



Exploring the Competencies of Administrative Staff in the Era of Artificial Intelligence: A Qualitative Study in Higher Education

Berlina Hidayati^a

^a, Universitas Terbuka, South Tangerang, Indonesia

ARTICLE INFO

ABSTRACT:

Keywords:

Administrative Staff; Artificial Intelligence; Digital Literacy; Data Literacy; Human–AI Collaboration; Higher Education Administration; Professional Development; Institutional Accountability.

Article History:

Received July 20, 2025

Revised August 14, 2025

Accepted August 20, 2025

Available online August 29, 2025

Correspondence:

Berlina Hidayati, Department of Taxation, Faculty of Law, Social, and Political Science, Universitas Terbuka, South Tangerang, Indonesia. Email:

berlina@ecampus.ut.ac.id

The rapid digitalization of administrative services in higher education has accelerated the adoption of artificial intelligence (AI), fundamentally reshaping the competencies required of administrative staff. While previous research has largely focused on AI's implications for teaching and learning, relatively little is known about how non-academic administrative personnel adapt to AI-enabled environments. This qualitative study explores the competencies needed by administrative staff to sustain accuracy, responsiveness, and accountability in an increasingly automated institutional landscape. Guided by Creswell's qualitative research design, data were collected through semi-structured interviews with administrative staff across multiple units in a higher education institution. Thematic analysis following Braun and Clarke's reflexive approach generated four interrelated themes. Findings show that administrative roles have expanded beyond procedural tasks toward interpretive, supervisory, and evaluative functions, requiring staff to understand how AI systems operate, validate AI outputs, and intervene in cases requiring contextual judgment. Data literacy emerged as critical for ensuring the accuracy and integrity of institutional reporting, while human oversight was essential for maintaining ethical and contextually appropriate decision-making. Continuous learning—supported by structured training and organizational mechanisms—proved indispensable for sustaining these competencies. The study contributes to current debates on AI in higher education by highlighting the multidimensional and socio-technical nature of administrative competency in the AI era and offers practical recommendations for workforce development and institutional policy.

This is an open-access article under the [CC-BY-SA](#) license.



INTRODUCTION

The landscape of administrative services in higher education has undergone profound transformation over the past decade. Rapid digitalization—characterized by the widespread

adoption of online service portals, integrated academic information systems, and automated workflow tools—has reshaped how universities organize, deliver, and monitor administrative functions. In parallel, artificial intelligence (AI) has emerged as a disruptive force, enabling increasingly sophisticated forms of automation, decision support, and service personalization. Recent bibliometric and content analyses confirm that the use of AI in higher education continues to expand sharply, influencing both academic and non-academic domains (Sahar & Munawaroh, 2025). This acceleration signals a shift from traditional document-based, manual, and routine administrative processes to AI-supported systems that promise greater speed, accuracy, and accountability.

Scholars have highlighted that AI-driven systems can enhance institutional efficiency by automating routine tasks, reducing administrative errors, and enabling more agile responsiveness to student and stakeholder needs (Crompton et al., 2023; Ocen, 2025). For example, AI-powered chatbots are increasingly implemented to handle student inquiries, while data analytics tools assist in enrollment management, accreditation reporting, and institutional planning. In Indonesia, early studies similarly show that AI tools can optimize academic data management and streamline administrative workflows, although successful implementation requires administrative staff to possess adequate digital competence (Sahar & Munawaroh, 2025). These developments suggest that higher education administrative personnel are now expected not only to operate digital systems but also to collaborate effectively with AI technologies.

The rise of AI-supported administrative environments presents a dual reality. On one hand, AI offers significant benefits that align with institutional priorities of timeliness, precision, and accountability. On the other hand, the shift introduces new expectations, requiring administrative staff to possess skills that were not traditionally associated with administrative roles. Research on digital competence in higher education shows that technological proficiency, data literacy, problem-solving skills, and adaptability have become essential for staff navigating AI-enabled systems (López-Nuñez et al., 2024; Basilotta-Gómez-Pablos et al., 2022; Moreira et al., 2023). Additionally, global reviews of AI adoption highlight the need for competencies related to human–AI collaboration, such as understanding system outputs, exercising judgment, and managing ethical concerns associated with algorithmic decision-making (Woo et al., 2025; Nguyen, 2025).

