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The Role of Digital Transformation in Enhancing the Quality of Higher Education in University Institutions: An Analytical and Empirical Study

Üniversite Kurumlarında Yükseköğretim Kalitesinin Geliştirilmesinde Dijital Dönüşümün Rolü: Analitik ve Uygulamalı Bir Araştırma

Mansour Aissani¹

Lecturer (Class A), Faculty of Economic, Commercial and Management Sciences, University of Algiers 3, Algeria
Laboratory of Economic Transformation Strategies

Email: mansouraissani2@gmail.com

ORCID: <https://orcid.org/0009-0008-7692-5452>

Ali Bouamama²

Lecturer (Class B), Faculty of Economic, Commercial and Management Sciences, University of Algiers 3, Algeria
Laboratory of Economic Transformation Strategies

Email: p.bou3mama1@yahoo.fr

ORCID: <https://orcid.org/0009-0003-4026-2056>

Youssef Bahi³

Lecturer (Class C), Faculty of Economic, Commercial and Management Sciences, University of Algiers 3, Algeria

Email: abou.adel97@gmail.com

ORCID: <https://orcid.org/0009-0007-3460-8048>

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Abstract

Digital transformation has become a strategic priority for higher education institutions seeking to improve teaching effectiveness, academic assessment, learning outcomes, institutional governance, and access to educational services. This study examines the role of digital transformation in enhancing the quality of higher education, with particular emphasis on the perceptions of faculty members at the Faculty of Economic, Commercial and Management Sciences of the University of Algiers 3. It also evaluates the level of digital transformation adoption, explores its relationship with perceived educational quality, and determines whether faculty assessments differ according to selected demographic characteristics. The study employed a descriptive-analytical design and combined a review of the conceptual literature with an empirical investigation. Data were collected from faculty members using a structured questionnaire and analyzed with IBM SPSS Statistics, Version 27.

Öz

Dijital dönüşüm; öğretimin etkililiğini, akademik değerlendirmeyi, öğrenme çıktılarını, kurumsal yönetişimi ve eğitim hizmetlerine erişimi geliştirmeyi amaçlayan yükseköğretim kurumları açısından stratejik bir öncelik hâline gelmiştir. Bu çalışma, dijital dönüşümün yükseköğretim kalitesinin geliştirilmesindeki rolünü, Cezayir 3 Üniversitesi İktisadi, Ticari ve Yönetim Bilimleri Fakültesinde görev yapan öğretim üyelerinin değerlendirmeleri üzerinden incelemektedir. Araştırmada ayrıca dijital dönüşümün benimsenme düzeyinin belirlenmesi, algılanan eğitim kalitesiyle ilişkisinin incelenmesi ve öğretim üyelerinin değerlendirmelerinin seçilmiş demografik özelliklere göre farklılaşıp farklılaşmadığının ortaya konulması amaçlanmıştır. Çalışmada betimsel-analitik araştırma deseni benimsenmiş; kavramsal literatür incelemesi uygulamalı bir araştırma ile birleştirilmiştir. Veriler, öğretim üyelerine uygulanan yapılandırılmış bir anket aracılığıyla toplanmış ve IBM SPSS

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Descriptive statistics were used to assess the principal study dimensions, while appropriate inferential procedures were employed to examine relationships between digital transformation and higher education quality and to test differences associated with gender and professional experience. The results indicate that digital transformation contributes positively to educational quality by strengthening academic interaction, facilitating access to learning resources, supporting assessment processes, and improving the efficiency and responsiveness of university services. The findings further demonstrate a statistically significant relationship between digital transformation and perceived higher education quality. In contrast, differences associated with the examined demographic variables were not substantial, suggesting broad agreement among faculty members concerning the educational importance of digitalization. The study concludes that effective digital transformation requires more than technological infrastructure; it also depends on institutional strategy, digital competence, organizational readiness, data governance, and continuous professional development. Universities should therefore adopt integrated digital policies aligned with academic objectives, quality standards, and the evolving needs of students and the labor market. Keywords: digital transformation; higher education; educational quality; university institutions; academic assessment; learning outcomes	Statistics 27 programıyla analiz edilmiştir. Araştırmanın temel boyutlarını değerlendirmek için betimsel istatistiklerden; dijital dönüşüm ile yükseköğretim kalitesi arasındaki ilişkiyi ve cinsiyet ile mesleki deneyime bağlı farklılıkları incelemek için uygun çıkarımsal analizlerden yararlanılmıştır. Bulgular, dijital dönüşümün akademik etkileşimi güçlendirme, öğrenme kaynaklarına erişimi kolaylaştırma, değerlendirme süreçlerini destekleme ve üniversite hizmetlerinin verimliliğini artırma yoluyla eğitim kalitesine olumlu katkı sağladığını göstermektedir. Dijital dönüşüm ile algılanan yükseköğretim kalitesi arasında istatistiksel olarak anlamlı bir ilişki belirlenmiştir. Buna karşılık incelenen demografik değişkenlere bağlı farklılıkların önemli olmadığı görülmüş; öğretim üyelerinin dijitalleşmenin eğitim açısından taşıdığı önem konusunda genel olarak benzer değerlendirmelere sahip oldukları anlaşılmıştır. Çalışma, etkili dijital dönüşümün yalnızca teknolojik altyapıya değil; kurumsal stratejiye, dijital yeterliklere, örgütsel hazırlığa, veri yönetimine ve sürekli mesleki gelişime de bağlı olduğu sonucuna ulaşmıştır. Anahtar Kelimeler: dijital dönüşüm; yükseköğretim; eğitim kalitesi; üniversite kurumları; akademik değerlendirme; öğrenme çıktıları
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1. Introduction

