

Automating University Administration: A Systematic Review of Chatbot Applications in Higher Education

Prashant^{1*}, Monika Poriye², Pradeep Mittal³, Naveen Sharma⁴

^{1,2,3}Department of Computer Science and Applications, Kurukshetra University, Kurukshetra, India

⁴Department of Computer Science and Engineering, HMR institute of Technology and Management, GGSIP

University Delhi

*dcsa2325prashant@kuk.ac.in

* Corresponding author

doi: <https://doi.org/10.21467/proceedings.7.6.36>

Abstract

As higher education institutions (HEIs) increasingly adopt artificial intelligence technologies, chatbots have emerged as a scalable solution for improving administrative services. While earlier studies focused primarily on pedagogical aspects, the administrative dimensions remain less explored. This systematic literature review analysed 38 peer-reviewed research articles on the role of chatbots in various university administrative functions, including admissions, enrollment, student services, and financial aid, adhering to the PRISMA 2020 framework. The review introduced a functional taxonomy categorising chatbots based on interaction style, technological framework, target user group, and administrative objectives. It highlighted shared implementation trends, emphasises benefits like reduced workloads and enhanced service responsiveness, and identifies ongoing challenges such as privacy concerns, limited multilingual capabilities, and a mismatch between evaluation methods and expected outcomes. Furthermore, the discussion contextualised the findings within a broader theoretical framework, including the Technology Acceptance Model (TAM), while providing institutional recommendations for future implementations. It also identified significant research gaps, including empirical evaluations, cross-institutional studies, and ethics-focused design. By synthesising academic literature and assessing evidence on administrative chatbots in HEIs, this review offers a targeted, evidence-based perspective on their potential in this sector. It proposes practical directions for advancing research and practice in technology-enhanced learning.

Keywords: Administrative chatbots, higher education, conversational agents

1. Introduction

Higher education is experiencing a digital transformation, with artificial intelligence (AI) increasingly vital for providing academic and administrative services. Chatbots, which are automated systems that communicate with users in natural language, can significantly enhance the efficiency of repetitive tasks and response times. While there is a wealth of literature examining educational uses of chatbots, their role in university administration has received far less focus. Key activities like admissions, enrolment, academic advising, fee processing, and technical support are essential for the functioning of higher education institutions (HEIs). These activities are not only resource-heavy but also time-sensitive and repetitive, making them ideal candidates for automation. With rising student enrolments, increasing operational complexities, and a pressing need for round-the-clock assistance, many HEIs are now adopting chatbots to improve service delivery and enhance the student experience. Nevertheless, existing academic reviews often conflate chatbot applications in administration with those in education. This highlights a significant need for a focused synthesis on how chatbots can both automate and improve administrative services in the realm of higher education.

1.1. Background and Context

Since the creation of the first chatbot, Eliza[1], in 1966, chatbots have seen substantial growth, with projections suggesting broader adoption across various sectors soon. Chatbots have rapidly advanced in education from



simple FAQ tools to sophisticated systems that aid in pedagogical, instructional, and administrative responsibilities. The administrative demands linked to student admissions, registration, financial services, and information delivery have increased in higher education institutions (HEIs) due to larger student populations and heightened expectations for responsiveness. Consequently, chatbots are emerging as practical solutions to automate these functions, providing scalable, real-time support without overburdening administrative personnel. [2],[3]. Although numerous studies have examined the role of chatbots in teaching and learning environments, the exploration of their application in administrative contexts remains relatively limited.

1.2. Rationale and motivation

The university administration includes repetitive, time-sensitive tasks like managing admissions enquiries, overseeing enrollment, addressing financial aid questions, and assisting students with institutional processes. However, limited staff and inconsistent communication often hinder these services, leading to delays, errors, and decreased student satisfaction. The distinct challenges posed by resource limitations and the necessity for round-the-clock service highlight a strong need for automation in administrative services. Conversational agents solve these issues by automating frequently asked questions and facilitating more straightforward access to resource information[4], [5]. While the adoption of administrative chatbots is rising, existing literature remains fragmented. Most studies focus on specific implementations of chatbots, rarely attempting to unify insights from various technologies, institutions, or regions. Moreover, previous reviews primarily concentrate on educational applications or hybrid models, leaving a gap in understanding the distinctive dynamics of administrative chatbot systems.

