Online Journal of Communication and Media Technologies, 2026, **16**(4), e202654
e-ISSN: 1986-3497

OPEN ACCESS

Review Article

Digital integration, communication quality, and institutional trust in higher education: A systematic review

Lyudmila S. Chikileva [1]
0000-0002-4737-9041

Sergei P. Zhdanov [2]
0000-0002-1330-8165

Tatiana I. Ladykova [3*]
0000-0003-3125-8429

Natalia L. Sokolova [4]
0000-0002-0667-5098

Zhanna M. Sizova [5]
0000-0002-1242-7074

Ludmila Y. Grebenshchikova [6]
0000-0003-2815-1882

[1] Department of English for Professional Communication, Financial University under the Government of the Russian Federation, Moscow, RUSSIA
[2] Department of Criminal Law, Procedure and Criminology, National Research University "Higher School of Economics" (HSE University), Moscow, RUSSIA
[3] Department of Macroeconomic Policy and Strategic Management, Lomonosov Moscow State University, Moscow, RUSSIA
[4] Institute of Foreign Languages, Peoples' Friendship University of Russia (RUDN University), Moscow, RUSSIA
[5] Department of Medical and Social Assessment, Emergency, and Ambulatory Practice, Sechenov First Moscow State Medical University, Moscow, RUSSIA
[6] Department of Reproductive Medicine and Perinatology, Tver State Medical University, Tver, RUSSIA
[*] Corresponding author: ladykova@mail.ru

Citation: Chikileva, L. S., Zhdanov, S. P., Ladykova, T. I., Sokolova, N. L., Sizova, Z. M., & Grebenshchikova, L. Y. (2026). Digital integration, communication quality, and institutional trust in higher education: A systematic review. *Online Journal of Communication and Media Technologies, 16*(4), Article e202654. https://doi.org/10.30935/ojcmt/19988

ARTICLE INFO

Received: 4 Jun 2026
Accepted: 8 Nov 2026

ABSTRACT

The aim of this research is to examine the impact of digital integration on communication quality and institutional trust in higher education institutions through a systematic review. The study addresses how digital tools transform student-academician and institutional communication, how this transformation shapes the perception of institutional trust, and the role of communication quality in the relationship between digital integration and trust. 44 studies published since 2019 and obtained from the Web of Science and Scopus databases were analyzed in this context, and the document analysis method was used to analyze the data. Content analysis techniques were employed; the frequencies of message elements were determined and expressed in the form of themes and sub-themes. The findings showed that digital integration can affect communication quality both positively and negatively. The impact of integration on institutional trust was found to largely depend on the quality of the communication infrastructure, the level of digital competence, and institutional transparency. The findings indicate that communication quality acts as a mediating variable. In this context, it is recommended that institutions prioritize the quality of their communication infrastructures in their digital transformation strategies. Improving the digital competencies of faculty members should be considered one of the most effective ways to improve communication quality and thus strengthen institutional trust.

Copyright © 2026 by authors; licensee OJCMT by Bastas, CY. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/).

Keywords: digital integration, higher education, digital transformation, communication quality, institutional trust

INTRODUCTION

As the world progresses in terms of the growth in information and communication technologies (ICTs), higher education establishments play a central role in such digital transformation. In fact, during the current coronavirus crisis, which has brought about digitalization through force, higher education establishments have been required to undergo radical restructuring of not just their educational materials but also their communication channels and trust relationships with their stakeholder community. This situation has necessitated research into the dimensions, effects, and limitations of digital integration in higher education. Digital integration can be viewed as a key prerequisite and point of departure for digital transformation as it provides the foundation on which further transformations will take place (Tang et al., 2025). In this regard, digital integration can be viewed as an important sign of digital transformation in the current study.

The concept of digital integration has a broad meaning within the context of higher education. It encompasses a wide range of applications, from the adoption of e-learning platforms to institutional information management systems, digital communication channels, and artificial intelligence (AI)-supported administrative processes (Benavides et al., 2020; Fernández et al., 2023; Gkrimpizi et al., 2023). However, a framework addressing the effects of digital tools on the quality of institutional communication and institutional trust has not yet been sufficiently examined in the literature. While digital communication offers speed and accessibility in organizational processes, the risk of trust erosion stemming from reduced face-to-face interaction is a notable issue (Mialkovska et al., 2023; Romero et al., 2023). Institutional trust stands out as a critical variable for the sustainability of higher education institutions and student satisfaction. Research results show that digital strategies directly affect institutional trust (Mohamed Hashim et al., 2022). Also, research has revealed the decisive role of trust in technology adoption processes (Almaiah et al., 2022).

An analysis of current literature shows that digital transformation research has mostly addressed issues related to technology acceptance models (Almaiah et al., 2022; Shard et al., 2024), academic achievement and success of e-learning (Milićević et al., 2021; Sahni et al., 2025), and digital literacy (de las Mercedes de Obesso et al., 2023; López-Nuñez et al., 2024; Zhao et al., 2021). Little attention has been paid to examining the impact of the integration of digital technologies on the quality of communication and trust. This research aims to reveal the impact of digital integration in higher education on communication quality and institutional trust through existing research and to determine the role of communication quality in the relationship between these two variables.

THEORETICAL FRAMEWORK

Digital Transformation in Higher Education: Conceptual Dimensions

Digital transformation is a comprehensive process that diverges from the concepts of digitization and digitalization, which are often used interchangeably but carry fundamentally different meanings (**Figure 1**). Digital transformation is a strategic process that fundamentally reshapes the organizational structures, processes, and cultures of higher education institutions, encompassing not only technology adoption but also human, information, and organizational transformation dimensions (Fernández et al., 2023; Gkrimpizi et al., 2024).

In the early days, the emphasis was made on the automation of mundane processes and the optimization of the workflow; however, nowadays, the main emphasis is placed on revisiting the very mission and business model of educational organizations (Gkrimpizi et al., 2023). Digital transformation entails significant changes on a cultural, workforce-related, and technological level and enables new organizational and educational paradigms to be established. Digital transformation, therefore, is not a one-off process but rather an ongoing evolution, which yields more significant changes within organizations, as depicted in **Figure 1** (Brooks & McCormack, 2020). This perspective supports the multidisciplinary approach adopted by Verhoef et al. (2021), which identifies three consecutive phases: digitization, defined as the transition from analog to digital media;

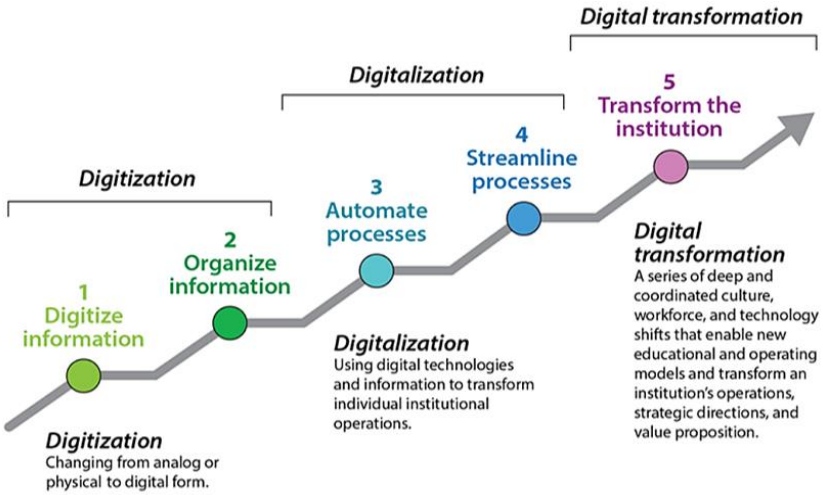


Figure 1. Digital transformation in context (Brooks & McCormack, 2020)

digitalization, emphasizing enhancements in existing systems and processes via information technology; and digital transformation, which is the most transformative phase in which revolutionary processes and technologies are created through innovation in the preceding phases.

According to Benavides et al. (2020) there are three primary aspects associated with digital transformation in higher education. These are technological aspect, organizational aspect, and sociocultural aspect. The technological aspect refers to hardware and software systems and connectivity infrastructure; organizational aspect refers to leadership and strategy and organizational alignment; sociocultural aspect refers to variables including digital culture, competency development, and change resistance. The managerial dimension of digital transformation in higher education institutions affects institutional competitiveness and operational efficiency. The decisive role of digital adoption in improving institutional performance and the systematic management of challenges in the transformation process are also relevant in this context (Carmo et al., 2025).

Various frameworks have been developed to assess digital transformation maturity in higher education, showing the stages institutions have gone through in this process (Marks et al., 2020). In the context of Industry 4.0, curriculum alignment, cloud computing, and universal access stand out as key drivers of digital transformation (Wang et al., 2023). There are also findings indicating that blended and distance learning models increase institutional flexibility, and that digitalization makes significant contributions to the dimensions of flexibility and openness in higher education (Orr et al., 2019).

