Administrative Chatbots in Higher Education and Public Administration: A Pre-implementation Analysis of Communication Practices

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Abstract

Digital transformation in public higher education is increasingly encompassing administrative and support functions, which significantly shape the user experience. Despite the widespread use of digital platforms, information often remains fragmented and uncoordinated, leading to repetitive queries and increasing the administrative burden on students and staff.

This paper develops an analytical approach to the design of an administrative chatbot (ACB) in the pre-implementation phase, with a focus on the public administration context. The empirical section is based on an exploratory qualitative analysis of administrative enquiries and communication practices at the Faculty of Public Administration, University of Ljubljana. The analysis includes a preliminary review of administrative emails, institutional communication channels and a survey of students (N = 107); therefore, the findings should be interpreted with caution.

The key contribution is the development of an analytical framework that links the structure of enquiries with the possibilities for their automation based on three dimensions: consistency of information, delineation of responsibilities, and complexity of interactions. The findings suggest that the limits of automation are not primarily technological, but stem from communication practices, the quality of information, and the organisational context.

Points for Practitioners

The paper offers several practical insights for management and staff at public higher education institutions considering the introduction of digital support tools, particularly administrative chatbots:

- Firstly, the ACB concept shows that such systems can reduce the number of routine enquiries and contribute to more consistent and faster information provision.
- Secondly, a clearly defined scope of operation is crucial for effective use. The chatbot must be unambiguously presented as an informational and support tool, not as a decision-making or authoritative system. This distinction is also emphasised in the literature on human-artificial intelligence interaction (Gomez et al., 2024; Lindgren, 2025).
- Thirdly, the project highlights the importance of content preparation prior to technical implementation. The harmonisation of administrative information, standardisation of responses, and collaboration with administrative services are essential prerequisites for a digital tool to actually improve the quality of communication, rather than reproducing existing ambiguities.

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– Fourthly, the ACB illustrates the advantages of a pilot approach, which allows for gradual learning and adaptation. However, its actual effectiveness remains an open question at this stage, particularly in relation to the level of institutional support and appropriate integration into organisational processes.

For practitioners in public administration and higher education administration, the paper shows that thoughtfully designed administrative chatbots can improve access to information, automate responses to frequently asked questions, and contribute to faster information dissemination (Rafiq & Hassan, 2020; Kim & Kwon, 2023). This can indirectly affect staff workload, as the effectiveness of these systems is often linked to the degree of integration into organisational processes (Carmo et al., 2025).

Key words: administrative burden, administrative chatbot, higher education administration, user-centred communication, digital transformation.

1. Introduction

Over the past decade, the digital transformation of the public higher education sector has moved beyond teaching and learning processes to increasingly encompass administrative, organisational and support functions. Universities are facing the growing complexity of rules, procedures and communication flows, whilst at the same time dealing with ever-increasing expectations from students and staff regarding the accessibility, transparency and responsiveness of institutions. Digital technologies contribute to improved efficiency, particularly when they are appropriately integrated into organisational processes and management practices (Carmo et al., 2025). The administrative burden includes learning costs, compliance costs and psychological costs (Moynihan et al., 2015), with the literature also emphasising that these burdens are the result of planned institutional decisions and can be reduced through various strategies (Benish et al., 2024). Digital tools are often regarded as a potential mechanism for reducing administrative costs, but the literature primarily highlights their impact on access to information and interaction with services.

In recent years, chatbots have emerged as one of the more prominent support solutions, with universities primarily implementing them in non-teaching, administrative roles. A review of the literature shows that chatbots are primarily used to automate frequently asked questions and to support administrative functions (Carmo et al., 2025). Their effects depend on the method of implementation and the organisational context (Carmo et al., 2025), whilst empirical and applied studies confirm similar patterns. The literature notes that the functioning of chatbots varies depending on the degree of their integration into organisational processes and tasks (Prashant et al., 2024). At the same time, research into human-AI interaction emphasises the importance of transparency, understanding of roles, and the adaptation of relationships between humans and AI (Lindgren, 2025). This raises questions of transparency, control, and the clear definition of roles in the relationship between humans and the system. Research highlights that the manner of interaction between the user and the system influences the acceptance and use of AI systems, with transparency, comprehensibility and control playing a significant role (Gomez et al., 2024; Lindgren, 2025).