Despite these developments, a notable gap persists in the literature: while extensive research examines AI's role in teaching, learning, and academic innovation, far fewer studies

focus on the competencies required of administrative staff, who constitute the functional backbone of higher education institutions. Administrative professionals are critical to ensuring operational continuity, sustaining compliance with regulatory frameworks, and delivering frontline services to students and faculty. Their performance directly influences institutional reputation, service quality, and organizational resilience. Yet, existing discussions on AI-related competencies often generalize across workforce categories or focus primarily on academic staff, technical units, or leadership roles (Santana & Díaz-Fernández, 2023; Myszak & Filina-Dawidowicz, 2025). This lack of targeted focus is problematic because administrative work in higher education has unique characteristics—highly procedural, regulated, data-intensive, and embedded in complex bureaucratic structures—that may require distinct competencies in the AI era.

The urgency of this study is reinforced by recent evidence showing that administrative capacities significantly affect the success or failure of digital and AI-driven transformation in universities. Reviews of institutional AI adoption emphasize that without adequately skilled administrative staff, digital initiatives often fail to scale or generate sustainable impact (Adamakis et al., 2025; Jin et al., 2025). Barriers such as limited digital literacy, resistance to technological change, insufficient training, and lack of institutional support frequently hinder effective integration of AI-based systems in administrative settings (Ocen, 2025). As a result, higher education institutions risk underutilizing technological investments or exacerbating administrative burdens through poorly implemented solutions.

The novelty of this research lies in its explicit focus on competencies of administrative staff in higher education within the context of AI adoption. Unlike previous studies that examine AI skills within general organizational contexts, technological occupations, or teaching roles, this study addresses a critical yet underexplored group whose contributions are essential to institutional functioning. By adopting a qualitative approach, the research provides nuanced insights into how administrative staff perceive, develop, and enact competencies required in AI-mediated environments—insights that quantitative or generalized studies often overlook.

The present study therefore aims to explore and understand the competencies that administrative staff in higher education consider essential in the era of artificial intelligence. Specifically, it seeks to:

- RQ1. identify key competency domains perceived as important for supporting AI-enabled administrative services;



RQ2. examine how administrative staff develop and apply these competencies in their daily work;

RQ3. investigate challenges and enabling conditions shaping their capacity to support timely, accurate, and accountable administrative processes.

METHOD

This study employed a qualitative research design to explore the competencies required by administrative staff in higher education in the era of artificial intelligence (AI). Qualitative inquiry was selected because it enables the researcher to capture participants' lived experiences, interpretations, and meaning-making processes in depth. Following Creswell's (2013, 2018) approach to qualitative research, the study adopted a phenomenological orientation, focusing on understanding how administrative staff perceive, develop, and enact competencies within AI-supported administrative environments. Phenomenology is well suited to this investigation given its emphasis on examining shared experiences and uncovering the essence of a phenomenon—in this case, the competency demands emerging from digitalization and AI adoption in higher education administrative work. This design allows the study to move beyond surface-level descriptions and identify underlying patterns, meanings, and contextual influences shaping administrative practices.

Participants and Data Collection

This research was conducted in higher education institution in Surabaya that has implemented various AI-enabled administrative technologies, including automated document processing, online service portals, academic information systems, and AI-assisted communication tools. This setting was selected purposively because it offered a rich environment in which administrative staff regularly interact with digital and AI-driven systems as part of their daily work. Participants were recruited by Creswell's (2013) recommendation for selecting information-rich cases. The sample consisted of 12 administrative staff members occupying roles related to student services, academic administration, finance, institutional reporting, and general office management. Eligibility criteria included: 1) at least one year of experience in administrative work in higher education; 2) regular interaction with digital administrative systems or AI-assisted tools; 3) willingness to reflect on their experiences with emerging technologies. To ensure diversity of perspectives, participants were drawn from different departments and job categories within the institution.



Data were collected using semi-structured in-depth interviews, allowing participants to elaborate freely on their experiences while providing enough structure to align with research objectives. Interview questions explored: 1) experiences working with AI-enabled administrative tools; 2) competencies perceived as essential in AI-mediated environments; 3) processes of learning or developing such competencies; 4) challenges and enabling factors in adapting to digital and AI-driven systems. Each interview lasted approximately 45–60 minutes and was conducted either face-to-face or via secure video conferencing. With participants' consent, all interviews were audio-recorded and transcribed verbatim. To enhance contextual understanding, the researcher also took field notes during and after interviews, noting observations, reflections, and emerging analytic insights.

