents were rigorously screened against predefined criteria by three independent reviewers.

## Results and Discussion

This section presents and discusses the results of the study based on the research questions that were raised earlier in this study.

## Impact of Specific AI Tools in Enhancing the Efficiency and Effectiveness of University Administrators' Core Duties

Between 2018 and 2019, the United States and the Asia-Pacific region were the primary contributors to AI investment, accounting for $ 164 billion, with 75% of the investment coming from these two regions (Babina et al., 2024; Tricot, 2021). Europe followed with an investment of 15.2% (Dolunay & Temel, 2024). The research emphasized the necessity of considering ethical concerns when employing AI in universities. Additionally, future scholarly endeavors should focus on how AI and automation technologies can be utilized to address concerns specifically related to the management of higher education institutions and associated data, particularly when academic administrators lack expertise in this area. This involves recognizing and understanding how AI assumes new roles within university settings and how these advancements will influence the performance of administrative tasks by academic administrators (Zhang & Aslan, 2021).

The potential of AI requires careful consideration, particularly in relation to the largely untapped personal data universities maintain. This information highlights the significance of AI in recognizing personal preferences, which is essential for tailoring study programs. It also enables a predictive analysis of students' future academic achievement and the likelihood of discontinuing their studies. The integration of AI systems can greatly improve administrative processes (Renz & Hilbig, 2021). Services that are currently impossible to guarantee may be offered, such as providing virtual mentors to students to address their emotional needs, particularly during pandemics (Soler Costa et al., 2021). AI has the potential to enhance and optimize digital learning experiences, potentially leading to the creation of all-encompassing platforms that offer tailored and personalized support to learners. It is crucial to evaluate the values that underpin AI and service robots because these technologies are not immune to the human tendency to make decisions based on ethical and moral principles. It is vital to identify the values embedded within AI systems and ensure that they align with societal values so that informed decisions can be made about the role of AI in educational settings. Failing to address this could lead to the promotion of values that are contrary to ethical and moral principles (Gligorea et al., 2023).

Another study examined the determinants of user behavior toward an artificial intelligence (AI) tool, ChatGPT, among university students and office workers. The study found that among the control variables, only age affected behavioral intention. Additionally, the study confirmed the indirect effects and conducted a multigroup analysis (MGA) between students and workers. The MGA results revealed significant differences in three relationships (personalization-satisfaction, utilitarian benefit-WOM, and behavioral intention-WOM) between the two groups (Jo, 2023).

Although considerable resources have been devoted to research on AI, most studies have focused on its application in academic pursuits, with comparatively fewer examining its use in administrative tasks. Consequently, this skewed perspective may lead to inaccurate perceptions of AI's role in administrative operations. The results of this study indicate that researchers must conduct empirical investigations into the utilization of AI by higher educational institution administrators to inform the development of policies and optimize technology implementation. This conclusion aligns with previous evaluations as documented in past studies (Collins et al., 2021; Nguyen et al., 2023; Tsou, 2024)

**Managing Student Information:** Information about students can be used to provide personalized learning experiences that enhance productivity. Artificial Intelligence can customize educational materials and instructions to cater to each student's specific needs and pace. This personalization can be achieved by analyzing student data to identify strengths and weaknesses and suggest suitable learning activities. Therefore, institutions can utilize their systems

to expedite, automate, protect data, and verify records, as well as other school management tasks (Igbokwe, 2023). Acquiring these systems also aims to enhance institutions' information management, digital security, and technical capabilities, while simultaneously safeguarding access to personal information for others.

In addition, research has revealed the application of Student Information Systems (SISs) to oversee student data including schedules, attendance, and grades. These systems typically comprise participatory and learning tools designed to optimize student performance, impart new knowledge, and facilitate collaboration, given the ongoing advancements in personal data systems and artificial intelligence (Owoc et al., 2021). Based on our findings, researchers will subsequently propose the optimal application of these technologies. They should prepare to integrate AI into the Student Information System (SIS) used by higher education institutions, considering the current stage of adoption in the academic field in Sabah. These recommendations align with recent studies (Mohapatra & Mishra, 2023; Syafiqah, 2024).

**Use of Chatbots and Virtual Assistants:** A chatbot is a software application that uses artificial intelligence to perform conversational tasks. On the other hand, virtual assistants are more comprehensive in scope as they are intelligent agents that perform tasks or provide services for an individual (Cardoso & Sheth, 2006). Artificial Intelligence, with its aptitude for adaptation, evolution, and self-improvement, appears to be a solution to the ontological concerns of chatbot functionality. The language capabilities it possesses significantly contribute to enhancing the user experience by fostering memorable and meaningful interactions with customers or users,

with the intention of improving their experience. One study revealed that 93% of consumers are more likely to make repeat purchases from companies that provide excellent customer service (Chen et al., 2021). Consequently, universities and colleges worldwide are investing in creating and enhancing these systems to meet the needs of their communities. Artificial intelligence-powered services are becoming more prevalent in customer-oriented applications that focus on enhancing the user experience by promptly addressing customer inquiries and simplifying human life. These applications are developed with the aid of advanced technologies, including artificial intelligence and machine learning.