Communication Quality in Digital Environments

Communication quality is a concept evaluated by criteria such as the accuracy of information, timeliness, comprehensibility, bidirectional nature, and the capacity to meet stakeholder expectations. Ensuring this quality in digital environments requires a different process than traditional communication models (Mialkovska et al., 2023). Relevant research shows that digital communication tools enrich student-teacher interaction through flexible learning environments. It is also emphasized that ICT tools increase communication quality by creating global reach and collaboration capacity in corporate communication (Alenezi, 2023).

The quality of digital communication is directly linked to the digital competence of faculty members, the functionality of the platform used, and the institutional support structures (Lee et al., 2025; Romero et al., 2023). When examining the effects of e-learning technologies on academic participation and professional development in the post-pandemic period, it is seen that the decrease in interpersonal interaction negatively affects the quality of communication (Sahni et al., 2025). When the relationship between educators' digital competencies and student learning is investigated, it is seen that the majority of students evaluate that educators' digital skills positively affect the learning process (de las Mercedes de Obesso et al., 2023). This clearly shows that the quality of digital communication is directly related not only to technology infrastructure but also to human capital. The transformative power of effective use of ICT tools on educational outcomes is also strongly emphasized in the literature (Alenezi et al., 2023).

Institutional Trust and Digital Transformation in Higher Education

Institutional trust is a construct formed by stakeholders' beliefs that an institution behaves consistently, transparently, and competently. In the context of higher education, this trust directly determines student satisfaction, academic commitment, and the institution's social connection (Milićević et al., 2021). When examining the factors influencing the adoption of digital information technologies in higher education, the element of trust has been shown to have a decisive impact on technology acceptance. Infrastructure quality, awareness, social impact, and trust also play important roles in digital adoption (Almaiah et al., 2022).

When considering the relationship between digital transformation strategies and organizational trust, it is argued that digital strategy in higher education functions as a trust-building mechanism (Mohamed Hashim et al., 2022). It is also a prominent view in this context that digital transformation assessment frameworks implemented from an institutional perspective should explicitly include the trust component (Valdés et al., 2021). In the context of e-learning, researchers emphasize that high-quality pedagogical communication supports the perception of trust, and therefore the importance of trust's role is highlighted (Milićević et al., 2021). When examining organizational resilience in the age of digital transformation, it has been found that a harmonious culture enhances organizational resilience through digital transformation, and trust functions as a key variable in this process (Gull et al., 2024). Regarding the relationship between information technology governance and organizational trust, the decisive effect of technology governance quality on trust has been demonstrated through multi-country analyses (Bianchi et al., 2021).

Higher education institutions interact with a wide range of stakeholders, from students and academics to administrative staff and societal stakeholders, during the digitalization process (Bianchi et al., 2021; Ting et al., 2023). The quality of communication these institutions establish with their stakeholders and the trust built through these communication channels are critically important for institutional sustainability and competitiveness (Panda et al., 2026). However, research examining the effects of digital integration on these two fundamental variables remains extremely limited. In the current literature, communication quality and institutional trust are mostly treated as independent variables; their relationship and their connection to digital integration are not sufficiently investigated (Singun, 2025). The emergence of remote and hybrid education models as a permanent norm after the COVID-19 pandemic has made understanding the impact of digital communication channels on institutional trust an increasingly urgent need. This study also aims to offer practical implications for higher education policymakers, institutional managers, and researchers.

The main aim of this research is to examine the effects of digital integration on communication quality and institutional trust in higher education, based on studies in the literature. It also aims to understand the role of communication quality in the relationship between digital integration and institutional trust. In line with this main aim, the following sub-objectives are addressed:

1. What are the effects of digital integration on communication quality?
2. What are the direct effects of digital integration on institutional trust?
3. How does communication quality affect institutional trust?
4. What role does communication quality play in the relationship between digital integration and institutional trust?

METHOD

Research Model

This study utilized a systematic analysis method. Systematic analysis allows for the analysis of numerous documents within a framework of predetermined rules, ensuring transparency and repeatability of the process (Aveyard, 2014; Tranfield et al., 2003). This review was initiated with a comprehensive search of relevant databases using predetermined search terms.

Search Strategy and Inclusion/Exclusion Criteria

The study's universe consists of research papers whose full text is available in the Web of Science (WoS) and Scopus databases. In this context, a total of 44 publications were included in the study. The search was

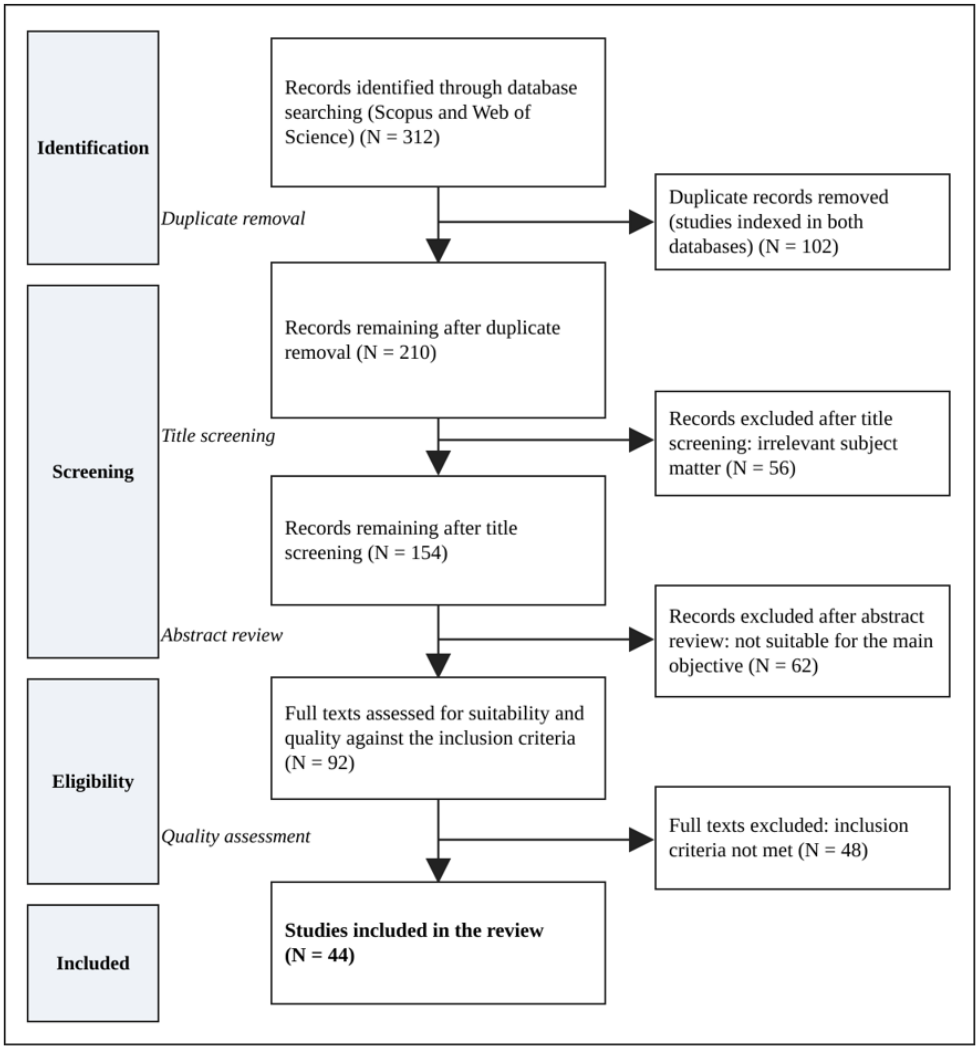


Figure 2. PRISMA process included in the analysis (created by the authors)

conducted in March 2026. In the Scopus database, in the title field *(TITLE("digital transformation") AND TITLE("higher education") AND TITLE("communication" OR "trust")) OR (TITLE("digital integration") AND TITLE("higher education") AND TITLE("communication quality" OR "institutional trust"))* formulation has been applied. In the WoS database *("digital transformation" AND "higher education" AND "communication quality") OR ("digital integration" AND "higher education" AND "institutional trust")* terms have been searched in the title (TI) and topic (TS) fields. Searches were limited to the years 2019-2026 and only English-language publications were included. One of the included studies (Mothafar et al., 2024) has since been retracted; it is marked as retracted in the reference list, and the findings attributed to it should be interpreted with caution. **Appendix A** shows PRISMA checklist.

As part of the research, the relevant literature review was conducted, and the author, publication year, publication title, database, subject, journal information, and abstract information were selected as appropriate for the purpose. Each study was assigned a code number, and the research was reported in APA 7 style. The reasons for exclusion from publications can be listed as follows:

(1) not being found in the relevant databases,

(2) the full text not being publicly accessible, or

(3) not focusing on any of the issues of digital integration, communication quality, or institutional trust.