Data Analysis

The analytic process began the moment the interviews were completed, as the researcher immersed themselves in the transcripts to gain an intimate familiarity with the data. Following Braun and Clarke's (2006, 2021) reflexive thematic analysis, the early phase involved repeatedly reading each transcript—attending not only to explicit statements but also to the tone, emphasis, and contextual nuances that revealed how administrative staff experienced AI-driven changes in their work. This prolonged immersion allowed the researcher to enter the world of the participants and begin noticing patterns related to emerging competency demands in AI-supported administrative environments.

Rather than approaching coding as a mechanical classification exercise, the researcher treated it as an interpretive act. Initial codes were generated inductively, capturing meaningful segments that illuminated how participants made sense of new technologies, negotiated uncertainty, or adapted their skills to AI-enabled systems. These codes often overlapped in subtle ways; thus, coding was iterative, flexible, and deeply reflexive, consistent with Braun and Clarke's (2021) argument that qualitative analysis is a creative, sense-making process rather than a rigid procedure.

As coding progressed, clusters of ideas began to cohere into candidate themes. At this stage, the researcher shifted from examining discrete data segments to identifying broader patterns that threaded across participants' accounts. Themes were developed not merely as summaries of codes but as conceptual insights that captured the shared meanings within the group—for example, how administrative staff negotiate the tension between automation and human judgment, or how they reinterpret their roles and identities in the age of AI. This middle

analytic phase required constant movement between the dataset, codes, and thematic structures, ensuring that themes authentically reflected the data rather than the researcher's assumptions.

The refinement stage involved interrogating the coherence of each theme and its boundaries. Some themes were collapsed due to conceptual overlap, while others were expanded to accommodate diverse perspectives. The goal was not to force uniformity but to craft themes that were both analytically robust and richly grounded in participants' lived experiences. Throughout this process, analytic memos were used to capture insights, doubts, emergent questions, and moments of reflexivity, thereby strengthening the transparency and rigor of the analysis.

RESULTS AND DISCUSSIONS

Data analysis generated four overarching themes that capture the constellation of competencies required by administrative staff in higher education as they navigate AI-enabled administrative environments. These themes reflect not only technical skill requirements but also interpretive, collaborative, and developmental competencies that shape how staff engage with digital and AI-driven systems. Each theme is presented below with supporting participant accounts.

Digital and AI Literacy as Foundational Competence

Participants consistently described digital and AI literacy as the most fundamental competency for administrative work in the current technological landscape. Although basic digital operations had long been part of administrative roles, the integration of AI-driven tools expanded these expectations into deeper, interpretive forms of literacy. Many participants noted that they now needed to understand how AI systems generate recommendations or automate tasks rather than simply operate digital interfaces. Basic digital operation skills, such as operating basic digital systems (email, service portals, LMS, etc.), are important for administrators to access and navigate administrative systems, understand the basic functions of digital features, and use digital devices to ensure the smooth running of administrative systems in higher education. In addition, understanding how AI tools such as chatbots, auto-scheduling, and summarization tools work is important, so that administrators have at least a basic understanding of the functions and limitations of AI tools, know how to use chatbots to answer student questions, and know how to utilize AI for task automation.

"I can do most tasks in the student portal, like updating records or checking requests. The skills must be owned by every administrator to make job easier..." (Doso)

"... It took time, but I learned to navigate the new system every new system..." (Jiji)

"I use the chatbot to explore many problem-solving of tasks in office... many of us have early preparation, extensive exploration, good innovation, and proper problem solving..." (Gangs)

"The AI provides many suggestions for us, but I must still check them... I have many fake suggestions from AI." (Songo)