Designed to converse with real humans, chatbots are integrated into familiar digital platforms and are often operational via popular social media networks. As AI technologies continue to evolve, the extent to which chatbots and virtual (smart) assistants mirror human conversational capabilities continues to grow (Dwivedi et al., 2023). It contributes to streamlined paperless processes and offers several advantages, particularly in enhancing user satisfaction, engagement, and communication. With advances in the field of Natural Language Processing (NLP) technologies, chatbots are anticipated to have a significant impact on future conversations, pushing major industry players, such as Apple, Amazon, Google, and Microsoft, to develop smarter digital assistants to interact with businesses and deliver increased value to customers, as suggested by current research, which aligns with previous review findings (Gatzioufa & Saprikis, 2022). Figure 4 illustrates the distinctions between chatbots and virtual assistants.

Figure 4: *Comparison of Chatbots and Virtual Assistants*
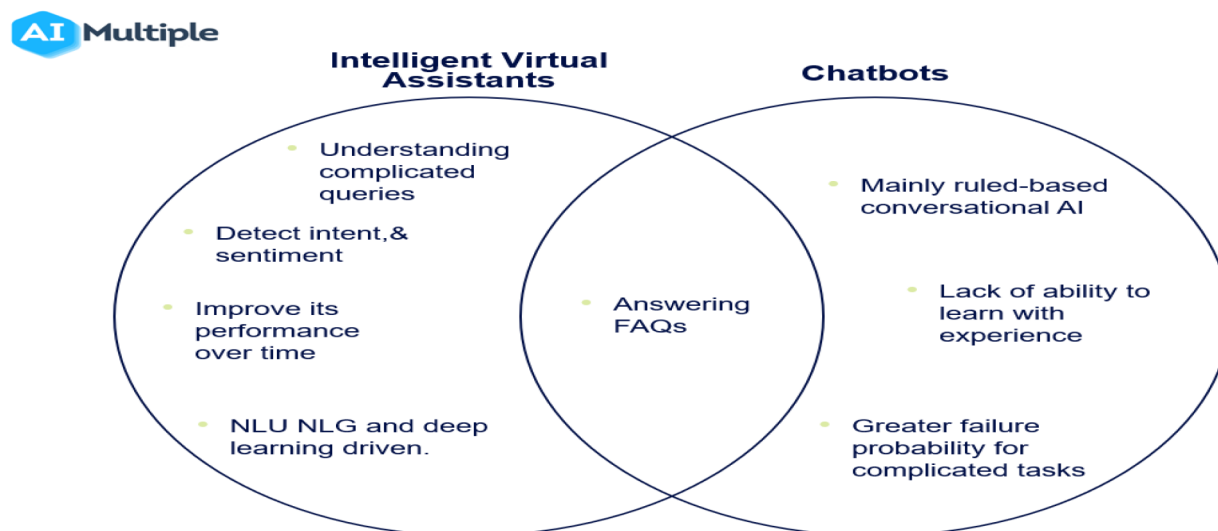


Note. Adapted from "Chatbot vs Intelligent Virtual Assistant: Comparison in 2024," by C. Dilmegani, 2024. https://research.aimultiple.com/chatbot-vs-intelligent-virtual-assistant/

**Predictive Analytics:** Advanced AIs help students learn by providing additional educational opportunities, analyzing student engagement, detecting plagiarism, automating grading, and providing personalized feedback. They also monitor student behaviors, alert professors and administrators to those at risk, assist in online instruction, and even facilitate online proctoring through facial recognition. AIs also help students write, design, and administer courses based on hundreds of student engagements and thousands of exams and papers. In addition, AIs also help administrators plan for the future (Zaman, 2023). Furthermore, other studies have identified AI to guide budget forms and estimate institution-wide cost bases. Administrators can forecast student enrolment, graduation rates, fundraising totals, and unforeseen expenditures. AI algorithms also identify behaviors that indicate potential difficulties, such as skipping classes and meetings, canceling appointments, avoiding counseling sessions, and exhibiting persistent unease. Consequently, these systems interact and intervene in students' lives to increase the likelihood of beneficial outcomes.