Figure 2 summarizes the flow of studies included in the analysis.

As shown in the PRISMA diagram in **Figure 2**, all research studies were searched in the relevant databases using keywords to identify studies suitable for analysis. The searches identified 312 records in total. Of these, 102 records were removed as duplicates because they were indexed in both databases (Scopus and WoS),

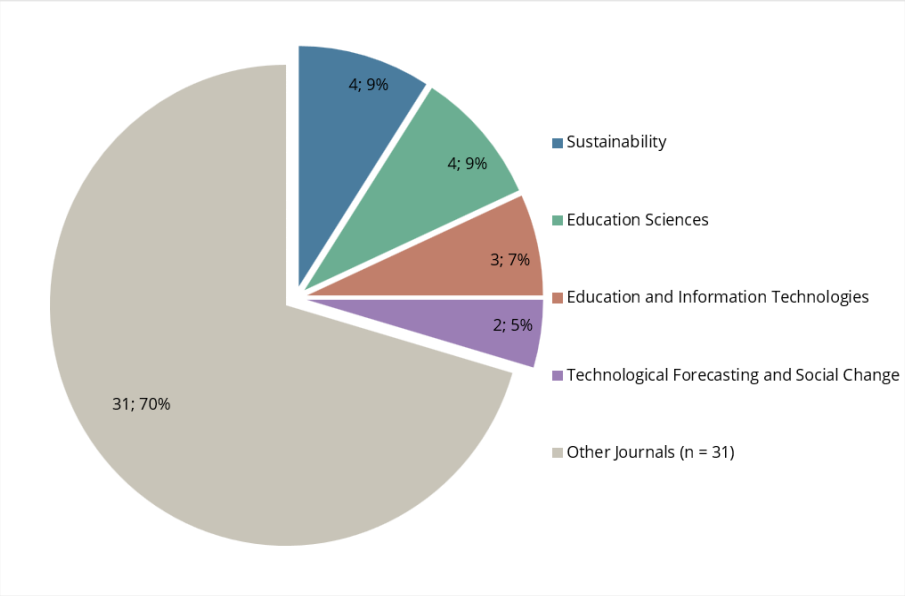


Figure 3. Distribution of articles by journal (created by the authors according to data set)

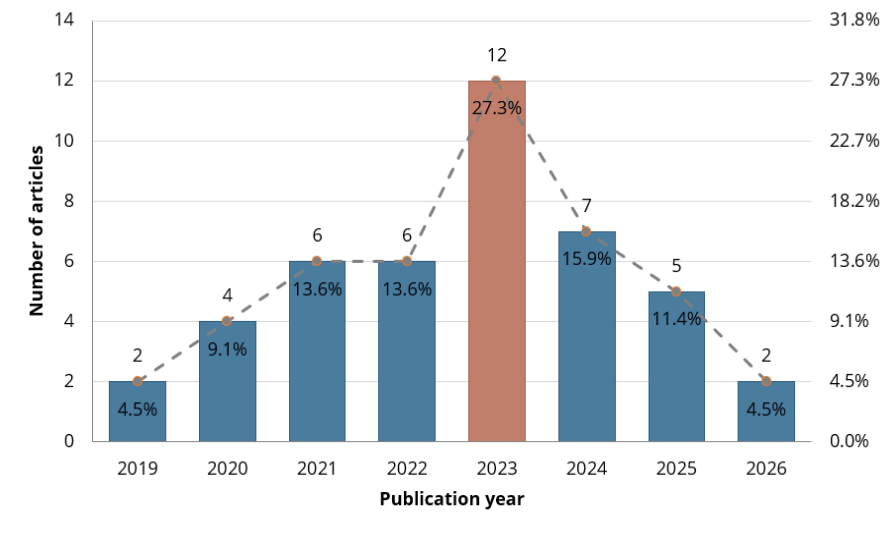


Figure 4. Distribution of articles by year (created by the authors according to data set)

leaving 210 records for screening. In the second stage, the remaining 210 records were screened by title, and 56 were removed because of irrelevant subject matter, leaving 154 records. The abstracts of these 154 records were then reviewed, and 62 were removed because they were not suitable for the main objective, leaving 92 full texts. These full texts were assessed for suitability and quality against the inclusion criteria, and 48 did not meet the criteria. The remaining 44 studies were deemed suitable for the purpose and were recorded as full-text studies for evaluation.

When examining the distribution of the 44 studies across journals (**Figure 3**), no single outlet dominates the literature; the majority of articles (n = 31, 70.5%) are spread across 31 different journals with a single publication each, while only four journals contributed two or more articles. These are Sustainability and Education Sciences (f = 4 each), Education and Information Technologies (f = 3), and Technological Forecasting and Social Change (f = 2).

The distribution by publication year reveals a clear upward trend in research interest, peaking in 2023 (n = 12, 27.3%), followed by a gradual decline in 2024 (n = 7) and 2025 (n = 5), with two further studies dated 2026 (n = 2, 4.5%). During this period, scholarly attention to the topic intensified particularly between 2021 and 2024 (**Figure 4**).

Table 1. Effects of digital integration on communication quality

Theme	Sub-theme	Related research
Digital tools empowering communication (theme 1)	Increased accessibility and flexibility	Alenezi et al. (2023), Mialkovska et al. (2023), Orr et al. (2019)
	Improvement of two-way communication capacity	Panda et al. (2026), Romero et al. (2023), Sahni et al. (2025)
	The relationship between data-driven communication processes and organizational capacity	Carmo et al. (2025), Castro Benavides et al. (2026)
Factors that weaken communication quality (theme 2)	Lack of digital literacy becoming a communication barrier	de las Mercedes de Obesso et al. (2023), López-Nuñez et al. (2024), Mercader (2020)
	Loss of interpersonal interaction reduces the quality of communication	Beloev et al. (2023), Milićević et al. (2021), Sahni et al. (2025)
	Lack of institutional communication strategy	Coral and Bernuy (2022), Fernández et al. (2023), Fleaca et al. (2022)
	Technical problems and system outages disrupt communication	Aditya et al. (2022a), Gkrimpizi et al. (2023)
Context-specific variations (theme 3)	Infrastructure-related communication difficulties in developing countries	Almaiah et al. (2022), Matveeva et al. (2020), Uoc (2023)
	How differences in corporate size and resources are reflected in communication.	Mohamed Hashim et al. (2022), Teixeira et al. (2021)
	The emergence of hybrid communication models in the post-pandemic era	Alenezi et al. (2023), Romero et al. (2023), Sahni et al. (2025)
	The link between institutional digital strategy and communication quality.	Castro Benavides et al. (2026), Davidaviciene and Limanovskaja (2025), Wang et al. (2023)

Data Analysis

In this research, the document analysis method was used to analyze the data. The documents encompassed a wide range, including journals, technical documents, conference papers, reports or statistics, primary or secondary sources, and articles (Cohen et al., 2007). Document analysis was carried out in two stages. In the first stage, descriptive analyses were performed to reveal data on author, journal, publication year, publication type, and research topic. In the second stage, the studies were systematically coded using the academic publication evaluation form developed within the scope of the research. Content analysis techniques were employed; the frequencies of message elements were determined and expressed in the form of themes and sub-themes.

Validity and Reliability of the Study

In qualitative research, validity means that the researcher observes the phenomenon under consideration as realistically and impartially as possible (Creswell & Poth, 2016). In this study, detailed descriptions were included in the findings section to increase internal validity; after presenting objective data, interpretation was initiated. To support external validity, the process of extracting data from databases was explained in detail. In the reliability calculation, two experts independently performed coding; Miles and Huberman's (1994) formula was applied: Reliability = agreement/(agreement + disagreement). In the calculation, the reliability of the study was found to be 84%. A value above 70% indicates that the research is reliable (Miles & Huberman, 1994).

RESULTS

The Effects of Digital Integration on Communication Quality

The studies reviewed address the effects of digital integration on communication quality within three main themes: the enhancing effects of digital tools on communication (theme 1), factors that weaken communication quality (theme 2), and context-specific differences (theme 3). These findings are presented in **Table 1**.