The use of chatbots, workflow automation, and AI-assisted MIS platforms required administrative staff not only to execute tasks but also to evaluate whether the system responses made sense in specific contexts. Thus, the ability to assess, examine, and interpret AI output (recommendations, automated reports) becomes important, requiring administrators to have the ability to verify the accuracy of AI results before making decisions, assess whether AI responses are contextually appropriate, and detect simple errors or biases. Furthermore, skills in using automation flows such as auto-routing, workflow approval, and auto-notification are essential, so administrators must be able to use automation to speed up services and view logs or traces of automated systems. The participants explained that

"...I find some AI suggestions looked wrong, so I use double-check to make sure the results match to our need... I sometimes checked and compared it with last project or work." (Roro)

"Sometimes the AI suggests something irrelevant, so I have to double-check. Many of us remind each other." (Papat)

"The automated approval helps, but sometimes it sends things to the wrong unit." (Gangs)

This ability to judge the reliability of AI-generated information was widely viewed as essential for maintaining the accuracy and responsiveness of administrative services. Participants also described the limits of their current skills, noting a need for more structured training on emerging AI tools.

Data Literacy and Analytical Capacity

The second major theme highlights the centrality of data literacy. Participants described an increased volume of data-related tasks—ranging from compiling administrative records to preparing reports for accreditation, financial oversight, or program evaluation. Many emphasized the necessity of checking, cleaning, and interpreting data before it could be used for decision-making. In this situation, the skills to check, clean, and validate administrative data is crucial, and administrators must be able to check for input errors, handle data duplication, and ensure consistency between systems when using AI. Then, the ability to read



graphs, tables, analytical reports, and understand the meaning of data is also very important so that administrators must be able to read data, interpret trends, compare different time periods, and identify patterns and outliers. The participants explained the importance of verifying AI-driven analytics:

“... for administrative purposes, I always check before submitting the results discussed with AI in the stored history, unless it is not on my personal account...” (Welas)

“... I always clean the data because the security of my account is weak... Many administrators using AI by pay for joint account” (Roro)

“The trend in decision-making of administrator is true because many technical jobs have been taken by AI, so I take the analysis and decision-making for topic or theme of jobs...” (Doso)

“... and I used the dashboard to track what, why, when, who/whom, or how to boost the AI skills.” (Papat)

Participants frequently acknowledged gaps in their own data literacy, especially when engaging with dashboards or analytics tools that displayed trends, anomalies, or predictive outputs. These gaps often required additional manual effort to validate the accuracy of automated reports. In some cases, participants found that AI-generated reports lacked contextual nuance or contained inconsistencies, reinforcing the need for strong analytical skills. Across the dataset, data literacy emerged as a central competence underpinning accuracy, accountability, and institutional trust. Skills in awareness of the limitations of analytical systems or AI, including error boundaries and data gaps, are so important that administrators must know when AI is wrong and what data is not recorded. Then, skills in responsibility for maintaining the integrity of administrative reports are also important so that administrators must be able to maintain accuracy for accreditation and cross-check between units.

“The analytics tool can’t read special cases, so I still check manually to make sure the accuracy of the information... May the AI has a limitation, so we have awareness skills of the information that suggest to us.” (Rolas)

“As admin staff, I found it very helpful for completing many activities such as the accreditation agenda, guest lecture, and many more... that all information that are suggested by AI we must ensure the accuracy before submitting to many agenda.” (Lulu)

Human–AI Collaboration in Administrative Decision-Making

Third theme highlights the evolving role of administrative staff as collaborators with AI systems. Rather than replacing human decision-making, AI tools were described as extending or reshaping administrative work. Participants portrayed their roles as supervisors of automated processes—monitoring, validating, and intervening when AI systems failed to interpret unique or complex cases. So, administrator has to have the ability to monitor, validate, or reject AI

recommendations, so administrators must have the ability to review outputs before they are implemented and determine when human intervention is necessary.

“I treat AI as a helper, but the final decision is always mine.” (Pipit)

“... many AI recommendations is good, ... as administrator we need to check and recheck the information.” (Nenem)

Then, when dealing with cases that cannot be resolved by AI, administrators can take full part in resolving complex issues and determining the appropriate escalation path.

“When the chatbot cannot answer a student's concern, it comes to my desk how understand and deliver the information...” (Jiji)

“... not only check the AI suggestion or information, but also need to take full part of the complex problem and solution.” (Lulu)

Participants also emphasized the need to apply contextual judgment, particularly when AI recommendations did not account for special circumstances or sensitive student needs. So, administrators can add context that AI does not understand to make the right decisions by considering the context of interpretation on issues relevant to AI suggestions.