Digital transformation has become a central driver of institutional change across contemporary higher education. The expansion of learning management systems, digital assessment platforms, student information systems, cloud services, data analytics, artificial intelligence, and online learning environments has altered how universities design academic programs, deliver instruction, evaluate learning, communicate with stakeholders, and manage institutional resources. Digital transformation therefore extends beyond the conversion of paper-based procedures into electronic formats. It involves the strategic redesign of educational processes, organizational structures, governance mechanisms, professional practices, and institutional culture through the purposeful use of digital technologies.

Higher education has been among the sectors most rapidly affected by technological change. Universities operate in an environment characterized by expanding knowledge production, growing demand for flexible learning, changing student expectations, increased international competition, and pressure to demonstrate the quality and relevance of educational outcomes. Digital technologies offer universities opportunities to expand access, overcome geographical and temporal barriers, personalize learning, improve communication, accelerate administrative procedures, and support evidence-based decision-making. However, international evidence also indicates that technology does not automatically improve education. Its contribution depends on its relevance, equitable availability, institutional sustainability, and pedagogically appropriate use (UNESCO, 2023).

The distinction between digitization, digitalization, and digital transformation is important in this context. Digitization generally refers to converting analogue information into digital form, whereas digitalization involves using digital technologies to improve existing processes. Digital transformation is broader and more strategic: it requires institutions to reconsider how teaching, assessment, governance, research, communication, and student services are organized. A university may use electronic records or online platforms without achieving meaningful transformation if its educational practices, decision-making structures, and quality-assurance mechanisms remain unchanged. Genuine digital transformation therefore requires alignment among technology, pedagogy, human capabilities, institutional strategy, and governance.

The quality of higher education is similarly multidimensional. It encompasses the effectiveness of teaching, relevance of curricula, reliability of assessment, achievement of learning outcomes, quality of academic interaction, accessibility of learning resources, responsiveness of student services, and efficiency of institutional governance. Digital transformation can potentially influence each of these dimensions. Learning platforms can facilitate continuous access to educational materials, synchronous and asynchronous interaction, collaborative learning, and timely feedback. Digital assessment can improve the organization and monitoring of evaluation processes, while institutional information systems can support academic planning, quality assurance, and resource allocation. The OECD emphasizes that effective digital education depends on a coherent ecosystem connecting infrastructure, platforms, data, professional competence, governance, and institutional actors rather than on isolated technological investments (OECD, 2023).

Nevertheless, the relationship between digital transformation and educational quality is neither automatic nor uniformly positive. Insufficient infrastructure, unreliable internet access, limited digital competence, fragmented platforms, weak

cybersecurity, resistance to organizational change, and inadequate technical support may prevent universities from realizing the expected benefits. Digital inequality may also reproduce or deepen existing differences in access and participation. Furthermore, poorly designed digital systems can increase faculty workload, weaken meaningful interaction, and prioritize administrative efficiency over pedagogical value. The effectiveness of transformation must therefore be evaluated according to whether technology contributes to clearly defined educational objectives rather than according to the mere availability of digital tools.

Faculty members occupy a decisive position in this process because they translate institutional digital policies into teaching, assessment, communication, and academic guidance practices. Their acceptance of digital systems, perceived usefulness of technology, confidence in using digital resources, and access to professional development substantially influence implementation outcomes. Digital competence is not limited to operating devices or software; it also includes selecting suitable digital resources, designing technology-supported learning activities, evaluating students through appropriate digital methods, facilitating participation, and using data responsibly. The European Commission's DigCompEdu framework similarly presents educators' digital competence as a combination of professional engagement, digital resource use, teaching and learning, assessment, learner empowerment, and the development of students' digital competence ([European Commission Joint Research Centre, 2017](#)).

Institutional leadership and governance are equally important. Universities need clear digital strategies that define priorities, allocate responsibilities, establish implementation timelines, and connect technological investment with academic quality standards. Data protection, cybersecurity, interoperability, ethical technology use, and continuous evaluation must form part of this governance framework. The OECD argues that a shared digital strategy provides direction for stakeholders, although successful implementation requires continuing coordination, institutional capacity, and stakeholder participation ([OECD, 2023](#)). Digital transformation should therefore be understood as an institutional change process requiring human, pedagogical, technological, financial, and regulatory readiness.

Within Algerian higher education, digital transformation has acquired increasing importance as universities seek to modernize academic services, expand digital learning opportunities, improve administrative efficiency, and strengthen educational quality. However, the existence of digital infrastructure alone does not demonstrate that transformation has produced meaningful improvements. Institution-level evidence is required to determine how faculty members assess the adoption of digital technologies and whether they associate digital transformation with improvements in teaching, assessment, academic interaction, learning outcomes, and governance. Evidence is also needed to establish whether these assessments vary according to faculty members' demographic and professional characteristics.