Existing research on chatbots in higher education largely focuses on already implemented solutions and user satisfaction. However, the pre-implementation phase remains less researched compared to analyses of implemented solutions, with the literature primarily highlighting already introduced systems and their use. In particular, there is a lack of systematic analysis of how the administrative burden manifests itself in day-to-day communication, which limits our understanding of the conditions for designing such systems. This gap limits our understanding of the conditions for the effective introduction of chatbots into administrative processes.

The aim of this paper is to analyse how the administrative burden manifests itself in specific administrative issues and how this influences the design of digital support systems. The paper contributes in two ways. Firstly, it links the concept of administrative burden to specific communication practices. Secondly, it treats the pre-implementation phase as an analytical framework for planning digital solutions that affect access to information and the use of services.

2. Digital transformation of public higher education

Digital transformation in higher education reflects the need to adapt to technological changes and societal demands, as well as to improve institutional efficiency (Mabotha & Ngcamu, 2026). This is not merely a matter of introducing new technologies, but a comprehensive process that also involves changes to organisational processes, institutional practices and organisational culture (Singun, 2025). The literature treats digital transformation as a complex process with multidimensional effects on the organisation and its processes (Mabotha & Ngcamu, 2026). From this perspective, it goes beyond mere online teaching or the use of digital tools and also encompasses changes in institutional culture, decision-making processes and business models of public universities.

Systematic literature reviews confirm that public higher education institutions worldwide are increasingly adopting digital technologies to improve processes, performance and organisational practices (Mabotha & Ngcamu, 2026). Common effects include improvements in processes and organisational efficiency, but these effects depend on the degree of integration of digital solutions into organisational processes (Carmo et al., 2025; Mabotha & Ngcamu, 2026). At the same time, the literature indicates that digital transformation is often fragmented due to differences in organisational practices, infrastructure and available resources (Mabotha & Ngcamu, 2026), with marked differences between institutions, countries and regions.

Tang et al. (2025) propose a framework of three logics – value-based, technological and practical – which emphasises the need to align educational goals, technological solutions and actual pedagogical practices. This means that successful transformation requires not only technological solutions, but also a shared understanding of educational values and changes in everyday teaching and learning practices. Their findings highlight several practical dilemmas. The introduction of digital technologies brings organisational and operational challenges, particularly at the level of processes and management (Carmo et al., 2025).

Digital transformation involves the introduction of technologies whose impact on process efficiency depends on their integration into organisational structures and the coordination of processes (Carmo et al., 2025). At the same time, research warns that uncoordinated digital initiatives can lead to fragmented processes (Carmo et al., 2025; Mabotha & Ngcamu, 2026). Furthermore, many universities still lack a comprehensive view of the impact of digital transformation on organisational coordination, leadership and long-term planning. Consequently, digital initiatives often remain fragmented and do not lead to lasting institutional changes. Barriers to digital transformation are a significant topic in the research literature. Research indicates that higher education institutions face various challenges, such as limited resources, weak strategic direction, a lack of digital skills and inadequate infrastructure. These factors can limit the implementation of digital solutions and reduce their impact on processes (Mabotha & Ngcamu, 2026).

Digital transformation also raises new issues related to organisational management, resource availability and staff readiness for change. These challenges are particularly pronounced in the higher education sector, where digital initiatives often face institutional and organisational constraints. Digital transformation also influences how public universities are perceived by external stakeholders, although this influence is primarily indirect and depends on the concrete outcomes of implementation (Mabotha & Ngcamu, 2026). This influence is mediated through improvements in operational efficiency and the quality of education.

The literature indicates, with varying emphases, that digital transformation is a complex and multifaceted process. However, findings are often inconsistent regarding its actual impact on organisational processes. Some studies highlight improvements in efficiency and accessibility, whilst others point to fragmentation and limited impact due to a lack of strategy and coordination. This suggests that digital transformation is not a uniform process, but rather depends on the institutional context and governance.

3. User-centred communication in public institutions

User-centred communication stems from users' needs and experiences rather than from institutional logic or technological possibilities (Saeed et al., 2018). Recent research further emphasises the importance of the actual implementation of these approaches in practice (Bastardo et al., 2024). From an e-government perspective, this is closely linked to service quality and user participation. As Saeed et al. (2018) point out, many digital public services fail not because of technological limitations, but because of a lack of understanding of users' real-life contexts. A user-centred approach therefore requires their active involvement in the entire process of designing and implementing services, as well as the continuous adaptation of communication channels and content.