1.3. Research objectives and questions

This systematic review aims to address several critical research questions that seek to overcome existing limitations in the understanding of chatbot systems within higher education institutions (HEIs). First and foremost, it will investigate the specific chatbot systems employed in administrative contexts within these institutions, providing a comprehensive overview of their application. Furthermore, the review will identify the administrative functions that are most frequently supported by chatbot deployments, shedding light on the operational areas that benefit from these technological interventions. In addition to these practical aspects, the review will delve into the technological and design approaches that underpin the development of such systems, offering insights into the frameworks and methodologies that facilitate their implementation. Equally important is the evaluation of administrative chatbots; thus, this review will examine the methodologies used for assessing their effectiveness, as well as the outcomes reported in the existing literature. Finally, the review will address the challenges and limitations that have been identified across current implementations, providing a nuanced understanding of the obstacles faced by HEIs in adopting these technologies. By pursuing these objectives, this systematic review seeks to fill a significant gap in the literature and clarify the role of chatbots in enhancing administrative service delivery within the higher education sector.

2. Theoretical Background

Recent advancements in natural language processing (NLP) and machine learning have enhanced the interactivity and scalability of conversational agents. To deploy chatbots effectively in higher education institutions (HEIs), they must align with institutional workflows, meet user expectations, and adhere to principles of human-computer interaction (HCI). In university administration, chatbots are typically developed using rule-based systems or complex AI architectures for information retrieval and content generation. The choice of chatbot type and its underlying NLP approaches greatly influence its ability to manage complex inquiries, offer personalised support, and operate in multilingual or multi-service environments. Furthermore, the theoretical framework for evaluating chatbot implementation plays a crucial role. Models such as the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Information Systems Success Model offer valuable insights into user perceptions, system effectiveness, and their broader implications for institutional performance. These models often assess user engagement, satisfaction with the system, and behavioural intentions in educational technology, specifically concerning chatbot interfaces.

2.1. Chatbot Technologies in Higher Education

Chatbots are digital tools designed to replicate human conversation. Their functionalities can vary greatly, from simple, rule-driven exchanges to complex interactions driven by advanced artificial intelligence and natural language processing technologies. Depending on their foundational structure, chatbots utilised in higher education administrative services can be generally classified into rule-based, retrieval-based, and AI-driven categories. Rule-based chatbots operate using predefined pathways and react to specific keyword triggers, providing predictable yet restricted interactions. While easy to set up, these systems have difficulty managing unstructured input and complex queries. They generate responses by looking for pattern matches, making them susceptible to errors when encountering sentences that do not fit established patterns. However, the strength of rule-based approaches lies in their ability to deliver highly accurate results within specific domains despite the challenges involved in manually encoding matching rules. The APU Admin Bot[6] is designed to offer students a practical and thorough approach to addressing their administrative inquiries by implementing a rule-based enquiry chatbot.

Retrieval-based chatbots apply natural language processing (NLP) methods to connect user queries with the most relevant pre-set responses. They associate user inputs with a collection of predetermined replies using keyword analysis or semantic similarity techniques. While these systems offer more flexibility compared to rule-based bots, they still lack depth in conversation. For NEDBOT, NLP models are incorporated into the DialogFlow platform, utilising a retrieval-based approach approach[7]. Generative chatbots, AI-driven systems, are the most sophisticated options available today. They leverage machine learning models to produce real-time responses tailored to the context of each interaction. These chatbots excel at managing open-ended inquiries and demonstrate expertise in handling intricate administrative tasks [8]. Nonetheless, they demand considerable computational resources and pose notable implementation difficulties. Numerous research efforts have investigated the potential of AI-driven bots via platforms such as Google Dialogflow and Microsoft Bot Framework Rasa[9]. The chatbots now use GPT-2/GPT-3.5 models to enable more detailed, multi-turn conversations regarding admissions and cut-off predictions[5], [8].

2.2. Administrative Context in HEIs

In higher education institutions (HEIs), administrative services include functions such as admissions, course registration, financial aid, and technical support. These activities are essential for both institutional efficiency and student satisfaction. Research indicates that many administrative tasks involve repetitive interactions and established workflows, making them well-suited for chatbot automation. For instance, Ana[4] showed how a chatbot can automate the health education admissions process, effectively cutting down processing time and enhancing transparency. Similarly, Nurshatayeva et al. emphasised the importance of chatbots in managing and addressing common inquiries in financial services, which alleviates staff workload intervention[10].