Existing discussions frequently emphasize the technological potential of digitalization but pay less attention to its measurable relationship with perceived educational quality in particular institutional contexts. Moreover, studies may examine infrastructure, online learning, faculty competence, or administrative systems independently, even though these elements operate as components of an integrated digital ecosystem. This fragmentation creates a need for research that combines a conceptual analysis of digital transformation with an applied assessment of its educational implications.

Against this background, the present study examines the role of digital transformation in enhancing the quality of higher education at the Faculty of Economic, Commercial and Management Sciences of the University of Algiers 3 during the 2025–2026 academic year. It focuses on faculty members because their experiences provide important evidence concerning both the practical adoption of digital technologies and their perceived contribution to educational quality. The study addresses the following principal research question:

To what extent does digital transformation contribute to enhancing the quality of higher education in university institutions?

The principal question is examined through the following subsidiary questions:

1. What are the conceptual dimensions of digital transformation and higher education quality?
2. What technological, human, organizational, pedagogical, and governance requirements are necessary for successful digital transformation?
3. What is the level of digital transformation adoption at the University of Algiers 3 from the perspective of faculty members?
4. What is the perceived level of higher education quality within the digitally transformed environment?
5. Is there a statistically significant relationship between digital transformation and higher education quality?
6. Do faculty members' assessments differ according to gender and years of professional experience?

On this basis, the empirical analysis tests the following hypotheses:

- H1: Digital transformation is adopted at a substantial level within the university institution.
- H2: Faculty members perceive the quality of higher education under digital transformation as high.
- H3: Digital transformation is significantly and positively associated with the quality of higher education.
- H4: Faculty members' assessments of the role of digital transformation differ significantly according to gender and years of professional experience.

The study aims to make three contributions. First, it develops an integrated conceptual framework connecting digital transformation with teaching quality, academic assessment, learning outcomes, interaction, and institutional governance. Second, it provides applied evidence from the University of Algiers 3 by analyzing data collected from faculty members through a structured questionnaire and processed using IBM SPSS Statistics, Version 27. Third, it offers evidence that may support

university leaders and policymakers in designing digital strategies aligned with academic priorities, quality standards, faculty development needs, and labor-market expectations.

By combining conceptual analysis with institutional evidence, the study avoids treating digital transformation as a purely technical modernization project. Instead, it approaches transformation as a strategic and human-centered process whose value depends on its capacity to generate measurable educational improvement. This perspective is consistent with UNESCO's recommendation that decisions concerning educational technology should remain relevant, equitable, evidence-based, and sustainable (UNESCO, 2023). Accordingly, the study evaluates digital transformation not by the number of technologies introduced but by its perceived contribution to the effectiveness, accessibility, interaction, assessment, outcomes, and governance of higher education.

2. Literature Review

2.1. Digital Transformation in Higher Education

Digital transformation has emerged as a strategic priority for universities seeking to respond to technological development, expanding knowledge production, changing student expectations, and increasing demands for institutional effectiveness. It differs from the limited adoption of individual technologies because it involves a comprehensive restructuring of teaching, assessment, research, administration, communication, and decision-making. In this sense, digital transformation requires universities to integrate technological infrastructure with institutional strategy, academic objectives, human capabilities, and quality-assurance mechanisms.

Amin (2018) approaches digital transformation in Egyptian universities as a prerequisite for developing a knowledge society. This perspective positions universities not merely as users of technology but as institutions responsible for producing, organizing, and disseminating knowledge. Digital transformation can support this responsibility by facilitating access to academic resources, strengthening communication, accelerating information exchange, and creating more flexible environments for learning and research. Its strategic importance therefore lies in its potential to reshape institutional functions rather than simply replace paper-based processes with electronic alternatives.

Hassan (2020) examines the broader reality of digital transformation in Saudi Arabia from an analytical perspective. This work draws attention to the institutional and policy dimensions of digitalization and suggests that transformation must be evaluated within its national and organizational context. The technological readiness of an institution is important, but successful transformation also depends on leadership, organizational culture, financing, human resources, regulation, and the ability to manage change.

The administrative dimension is similarly emphasized by Amari (2017), who discusses electronic management as a mechanism for achieving digital transformation in university libraries. University libraries represent an important component of the academic digital ecosystem because they provide access to databases, electronic publications, institutional repositories, and research-support services. Their transformation illustrates how digitalization can improve access to information while changing the roles, competencies, and service models of academic personnel.

2.2. Institutional Readiness and Transformation Requirements

Institutional readiness is one of the principal conditions determining whether digital initiatives produce sustainable educational improvements. Madi and Abu Hajir (2020) examine the readiness of Palestinian private universities for digital transformation, highlighting the importance of assessing existing institutional capacities before introducing large-scale technological changes. Readiness involves more than equipment and internet connectivity; it includes leadership commitment, employee competence, technical support, organizational flexibility, financial resources, and acceptance of change.

The importance of governance is addressed by Hamni and Toubal (2020), who analyze the role of information technology governance in the success of digital transformation. Governance provides the structures through which institutions establish priorities, distribute responsibilities, manage investments, monitor performance, and control technological risks. Without a coherent governance framework, universities may adopt disconnected platforms that duplicate functions, create incompatible data systems, or fail to contribute to academic objectives. Information technology governance therefore connects technological decisions with institutional strategy and educational quality.