“... the AI suggested something, but it didn't consider the administrator's special condition.” (Elu)

“.. special offer of the job, we need to write clearly in chatbot and have to deep analyze the information or AI suggestion.” (Pipit)

Moreover, participants expressed concerns about ethical considerations such as privacy, fairness, and the appropriateness of delegating certain decisions to AI systems. These concerns underscored the hybrid nature of the work: technology may perform the initial task, but human staff ensure that the final decision is contextually appropriate and ethically defensible. So, administrator skills to make decisions that consider ethics, privacy, and fairness by rejecting potentially biased outputs and avoiding AI misuse are essential to support the completion of work in the office.

“We cannot trust AI fully because it may mishandle sensitive data, and not open access data...” (Gangs)

“... making decision is the main skill for administrator by using AI... not all administrator understanding it, but we can discuss to take a decision for administration job.” (Rolas)

Continuous Learning, Upskilling, and Professional Development

The fourth theme highlights the importance of continuous learning as AI-driven systems become increasingly embedded in administrative workflows. Participants repeatedly stressed the need for ongoing training, both formal and informal, to keep pace with rapidly evolving

technologies. Staff participation in formal training related to AI, MIS, data, or digital tools is essential by attending workshops and seeking certification.

“The university offered training, and that helped me understand the AI system.” (Elu)
“... I usually look for free training myself. So, my AI skills are well honed.” (Songo)
“My friends often invite me to join training sessions on using AI. I gained this skill from my friends at work.” (Welas)

However, others reported gaps in institutional support, citing heavy workloads, insufficient time for training, or limited availability of structured programs. For many, peer support and self-directed learning (e.g., YouTube tutorials, experimentation, peer mentoring) played a central role in skills development. So, the administrator can do self-directed learning, informal mentoring, sharing among colleagues through independent learning, and peer-to-peer learning with colleagues.

“I learned most features not from training but from my colleagues.” (Gangs)
“... many skills that I have, I learn by myself in Youtube.” (Lulu)
“I often try to explore what AI can do. I keep trying until I have certain abilities...” (Songo)

Participants also expressed intrinsic motivation to learn, driven by the recognition that AI tools could improve their efficiency and reduce administrative burden. Yet they emphasized that institutional support structures—such as formal training pathways, role-specific AI orientations, and recognition of digital competencies—were crucial for enabling sustained upskilling. The desire to grow, curiosity, and motivation to try new technologies are key ingredients for administrators in optimizing their work using AI. The skills that must be instilled are proactively seeking information and trying new features without being told to do so. Then, structural support related to competency development is very important by providing opportunities to learn at every opportunity.

“I explore new AI features on my own because it makes my work easier.” (Doso)
“I usually join a training even though my workload is too high. My big motivation is how AI make us completing tasks easier.” (Welas)
“... my university strongly supports digital skills development of all administrators, but not all have the same motivation.” (Roro)

Discussions

The findings reveal a competency landscape shaped by technological complexity and organizational change. Administrative staff must now be digitally fluent, analytically capable,

ethically grounded, and continuously adaptive to evolving AI-driven systems. Rather than diminishing the role of administrative personnel, AI has created new demands for judgment, interpretation, and oversight — roles that are uniquely human and increasingly central to higher education administration.

The basic digital skills have evolved into richer AI literacy is strongly supported in recent literature. Studies reviewing AI uptake in higher education note that mere operational familiarity with portals and MIS is no longer sufficient; administrative staff must understand how AI tools generate outputs, what assumptions underpin them, and how to interrogate or validate those outputs (Crompton, Besançon, & Fischer, 2023; Sahar & Munawaroh, 2025). Crompton et al. (2023) argue that institutional adoption of AI expands the range of “day-to-day” digital interactions and thus raises the baseline of required competencies across non-academic staff. Likewise, Sahar and Munawaroh’s bibliometric analysis (2025) highlights an emergent cluster of studies emphasizing interpretive literacy — the capacity to read, evaluate, and contextualize algorithmic recommendations — as central to effective deployment. These reviews resonate with MDPI studies on digital competences that call for a shift from tool-use to critical engagement with outputs (López-Nuñez et al., 2024; Moreira et al., 2023). Practically, this means administrative staff must be trained not only in “click skills” but in conceptual understandings of AI workflows, error modes, and confidence measures so they can judge when to accept, verify, or override machine outputs. Without such literacy, institutions risk misinterpreting AI-driven reports (affecting accuracy) or failing to hold systems accountable (affecting transparency and trust).