Recent research confirms that usability and the quality of communication play a key role in engaging citizens with digital public services. In a systematic review, Bastardo, Pavão and Rocha (2024) conclude that user-centred usability evaluation is essential for promoting meaningful participation in public administration. At the same time, they highlight methodological shortcomings in many studies, as user-centred approaches often remain at a declarative level and are not consistently implemented in practice. This gap reduces the effectiveness of communication strategies aimed at increasing transparency, participation and trust. The use of information in

public communication remains a key challenge; institutions often fail to utilise information to improve communication, which reduces the effectiveness of interactions with users and limits their engagement with digital public services (Cantarelli et al., 2023; Bastardo et al., 2024).

Trust remains a central concept in research on user-centred public communication, with the quality of communication potentially being a significant factor in the perception of legitimacy and support for public services (Saeed et al., 2018; Cantarelli et al., 2023). Their empirical findings show that dimensions of service quality, particularly clarity of communication and ease of use, significantly influence perceptions of legitimacy and support for public policies. This confirms the close link between communication design and institutional trust.

User-centred approaches are also increasingly being analysed in the context of reducing administrative burdens and promoting user engagement. Nagtegaal et al. (2026) note that administrative complexity limits the use of public services, even when these are beneficial to users. Their study shows that redesigning communication and procedures from a user perspective can increase interest and participation, particularly among under-represented groups. This makes public services more accessible and better tailored to citizens' needs.

Research indicates that user-centred communication is linked to organisational changes and the active involvement of users in service design processes (Saeed et al., 2018; Nagtegaal et al., 2026), as without this, digital solutions often fail to achieve the expected outcomes. It thus makes a significant contribution to improving service quality, building trust and enabling collaboration. At the same time, the need for methodological consistency, organisational commitment and the continuous involvement of users is emphasised if digital transformation is to actually contribute to the creation of public value and not reproduce existing barriers.

4. Administrative burden reduction (students and staff)

Administrative burden is defined as a combination of learning costs, psychological costs and compliance costs (Moynihan et al., 2015), with recent research highlighting that these costs systematically affect access to public services and user behaviour (Halling & Baekgaard, 2024). Learning costs include the effort required to search for and understand information; psychological costs stem from stress, frustration or loss of autonomy; and compliance costs refer to the time and resources required to carry out administrative procedures. In public higher education, these burdens affect both students and staff, primarily due to complex rules, demanding documentation and often opaque digital systems.

Recent research suggests that the administrative burden is not merely an unintended side effect, but often a systemic feature of organisations. In a systematic literature review, Halling and Baekgaard (2024) conclude that these burdens shape access to public services and significantly influence participation, equity and outcomes. In the higher education context, the administrative burden is closely linked to organisational design and the complexity of information and information systems. Complex administrative procedures increase learning and compliance costs and negatively affect access to services and user behaviour (Halling & Baekgaard, 2024), whilst the conceptual framework stems from the definition of administrative burden (Moynihan et al., 2015)

In the context of digital transformation, reducing the administrative burden is becoming a key management challenge, as digital solutions can either reduce or increase the burden depending on their design (Daigneault, 2025; Benish et al., 2024). The administrative burden is both an analytical concept and a practical management problem. Reducing it is therefore not merely a question of efficiency, but also of fairness, transparency and the quality of the user experience. In higher education, this means designing procedures that take into account the capabilities and constraints of students and staff. Reducing the administrative burden is a multidimensional process that involves redistributing burdens, simplifying procedures and improving the quality of interactions between users and the institution (Benish et al., 2024).

The literature identifies various strategies for reducing the administrative burden. Benish et al. (2024) distinguish between approaches based on the target group, the type of burden and the reduction mechanisms. Specific strategies for reducing the administrative burden include transferring the burden to the state or third parties, simplifying procedures, removing requirements, speeding up processes, and improving communication and the quality of interactions between users and institutions (Benish et al., 2024). Digitalisation in itself does not constitute a standalone strategy for reducing the administrative burden, but acts as a tool that can support various approaches, such as automation, simplification of procedures or improved communication (Benish et al., 2024)

The administrative burden manifests itself differently for different groups in a higher education context. For students, it is linked to application, enrolment, financial aid and reporting obligations, as well as issues regarding deadlines, form-filling, access to information on study regulations and the coordination of obligations across different systems. This can disproportionately affect vulnerable groups, such as students without prior higher education experience, international students, or students with limited access to information.