Human resources constitute another essential dimension of readiness. Abdullah (2018) examines the determinants of developing academic human resources at Benha University in the digital era. Faculty members must be able not only to operate digital technologies but also to incorporate them meaningfully into teaching, assessment, communication, and research. Continuous professional development is therefore necessary to prevent technological investment from being underused or applied without pedagogical purpose. Faculty competence, motivation, acceptance, and access to technical support may shape the effectiveness of digital transformation as strongly as infrastructure itself.

Al-Khatib and Hazm (2021) focus on the challenges of digital transformation in university education in Yemen and possible mechanisms for overcoming them. Their work situates digital transformation within contexts where financial, technological, organizational, and human constraints may restrict implementation. This perspective is particularly relevant to developing higher education systems because digital strategies designed for well-resourced institutions cannot be transferred automatically to universities operating under different conditions. Transformation policies must be adapted to institutional capacity, local priorities, and the needs of academic users.

2.3. Higher Education Quality as a Multidimensional Concept

The concept of higher education quality is complex because it encompasses multiple academic and institutional dimensions. Ararour (2013) discusses quality in higher education as a broad concept associated with the effectiveness of educational processes and institutional performance. Quality may include curriculum relevance, faculty competence, teaching

effectiveness, assessment reliability, student achievement, research productivity, academic services, governance, and responsiveness to social and labor-market needs.

Chenaf and Al-Ibrahimi (2017) review selected international models of higher education quality standards. Their contribution demonstrates that quality cannot be reduced to a single performance indicator. It requires a coherent set of standards addressing inputs, processes, outcomes, and continuous improvement. International models can provide useful reference points, but they must be interpreted according to national and institutional circumstances. For digital transformation to enhance quality, technological practices should therefore be aligned with explicit academic standards and measurable educational objectives.

Achari (2017) investigates the relationship between organizational climate and higher education quality in Algeria. This perspective is important because transformation occurs within existing organizational cultures. A supportive climate can encourage innovation, collaboration, professional learning, and acceptance of digital practices. Conversely, resistance to change, unclear responsibilities, inadequate communication, and limited participation in decision-making may weaken transformation initiatives. Organizational climate can thus mediate the relationship between digital investment and quality improvement.

University governance also affects institutional quality. Ja'qta (2017) examines the role of university governance in improving higher education quality. Governance determines how universities formulate strategies, make decisions, allocate resources, ensure accountability, and evaluate results. Digital transformation can strengthen governance by improving information availability, transparency, monitoring, and communication. However, it also introduces challenges related to data protection, cybersecurity, system interoperability, and ethical responsibility.

2.4. Digital Services and Institutional Performance

Digital transformation can enhance educational quality partly by improving the accessibility, efficiency, reliability, and responsiveness of university services. Al-Masdar and Nasr (2020), although focusing on government services in Palestine, provide a relevant service-oriented perspective on digital transformation. Their work demonstrates the broader importance of redesigning service delivery through digital systems rather than merely transferring traditional procedures to electronic platforms. Within universities, this principle applies to registration, academic records, assessment, student support, library services, communication, and administrative transactions.

The quality of electronic services is an important indicator of whether digital transformation meets users' expectations. Nour Mohamed and Abdel-Qader (2015) examine electronic-service quality from the perspective of auditors in Sudan. Although their study is situated outside higher education, its focus on evaluating digital services is relevant to universities. Digital platforms must be accessible, reliable, secure, responsive, and easy to use. Technological availability alone cannot be regarded as evidence of quality if systems are difficult to navigate, unstable, fragmented, or unresponsive to user needs.

In higher education, the quality of digital services can indirectly affect teaching and learning. Efficient administrative processes reduce procedural burdens on faculty and students, while reliable access to academic information supports planning and decision-making. Digital platforms can also strengthen academic interaction, facilitate resource sharing, and provide timely feedback. However, these benefits depend on system quality, user competence, technical support, and integration across institutional functions.

2.5. Digital Transformation and Educational Quality

The reviewed literature suggests several mechanisms through which digital transformation may contribute to higher education quality. First, digital platforms can improve access to learning materials and allow students to engage with content beyond the physical and temporal boundaries of the classroom. Second, digital assessment systems can facilitate the organization of evaluations, communication of results, and provision of feedback. Third, integrated information systems can support institutional planning, academic monitoring, and quality assurance. Fourth, digital communication tools can strengthen interaction among students, faculty members, administrators, and external stakeholders.

Nevertheless, these contributions remain conditional. The studies concerning institutional readiness, governance, human-resource development, and organizational challenges indicate that the relationship between technology and quality is mediated by institutional conditions (Abdullah, 2018; Al-Khatib & Hazm, 2021; Hamni & Toubal, 2020; Madi & Abu Hajir, 2020). A university may possess modern technology without achieving educational improvement if faculty members are not adequately prepared, systems are not integrated, or digital policies are disconnected from academic goals.

The literature therefore supports an integrated model in which higher education quality is influenced by the interaction of technological, human, organizational, pedagogical, and governance factors. Infrastructure provides the technical foundation; academic human resources determine how technology is used; governance aligns digital practices with institutional priorities; organizational climate affects acceptance and implementation; and quality standards provide criteria for evaluating results.