2.3. Theoretical Models Underpinning Chatbot Adoption

Theoretical frameworks relevant to chatbot integration deserve significant attention. The Technology Acceptance Model (TAM) explains how users evaluate the usefulness and usability of new technological systems. Concurrently, the Unified Theory of Acceptance and Use of Technology (UTAUT) broadens this perspective by including other factors, such as social influences and facilitating conditions, that impact user acceptance. These models are frequently cited in research analysing user engagement with chatbot systems[11]. Additionally, the Information Systems Success Model offers a thorough evaluative perspective by assessing technology through multiple dimensions, such as system quality, information quality, service quality, and user satisfaction[12]. The evaluation criteria are especially important for chatbots used in administrative settings, where factors such as efficiency, accuracy, and reliability are essential. Yet, not all studies included a theoretical framework in their design or evaluation processes. This highlights a key opportunity for improvement in upcoming research.

The success of chatbot systems is closely tied to their alignment with the institutional processes they are designed to aid. Institutions exhibit significant variations in administrative tasks and, consequently, different levels of preparedness for technology adoption. Effective chatbot implementation relies on crucial elements like data availability, employee training, and seamless integration with existing infrastructure.

3. Methodology

This systematic literature review adhered to the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. These standards provided a framework for the review process, ensuring transparency, consistency, and reproducibility in identifying, selecting, and analysing studies. The checklist facilitated documentation throughout all phases, from protocol development to the final synthesis.

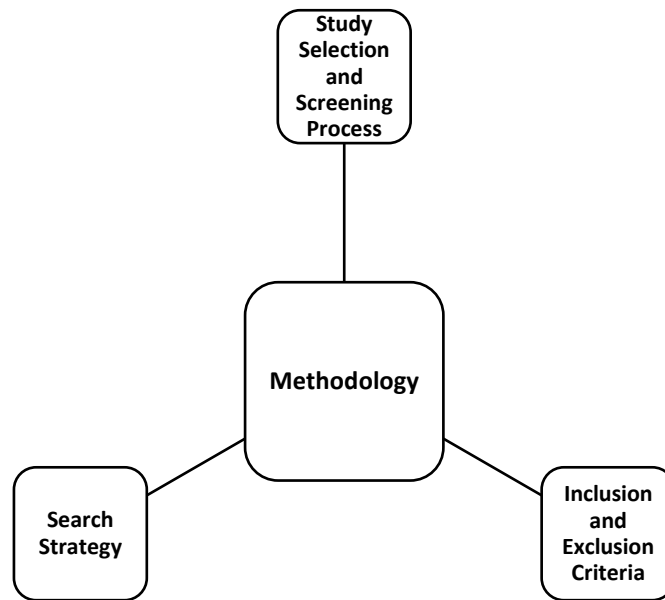


Figure 3: Methodology

A comprehensive search was conducted across five prominent academic databases, specifically Scopus and Google Scholar, to investigate the application of chatbots within higher education institutions. This search was systematically limited to studies published between the years 2018 and 2024, ensuring a focus on contemporary research. The Boolean search string employed across these databases was structured as follows: ("chatbots") AND ("higher education institutions") AND (LIMIT-TO (SUBJAREA, "COMP")). The resultant findings were then meticulously exported to Mendeley for effective citation management, during which duplicate entries were rigorously eliminated to maintain the integrity of the dataset. The inclusion criteria for selected studies focused primarily on those that examined the implementation of chatbot applications in the realm of administrative services within higher education settings. Furthermore, it was necessary for publications to provide detailed accounts of chatbot functionalities, the underlying technologies deployed, and the targeted user groups. Conversely, studies that exclusively addressed pedagogical or instructional chatbot use were excluded, as were opinion pieces, non-peer-reviewed blog articles, and speculative writings. Additionally, systems that were not situated within an administrative context of higher education institutions were also deemed ineligible for inclusion in this review. The screening process consisted of two stages: title/abstract screening and full-text review. Two reviewers independently assessed all records, and disagreements were resolved through consensus. In total, 1018 articles were initially identified. After removing duplicates and applying eligibility criteria, 38 studies were included.