For staff, the administrative burden is reflected in extensive reporting requirements, evaluation procedures and compliance tasks, as well as in the coordination of data across different systems, the preparation of documentation for accreditation, the processing of student enquiries, and the coordination of information between organisational units. Such tasks reduce the time available for core academic activities.

Reducing the administrative burden is therefore becoming a strategic priority for public higher education institutions. It requires a user-centred approach, organisational coordination and continuous evaluation of processes. As Daigneault (2025) emphasises, this is not a one-off reform measure, but an ongoing management challenge that requires a balance between accountability and accessibility. Research thus shows that human–AI interaction in support roles influences the delivery of administrative services, with its effects depending primarily on the design of the interaction and the method of implementation (Gomez et al., 2024; Lindgren, 2025).

5. Human–AI interaction in support (non-teaching) roles

Interaction between humans and artificial intelligence (AI) is becoming increasingly important in non-teaching support roles within public higher education institutions, such as administration, student services, decision support

and operational management. Modern AI systems are not primarily designed to replace human labour, but rather to complement it, supporting, structuring and partially automating work processes. Research shows that the interaction between people and AI systems creates new roles and relationships, with systems acting as a support for decision-making processes whilst people retain responsibility (Lindgren, 2025; Gomez et al., 2024). In these contexts, AI increasingly acts as an advisor, supervisor or collaborator, with humans retaining responsibility for decision-making whilst systems provide recommendations, predictions or automated data processing. Such a division of tasks requires a clear definition of roles, responsibilities and trust mechanisms, particularly in public institutions where decisions affect individuals' rights and access to services.

Such interaction arrangements are also specifically reflected in supporting administrative contexts. Empirical findings show that one-way interaction between the user and the AI system is common in these environments. Based on a systematic review, Gomez et al. (2024) develop a taxonomy of interaction patterns in AI-supported decision-making and identify a predominant one-way interaction: systems generate outputs that users accept, reject or ignore. Dynamic collaboration, involving feedback loops and adaptation by both users and systems, remains relatively rare. In support roles, this can lead to over-reliance on algorithmic outputs or, conversely, to their rejection due to a lack of transparency or understanding.

User experience plays a key role in shaping these interactions. Zheng et al. (2022) emphasise the importance of usability, clarity and alignment with users' mental models in conversational UI systems. In non-educational support roles, such systems (e.g. chatbots and virtual assistants) are used to handle administrative enquiries and provide user support. Inadequate design of conversational systems can hinder interaction and reduce users' ability to achieve their goals, negatively impacting the user experience (Zheng et al., 2022). Recent research highlights the importance of explainability, adaptability and human control in AI systems (Correia et al., 2025), whilst Zheng et al. (2022) emphasise, in particular, their impact on the quality of interaction and the user experience. Users must be able to understand how the system works, verify the recommendations provided and retain control over final decisions, which is crucial in the public sector for ensuring transparency and accountability.

The social and emotional dimensions of interaction are also coming increasingly to the fore. Research emphasises that perceptions of the interaction and the relationship between the user and the system influence its acceptance, with social and contextual dimensions playing an important role (Lindgren, 2025; Gomez et al., 2024). In support roles, systems that communicate directly with users can influence perceptions of trust and legitimacy. A lack of such alignment can lead to feelings of alienation, unfairness or a loss of autonomy.

A common finding in the literature is that the interaction between humans and AI in support roles must be understood as a socio-technical system in which technological capabilities, organisational context and institutional values are intertwined (Lindgren, 2025). Poorly designed systems can reinforce rigid procedures, obscure accountability or create new forms of dependency. These risks are particularly pronounced in public institutions, where support functions – such as student admissions, eligibility assessments or resource allocation – are based on rules and standardisation. The way in which interactions between users and AI systems are designed therefore directly influences fairness, accountability and technology adoption (Gomez et al., 2024; Correia et al., 2025). In

conclusion, research indicates that human-AI interaction in support roles can improve the efficiency, consistency and accessibility of services, but only with carefully designed and managed implementation. Key success factors are transparency, quality of user experience and socio-affective alignment, which together enable AI systems to support, rather than undermine, the objectives of public services.