Closely related to AI literacy is data literacy: the ability to access, clean, interpret, and present data responsibly. Several open-access studies emphasize that administrative functions in universities produce large volumes of structured and unstructured data (Crompton et al., 2023; López-Nuñez et al., 2024). Institutional reporting (accreditation, finance, enrollment) increasingly relies on analytics pipelines; staff who cannot evaluate data quality or diagnose anomalies become bottlenecks or sources of error. Condon’s practitioner-oriented work on workplace data literacy (2025) foregrounds how employees across sectors struggle with data cleaning, provenance, and interpretation — challenges that translate directly to higher education contexts. Kennedy & Gupta (2025) and Coimbra Group (2025) position papers recommend concrete learning outcomes for data acumen (e.g., understanding data provenance, basic descriptive statistics, and visualization literacy) targeted at administrative personnel. The implication for your thematic analysis is that codes related to “verifying AI outputs”, “data

cleaning practices”, and “report reliability” represent not just procedural tasks but core competencies that sustain institutional accountability. Emphasize examples where staff narratives describe stepping in to validate outputs for accreditation or financial reporting — these are high-stakes moments illustrating data literacy’s central role.

Multiple recent contributions underscore that AI rarely replaces human judgment entirely in institutional administrative work; instead, it reconfigures it (Deroncele-Acosta, 2025; Khairullah et al., 2025; Sánchez-Vera et al., 2024). The literature on human–AI collaboration stresses roles such as supervisor-of-algorithm, context-interpreter, and escalation point — all roles you observed in your data. For instance, empirical case studies of chatbots used in student services show that when automation cannot resolve an inquiry, administrative staff must interpret the conversational logs, fill contextual gaps, and make discretionary decisions (Sánchez-Vera et al., 2024). Deroncele-Acosta (2025) and Khairullah et al. (2025) argue that effective collaboration requires staff to understand both AI affordances and limits, and to maintain an ethical and pragmatic oversight stance (e.g., catching algorithmic bias, correcting incorrect classifications). In your write-up, treat “human–AI collaboration” as a compound competency (Rioseco-Pais, et.al., 2024): it comprises technical understanding (what the AI did), contextual judgment (why a human response is needed), and procedural authority (how to intervene). Present participant excerpts that show negotiation of responsibility (“the bot gave a schedule but I had to check because the student had a special case”) to illustrate these multi-dimensional competencies.

Finally, the literature converges on the necessity of ongoing professional development tailored to non-academic staff. Reviews and policy papers identify persistent gaps in formal training pathways for administrative personnel, and they advocate for institutionalized upskilling programs that blend technical, data, and ethical competencies (Condon, 2025; Kennedy & Gupta, 2025; Coimbra Group, 2025; Sahar & Munawaroh, 2025). Practical case studies show that when institutions invest in modular, practice-based training (short courses on data literacy, hands-on AI tool workshops, communities of practice), staff are more likely to integrate AI affordances into daily workflows and to sustain service quality improvements (Sánchez-Vera et al., 2024; Moreira et al., 2023). Critically, the literature also warns that training alone is insufficient without organizational supports: time allocation, recognition (career pathways), and participatory implementation processes that involve administrative staff in system design (Khairullah et al., 2025; Coimbra Group, 2025). For your thematic analysis, highlight distinctions between formal training (institutional courses) and informal upskilling

(peer learning, self-study), and discuss contextual enablers (leadership support, resource allocation) that participants identify as shaping their capacity to learn

Implications for Policy and Practice

Taken together, these themes argue for a multidimensional competency model for administrative staff that combines interpretive AI literacy, data acumen, collaborative decision-making skills, and a culture of continuous learning. For practice, immediate steps include 1) co-designing training with administrative staff to target real tasks (not hypothetical use cases), 2) implementing routine validation checkpoints for AI outputs in high-stakes workflows (e.g., accreditation reporting), and 3) establishing governance frameworks for human–AI handoffs (Rioseco-Pais, et.al., 2024). For policy, institutions and governing bodies should recognize administrative AI competence as part of professional standards and invest in systemic supports that enable sustainable upskilling. Theoretically, this study contributes to socio-technical perspectives on AI by showing how non-academic workforces enact oversight functions that preserve accountability and contextual judgment in automated systems.