2.6. Research Gap and Contribution of the Present Study

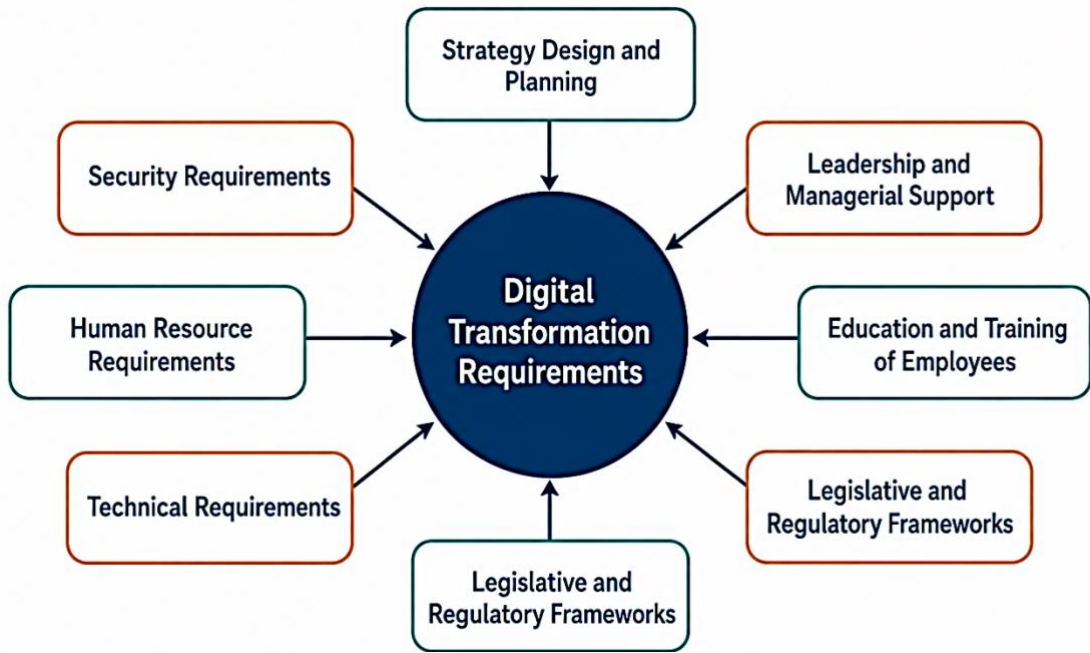
The existing literature offers valuable insights into digital transformation, institutional readiness, information technology governance, human-resource development, electronic services, university governance, and higher education quality. However, much of this scholarship examines these dimensions separately. Some studies focus on the conceptual importance of digital transformation, while others analyze organizational readiness, technological challenges, governance, or service quality. Fewer studies empirically examine the direct relationship between digital transformation and the perceived quality of higher education within a specific Algerian university context.

A further limitation is that the perspectives of faculty members are not always integrated into institutional evaluations of digital transformation. Faculty members are central actors because they use digital systems in teaching, assessment,

communication, research, and academic administration. Their evaluations can therefore provide important evidence regarding both the level of digital adoption and its contribution to educational quality.

The present study addresses this gap by combining conceptual analysis with an applied investigation at the University of Algiers 3. It examines the level of digital transformation adoption, assesses perceived higher education quality, tests the relationship between the two variables, and investigates whether faculty evaluations differ according to gender and professional experience. In doing so, the study connects technological transformation with teaching, academic assessment, learning outcomes, interaction, and institutional performance within a unified analytical framework.

Figure 1. Digital Transformation Requirements



Source: Abaid, Salima; Al-Shami, Mohammed Ali Hussein (2023). The Role of Digital Transformation in Enhancing the Quality of Higher Education. Al-Ibda’ Journal, Vol. 13, No. 13, Blida, pp. 449–470.

4. Results

4.1. Sample Characteristics

A total of 51 valid questionnaires were obtained from faculty members at the Faculty of Economic, Commercial and Management Sciences of the University of Algiers 3. All completed questionnaires were retained for analysis.

The sample comprised 33 male respondents (64.7%) and 18 female respondents (35.3%). Regarding university teaching experience, 22 respondents (43.1%) had fewer than five years of experience, 10 (19.6%) had between five and fewer than ten years, 12 (23.5%) had between ten and fewer than fifteen years, and seven respondents (13.7%) had fifteen or more years of experience.

Characteristic	Category	n	%
Gender	Male	33	64.7
	Female	18	35.3
Teaching experience	Fewer than 5 years	22	43.1
	5–<10 years	10	19.6
	10–<15 years	12	23.5
	15 years or more	7	13.7

The sample was therefore weighted toward male faculty members and academics with fewer than five years of teaching experience. Nevertheless, all four experience categories were represented.

4.2. Reliability and Internal Consistency

The internal consistency of the questionnaire was evaluated using Cronbach’s alpha. The 10-item digital transformation scale produced an alpha coefficient of .874, demonstrating strong reliability. The 10-item higher education quality scale produced an alpha of .938, indicating excellent internal consistency. For the complete 20-item questionnaire, Cronbach’s alpha was .945.

Scale	Items	Cronbach’s α	Interpretation
Digital transformation	10	.874	Strong
Higher education quality	10	.938	Excellent
Complete questionnaire	20	.945	Excellent

All coefficients exceeded the commonly accepted threshold of .70, confirming that the items within each scale measured sufficiently coherent constructs (DeVellis & Thorpe, 2021; Nunnally & Bernstein, 1994). The particularly high overall coefficient indicates that the instrument was suitable for subsequent hypothesis testing. However, reliability should not be interpreted as evidence of construct validity on its own.