The effects of chatbots on administrative processes are not self-evident, but depend on the design of the interaction, the user experience and the system's ability to support effective communication (Zheng et al., 2022).

6. Chatbots and higher education administration

Chatbots are most commonly used to handle routine enquiries and provide user support; their effectiveness depends not only on automation, but also on the design of the interaction, the clarity of communication, and alignment with user needs (Zheng et al., 2022). The user experience plays a crucial role, as clear language, simple instructions and the option to switch to human support significantly influence the system's effectiveness (Peyton et al., 2025; Zheng et al., 2022). Consequently, chatbots are most commonly established as a first point of contact, rather than as a replacement for administrative staff. Trust and transparency represent further key success factors. Research into human-AI interaction emphasises that users must be clearly informed about the nature of the system. Poorly designed conversational interactions can cause difficulties in achieving users' goals and negatively impact the user experience, including reduced engagement and ineffective communication (Zheng et al., 2022).

Based on the literature, several common best practices can be highlighted. Firstly, chatbots must be designed with a user-centric approach and based on users' actual needs (Peyton et al., 2025). Secondly, their role must be clearly embedded within broader administrative processes, with the option to escalate to human support where necessary (Prashant et al., 2024). Thirdly, the operation of chatbots requires constant monitoring and adaptation based on feedback and usage data.

In conclusion, the literature suggests that the success of chatbots often depends not merely on the technology used, but on their institutional embedding, the quality of content, and the management of user expectations. With appropriate design and management, they can contribute to improving the accessibility of information and the responsiveness of administrative services. It remains crucial that they function as support tools under human supervision, rather than as a substitute for administrative staff. On this basis, it makes sense to analyse existing institutional practices that illustrate different approaches to the implementation of chatbots in a higher education environment.

7. Institutional practices and empirical analysis of administrative queries

The following section presents selected examples of the use of administrative chatbots in higher education, illustrating different approaches, scopes and levels of maturity in the implementation of these digital support tools. The examples originate from various institutional and national contexts, enabling a comparison between large research universities, smaller institutions and national platforms. A common feature of the cases examined is that

the chatbots are not designed as pedagogical systems, but rather as support for administrative and student services. The cases are analysed on the basis of four analytical dimensions: scope of operation, degree of integration, type of administrative tasks, and the role of human support. This framework enables a comparison of institutional practices and the identification of common characteristics of effective solutions (Peyton et al., 2025).

Examples of the use of administrative chatbots in higher education:

- University of the Free State (South Africa) – KovsieChat ("Lennie"); KovsieChat was introduced in 2020 in response to the increased number of student enquiries during the COVID-19 pandemic. The system has gradually evolved from a simple FAQ chatbot into a more integrated digital assistant that acts as the first point of contact for administrative queries. Its role is to respond to routine enquiries and direct students to the appropriate services. This example illustrates how a phased rollout can effectively support the handling of routine enquiries and relieve pressure on communication channels (Verge AI, 2024).
- University of Michigan (USA) – UM GPT, Go Blue, Maizey; The University of Michigan has established an institutional AI ecosystem with several specialised chatbots to support administrative communication and campus life. These systems operate within a controlled infrastructure and are clearly separated from educational functions. The roll-out is taking place in phases, with clear data management and defined usage restrictions. This example highlights the importance of a strategic and institutionally led approach to AI implementation (Hennick, 2025).
- European University of Tirana (Albania) – UetBot; UetBot is part of an integrated digital platform designed for administrative communication and student support. The chatbot automates responses to questions about academic regulations, procedures and enrolment. Its main benefit is more consistent communication and faster access to information. In terms of function and scope, it is comparable to the ACB concept (Dema, 2025).
- University of Liverpool (United Kingdom); The University of Liverpool has introduced a chatbot as a supplementary source of information to relieve the workload of administrative staff. The system is clearly presented as a support tool and not as an authoritative source for decision-making. Particular emphasis is placed on transparency and understanding the chatbot's limitations. This approach reduces the risk of false expectations and strengthens user trust (University of Liverpool, 2024).
- Central European University (CEU, Vienna); CEU uses digital chat platforms as the first point of contact to support students with administrative queries. The system improves access to information, particularly for international students, and reduces the workload on administrative services. The chatbot is clearly positioned as a supplementary, rather than a replacement, channel. The example illustrates effective integration into existing communication structures (Central European University, 2026).
- Masaryk University (Czech Republic) – Faculty chat service; A chat service has been introduced at the faculty to support students' basic administrative enquiries. It acts as a first point of contact and improves responsiveness outside office hours. The system reduces the workload of administrative staff and contributes to more consistent communication. This example confirms the feasibility of implementation at faculty level (Citymind, 2026).
- Czech universities (e.g. Hradec Králové) – pilot projects; At several universities, chatbots are being introduced gradually as pilot projects for specific needs, such as crisis communication or increased