CONCLUSION

This study explored the competencies required of administrative staff in higher education as institutions increasingly adopt AI-enabled administrative systems. The findings demonstrate that AI does not diminish the role of administrative personnel; instead, it reconfigures their responsibilities and elevates the level of expertise required to maintain accuracy, responsiveness, and institutional accountability. Four interrelated competencies emerged as essential.

First, digital and AI literacy has become foundational. Administrative staff can no longer rely solely on procedural or “click skills”; they must understand how AI systems work, how to interrogate their outputs, and how to identify errors or contextual mismatches. This interpretive dimension of literacy reflects broader shifts in higher education where digital interfaces and AI-generated recommendations shape day-to-day administrative work.

Second, data literacy and analytical capacity serve as the backbone of accuracy and accountability. As universities depend more heavily on analytics-based reporting for accreditation, quality assurance, and financial oversight, administrative staff function as critical gatekeepers who validate data quality, interpret trends, and ensure the integrity of institutional

information. Errors in AI-generated analytics require human oversight to prevent misreporting and compliance risks.

Third, human–AI collaboration has emerged as a defining competency. Rather than fully automating administrative decision-making, AI tools redistribute tasks across human and algorithmic actors. Administrators act as supervisors, interpreters, and ethical decision-makers who intervene when AI systems lack contextual understanding or when sensitive cases require human judgment. This reinforces the importance of human oversight as a safeguard for institutional fairness, empathy, and professionalism.

Finally, continuous learning, upskilling, and organizational support constitute the enabling architecture that sustains the other competencies. Without structured training, time allocation, and institutional frameworks for skill development, administrative staff struggle to keep pace with rapidly evolving tools. Professional development becomes not merely an optional activity but an organizational imperative that directly influences institutional performance.

These findings suggest that administrative competence in the AI era is multidimensional, socio-technical, and dynamic. It requires not only individual skill acquisition but also institutional commitment to supporting human–AI ecosystems that uphold accuracy, transparency, and service quality. The study contributes to a growing understanding of how administrative staff enact interpretive, ethical, and collaborative functions that complement AI capabilities and preserve institutional integrity.

ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude to Universitas Terbuka for providing the research grant that supported the completion of this study. The institutional support and resources offered by Universitas Terbuka were instrumental in facilitating data collection and manuscript preparation. The authors also wish to thank the participating administrative staff and academic colleagues who generously shared their insights and experiences, contributing to the depth and relevance of this research.

REFERENCES

- Adamakis, M., & colleagues. (2025). *Artificial intelligence in higher education: A state-of-the-art review*. Information, 5(4), 180. <https://doi.org/10.3390/encyclopedia5040180>
- Basilotta-Gómez-Pablos, V., De Benito, B., & García-Pérez, R. (2022). Teachers' digital competencies in higher education: A systematic review. *International Journal of*



Educational Technology in Higher Education, 19(8). <https://doi.org/10.1186/s41239-021-00312-8>