The enhancing effects of digital tools on communication (theme 1) are shaped in three sub-themes. In the dimension of increased accessibility and flexibility, digital platforms are seen to make student-teacher communication sustainable anytime and anywhere (Alenezi et al., 2023; Mialkovska et al., 2023; Orr et al.,

Table 2. Direct impacts of digital integration on institutional trust

Theme	Sub-theme	Related research
Transparency and accountability mechanisms (theme 1)	Digital systems increase corporate transparency.	Bianchi et al. (2021), Mohamed Hashim et al. (2022), Valdés et al. (2021)
	Open data and reporting practices reinforce trust.	Castro Benavides et al. (2026), Gkrimpizi et al. (2024)
	The contribution of accountability tools to corporate image	Davidaviciene and Limanovskaja (2025), Marks et al. (2020), Teixeira et al. (2021)
Technology reliability and system security (theme 2)	System quality directly affects the perception of trust	Almaiah et al. (2022), Devisakti and Muftahu (2023), Martins et al. (2019)
	Security concerns undermine corporate trust	Aditya et al. (2022a), Coral and Bernuy (2022), Gkrimpizi et al. (2023)
	System continuity and technical reliability contribute to building trust.	Milićević et al. (2021), Mohamed Hashim et al. (2022)
Institutional image and digital identity (theme 3)	The contribution of digital maturity to corporate prestige and trust.	Davidaviciene and Limanovskaja (2025), Marks et al. (2020), Wang et al. (2023)
	How digital ranking indicators shape stakeholder trust	Aparisi-Torrijo et al. (2024), Fernández et al. (2023)
	The impact of social responsibility practices on corporate trust	Haddade et al. (2024), Mothafar et al. (2024)
	The relationship between corporate digital strategy and stakeholder trust	Bianchi et al. (2021), Gull et al. (2024), Mohamed Hashim et al. (2022)
Digital participation quality and organizational resilience (theme 4)	The role of digital participation mechanisms in building trust	Fleaca et al. (2022), Gull et al. (2024), Teixeira et al. (2021)
	The link between organizational resilience and corporate trust.	Gull et al. (2024), Valdés et al. (2021)

2019). In the sub-theme of improving two-way communication capacity, it has been determined that digital tools enable not only information transfer but also discussion, feedback, and collaboration, thus qualitatively improving the quality of communication (Panda et al., 2026; Romero et al., 2023; Sahni et al., 2025). In the dimension of the relationship between data-driven communication processes and institutional capacity, there is evidence that analytical systems increase communication effectiveness (Benavides et al., 2026; Carmo et al., 2025).

Factors that weaken communication quality (theme 2) are addressed in four sub-themes. Lack of digital competence can become a serious communication barrier; inadequate digital skills of faculty members negatively affect student-teacher communication (de las Mercedes de Obesso et al., 2023; López-Nuñez et al., 2024; Mercader, 2020). The sub-theme of how loss of interpersonal interaction reduces communication quality draws attention to the problems of loneliness and weakened connections brought about by digital environments (Beloev et al., 2023; Milićević et al., 2021; Sahni et al., 2025). Technical problems and system outages, as well as a lack of institutional communication strategy, are other sub-themes that complement this theme (Fleaca et al., 2022; Gkrimpizi et al., 2023).

Context-specific differentiations (theme 3) manifest themselves in four sub-themes. In developing countries, inadequate infrastructure severely restricts the quality of communication; institutions in these countries do not have equal opportunities in digital communication (Almaiah et al., 2022; Matveeva et al., 2020; Uoc, 2023). The emergence of hybrid communication models after the pandemic has created both opportunities and new challenges; the capacity of institutions to manage these models has become a direct determinant of communication quality (Romero et al., 2023; Sahni et al., 2025).

The Direct Effects of Digital Integration on Institutional Trust

The studies reviewed address the direct impacts of digital integration on organizational trust along four main thematic axes: transparency and accountability mechanisms (theme 1), technology reliability and system trust (theme 2), corporate image and digital identity (theme 3), and the quality of digital engagement and organizational resilience (theme 4). These findings are presented in **Table 2**.

Transparency and accountability mechanisms (theme 1) are structured around three sub-themes. Digital systems are seen as making corporate decision-making processes and financial transactions more visible, thereby strengthening stakeholder trust in the organization (Bianchi et al., 2021; Mohamed Hashim et al.,

Table 3. The impact of communication quality on institutional trust

Theme	Sub-theme	Related research
The role of consistent communication in building trust (theme 1)	Consistent and predictable communication strengthens trust.	Mialkovska et al. (2023), Mohamed Hashim et al. (2022), Romero et al. (2023)
	The relationship between clarity and transparency in corporate messaging.	de las Mercedes de Obesso et al. (2023), Sahni et al. (2025), Valdés et al. (2021)
	The contribution of timely information delivery to expectation management.	Beloev et al. (2023), Milićević et al. (2021)
The impact of faculty member's digital competence on trust (theme 2)	How a faculty member's digital skills reflect on student confidence.	Bravo-Jaico et al. (2025a), de las Mercedes de Obesso et al. (2023), López-Nuñez et al. (2024), Panda et al. (2026)
	The link between digital pedagogical competence and student satisfaction.	Budai et al. (2023), Santos et al. (2021), Zhao et al. (2021)
	The contribution of faculty member competency development programs to trust.	Matveeva et al. (2020), Mercader (2020)
	The quality of managerial communication shapes the perception of corporate trust.	Mohamed Hashim et al. (2022), Romero et al. (2023), Teixeira et al. (2021)
Feedback mechanisms and two-way communication (theme 3)	The impact of student feedback on the institutional trust cycle.	Alenezi et al. (2023), Devisakti and Muftahu (2023), Mialkovska et al. (2023)
	Two-way digital communication channels support the perception of trust.	Milićević et al. (2021), Romero et al. (2023)
The combined trust effect of system quality and communication quality (theme 4)	Transferring information system quality to trust through communication	Almaiah et al. (2022), Martins et al. (2019), Mohamed Hashim et al. (2022)
	How user experience quality affects communication perception.	Alenezi et al. (2023), Shard et al. (2024)
	Accessible and understandable digital content fosters trust.	Orr et al. (2019), Aditya et al. (2022b)
The impact of stakeholder engagement and communication quality on organizational interaction (theme 5)	The cyclical relationship between student engagement and institutional trust.	Bravo-Jaico et al. (2025b), Fleaca et al. (2022), Gull et al. (2024), Teixeira et al. (2021)
	The contribution of community-focused communication practices to corporate commitment.	Haddade et al. (2024), Mothafar et al. (2024)

2022; Valdés et al., 2021). The contribution of open data and reporting practices, along with accountability tools, to corporate image also complements this theme (Davidaviciene & Limanovskaja, 2025; Gkrimpizi et al., 2024).

Technology reliability and system trust (theme 2) consists of three interconnected sub-themes. Empirical evidence supports the idea that high-quality, uninterrupted systems build trust among users (Almaiah et al., 2022; Martins et al., 2019). After that, data security concerns and news of security breaches can seriously damage corporate trust (Aditya et al., 2022a; Gkrimpizi et al., 2023). The impact of system continuity on trust highlights the critical role of technical reliability in this relationship (Milićević et al., 2021).

Institutional image and digital identity (theme 3) are addressed in four sub-themes. Digital maturity level is seen to have a decisive impact on international rankings and corporate reputation (Davidaviciene & Limanovskaja, 2025; Marks et al., 2020; Wang et al., 2023). The alignment of digital social responsibility practices with corporate strategy also strengthens stakeholder trust, according to findings within this theme (Mohamed Hashim et al., 2022; Mothafar et al., 2024). In the dimension of digital participation quality and organizational resilience (theme 4), it was determined that digital participation mechanisms act as a buffer protecting trust during periods of uncertainty and crisis (Gull et al., 2024; Teixeira et al., 2021).

The Impact of Communication Quality on Institutional Trust

The impact of communication quality on organizational trust is examined within the framework of five main themes: the role of consistent communication in building trust (theme 1), the impact of educator digital competence on trust (theme 2), feedback mechanisms and two-way communication (theme 3), the combined trust effect of system quality and communication quality (theme 4), and the reflection of stakeholder engagement on organizational interaction (theme 5). These findings are presented in **Table 3**.

Table 4. The mediating role of communication quality between digital integration and institutional trust

Theme	Sub-theme	Related research
System quality-communication-trust chain (theme 1)	The mediating function of communication quality in the information system success model	Almaiah et al. (2022), Martins et al. (2019), Mohamed Hashim et al. (2022)
	Transferring system reliability to trust through communication quality	Devisakti and Muftahu (2023), Milićević et al. (2021)
	Shaping trust through communication in institutional digital strategy	Bianchi et al. (2021), Mohamed Hashim et al. (2022), Valdés et al. (2021)
Digital competence-communication-trust relationship (theme 2)	The impact of faculty member's digital competence on trust through the quality of communication.	de las Mercedes de Obesso et al. (2023), Panda et al. (2026), Zhao et al. (2021)
	The cycle between student digital competence and the quality of corporate communication.	Budai et al. (2023), López-Nuñez et al. (2024)
	Transforming corporate capacity and digital infrastructure into trust through communication.	Coral and Bernuy (2022), Fleaca et al. (2022), Gkrimpizi et al. (2023)
Contextual moderating factors (theme 3)	The level of development regulates the mediating relationship.	Almaiah et al. (2022), Matveeva et al. (2020), Uoc (2023)
	How corporate culture and resistance to change dynamics influence the mediating process.	Gull et al. (2024), Romero et al. (2023)

The role of consistent communication in building trust (theme 1) is highlighted in three sub-themes. Maintaining uninterrupted and predictable communication between organizations and their stakeholders directly reinforces the perception of trust (Mialkovska et al., 2023; Mohamed Hashim et al., 2022; Romero et al., 2023). The clarity of corporate messages strengthens the perception of transparency, while timely information delivery supports expectation management (Milićević et al., 2021; Sahni et al., 2025).