The proper usage of AIs in higher education can increase their efficiency (Ajuzieogu, 2019; Popenici & Kerr, 2017). Artificial Intelligence systems are capable of gathering and assessing data from a range of sources, such as prior records and evaluations, to forecast outcomes, such as student performance and dropout rates, predict faculty performance and research production, and estimate institutional performance (Alhassan et al., 2020; Mohapatra & Mishra, 2023). The prediction generated by AI models is achieved through advanced algorithms and pattern-matching techniques, which enable them to identify patterns and trends among numerous data points. Consequently, it can offer recommendations to the legislative body and automate routine tasks such as scheduling meetings and monitoring compliance. Predictive systems have already been adopted in higher education, and tools such as EAB and Civitas Learning utilize these systems to optimize college enrolment decisions, retention efforts, and alumni engagement based on data-driven insights and algorithms.

## Ethical and Legal Issues in AI Adoption in University Administration

Ethics is a crucial component of responsible artificial intelligence and should not be considered independently. The ethical sphere encompasses a range of concerns, including data privacy, consent, and the potential consequences of AI on individuals and communities. Institutions must adhere to ethical principles in their AI practices. In this sense, administrators, as professionals responsible for planning, organizing, directing, and controlling an organization's human, financial, physical, and informational resources, are accountable for identifying and resolving the potentially controversial ethical and moral issues raised by AI usage in a timely manner. Another common ethical issue to consider is privacy, particularly regarding information contained in sensitive medical, legal, and administrative documents. Therefore, AI use must be performed through an ethical prism in which human decency-related concerns rule. In this context, several academic articles in the field indicate that the top threats to AI adoption are ethical and privacy challenges (Arman & Lamiyar, 2023; Gerke et al., 2020; Naik et al., 2022; Ungerer & Slade, 2022), particularly in sectors such as healthcare, the public sector, non-governmental organizations, financial services, insurance, and education.

From a legal perspective, AI's ethical constraints often traverse the law itself. Given the broad legal ramifications of AI decision-making and the high potential for irreversible impacts that would result from improper AI deployment, many governments have enacted legislation to enforce the deployment of ethical AI for public administration and society as a whole. Ethical and legal considerations surrounding the adoption of AI in the public sector, particularly within higher education administration, are of increasing concern due to the sensitive nature of data, decision-making authority, and the potential for institutional bias. While a growing body of literature has debated ethical issues in the scholarly application of AI, including grading systems, plagiarism detection, and forecasting student performance, there is a remarkable lack of consideration by university administrators in governance, resource allocation, and human resource decisions. This research gap is significant, as the administrative applications of AI involve working with vast quantities of personal and institutional data, which raises challenging ethical issues and legal questions.

Without specific ethical guidelines and legal frameworks, the adoption of AI by university administrators risks infringing on rights related to data privacy, nondiscrimination, and accountability. For instance, if an AI tool is used to shortlist applicants for professorships or determine student funding eligibility based on biased algorithms, it could indirectly violate anti-discrimination laws such as the provisions of the General Data Protection Regulation (GDPR) in the EU or equal protection clauses (U.S. Constitution), which requires fairness, transparency, and explainability in automated decision-making practices (Articles 13–15, GDPR). In Ghana and other developing countries with emerging data protection regimes, AI systems deployed without strict regulations may contravene data protection legislation, such as the Ghana Data Protection Act, 2012 (Act 843), particularly in relation to lawful processing, consent, and data subject rights (Ghana, 2012).

Moreover, the administrative applications of AI involve liability and redress. If there are no delineated policies, universities can become targets of lawsuits or reputations damaged if administrative choices based on AI result in unfair outcomes. Nguyen et al. (2023) argue that this highlights the need to establish context-sensitive ethical guidelines and legal standards for the administrative environment not just the instructional or research uses of AI.

If left unaddressed, they have the potential to create a regulatory gap, with the effects of AI technologies being used without proper oversight, thereby eroding public trust in colleges and universities. In addition to ethically applying AI, institutions must also ensure

that their procedures meet the legal criteria of procedural justice, accountability, and transparency (Eubanks, 2018; Zuboff, 2019).

## Prospects of Artificial Intelligence for Management in Universities

Education developers, academic developers, and IT staff must collaborate to enhance the design, features, and applications of AI technologies and systems, thereby improving the learning experience for learners. Apart from the types of AI technologies and tools used, the successful implementation of AI also depends on the competence of administrators in designing and applying AI technologies and systems (Fitria, 2021). For instance, in addition to developing chatbots, it can provide students and staff with access to conversational agents that can engage in more complex dialogue. They may also facilitate the translation or transduction of languages and media from one format to another, or from or to speech and signed languages and synchronous or cultural contexts to promote the globalization of education. Staff development can also enhance staff competencies by leveraging various AI digital technologies to foster professional leadership and a more collaborative community of practice, thereby providing support for educational development across the university. Formal or interprofessional teams within the university or faculties can further standardize technology development, testing, deployment, and diagnostic processes to facilitate everyday use and sustainable usage practices of AI applications and services. This suggestion aligns with earlier review studies (Elahi et al., 2023).