4. Insights from Literature on Administrative Chatbots

4.1. Trend in Research and Global Adoption

A clear trend emerged from the studies reviewed that the interest in administrative chatbots has seen a significant increase since 2018. Following 2020, there was a marked rise in peer-reviewed publications, particularly as universities aimed to enhance digital automation in response to the COVID-19 pandemic. In recent years (2022–2024), the volume of research has peaked, reflecting a heightened focus on utilizing conversational agents for administrative functions within higher education institutions.

Various implementations have been observed globally, demonstrating the rapid digitization of university systems and the growing demand for scalable solutions. Contributions have been made by countries such as India and Indonesia, highlighting widespread interest from both developed and developing sectors of higher education.

Table 4.1: Trend in Research and Global Adoption

Aspect	Details
Rising Interest	Interest in administrative chatbots has significantly increased since 2018.
Post-2020 Growth	Notable rise in peer-reviewed publications, especially during COVID-19 pandemic as universities embraced digital automation.
Peak Research Years	2022–2024 marked peak interest and contributions.
Global Contributions	Implementations noted from both developed and developing countries.
Notable Countries	India [5], Indonesia [13], among others.

4.2. Chatbot Type and Technical Features

In contemporary research on chatbot architectures, three predominant approaches have emerged, each characterized by distinct methodologies and applications. The earliest iterations of conversational systems primarily utilized rule-based architectures, which were favored for their simplicity and ease of deployment. This foundational approach laid the groundwork for further advancements in the field. As the capabilities of natural language processing (NLP) evolved, retrieval-based models gained traction in various applications, such as EduChat[2] and NEdBOT[7]. These models leverage sophisticated NLP techniques to enhance the accuracy and relevance of responses, thereby providing a more engaging user experience. A notable example in this domain is the chatbot developed for Tarumanagara University[13], which employed a multilayer perceptron model in conjunction with a retrieval-based strategy to facilitate effective information retrieval and interaction. More recently, the advent of AI-based or generative bots has marked a significant shift in the landscape of conversational agents. These systems integrate advanced AI frameworks, such as Dialogflow and the Microsoft Bot Framework, along with transformer models, to enable more dynamic and context-aware interactions. This evolution underscores the increasing complexity and capability of chatbot technologies, reflecting a broader trend towards more sophisticated and responsive digital communication tools.

Table 4.2: Chatbot Types

Chatbot Architecture	Details
Rule-based Systems	Used primarily in earlier projects for their simplicity and ease of deployment.
Retrieval-based Models	Used in systems like EduChat [2] and NEdBOT [7]; enhance response accuracy using NLP. Tarumanagara University [13] used Multilayer Perceptron in a retrieval-based chatbot.
AI-based/Generative Bots	Integrated frameworks like Dialogflow [15], Microsoft Bot Framework, and transformer models [5], [8] for dynamic interactions.

4.3. Administrative Functions Supported

In recent years, chatbots have emerged as a valuable tool across various service areas within educational institutions, offering a range of support to students throughout their academic journeys. One significant application of these digital assistants is in the domain of admissions, where chatbots have been deployed to effectively address

student inquiries during application cycles. This has streamlined the process, making it more accessible for prospective students seeking information. Additionally, chatbots play a critical role in enrollment and course registration by providing real-time assistance with course availability, thus facilitating the registration process for students. They also serve an essential function in financial aid and fee processing, where they are utilized to clarify queries regarding tuition, scholarships, and payment options, thereby alleviating some of the financial uncertainties students may face. Furthermore, document services and student records management have been enhanced through chatbot technology, allowing students to easily access grade reports, transcripts, and academic calendars without the need for direct human intervention. Finally, while a smaller subset of chatbots focuses on IT and platform support, these systems are crucial for addressing technical issues related to e-learning platforms or authentication processes, ensuring that students can navigate their educational environments with fewer disruptions. Through these diverse applications, chatbots have substantially improved the efficacy and efficiency of student support services in higher education.

Table 4.3: Administrative Functions

Administrative Function	Details
Admissions	Frequently deployed to support student enquiries during application cycles [16].
Enrolment & Course Registration	Provided real-time course availability and registration assistance [17].
Financial Aid & Fee Processing	Clarified tuition queries, scholarships, and payment-related questions [10].
Document & Records Access	Provided access to grade reports, transcripts, academic calendars [2].
IT & Platform Support	Handled issues with e-learning platforms and authentication [18].