The impact of faculty members' digital competence on trust (theme 2) is addressed in four sub-themes. It is observed that the level of digital skills of faculty members determines the quality of communication and, consequently, student trust (de las Mercedes de Obesso et al., 2023; López-Nuñez et al., 2024; Panda et al., 2026). The shaping of institutional trust perception by the quality of managerial communication is a critical sub-theme that complements this theme (Mohamed Hashim et al., 2022; Teixeira et al., 2021). In the dimension of feedback mechanisms and two-way communication (theme 3), obtaining and responding to student opinions functions as a mechanism that nourishes the institutional trust cycle (Devisakti & Muftahu, 2023; Mialkovska et al., 2023). The combined trust effect of system quality and communication quality (theme 4) and the reflection of stakeholder participation on institutional interaction (theme 5) complete this network of relationships.

The Mediating Role of Communication Quality

The mediating role of communication quality in the relationship between digital integration and corporate trust has been analyzed within the framework of three themes: system quality-communication-trust chain (theme 1), digital competence-communication-trust relationship (theme 2), and contextual moderating factors (theme 3). These findings are presented in **Table 4**.

The system quality-communication-trust chain (theme 1) provides the most direct evidence for the mediating role of communication quality. This is supported by a study based on DeLone and McLean's information system success model, which establishes the system quality → communication quality → trust chain (Martins et al., 2019). The finding that corporate digital strategy shapes trust through communication further reinforces this theme (Mohamed Hashim et al., 2022; Valdés et al., 2021). The relationship between digital competence, communication, and trust (theme 2) is shaped by three sub-themes. It is observed that faculty members' digital competence first improves communication quality, and this improvement then reflects on organizational trust, operating as a chain reaction (de las Mercedes de Obesso et al., 2023; Panda et al., 2026; Zhao et al., 2021). Contextual moderating factors (theme 3) reveal that the mediating relationship does not operate independently of context; variables such as level of development, organizational culture, and resistance to change strongly regulate this process (Almaiah et al., 2022; Gull et al., 2024).

According to findings digital integration in higher education shapes both communication quality and institutional trust, organizing its findings around three interconnected dimensions. The first dimension indicates the direct impacts of digital integration on institutional trust, identifying four key mechanisms. These

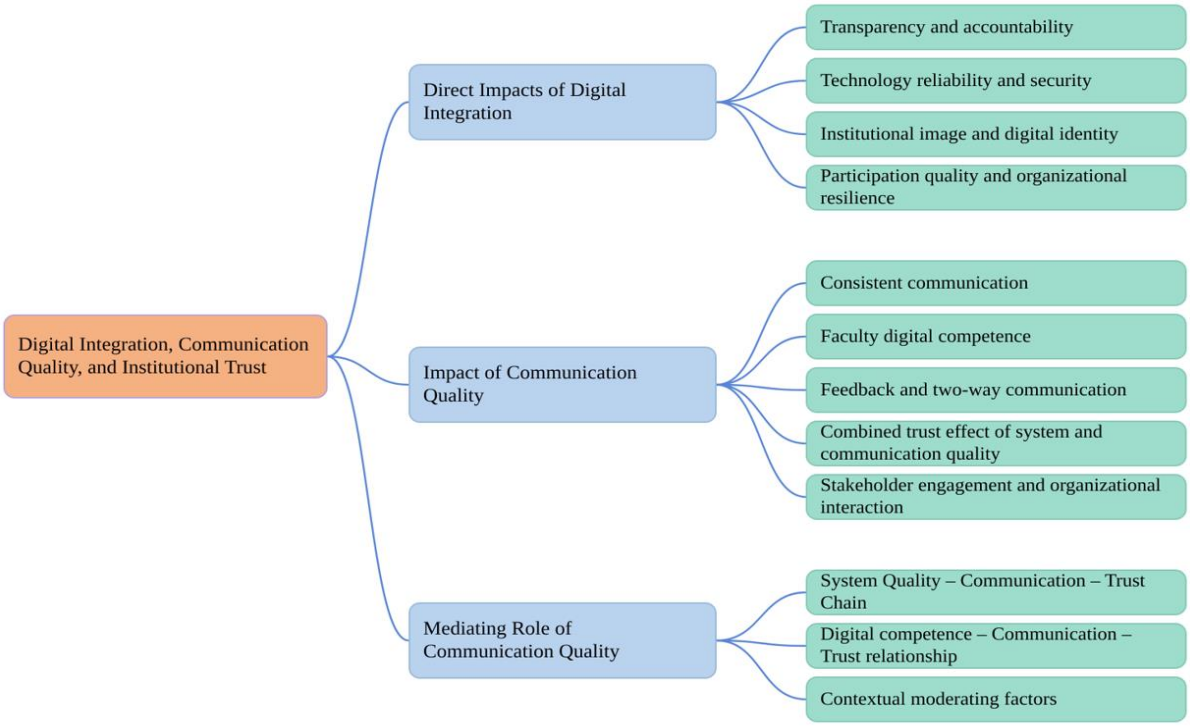


Figure 5. The effects of digital integration in higher education on communication quality and institutional trust (created by the authors)

are transparency and accountability, technology reliability and system security, institutional image and digital identity, and digital participation quality alongside organizational resilience. The second dimension focused on how communication quality shapes institutional trust, highlighting the roles of consistent communication, faculty members' digital competence, feedback and two-way communication, system and communication quality effects, and stakeholder engagement and interaction. The third dimension examines the mediating role of communication quality, structured around three analytical threads. These are the system quality-communication-trust chain, the digital competence-communication-trust relationship, and contextual moderating factors. Generally, the framework suggests that digital integration does not directly determine institutional trust in isolation; rather, communication quality serves as a critical bridge through which the effects of digital integration are transmitted and amplified within higher education institutions (**Figure 5**).

DISCUSSION

This research, based on existing studies in the literature, revealed the effects of digital integration on communication quality and institutional trust in higher education. Furthermore, it attempted to determine the role of communication quality in the relationship between digital integration and institutional trust. The research findings reveal that the effects of digital integration on communication quality and institutional trust in higher education exhibit a bidirectional and context-sensitive structure. This key finding suggests that these relationships should be considered within a complex system dynamic framework, rather than as a linear causal chain. When examining the findings related to the first sub-research question, it is seen that digital tools have both positive and negative effects on the quality of communication. Research supports the strong contributions of digital integration in terms of increased accessibility, flexibility, and two-way communication capacity (Alenezi et al., 2023; Mialkovska et al., 2023). This finding aligns with studies highlighting ICT's capacity to create educational value and its global reach potential (Orr et al., 2019). Furthermore, it is observed that a lack of digital competence, loss of interpersonal interaction, and technical problems can seriously impair the quality of communication (de las Mercedes de Obesso et al., 2023; Gkrimpizi et al., 2023). This reflects the fact that digital tools should not be considered merely as a technical infrastructure element, but rather as a comprehensive transformation component that must be evaluated in conjunction with institutional capacity, human capital, and organizational culture.

Findings regarding context-specific differentiations are another prominent theme in the research. It appears that higher education institutions in developing countries are unable to fully benefit from the contribution of digital integration to communication quality due to inadequate infrastructure (Almaiah et al., 2022; Uoc, 2023). This situation may also indicate that digital inequality in higher education creates a direct mechanism of injustice on communication quality. The persistence of hybrid models after the pandemic has created both opportunities and new management challenges (Romero et al., 2023). The capacity of institutions to effectively manage these models has become a determinant of communication quality (Sahni et al., 2025). This finding is consistent with research addressing the lasting transformative impact of COVID-19 on higher education systems.

The findings related to the second sub-research question show that the direct impact of digital integration on organizational trust operates through four key systems: transparency and accountability, technological reliability, corporate image, and the quality of digital engagement. These mechanisms are not independent of each other; they form a dynamic whole that feeds and strengthens each other. The fact that digital systems make organizational processes more visible increases the perception of transparency and, consequently, trust (Mohamed Hashim et al., 2022). This is conceptually significant because it transfers the transparency-trust relationship (Bianchi et al., 2021) into the organizational trust literature to the digital context. According to findings on the dimension of technology reliability, the positive impact of system quality and uninterrupted operation on trust is as decisive as the negative impact of security breaches (Almaiah et al., 2022). This dual effect shows that organizations should consider their digital infrastructure investments not merely as operational but as a strategic trust management tool. The impact of digital maturity on corporate prestige and international rankings (Marks et al., 2020) positions digital trust as an integral component of corporate competitiveness, moving it beyond a purely operational concept (Davidaviciene & Limanovskaja, 2025).