enquiries. The systems are designed to complement existing services rather than replace them. This approach enables learning and adaptation based on experience. Such examples in the literature and in practice point to a cautious and phased introduction of digital solutions.

- SWPS University (Poland) – Fido; The Fido chatbot supports student wellbeing and demonstrates a broader institutional approach to AI implementation. Although not primarily administrative, it contributes to the acceptance of conversational AI as a legitimate support tool. The system enables the gradual building of trust among users. The example illustrates the cultural dimension of AI implementation in higher education (SWPS University, 2024).
- National platforms (Poland – NAWA); the Polish national platform uses a chatbot to support students with information on studies and administrative procedures. The system operates at the level of the public higher education system and relieves the burden on individual institutions. It enables centralised and standardised communication with users. The example demonstrates the potential of supra-institutional solutions (NAWA, 2026).

The analysed cases reveal recurring characteristics in the design of chatbots, particularly a limited scope of operation in terms of content, integration into existing processes, and a clear role as a support tool. These findings serve as a starting point for further empirical analysis of administrative enquiries at the level of a selected institution.

The empirical part of the paper is based on a multi-phase qualitative content analysis of administrative enquiries collected from various institutional communication sources. In the initial phase, a survey was conducted among students regarding their expectations of using the chat system, after which the following sources were analysed:

- students' emails to the 'helpdesk' (125 messages sent during the previous academic year),
- library communications (17 messages sent during the previous academic year),
- emails from students to the e-learning support service (Moodle; 125 messages sent during the previous academic year),
- student emails to the Student Office (1,713 messages sent in the previous academic year).

Based on an analysis of student expectations, a thematic analysis of open-ended questions (N = 107) was carried out. The unit of analysis was each individual question potentially asked by a student in the chat room, categorised according to its predominant purpose. A total of 107 questions were analysed. The results show that the largest proportion of questions fall within the administrative domain (43.0%), followed by pedagogical and study-related questions (31.8%), whilst the remaining questions do not relate directly to the institutional context. A more detailed breakdown further shows that administrative questions most frequently relate to the operational aspects of study (e.g. timetables, deadlines and attendance), whilst pedagogical questions primarily concern course content and learning support. Initial qualitative analyses of the sources indicate that the majority of communication (particularly the helpdesk, library and Moodle) relates to unambiguous and repetitive questions regarding content (e.g. access to information systems, deadlines, extension of deadlines), which indicates their suitability for handling via simpler approaches, such as FAQ lists.

In contrast, student communication at the Student Office (1,713 messages) shows a high degree of thematic diversity. Initially, data selection and cleaning were carried out, during which irrelevant messages were excluded; the remaining set comprises 1,135 messages. Individual messages often contain multiple questions, vaguely formulated requests and a need for interpretation of the rules. The findings in this paper are based on a preliminary review of the messages (carried out as part of the process of removing irrelevant messages), with a detailed analysis of the messages still to follow. The preliminary review of these messages represents the next analytical focus of the study.

Initial findings indicate that administrative enquiries vary in terms of their level of complexity. This provides insight into the administrative burden at the level of specific communication. Administrative queries are concentrated in a limited number of recurring categories, with the largest proportion comprising queries relating to registration procedures and deadlines. The review shows that choosing the appropriate approach to automation is not merely a technical issue, but stems from the structure of the queries. In this regard, we find that unambiguous and repetitive questions are suitable for standardised answers, whilst more complex enquiries require additional interpretation. This confirms the assumption that the preparation and structuring of knowledge is a key challenge in the pre-implementation phase.

A significant proportion of the questions from the study paper's content set go beyond the simple provision of information, as they involve the interpretation of rules and specific situations. Users often combine several questions into a single query or request further clarification. These findings suggest that the administrative burden is also linked to the complexity of communication, not merely to the accessibility of information. Based on a preliminary review of the messages, the questions were classified into key content categories, shown in Table 1.