4.4. Integration and Deployment Models

Chatbots have been deployed across diverse technological platforms, mirroring institutional preferences and the behavioural patterns of target users. One prevalent medium is web-based interfaces, which are often integrated into university websites or portals, facilitating seamless access for students and faculty. Additionally, standalone mobile applications have emerged, allowing for integration with existing institutional mobile tools, thereby enhancing user engagement on personal devices. Furthermore, social media and messaging platforms, such as WhatsApp, Facebook Messenger, Line, and Telegram, serve as informal yet effective channels for communication, catering to the preferences of a generation increasingly reliant on these platforms for daily interactions. Lastly, learning management systems (LMS), such as Moodle and Canvas, have adopted chatbots by embedding them within their frameworks. This strategic integration not only supports academic interactions but also streamlines administrative processes, thereby fostering a comprehensive educational environment. Thus, the deployment of chatbots illustrates a multifaceted approach that addresses the varying needs and preferences of users in contemporary higher education settings.

Table 4.4: Deployment Models

Deployment Platform	Details
Web-Based Interfaces	Integrated into university websites or portals.
Mobile Applications	Standalone or part of existing institutional mobile tools.
Social Media/Messaging Apps	WhatsApp, Facebook Messenger [19], [20], Line [21], Telegram.
Learning Management Systems	Embedded in LMS platforms like Moodle or Canvas for academic and administrative functions.

4.5. Interaction and NLP Capabilities

In the evolution of chatbot technology, basic systems primarily relied on button-driven interfaces, which limited user interactions to predetermined options. In contrast, the advent of AI-enabled bots marked a significant advancement in user engagement, as these systems supported multi-turn conversations through sophisticated context tracking and intent recognition mechanisms. While early iterations of these technologies often offered language support predominantly in English, an emerging trend saw the incorporation of multilingual capabilities, thereby broadening their accessibility. The interaction styles and design frameworks of chatbots exhibited notable variation, corresponding to the underlying architecture of the systems. Menu-driven and button-based interactions were predominantly characteristic of rule-based systems, which adhered to fixed pathways in dialogue. Meanwhile, retrieval-based systems leveraged keyword-triggered responses, allowing for a more dynamic yet still constrained user experience. In stark contrast, conversational natural language processing (NLP) emerged as a hallmark of AI-based systems, facilitating more flexible and natural interactions. These advanced systems not only allowed for extended multi-turn dialogue but also incorporated basic sentiment analysis, thereby enhancing their ability to respond to user emotions and intentions. Such developments underscore the transformative impact of AI on conversational interfaces, paving the way for more intuitive and responsive user experiences.

Table 4.5: Interaction Types

Interaction Type	Details
Menu/Button-Based Chat	Common in rule-based systems.
Keyword-Triggered Responses	Employed in retrieval-based chatbots.
Conversational NLP	Used in AI-based bots to support natural conversation, multi-turn dialogue, context tracking, and intent recognition.
Sentiment Analysis	Basic sentiment analysis was supported in some advanced systems.
Language Support	Mostly English; a few systems provided multilingual support [18].

Target Users

These chatbots' primary users were prospective, enrolled, or newly admitted students. A smaller number of tools also targeted administrative staff or faculty for operational queries.

Evaluation Metrics and Outcomes

Evaluation approaches ranged from structured usability testing to informal feedback collection. Many studies used adoption rates, user satisfaction surveys, or task completion rates to measure success. However, only a minority used validated instruments or longitudinal data, indicating a need for more standardised assessment practices. The assessment of chatbot systems generally employs a three-pronged approach. The first component is user satisfaction, which is typically measured through surveys and interviews. The second component involves evaluating system performance through metrics such as task success rates, response accuracy, and response speed. The third component focuses on adoption metrics, which examine the number of users, user frequency, and retention rates.