The findings obtained within the context of the third sub-research question reveal that communication quality has an independent and significant impact on institutional trust. This impact operates through five different mechanisms. The themes of consistency and predictability show that the dimensions determining the quality of communication directly reflect trust (Mialkovska et al., 2023; Romero et al., 2023). The digital competence of faculty members indirectly affects student trust by shaping communication quality; this finding reproduces the traditional relationship between educator competence and student trust in a digital context (de las Mercedes de Obesso et al., 2023; Panda et al., 2026). Findings regarding feedback mechanisms reveal that trust is affected not only by the quality of the message received but also by the quality of the response given, emphasizing the critical role of two-way communication in trust formation (Devisakti & Muftahu, 2023; Mialkovska et al., 2023).

The transfer of system quality to trust through communication quality demonstrates that technological and human dimensions are inextricably intertwined in trust formation (Almaiah et al., 2022; Martins et al., 2019). This finding shows that the DeLone-McLean model retains its strong explanatory power in the context of higher education and can be successfully adapted to digital environments. The contribution of stakeholder participation to the trust cycle offers a perspective that conceptualizes communication quality not merely as information transfer, but as a process of participation and shared meaning-making.

Findings for the fourth sub-research question reveal a strong pattern of consistent indirect evidence regarding the mediating role of communication quality; however, research directly examining this role remains extremely limited. The system quality → communication quality → trust chain represents the strongest and most systematic evidence available (Martins et al., 2019). This finding points to the theoretical efficiency of integrating the DeLone-McLean model into higher education trust studies. The digital competence → communication quality → trust chain conceptually strengthens the mediating role of human capital in this process (de las Mercedes de Obesso et al., 2023; Zhao et al., 2021). Findings regarding contextual moderating factors reveal that the mediating mechanism does not have a universal functioning; the level of development, organizational culture, and organizational change capacity strongly regulate this process (Almaiah et al., 2022; Gull et al., 2024; Uoc, 2023). This finding contributes to theoretical enrichment by relating the emphasis on contextual sensitivity in the change management literature to digital trust research.

This research provides a comprehensive and systematic conceptualization of the relationship between digital integration, communication quality, and corporate trust as a theoretical contribution. It clearly

demonstrates that communication quality is not merely a process outcome, but functions as an active bridging mechanism in the dynamic relationship between digital integration and corporate trust. In terms of practical implications, digital transformation strategies should not be limited to technical infrastructure investments; they should be addressed within an integrated framework encompassing the development of communication quality standards, the systematic enhancement of educator competencies, and trust management approaches that support stakeholder participation.

CONCLUSION AND RECOMMENDATIONS

This study aimed to reveal the effects of digital integration in higher education on communication quality and institutional trust through a systematic literature review. Analysis of 44 studies yielded the following key conclusions: Digital integration can both improve and weaken communication quality; this duality depends on the simultaneous development of technological infrastructure, institutional capacity, and human capital. Digital integration directly impacts institutional trust through mechanisms such as transparency, system reliability, and corporate image. Communication quality is a significant predictor of institutional trust, and this relationship exhibits context-independent consistency. While indirect evidence regarding the mediating role of communication quality is consistent, there is a research gap requiring direct empirical testing.

In the context of recommendations for higher education administrators, institutions should prioritize the quality of their communication infrastructure in their digital transformation strategies. Improving the digital competencies of faculty members should be considered one of the most effective ways to enhance communication quality and thus strengthen institutional trust. Investments in data security and digital transparency practices should be prioritized in institutional budgets as indispensable components of building institutional trust. In addition, strengthening feedback mechanisms will improve the quality of two-way communication, fostering the trust cycle.

In the context of recommendations for future research, quantitative studies directly testing the relationship between digital integration, communication quality, and institutional trust should be conducted, particularly using structural equation modeling. It is essential to focus on developing measurement tools which assess the quality of communication in terms of higher education specifically, since there are many methodological weaknesses in this regard. Performing comparative studies in various locations will result in recognizing the effect of context on moderation. There are certain shortcomings to this study that must be noted. For instance, the utilization of just two databases and the sole inclusion of English-based literature might result in some important papers written in other languages being overlooked. Nevertheless, there are certain gaps that have been found in this field of study by the current study, thus providing a promising avenue for further research.

Author contributions: LSC: conceptualization, investigation, methodology, writing – original draft; **SPZ:** data curation, formal analysis, visualization, writing – review & editing; **TIL:** methodology, validation, writing – review & editing; **NLS:** investigation, methodology, resources, writing – review & editing; **ZMS:** data curation, investigation, writing – review & editing; **LYG:** conceptualization, writing – review & editing. All authors approved the final version of the article. All authors approved the final version of the article.

Funding: The authors received no financial support for the research and/or authorship of this article.

Ethics declaration: This study is a systematic literature review based solely on previously published research; therefore, it does not involve any human or animal participants and does not require any ethical approval.

AI statement: No generative AI or AI-based tools were used in the preparation of this manuscript.

Declaration of interest: The authors declared no competing interest.

Data availability: Data generated or analyzed during this study are available from the authors on request.

REFERENCES

*Included systematic review

*Aditya, B. R., Ferdiana, R., & Kusumawardani, S. S. (2022a). A barrier diagnostic framework in process of digital transformation in higher education institutions. *Journal of Applied Research in Higher Education, 14*(2), 749-761. https://doi.org/10.1108/JARHE-12-2020-0454

*Aditya, B. R., Ferdiana, R., & Kusumawardani, S. S. (2022b). Identifying and prioritizing barriers to digital transformation in higher education: A case study in Indonesia. *International Journal of Innovation Science, 14*(3-4), 445-460. https://doi.org/10.1108/IJIS-11-2020-0262

*Alenezi, M. (2023). Digital learning and digital institution in higher education. *Education Sciences, 13*(1), Article 88. https://doi.org/10.3390/educsci13010088

*Alenezi, M., Wardat, S., & Akour, M. (2023). The need of integrating digital education in higher education: Challenges and opportunities. *Sustainability, 15*(6), Article 4782. https://doi.org/10.3390/su15064782

*Almaiah, M. A., Alhumaid, K., Aldhuhoori, A., Alnazzawi, N., Aburayya, A., Alfaisal, R., Salloum, S. A., Lutfi, A., Al Mulhem, A., Alkhdour, T., Awad, A. B., & Shehab, R. (2022). Factors affecting the adoption of digital information technologies in higher education: An empirical study. *Electronics, 11*(21), Article 3572. https://doi.org/10.3390/electronics11213572

*Aparisi-Torrijo, S., García-Hurtado, D., & Botella-Carrubi, D. (2024). Towards digitalization in higher education: Conceptual and bibliometric paradigm. *ESIC Market, 55*(2), Article e349. https://doi.org/10.7200/esicm.55.349

Aveyard, H. (2014). *Doing a literature review in health and social care: A practical guide* (3rd ed.). McGraw-Hill Education.

*Beloev, H., Smrikarov, A., Voinohovska, V., & Ivanova, G. (2023). Determining the degree of digitalization of a higher education institution. *Strategies for Policy in Science and Education, 31*(4s), 9-21. https://doi.org/10.53656/str2023-4s-1-det

*Benavides, L. M. C., Tamayo Arias, J. A., Arango Serna, M. D., Branch Bedoya, J. W., & Burgos, D. (2020). Digital transformation in higher education institutions: A systematic literature review. *Sensors, 20*(11), Article 3291. https://doi.org/10.3390/s20113291

*Benavides, L. M. C., Tamayo Arias, J. A., Burgos, D., & Martens, A. (2026). Measuring digital transformation in higher education institutions—Content validity instrument. *Applied Computing and Informatics, 22*(1-2), 129-144. https://doi.org/10.1108/ACI-03-2022-0069

*Bianchi, I. S., Sousa, R. D., & Pereira, R. (2021). Information technology governance for higher education institutions: A multi-country study. *Informatics, 8*(2), Article 26. https://doi.org/10.3390/informatics8020026

*Bravo-Jaico, J., Alarcón, R., Valdivia, C., Germán, N., Aquino, J., Serquén, O., Guevara, L., & Moreno Heredia, A. (2025a). Model for assessing the maturity level of digital transformation in higher education institutions: A theoretical-methodological approach. *Frontiers in Education, 10*. https://doi.org/10.3389/feduc.2025.1581648

*Bravo-Jaico, J., Maquen-Niño, G. L. E., Germán, N., Valdivia, C., Alarcón, R., Aquino, J., & Serquén, O. (2025b). Assessing digital transformation maturity in higher education institutions: A correlational analysis by actors and dimensions. *Frontiers in Computer Science, 7*. https://doi.org/10.3389/fcomp.2025.1549262

Brooks, D. C., & McCormack, M. (2020). Driving digital transformation in higher education. *ECAR*. https://www.educause.edu/ecar/research-publications/driving-digital-transformation-in-higher-education/2020/defining-digital-transformation

*Budai, B. B., Csuhai, S., & Tózsa, I. (2023). Digital competence development in public administration higher education. *Sustainability, 15*(16), Article 12462. https://doi.org/10.3390/su151612462

*Carmo, J. E. S., Lacerda, D. P., Klingenberg, C. O., & Piran, F. A. S. (2025). Digital transformation in the management of higher education institutions. *Sustainable Futures, 9*, Article 100692. https://doi.org/10.1016/j.sftr.2025.100692

Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (6th ed.). Routledge. https://doi.org/10.4324/9780203029053

*Coral, M. A., & Bernuy, A. E. (2022). Challenges in the digital transformation processes in higher education institutions and universities. *International Journal of Information Technologies and Systems Approach, 15*(1). https://doi.org/10.4018/IJITSA.290002

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE.