Table 1: Main categories of administrative queries

Category	Typical content
Registration	deadlines, documentation
Study regulations	Explanation of rules
Administrative procedures	Forms, submissions
Combined enquiries	multiple questions in a single query

The identified categories confirm that most queries arise from recurring administrative situations, suggesting that certain types of queries are suitable for partial automation.

A key issue is distinguishing between responses that can reasonably be automated and those that require human judgement. Scattered and uncoordinated information increases the complexity of interactions, as confirmed by findings on the role of information and administrative burden (Cantarelli et al., 2023; Moynihan et al., 2015). Defining these content boundaries represents a central challenge as early as the chatbot design phase. The development process also involves organisational and cultural dimensions. The introduction of the ACB entails a change in communication practices and may therefore trigger reservations regarding automation and the role of

artificial intelligence. The Administrative Chatbot (ACB) is positioned as a support tool and not as a replacement for administrative staff. The analysis suggests that the key advantage of a potentially designed chatbot lies primarily in the use of internal or less accessible sources, such as actual administrative enquiries (e.g. email), as these reflect users' real needs and typical communication patterns.

In conclusion, the analysis shows that administrative enquiries stem from recurring communication patterns linked to the complexity of information and the interpretation of rules. These patterns provide an empirical basis for understanding the conditions under which administrative communication can be partially automated. The findings further confirm that the structure of enquiries reflects perceived administrative complexity (Moynihan et al., 2015). In the context under consideration, an administrative chatbot would thus be used primarily to provide institutional information, whilst pedagogical functions represent a more limited segment of support.

On this basis, the discussion shifts from an analysis of patterns to a consideration of their potential application in the development of such a system. The following chapter therefore addresses the key challenges and implications arising from the empirical analysis, which determine the possibilities and limitations of implementing such a system in an institutional environment.

8. Development challenges and implications for ACB

Based on the analysis and review of the messages, there is a need to highlight key substantive, organisational and institutional challenges in the development of the ACB system, primarily related to the interpretation of rules, the complexity of administrative enquiries, and the distinction between automated and situation-dependent interactions. One of the key challenges in structuring administrative enquiries lies in clearly defined content categories that enable their differentiated handling. The findings also highlight the importance of aligning content with administrative practices and collaborating with organisational units, which impacts the accuracy and consistency of communication. Furthermore, we note the importance of clearly defining communication rules and the role of the system, particularly in relation to operational transparency and the option to redirect to human support. These elements are particularly important for more complex enquiries that require the interpretation of rules or the handling of specific situations. A gradual and limited implementation is particularly suitable for handling frequent and unambiguous queries, whilst monitoring usage and adapting the system on an ongoing basis.

In conclusion, we find that the success of the ACB system depends primarily on content management, the organisational context and a clear delineation of responsibilities, whilst technology represents a supporting element whose effects are contingent upon the method of implementation. The importance of a clear institutional positioning of the system is highlighted, including responsibility for content, ensuring its up-to-date status, and monitoring effects such as the reduction of administrative burden and the improvement of information accessibility.

9. Conclusion

This paper analyses the role of administrative chatbots as an important yet under-researched aspect of digital transformation in public higher education. The key finding is the development of an analytical framework that demonstrates that the introduction of such systems is not merely a technological challenge, but also a matter of organisational coordination, information quality and accountability management. In doing so, this paper shifts the debate from technological solutions to an understanding of the communicative and institutional conditions of their use. The analysis and preliminary review of messages identify three key dimensions: (1) consistency of information, (2) clarity of the demarcation of responsibilities, and (3) complexity of administrative interactions. These dimensions do not operate in isolation, but are intertwined and together determine the limits of automation in administrative processes. For example, issues with high information consistency and low complexity (e.g. information on deadlines) are suitable for automation, whilst issues involving the interpretation of rules or specific user situations require human judgement.

In conclusion, ACB presents a conceptual approach that clearly demonstrates that the success of automation depends primarily on organisational and communication conditions, not the technology itself. However, as the results are based on a still incomplete qualitative analysis of a set of communications, they should therefore be interpreted with caution. Nevertheless, this paper may serve as a starting point for further research and the development of administrative chatbots in various institutional contexts.

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