5. Chatbot Adoption in HEI

The review indicates that practical chatbot implementations typically align with established adoption frameworks, target users, deployment models and automation requirements. Chatbots have enhanced service accessibility on college websites efficiently[5]. The chatbot Ana[4] has automated the health education admissions process and solved several 5173 applicant requests, which shows a high cost-benefit improvement in reducing travel expenses for the candidates and the university. The research revealed that user engagement was affected by the chatbot's responsiveness, ease of navigation, and the relevance of the information provided[11]. These elements are aligned with fundamental aspects of the Technology Acceptance Model (TAM), particularly perceived usefulness and ease of use. The institutional context and support conditions also affected system uptake, echoing the Unified

Theory of Acceptance and Use of Technology (UTAUT). Administrative chatbots have proven effective in enhancing institutional efficiency, especially for high-traffic processes like application guidance, financial aid, registration, and document handling. Research indicates these bots manage hundreds of queries daily without human assistance[14], [15], [16]. However, effectiveness was often tied to backend integration and maintenance planning. Systems with real-time access to academic databases, such as EduChat[2], could provide up-to-date information. Few systems facilitated multilingual interaction and prioritised mobile-first design, concentrating on a diverse user base in global higher education institutions (HEIs).

Additionally, data governance and user privacy continue to be areas of concern. Although some studies recognised the significance of user consent and mentioned effective practices, comprehensive strategies for data security and adherence to institutional policies were mainly lacking. Higher Education Institutions (HEIs) that seek to implement administrative chatbots should ensure that the design of these bots aligns with specific service goals. Instead of developing generic tools, the conversational agents should be tailored for particular functions such as admissions, IT support, or finance. Emphasizing backend integration is crucial, as it serves as a connection between the chatbots and other systems like Student Information Systems (SIS), Enterprise Resource Planning (ERP), and document repositories, thereby enhancing responsiveness and task completion capabilities. To maintain the effectiveness and sustainability of this approach, it is important to conduct regular content updates, tune NLP models, and perform system audits to ensure long-term reliability. Users are more likely to trust the bots when there are transparent escalation paths and robust privacy safeguards in place. Additionally, the chatbots should incorporate standard features, including multilingual interfaces, mobile accessibility, and compliance with accessibility standards to promote inclusivity, especially in global institutions. Interest in administrative chatbots is on the rise, yet the methodological quality of studies varies widely. Few studies have provided longitudinal outcomes like ongoing usage, institutional adoption, or system fatigue. Most assessments took place shortly after implementation, offering limited insights into long-term sustainability. This reveals a significant gap in our understanding of how administrative bots change over time. A few chatbots have implemented the Chatbot Usability Questionnaire (CUQ) as an evaluation tool[17], [18]. Moreover, the lack of standard evaluation tools such as CUQ or objective success metrics impedes comparative analyses. Establishing standard benchmarks could improve the reliability and influence of future research on chatbots in higher education institutions (HEIs).

6. Research Gaps and Future Directions

Despite growing interest in administrative chatbots, this review identified several under-explored areas that limit the development of robust, scalable, and inclusive chatbot systems in higher education institutions (HEIs).

6.1. Research Gaps

Most chatbots analysed generally presume that users have proficiency in a specific language and technical skills. Few systems offer multilingual support, speech-to-text capabilities, or user interfaces designed to accommodate students with disabilities. As higher education becomes increasingly international, the emphasis on inclusive design is critically lacking. (Figure 6.1)

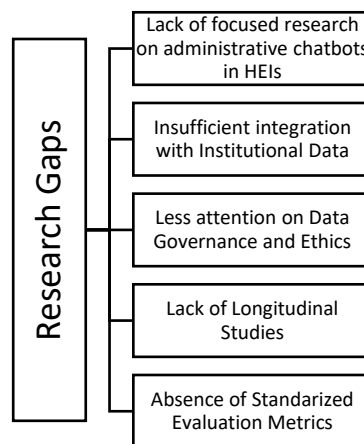


Figure 6.1: Research Gaps

6.2. Future Research Directions

In addressing the identified gaps within the realm of chatbot implementation and design, future research must prioritize several critical avenues (Figure 6.2). Firstly, there is a pressing need to investigate inclusive chatbot design, which encompasses the imperative of accessibility for users with diverse abilities, the incorporation of multilingual support, and the enhancement of cultural adaptability. These factors are crucial to ensuring that chatbots serve a broad spectrum of users effectively. In addition to design considerations, the establishment of institutional governance frameworks is essential; such frameworks should rigorously address issues related to data privacy, the ethical use of automation, and the necessity for human oversight in automated systems. Moreover, transparency in reporting technical models is of paramount importance. This includes a detailed disclosure of natural language processing (NLP) pipelines, training data, and intent classification strategies, thus fostering a more accountable approach to chatbot development. Lastly, there is a need to establish standardized evaluation protocols that can consistently measure chatbot accuracy, user satisfaction, and task success across various institutions. By prioritizing these areas, we can advance the field of chatbot technology in a way that is both ethical and effective, ultimately enhancing user experience and trust in automated systems.