## Challenges of Artificial Intelligence Implementation in University Administration

The implementation of Artificial Intelligence (AI) in university administration has significant benefits but also numerous challenges for university staff. Some of the most significant challenges include limited funds, a lack of technical expertise, data privacy concerns, resistance to change, and ethical issues. It is essential to overcome these barriers for successful and sustainable adoption of AI in universities.

**Resource and Infrastructure Constraints**: Many universities, particularly in low- and middle-income countries, face strained budgets, outdated IT infrastructure, and unreliable Internet connectivity. These constraints hinder procurement, installation, and maintenance of AI systems. Even in the presence of digital capacities, the costs of procuring advanced AI software, cloud computing abilities, and cybersecurity protection continue to be prohibitive. According to Heffernan et al. (2022), universities with weak digital underpinnings face delays or failures in AI implementation owing to a lack of infrastructure readiness.

**Technical Expertise and Training Needs**: The adoption of AI systems requires specialized technical expertise in data science, machine learning, and e-governance. University managers, for the most part, lack this. Not only does this discourage the effective use of AI applications, but it also increases dependence on external consultants beyond what may be sustainable in the future. Large-scale upskilling and professional development modules are required to build institutional capacities. As Holmes et al. (2021) noted, training initiatives must extend beyond surface-level digital literacy to encompass the ethical, operational, and strategic aspects of AI adoption.

**Data Privacy and Security**: University administrators handle sensitive data, including student records, health information, and employee files. AI adoption raises concerns regarding how such data is collected, stored, processed, and protected. Without proper safeguards, institutions risk data breaches, unjustified surveillance, or the misuse of personal information. Robust data governance frameworks, compliance with national data protection laws (such as the GDPR or Ghana's Data Protection Act, 2012), and institutional transparency are essential to mitigate these risks. As Prinsloo and Slade (2020) caution, higher education must adopt a proactive approach to data ethics to secure AI-responsible use.

**Change Management and Resistance**: The deployment of AI often alters existing workflows and job roles, causing apprehension or resistance among staff. These concerns are shared, including job loss due to automation, loss of autonomy, and increased dependency on opaque technologies. Effective change management is necessary to establish trust, clarify the advantages of AI, and involve stakeholders throughout the implementation process. Research studies by Tondeur et al. (2020) pointed out that cultural readiness and inclusive leadership are just as important as technical readiness in digital transformation programs.

**Ethical and Legal Issues**: Bias in AI algorithms, the depersonalization of student support services, a lack of transparency in automated decisions, and ambiguous legal liability are among the primary ethical concerns. For instance, bias in algorithms may perpetuate systemic injustices during the admissions or hiring process. Moreover, AI systems may operate in a "black box," so administrators are unable to explain or dispute the decisions. Legal ambiguities regarding accountability, particularly when AI decisions go awry, remain unresolved in most jurisdictions. As Eubanks (2018) argued, the unregulated uptake of AI risks heightening inequality and reducing public trust in institutions.

## Conclusion

This systematic review provided insight into the implementation of artificial intelligence (AI) in university settings, with a specific focus on its impact on administrative functions and governance.

Drawing on 23 relevant studies selected from a broader pool of 4,797 articles indexed in Scopus (2009–2023), the review offered a thematic synthesis of prevailing research trends, methodologies, and findings. Through the literature review, two dominant themes emerged: (1) the general application of AI within higher education institutions and (2) the role of AI in enhancing administrative decision-making. Overall, the findings underscore AI's potential to improve student outcomes, institutional efficiency, and administrative productivity. This study underscores the need for additional research to inform ethical, legal, and policy frameworks that promote responsible AI adoption in university governance.

## Limitations and Further Research

The approach presented in this paper is quite generic and is aimed at research purposes related to AI applications for administrative duties. The methodological approach utilized in this study yielded significant results and conclusions; however, certain limitations must be acknowledged. The decision to restrict the review to the Scopus database has inevitably excluded studies not indexed in it, including those found on websites, blogs, social media platforms, and other sources, which may contain additional relevant information. Incorporating multiple databases in future research to enhance the review would be beneficial.

Additionally, implementing AI in university human resource management may necessitate significant cultural changes within the organization. This can be met with resistance from some staff and management, resulting in a skill gap in effectively utilizing AI tools. Future research could therefore focus on identifying the barriers to AI adoption and implementing human resource management strategies to overcome these challenges. This could specifically include how universities can train human resource management teams to effectively utilize AI in fostering a culture that embraces technological change.

**Conflicts of interest**: None.

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