Item-level internal-consistency analysis also produced positive and statistically significant correlations. Correlations for the digital transformation items ranged from .457 to .650, with all significance values below .001. For the higher education quality items, coefficients ranged from .482 to .603, also with all p values below .001. These results indicate that the individual items were positively associated with their corresponding dimensions without displaying uniformly extreme coefficients that would necessarily indicate complete item redundancy.

4.3. Assessment of Distributional Assumptions

The distributions of the two principal scales and the overall questionnaire were examined using the Kolmogorov–Smirnov and Shapiro–Wilk tests.

Variable	Kolmogorov–Smirnov	p	Shapiro–Wilk	p	Distribution
Digital transformation	.296	<.001	.846	<.001	Non-normal
Higher education quality	.331	<.001	.754	<.001	Non-normal
Overall questionnaire	.146	.011	.878	<.001	Non-normal

Both tests indicated statistically significant deviations from normality. Consequently, nonparametric procedures were employed for hypothesis testing. This decision was appropriate given the sample size, ordinal response format, and observed distributional characteristics (Field, 2018).

4.4. Level of Digital Transformation Adoption

The first hypothesis proposed that digital transformation was adopted at a high level within the university institution. A one-sample Wilcoxon signed-rank test indicated that faculty assessments differed significantly from the reference value used in the analysis, . In conjunction with the questionnaire’s predefined score interpretation, the result placed perceived digital transformation within the high category.

Accordingly, H1 was supported. Faculty members generally perceived that digital platforms, technological resources, digitally delivered services, and related institutional practices had achieved a substantial level of adoption.

The result should nevertheless be interpreted as evidence of faculty perceptions. It does not independently demonstrate the technical performance, frequency of use, or institutional effectiveness of every digital system.

4.5. Perceived Higher Education Quality Under Digital Transformation

The second hypothesis proposed that faculty members would report a high level of higher education quality in the digitally transformed environment. The Wilcoxon signed-rank test produced a statistically significant result, . Based on the study’s score-classification criteria, faculty assessments of higher education quality were positive and fell within the high category.

H2 was therefore supported. Respondents generally perceived that digital transformation was associated with improvements in academic interaction, access to information, assessment processes, educational services, and learning-related outcomes.

This result establishes that the observed assessments were significantly above the reference value adopted for the test. It should not, however, be interpreted as direct causal proof that digital transformation alone produced the reported level of quality.

4.6. Relationship Between Digital Transformation and Higher Education Quality

Spearman’s rank-order correlation was used to test the relationship between digital transformation and perceived higher education quality. The analysis revealed a strong, positive, and statistically significant association:

The positive coefficient indicates that higher assessments of digital transformation were associated with higher assessments of educational quality. The magnitude of .750 represents a substantial relationship between the two study constructs. H3 was therefore supported.

This finding does not establish causality because the study employed a cross-sectional design and measured both constructs through the same questionnaire. The result demonstrates a strong association but cannot exclude alternative explanations, including institutional leadership, faculty competence, organizational climate, infrastructure quality, or common-method effects.

4.7. Differences According to Demographic Variables

The fourth hypothesis proposed statistically significant differences in faculty assessments according to gender and years of teaching experience. Because the data were not normally distributed, the Mann–Whitney U test was used for gender, while the Kruskal–Wallis test was used for professional-experience categories.

All significance values exceeded .05. Faculty assessments therefore did not differ significantly by gender or years of university teaching experience. H4 was rejected.

The absence of significant differences suggests that perceptions of digital transformation and its relationship with educational quality were broadly shared across the demographic groups represented in the sample. This result should not be interpreted as proof that demographic characteristics never matter, particularly given the modest sample size and unequal numbers within some experience categories.

4.8. Summary of Hypothesis Testing

Hypothesis	Statistical test	Result	Decision
H1: Digital transformation adoption is high	Wilcoxon signed-rank		Supported
H2: Perceived higher education quality is high	Wilcoxon signed-rank		Supported
H3: Digital transformation is positively associated with higher education quality	Spearman correlation		Supported
H4: Assessments differ by gender and experience	Mann–Whitney <i>U</i> and Kruskal–Wallis	All	Not supported

5. Discussion

5.1. Digital Transformation as an Institutional Capability

The findings indicate that faculty members perceived digital transformation at the University of Algiers 3 to be at a high level. This result supports the argument that digitalization has moved beyond being an optional technological initiative and has become an increasingly important component of university operations. Amin (2018) similarly treats digital transformation as a requirement for universities seeking to participate effectively in a knowledge-based society. From this perspective, digital transformation supports not only electronic service delivery but also knowledge production, communication, academic coordination, and institutional responsiveness.

The result is also consistent with Hassan's (2020) analytical examination of digital transformation, which emphasizes its organizational and strategic character. The perceived level of adoption in the present study may reflect the growing incorporation of digital tools into teaching, assessment, communication, and administrative services. However, the finding should not be reduced to the availability of hardware or software. Sustainable transformation requires the integration of technology with organizational processes, institutional objectives, and users' needs.