*Davidaviciene, V., & Limanovskaja, A. (2025). Digital transformation of educational processes in higher education: Tendences and consequences. *Journal of Competitiveness, 17*(3), 202-221. https://doi.org/10.7441/joc.2025.03.08

*de las Mercedes de Obesso, M., Núñez-Canal, M., & Pérez-Rivero, C. A. (2023). How do students perceive educators' digital competence in higher education? *Technological Forecasting and Social Change, 188*, Article 122284. https://doi.org/10.1016/j.techfore.2022.122284

*Devisakti, A., & Muftahu, M. (2023). Digitalization in higher education: Does personal innovativeness matter in digital learning? *Interactive Technology and Smart Education, 20*(2), 257-270. https://doi.org/10.1108/ITSE-10-2021-0182

*Fernández, A., Gómez, B., Binjaku, K., & Meçe, E. K. (2023). Digital transformation initiatives in higher education institutions: A multivocal literature review. *Education and Information Technologies, 28*(10), 12351-12382. https://doi.org/10.1007/s10639-022-11544-0

*Fleaca, B., Fleaca, E., & Maiduc, S. (2022). Digital transformation and current challenges of higher education. *TEM Journal: Technology, Education, Management, Informatics, 11*(3), 1235-1241. https://doi.org/10.18421/TEM113-32

*Gkrimpizi, T., Peristeras, V., & Magnisalis, I. (2023). Classification of barriers to digital transformation in higher education institutions: Systematic literature review. *Education Sciences, 13*(7), Article 746. https://doi.org/10.3390/educsci13070746

*Gkrimpizi, T., Peristeras, V., & Magnisalis, I. (2024). Defining the meaning and scope of digital transformation in higher education institutions. *Administrative Sciences, 14*(3), Article 48. https://doi.org/10.3390/admsci14030048

*Gull, M., Parveen, S., & Sridadi, A. R. (2024). Resilient higher educational institutions in a world of digital transformation. *Foresight, 26*(5), 755-774. https://doi.org/10.1108/FS-12-2022-0186

*Haddade, H., Nur, A., Rasyid, M. N. A., & Abd Raviq, R. (2024). Quality assurance strategies of higher education in digital era: An anthropology of education study in Islamic higher education institution. *Quality Assurance in Education, 32*(1), 46-63. https://doi.org/10.1108/QAE-05-2023-0084

Lee, Y.-J., Davis, R. O., & Choi, J.-I. (2025). Integrating generative AI into EFL writing: University students' strategies and perceptions. *Online Journal of Communication and Media Technologies, 15*(4), Article e202541. https://doi.org/10.30935/ojcmt/17545

*López-Nuñez, J.-A., Alonso-García, S., Berral-Ortiz, B., & Victoria-Maldonado, J.-J. (2024). A systematic review of digital competence evaluation in higher education. *Education Sciences, 14*(11), Article 1181. https://doi.org/10.3390/educsci14111181

*Marks, A., Al-Ali, M., Atassi, R., Abualkishik, A. Z., & Rezgui, Y. (2020). Digital transformation in higher education: A framework for maturity assessment. *International Journal of Advanced Computer Science and Applications, 11*(12), 504-513. https://doi.org/10.14569/IJACSA.2020.0111261

*Martins, J., Branco, F., Gonçalves, R., Au-Yong-Oliveira, M., Oliveira, T., Naranjo-Zolotov, M., & Cruz-Jesus, F. (2019). Assessing the success behind the use of education management information systems in higher education. *Telematics and Informatics, 38*, 182-193. https://doi.org/10.1016/j.tele.2018.10.001

*Matveeva, S. V., Akatova, N. S., Shcherbakov, Y. I., & Filinova, N. V. (2020). Digitalization of higher education and professional development of educators: Technologies and new opportunities. *Amazonia Investiga, 9*(29), 77-86. https://doi.org/10.34069/AI/2020.29.05.10

*Mercader, C. (2020). Explanatory model of barriers to integration of digital technologies in higher education institutions. *Education and Information Technologies, 25*(6), 5133-5147. https://doi.org/10.1007/s10639-020-10222-3

*Mialkovska, L., Redchuk, R., Sushyk, I., Martyniuk, Y., Maiboroda, O., & Savchuk, N. (2023). Gestão social e comunicações digitais como componentes importantes do ensino superior moderno [Social management and digital communications as important components of modern higher education]. *Cadernos de Educação Tecnologia e Sociedade, 16*(1), 143-152. https://doi.org/10.14571/brajets.v16.n1.143-152

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). SAGE.

*Milićević, V., Denić, N., Milićević, Z., Arsić, L., Spasić-Stojković, M., Petković, D., Stojanović, J., Krkić, M., Milovančević, N. S., & Jovanović, A. (2021). E-learning perspectives in higher education institutions. *Technological Forecasting and Social Change, 166*, Article 120618. https://doi.org/10.1016/j.techfore.2021.120618

*Mohamed Hashim, M. A., Tlemsani, I., & Matthews, R. (2022). Higher education strategy in digital transformation. *Education and Information Technologies, 27*(3), 3171-3195. https://doi.org/10.1007/s10639-021-10739-1

*Mothafar, N. A., Zhang, J., Alsoffary, A., Masoomi, B., Al-Barakani, A., & Alhady, O. S. (2024). Digital social responsibility towards digital education of international higher education students' institutions: Digital culture as mediator. *Heliyon, 10*(17), Article e36442. https://doi.org/10.1016/j.heliyon.2024.e36442 (Retracted article retraction notice: https://doi.org/10.1016/j.heliyon.2025.e44081)

*Orr, D., Weller, M., & Farrow, R. (2019). How is digitalisation affecting the flexibility and openness of higher education provision? Results of a global survey using a new conceptual model. *Journal of Interactive Media in Education, 2019*(1), Article 5. https://doi.org/10.5334/jime.523

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, Article n71. https://doi.org/10.1136/bmj.n71

*Panda, G., Dash, M. K., Kaswan, M. S., & Chaudhary, R. (2026). Exploring the impact of digital technology in Indian higher education: A comprehensive analysis. *The TQM Journal, 38*(2), 434-458. https://doi.org/10.1108/TQM-02-2024-0093

*Romero, M., Romeu, T., Guitert, M., & Baztán, P. (2023). La transformación digital en la educación superior: El caso de la UOC [Digital transformation in higher education: The UOC case]. *RIED: Revista Iberoamericana de Educación a Distancia, 26*(1), 163-179. https://doi.org/10.5944/ried.26.1.33998

*Sahni, S., Verma, S., & Kaurav, R. P. S. (2025). Understanding digital transformation challenges for online learning and teaching in higher education institutions: A review and research framework. *Benchmarking: An International Journal, 32*(5), 1487-1521. https://doi.org/10.1108/BIJ-04-2022-0245

*Santos, C., Pedro, N., & Mattar, J. (2021). Competencia digital de profesores de educación superior: Análisis de factores académicos e institucionales [Digital competence of higher education faculty: An analysis of academic and institutional factors]. *Obra Digital*, (21), 69-92. https://doi.org/10.25029/od.2021.311.21

*Shard, Kumar, D., & Koul, S. (2024). Digital transformation in higher education: A comprehensive review of e-learning adoption. *Human Systems Management, 43*(4), 433-454. https://doi.org/10.3233/HSM-230190

Singun, A. (2025). Unveiling the barriers to digital transformation in higher education institutions: A systematic literature review. *Discover Education, 4*(1), Article 37. https://doi.org/10.1007/s44217-025-00430-9

Tang, J., Huang, P., & Yan, S. (2025). Digital transformation in higher education: Logical framework, practical dilemmas, and implementation approaches. *Frontiers in Psychology, 16*. https://doi.org/10.3389/fpsyg.2025.1565591