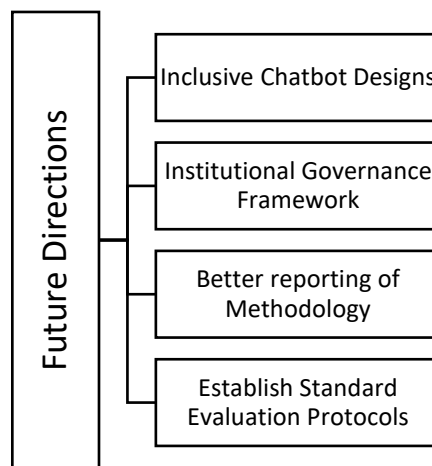


Figure 6.2: Future Direction

7. Conclusion

This systematic review synthesises findings on implementing chatbots in administrative services within higher education institutions (HEIs). It addresses a significant gap in the existing literature by focusing on administrative chatbots- an area often overlooked in discussions about the application of artificial intelligence in educational contexts. The review illustrates a progression from basic rule-based prototypes to advanced AI systems implemented across various institutions and geographical regions. The findings indicate a growing trend towards the enhanced use of chatbots in key processes like admissions, enrolment, and student support services. Nevertheless, many implementations lack cohesion and have limited applications. The insufficient integration of chatbots with vital systems, including student information systems (SIS) and enterprise resource planning (ERP), hinders their ability to respond in real time and diminishes overall operational efficiency. Future research must focus on longitudinal studies to evaluate the effects of chatbot technologies, encourage inclusive multilingual design practices, and create standardised evaluation protocols. As the demand for administrative efficiency within HEIs continues to rise, developing well-structured chatbot systems can facilitate transformative changes grounded in robust, inclusive, and ethically responsible frameworks.

Compliance with Ethical Standards

The authors have no conflicts of interest to declare. All the co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report. Each author has made substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data.