Amari's (2017) discussion of electronic management in university libraries illustrates this broader institutional function. Digitally transformed academic services can improve access to information and reduce procedural constraints, but their educational value depends on their reliability, integration, and usability. Accordingly, the high perceived adoption reported in the present study should be interpreted as an important institutional foundation rather than the final stage of transformation.

5.2. Digital Transformation and Perceived Educational Quality

Faculty members reported a high level of higher education quality under digital transformation. This supports the view that digital technologies can contribute to teaching effectiveness, academic interaction, access to resources, assessment, and institutional services. Ararour (2013) conceptualizes higher education quality as a multidimensional construct rather than a single outcome. The present findings correspond to this interpretation because the perceived contribution of digital transformation extended across several educational and institutional functions.

Chenaf and Al-Ibrahimi (2017) similarly demonstrate that higher education quality must be evaluated through multiple standards. Digital systems may contribute to these standards by facilitating access, increasing the speed of communication, supporting transparent assessment, and strengthening the availability of academic information. Nevertheless, quality cannot be inferred from technology use alone. Digital practices must be evaluated according to whether they improve meaningful academic outcomes and meet recognized standards.

This interpretation is consistent with UNESCO's position that educational technology should be relevant, equitable, evidence-based, and sustainable. Technology can support access, quality, and institutional management, but its benefits depend on the conditions under which it is selected and implemented (UNESCO, 2023). Thus, the positive assessments recorded in this study should encourage further evaluation using objective indicators such as student achievement, platform engagement, assessment turnaround time, service efficiency, and student satisfaction.

5.3. Strength of the Digital Transformation–Quality Relationship

The strongest empirical result was the positive association between digital transformation and higher education quality. This coefficient indicates that faculty members who evaluated digital transformation more favorably also tended to report higher educational quality. The finding supports H3 and provides institution-specific evidence for the theoretical link proposed in the literature.

Several mechanisms may explain this relationship. Digital learning platforms can facilitate access to course materials, communication, and feedback. Electronic assessment systems can improve the organization and monitoring of evaluation processes. Integrated information systems can support planning, academic decision-making, and quality assurance. Digital services may also reduce time and geographical constraints and improve institutional responsiveness.

The finding corresponds with Al-Masdar and Nasr's (2020) emphasis on the role of digital transformation in improving service delivery. Although their work concerns government services, the underlying principle is relevant to universities: digital transformation produces value when it redesigns services around user needs rather than merely reproducing traditional

procedures electronically. Nour Mohamed and Abdel-Qader's (2015) discussion of electronic-service quality further reinforces the importance of reliability, accessibility, responsiveness, and user confidence.

The relationship may also reflect the role of information technology governance. Hamni and Toubal (2020) argue that governance is central to successful digital transformation because it aligns technological resources with institutional strategy, assigns responsibilities, and supports performance monitoring. The OECD similarly emphasizes that effective digital education depends on a coherent ecosystem encompassing infrastructure, platforms, data, professional capabilities, and governance rather than disconnected technologies (OECD, 2023).

Despite the strength of the correlation, the wording of the conclusion must remain cautious. The result does not demonstrate that digital transformation "directly causes" educational quality. Both constructs were measured simultaneously through self-reported responses, creating the possibility of common-method variance. Longitudinal, experimental, or multi-source research would be required to establish a stronger causal claim.

5.4. Human Resources, Competence, and Organizational Readiness

The results should also be interpreted in relation to faculty competence and institutional readiness. Abdullah (2018) emphasizes the importance of developing academic human resources in the digital era. Even advanced digital infrastructure cannot improve educational quality if faculty members lack the skills, confidence, time, or institutional support required to use it meaningfully.

The high correlation observed in this study may therefore reflect the combined effect of technology and the human capacity to apply it. Digital competence includes selecting appropriate resources, designing technology-supported instruction, conducting digital assessment, facilitating interaction, and using institutional data responsibly. Continuous professional development should consequently form a central element of university digital strategies.

Madi and Abu Hajir (2020) similarly focus on universities' readiness for digital transformation. Readiness includes infrastructure, leadership, organizational culture, financial capacity, technical assistance, and stakeholder acceptance. The study's positive findings suggest a favorable perception of transformation, but a comprehensive readiness assessment would need to examine each of these components separately.

Organizational climate is also relevant. Achari (2017) associates organizational climate with higher education quality in Algeria. A supportive climate can facilitate innovation and collaboration, whereas resistance, weak communication, and unclear responsibilities can restrict the educational value of technology. Digital transformation should therefore be treated as a socio-technical change involving both technological systems and organizational behavior.

5.5. Demographic Similarity in Faculty Assessments

No statistically significant differences were identified according to gender or years of teaching experience. This suggests that the perceived importance of digital transformation was broadly shared across the examined groups. Digital platforms and services may have become sufficiently embedded in university practices to produce similar assessments among faculty members with different demographic characteristics.

The absence of gender differences may indicate that institutional exposure to digital systems is relatively consistent. Likewise, the absence of differences across experience categories suggests that both early-career and experienced faculty members recognize the relationship between digitalization and educational quality.

However, this result should be interpreted conservatively. The study included only 51 participants, and the smallest experience category contained seven respondents. Limited statistical power may have reduced the likelihood of detecting modest group differences. Furthermore, demographic variables may influence more specific outcomes—such as digital confidence, training needs, technology anxiety, or patterns of platform use—even when overall assessments do not differ.