*Teixeira, A. F., Gonçalves, M. J. A., & Taylor, M. de L. M. (2021). How higher education institutions are driving to digital transformation: A case study. *Education Sciences, 11*(10), Article 636. https://doi.org/10.3390/educsci11100636

Ting, T. T., Lee, K. T., Lim, S. M., Lai, C. C., Omar, M. A., Alin, J., & Meri, A. (2023). Assessing the identity of digital technology in education in the age of digital communication. *Online Journal of Communication and Media Technologies, 13*(4), Article e202353. https://doi.org/10.30935/ojcmt/13695

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management, 14*(3), 207-222. https://doi.org/10.1111/1467-8551.00375

*Uoc, T. M. (2023). Digital transformation in higher education in Vietnam today. *Revista de Gestão e Secretariado, 14*(8), 14582-14599. https://doi.org/10.7769/gesec.v14i8.2699

*Valdés, K. N., y Alpera, S. Q., & Cerdá Suárez, L. M. (2021). An institutional perspective for evaluating digital transformation in higher education: Insights from the Chilean case. *Sustainability, 13*(17), Article 9850. https://doi.org/10.3390/su13179850

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research, 122*, 889-901. https://doi.org/10.1016/j.jbusres.2019.09.022

*Wang, K., Li, B., Tian, T., Zakuan, N., & Rani, P. (2023). Evaluate the drivers for digital transformation in higher education institutions in the era of industry 4.0 based on decision-making method. *Journal of Innovation & Knowledge, 8*(3), Article 100364. https://doi.org/10.1016/j.jik.2023.100364

*Zhao, Y., Sánchez Gómez, M. C., Pinto Llorente, A. M., & Zhao, L. (2021). Digital competence in higher education: Students' perception and personal factors. *Sustainability, 13*(21), Article 12184. https://doi.org/10.3390/su132112184

APPENDIX A

Table A1. PRISMA 2020 checklist (Page et al., 2021)

Section/topic	Item	Checklist item	Location where item is reported	Status and comment
TITLE				
Title	1	Identify the report as a systematic review.	Title	Reported. The title ends with "A systematic review".
ABSTRACT				
Abstract	2	See the PRISMA 2020 for abstracts checklist.	Abstract	**Partially reported.** The abstract states the objective, data sources (WoS and Scopus), number of included studies (44), publication period, synthesis method (content analysis), main findings and implications. Registration, risk-of-bias assessment, limitations and funding are not included.
INTRODUCTION				
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Introduction; theoretical framework	**Reported.** Existing research on digital transformation is summarized and the gap (little attention to communication quality and trust) is identified.
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Abstract; end of Introduction/Theoretical Framework	**Reported.** Main aim and sub-research questions (effects on communication quality, direct effects on trust, effect of communication quality on trust, mediating role) are stated; the sub-questions are answered in the Results and Discussion.
METHODS				
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Method – search strategy and inclusion/ exclusion criteria	**Reported.** Full-text availability in WoS/Scopus, English language, 2019–2026, and focus on digital integration, communication quality or institutional trust; exclusion reasons (1)–(3) are listed. Grouping was by theme and sub-theme (data analysis).
Information sources	6	Specify all databases, registers, websites, organizations, reference lists and other sources searched or consulted, and the date last searched.	Method – search strategy and inclusion/ exclusion criteria	**Reported.** Scopus and Web of Science; search conducted in March 2026. No other sources were searched.
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Method – search strategy and inclusion/ exclusion criteria	**Reported.** Full Boolean expressions and searched fields are given for both databases; limits: 2019-2026 and English only.
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria, including how many reviewers screened each record and whether they worked independently, and any automation tools used.	Method – search strategy; **Figure 2** and the paragraph that follows	**Partially reported.** The staged selection (title, abstract, full text) is described and shown in Figure 2. The number of reviewers screening each record, independence of screening and use of automation tools are not stated.
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data, whether they worked independently, any processes for obtaining or confirming data from investigators, and any automation tools used.	Method – data analysis; validity and reliability	**Partially reported.** Data were extracted and coded with the academic publication evaluation form; two experts coded independently and agreement was 84%. Contacting study authors and automation tools are not mentioned (not applicable to document-based extraction).
Data items	10a	List and define all outcomes for which data were sought, and whether all results compatible with each outcome domain were sought.	Method – search strategy; data analysis	**Partially reported.** Coded outcomes are communication quality, institutional trust and their relationship (themes and sub-themes); no formal outcome definitions are given.
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources) and any assumptions made about missing or unclear information.	Method – search strategy; data analysis	**Partially reported.** Author, publication year, title, database, subject, journal, abstract, publication type and research topic were recorded. Assumptions about missing information are not described.
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and how the assessments were used in the synthesis.	Method – **Figure 2** paragraph	**Not reported.** Studies were checked for suitability and quality against the inclusion criteria at the full-text stage, but no formal risk-of-bias tool was used.

Table A1 (Continued).

Section/topic	Item	Checklist item	Location where item is reported	Status and comment
Effect measures	12	Specify for each outcome the effect measure(s) used in the synthesis or presentation of results.	-	**Not applicable.** The synthesis is qualitative (content analysis); no effect measures were used.
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis.	Method – data analysis; results	**Reported.** All 44 included studies were coded; each study was assigned to themes and sub-themes (**Table 1**-**Table 4**).
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics or data conversions.	-	**Not applicable.** No quantitative data conversion was required.
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Results – **Table 1**-**Table 4**; **Figure 3**-**Figure 5**	**Reported.** Tabulation by theme/sub-theme with supporting studies; distribution by journal (**Figure 3**) and year (**Figure 4**); conceptual framework (**Figure 5**).
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s).	Method – data analysis; validity and reliability	**Reported.** Document analysis with content analysis; frequencies of message elements expressed as themes and sub-themes; inter-coder reliability computed with Miles and Huberman's (1994) formula.
	13e	Describe any methods used to explore possible causes of heterogeneity among study results.	-	**Not applicable.** No quantitative synthesis; context-related differences are discussed narratively (discussion).
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	-	**Not reported.** No sensitivity analysis was conducted.
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	-	**Not reported.** Not assessed; the restriction to two databases and English-language studies is acknowledged as a limitation (conclusion and recommendations).
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	-	**Not reported.** No formal certainty assessment (e.g. GRADE) was performed.
RESULTS				
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Method – **Figure 2** and the paragraph that follows	**Reported.** 312 records identified; 102 duplicates removed; 210 screened by title (56 excluded); 154 abstracts reviewed (62 excluded); 92 full texts assessed (48 excluded); 44 studies included.
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Method – **Figure 2** and the paragraph that follows	**Partially reported.** Exclusion reasons are given for each stage; individual excluded full-text studies are not listed.
Study characteristics	17	Cite each included study and present its characteristics.	Results – **Figure 3**-**Figure 4**; **Table 1**-**Table 4**; references (asterisked entries)	**Partially reported.** All 44 included studies are cited and marked with an asterisk; distribution by journal and year is presented. Design, setting and sample characteristics of individual studies are not tabulated.
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	-	**Not reported.** See item 11.
Results of individual studies	19	For all outcomes, present, for each study, summary statistics for each group (where appropriate) and an effect estimate and its precision, ideally using structured tables or plots.	Results – **Table 1**-**Table 4**	**Partially reported.** Findings are presented by theme with the supporting studies; no summary statistics or effect estimates (not applicable).
Results of syntheses	20a	For each synthesis, briefly summarize the characteristics and risk of bias among contributing studies.	Results	**Partially reported.** Contributing studies are identified for each theme; risk of bias was not assessed.
	20b	Present results of all statistical syntheses conducted.	-	**Not applicable.** No statistical synthesis; frequencies of themes and sub-themes are reported.
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	-	**Not applicable.** See item 13e.
	20d	Present results of all sensitivity analyses conducted.	-	**Not reported.** See item 13f.
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	-	**Not reported.** See item 14.

Table A1 (Continued).

Section/topic	Item	Checklist item	Location where item is reported	Status and comment
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	-	**Not reported.** See item 15. The discussion notes that direct evidence on the mediating role of communication quality is very limited.
DISCUSSION				
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Discussion	**Reported.**
	23b	Discuss any limitations of the evidence included in the review.	Discussion; conclusion and recommendations	**Partially reported.** Limited direct evidence on the mediating role and methodological weaknesses of communication-quality measures are noted. The retracted study (Mothafar et al., 2024) is flagged in the method section.
	23c	Discuss any limitations of the review processes used.	Conclusion and Recommendations	**Reported.** Use of only two databases and English-language studies is acknowledged.
	23d	Discuss implications of the results for practice, policy, and future research.	Discussion; conclusion and recommendations	**Reported.**