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2021). Conceptual and design thinking for thematic analysis. *Qualitative Psychology*, 8(1), 3–26. <https://psycnet.apa.org/doi/10.1037/qup0000196>
- Coimbra Group. (2025). *AI and digital competence through higher education — Position paper*. Retrieved from <https://www.coimbra-group.eu/wp-content/uploads/AI-and-Digital-Competence-through-Higher-Education-EMP-WG-Position-Paper-.pdf>
- Condon, P. B., & Pothier, W. B. (2025). Data literacy competencies in context: Employee perspectives on workplace needs. *Journal of Business & Finance Librarianship*. <https://doi.org/10.1080/08963568.2025.2546209>
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). SAGE.
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE.
- Crompton, H., Besançon, M., & Fischer, N. (2023). Artificial intelligence in higher education: The state of the field. *International Journal of Educational Technology in Higher Education*, 20(22). <https://doi.org/10.1186/s41239-023-00392-8>
- Deroncele-Acosta, A. (2025). Generative AI & transversal competencies in higher education. *Horizons (MDPI)*. <https://doi.org/10.3390/asi8030083>
- Faraasyatul' Alam, G., Purnawirawan, O., Herlambang, A. D., & Batita, M. S. R. (2025). National education policy: Implementation of Artificial Intelligence in higher education. *Journal of Smart Education and Learning*.
- Helmiatin, A. (2024). Investigating the adoption of AI in higher education: Policy and practice analysis. *Cogent Education*, 11(1). <https://doi.org/10.1080/2331186X.2024.2380175>
- Jin, Y., & colleagues. (2025). Generative AI in higher education: A global perspective of institutional adoption policies and guidelines. *Computers & Education: Artificial Intelligence*, 8, 100348. <https://doi.org/10.1016/j.caeai.2024.100348>
- Kennedy, K., & Gupta, A. (2025). *AI & Data Acumen Learning Outcomes Framework* (white paper). Academy for Educational Studies. <https://academyforeducationalstudies.org/wp-content/uploads/2025/09/kennedy-gupta-final-1.pdf>
- Kennedy, K., & Gupta, A. (2025). *AI & Data Acumen Learning Outcomes Framework* (white paper). Academy for Educational Studies. Retrieved from <https://academyforeducationalstudies.org/wp-content/uploads/2025/09/kennedy-gupta-final-1.pdf>
- Khairullah, S. A., et al. (2025). Implementing artificial intelligence in academic and administrative functions in higher education: A review. *Frontiers in Education*, 10. <https://doi.org/10.3389/feduc.2025.1548104>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE.
- López-Núñez, J. A., Melian-González, S., & Suárez-Hernández, N. (2024). Digital competence

- evaluation in higher education: A systematic review. *Education Sciences*, 14(11), 1181. <https://doi.org/10.3390/educsci14111181>
- Rioseco-Pais, M., Silva-Quiroz, J., Vargas-Vitoria, R. (2024). Digital Competences and Years of Access to Technologies Among Chilean University Students: An Analysis Based on the DIGCOMP Framework. *Sustainability*, 16(22), 9876. <https://doi.org/10.3390/su16229876>
- Moreira, J. A., Nunes, C. S., & Casanova, D. (2023). Digital competence of higher education teachers at a distance learning university in Portugal. *Computers*, 12(9), 169. <https://doi.org/10.3390/computers12090169>
- Myszak, J. M., & Filina-Dawidowicz, L. (2025). Leaders' competencies and skills in the era of artificial intelligence: A scoping review. *Applied Sciences*, 15(18), 10271. <https://doi.org/10.3390/app151810271>
- Nguyen, T., Elbanna, A. (2025). Understanding human–AI augmentation in the workplace: A literature review. *Information Systems Frontiers*. <https://doi.org/10.1007/s10796-025-10591-5>
- Ocen, S. (2025). Artificial intelligence in higher education institutions: Opportunities and challenges. *Frontiers in Education*, 10, 1530247. <https://doi.org/10.3389/feduc.2025.1530247>
- Sahar, R., & Munawaroh, M. (2025). Artificial intelligence in higher education: Bibliometric and content analysis for future research agenda. *Discover Sustainability*, 6, 401. <https://doi.org/10.1007/s43621-025-01086-z>
- Santana, M., & Díaz-Fernández, M. (2023). Competencies for the artificial intelligence age: Visualisation of the state of the art and future perspectives. *Review of Managerial Science*, 17(6), 1971–2004. <https://doi.org/10.1007/s11846-022-00613-w>
- Sánchez-Vera, F., et al. (2024). Subject-specialized chatbot in higher education: Empirical evaluation. *Education Sciences*, 15(1), 26. <https://doi.org/10.3390/educsci15010026>
- Sposato, M. (2025). Artificial intelligence in educational leadership: Taxonomy and challenges. *International Journal of Educational Technology in Higher Education*, 22, 20. <https://doi.org/10.1186/s41239-025-00517-1>
- Woo, H., et al. (2025). Human–AI collaboration: Students' changing perceptions and implications for learning. *Sustainability*, 17(18), 8387. <https://doi.org/10.3390/su17188387>