References

- [1] J. Weizenbaum, "ELIZA-A computer program for the study of natural language communication between man and machine," *Commun. ACM*, vol. 9, no. 1, pp. 36–45, 1966, doi: 10.1145/365153.365168.
- [2] H. Dinh and T. K. Tran, "EduChat: An AI-Based Chatbot for University-Related Information Using a Hybrid Approach," *Appl. Sci.*, vol. 13, no. 22, Nov. 2023, doi: 10.3390/app132212446.
- [3] M. S. Stepanov, V. G. Popov, N. K. Fedorova, F. S. Kroshin, and A. R. Muzata, "The Automation of Client Servicing in University and College Admission Office," in *2023 Systems of Signals Generating and Processing in the Field of on Board Communications, SOSG 2023 - Conference Proceedings*, Institute of Electrical and Electronics Engineers Inc., 2023. doi: 10.1109/IEEECONF56737.2023.10092103.
- [4] S. C. Man, O. Matei, T. Faragau, L. Andreica, and D. Daraba, "The Innovative Use of Intelligent Chatbot for Sustainable Health Education Admission Process: Learnt Lessons and Good Practices," *Appl. Sci.*, vol. 13, no. 4, Feb. 2023, doi: 10.3390/app13042415.
- [5] R. Thamilselvan, P. Natesan, E. Gothai, S. E. Naveenkumar, J. K. Shanthosh, and S. Vigneshwaran, "Developing an AI-Driven Chatbot for Enhanced College Website Support Using Machine Learning," in *Proceedings - 2024 International Conference on Expert Clouds and Applications, ICOECA 2024*, Institute of Electrical and Electronics Engineers Inc., 2024, pp. 719–726. doi: 10.1109/ICOECA62351.2024.00130.
- [6] J. Singh, M. H. Joesph, and K. B. A. Jabbar, "Rule-based chatbot for student enquiries," *J. Phys. Conf. Ser.*, vol. 1228, no. 1, 2019, doi: 10.1088/1742-6596/1228/1/012060.
- [7] M. S. Ali, F. Azam, A. Safdar, and M. W. Anwar, "Intelligent Agents in Educational Institutions: NEDBOT - NLP-based Chatbot for Administrative Support Using DialogFlow," in *Proceedings - 2022 IEEE International Conference on Agents, ICA 2022*, Institute of Electrical and Electronics Engineers Inc., 2022, pp. 30–35. doi: 10.1109/ICA55837.2022.00012.
- [8] J. Odede and I. Frommholz, "JayBot - Aiding University Students and Admission with an LLM-based Chatbot," in *CHIIR 2024 - Proceedings of the 2024 Conference on Human Information Interaction and Retrieval*, Association for Computing Machinery, Inc, Mar. 2024, pp. 391–395. doi: 10.1145/3627508.3638293.
- [9] M. T. Nguyen, M. Tran-Tien, A. P. Viet, H. T. Vu, and V. H. Nguyen, "Building a Chatbot for Supporting the Admission of Universities," in *Proceedings - International Conference on Knowledge and Systems Engineering, KSE*, Institute of Electrical and Electronics Engineers Inc., 2021. doi: 10.1109/KSE53942.2021.9648677.
- [10] A. Nurshatayeva, L. C. Page, C. C. White, and H. Gehlbach, "Proactive student support using artificially intelligent conversational chatbots: The importance of targeting the technology," 2020. [Online]. Available: <https://www.edworkingpapers.com/ai20-208>
- [11] G. Bilquise, S. Ibrahim, and S. M. Sallieh, "Investigating student acceptance of an academic advising chatbot in higher education institutions," *Educ. Inf. Technol.*, vol. 29, no. 5, pp. 6357–6382, 2024, doi: 10.1007/s10639-023-12076-x.
- [12] I. Tisland, M. L. Sodefjed, P. Vassilakopoulou, and I. O. Pappas, *The Role of Quality, Trust, and Empowerment in Explaining Satisfaction and Use of Chatbots in e-government*, vol. 13454 LNCS. Springer International Publishing, 2022. doi: 10.1007/978-3-031-15342-6_22.
- [13] A. Ciayandi, V. C. Mawardi, and J. Hendryli, "Retrieval based chatbot on Tarumanagara University with multilayer perceptron," in *IOP Conference Series: Materials Science and Engineering*, IOP Publishing Ltd, Dec. 2020. doi: 10.1088/1757-899X/1007/1/012146.
- [14] N. I. Mohd Rahim, N. A. Iahad, A. F. Yusof, and M. A. Al-Sharafi, "AI-Based Chatbots Adoption Model for Higher-Education Institutions: A Hybrid PLS-SEM-Neural Network Modelling Approach," *Sustain.*, vol. 14, no. 19, 2022, doi: 10.3390/su141912726.
- [15] A. Aloqayli and H. Abdelhafez, "Intelligent Chatbot for Admission in Higher Education," *Int. J. Inf. Educ. Technol.*, vol. 13, no. 9, pp. 1348–1357, 2023, doi: 10.18178/ijiet.2023.13.9.1937.
- [16] C. Chun Ho, H. L. Lee, W. K. Lo, and K. F. A. Lui, "Developing a Chatbot for College Student Programme Advisement," *Proc. - 2018 Int. Symp. Educ. Technol. ISET 2018*, pp. 52–56, 2018, doi: 10.1109/ISET.2018.00021.
- [17] A. G. Usigan, M. I. Salomeo, G. J. L. J. Zafe, C. J. Centeno, A. A. R. C. Sison, and A. G. Bitancor, "Implementation of an Undergraduate Admission Chatbot Using Microsoft Azure's Question Answering and Bot Framework," in *ACM International Conference Proceeding Series*, Association for Computing Machinery, Dec. 2022, pp. 240–245. doi: 10.1145/3582099.3582135.
- [18] D. Plantak Vukovac, A. Horvat, and A. Čizmešija, "Usability and User Experience of a Chat Application with Integrated Educational Chatbot Functionalities," vol. 12785, P. Zaphiris and A. Ioannou, Eds., in *Lecture Notes in Computer Science*, vol. 12785. Cham: Springer International Publishing, 2021, pp. 216–229. doi: 10.1007/978-3-030-77943-6_14.