Al-Khatib and Hazm (2021) emphasize that digital transformation is affected by multiple technological, organizational, and human challenges. Consequently, the absence of demographic differences does not eliminate the need for differentiated professional-development opportunities. Universities should continue to assess individual competence and support requirements instead of assuming that all faculty members possess identical digital capabilities.

5.6. Governance and Policy Implications

The findings have several implications for university policy. First, the strong relationship between digital transformation and educational quality supports continued investment in digital infrastructure and academic platforms. However, investment decisions should be connected to measurable teaching, assessment, learning, and service objectives.

Second, information technology governance should be strengthened to ensure interoperability, cybersecurity, data protection, accountability, and strategic alignment. Hamni and Toubal (2020) identify governance as an essential condition for transformation success, while Ja'qta (2017) highlights the broader contribution of university governance to higher education quality.

Third, faculty development should be continuous rather than limited to initial technical training. Programs should address digital pedagogy, online and blended instruction, assessment design, data literacy, accessibility, academic integrity, and responsible use of artificial intelligence.

Fourth, digital-service quality should be monitored from the perspectives of faculty members, students, administrators, and external stakeholders. Feedback mechanisms can identify system limitations that aggregate institutional indicators may overlook.

Finally, universities should avoid equating digital expansion with educational improvement. The findings support a positive relationship, but quality enhancement requires the coordinated development of technology, human resources, governance, institutional culture, and pedagogical practice.

5.7. Theoretical and Empirical Contribution

This study contributes to the literature by integrating digital transformation and higher education quality within a single empirical model in an Algerian university context. Previous studies have often examined digital readiness, governance, human-resource development, electronic services, or educational quality separately. The present study demonstrates that faculty perceptions of digital transformation are strongly associated with their assessments of educational quality.

The findings also support a socio-technical interpretation of digital transformation. Educational quality appears to emerge not from technology alone but from the interaction of infrastructure, institutional practices, human competence, governance, and academic processes. This interpretation provides a stronger foundation for university policy than technologically deterministic approaches.

Nevertheless, the results are limited to one faculty and a relatively small cross-sectional sample. Future studies should test the model across Algerian universities, include student and administrative perspectives, and combine perception-based measures with objective indicators. Structural equation modelling could also be used with a sufficiently large sample to examine whether leadership, digital competence, service quality, or organizational readiness mediates the relationship between digital transformation and higher education quality.

Table 1
Demographic Profile of the Study Participants ()

Variable	Category		%
Gender	Male	33	64.7
	Female	18	35.3
Teaching experience	Fewer than 5 years	22	43.1
	5–<10 years	10	19.6
	10–<15 years	12	23.5
	15 years or more	7	13.7
	Total	51	100.0

Note. The percentages originally reported for male and female participants were reversed. The corrected values are 64.7% for males and 35.3% for females.
Source. Authors’ survey data.

Table 2
Measurement Structure, Internal Consistency, and Item-Level Associations

Construct	Items	Cronbach’s	Item-correlation range	Significance	Evaluation
Digital transformation	10	.874	.457–.650	All	Strong reliability
Higher education quality	10	.938	.482–.603	All	Excellent reliability
Overall questionnaire	20	.945	—	—	Excellent reliability

Note. Cronbach’s alpha values above .70 indicate acceptable internal consistency. The reported item-level correlations were positive and statistically significant. These results support reliability but do not, by themselves, establish construct validity.
Source. Authors’ calculations using IBM SPSS Statistics, Version 27.

Table 3
Assessment of Distributional Assumptions

Study variable	Kolmogorov–Smirnov statistic		Shapiro–Wilk statistic		Decision
Digital transformation	.296	<.001	.846	<.001	Non-normal
Higher education quality	.331	<.001	.754	<.001	Non-normal
Overall questionnaire	.146	.011	.878	<.001	Non-normal

Note. . Because all distributions departed significantly from normality, the hypotheses were tested using nonparametric procedures. Distributional decisions should ideally also be supported by histograms, Q–Q plots, skewness, and kurtosis.
Source. Authors’ calculations using IBM SPSS Statistics, Version 27.

Table 4
Consolidated Results of Hypothesis Testing

Hypothesis	Statistical procedure	Statistical result	Interpretation	Decision
H1: Digital transformation is adopted at a high level	One-sample Wilcoxon signed-rank test		Faculty evaluations were significantly above the reference level used in the analysis	Supported

H2: Perceived higher education quality under digital transformation is high	One-sample Wilcoxon signed-rank test		Faculty evaluations of educational quality were significantly positive	Supported
H3: Digital transformation is positively related to higher education quality	Spearman's rank correlation		Strong positive association between the two constructs	Supported
H4a: Faculty evaluations differ according to gender	Mann–Whitney test		No statistically significant gender difference	Not supported
H4b: Faculty evaluations differ according to teaching experience	Kruskal–Wallis test		No statistically significant difference across experience categories	Not supported

Note. Statistical significance was evaluated at . For complete Q1-level reporting, the final manuscript should add the reference median used in the Wilcoxon tests, the exact Mann–Whitney and Kruskal–Wallis statistics, exact values, effect sizes, and 95% confidence intervals. The correlation demonstrates association, not causation.

Source. Authors' calculations using IBM SPSS Statistics, Version 27.

Table 5

Integrated Interpretation of the Principal Findings and Institutional Implications

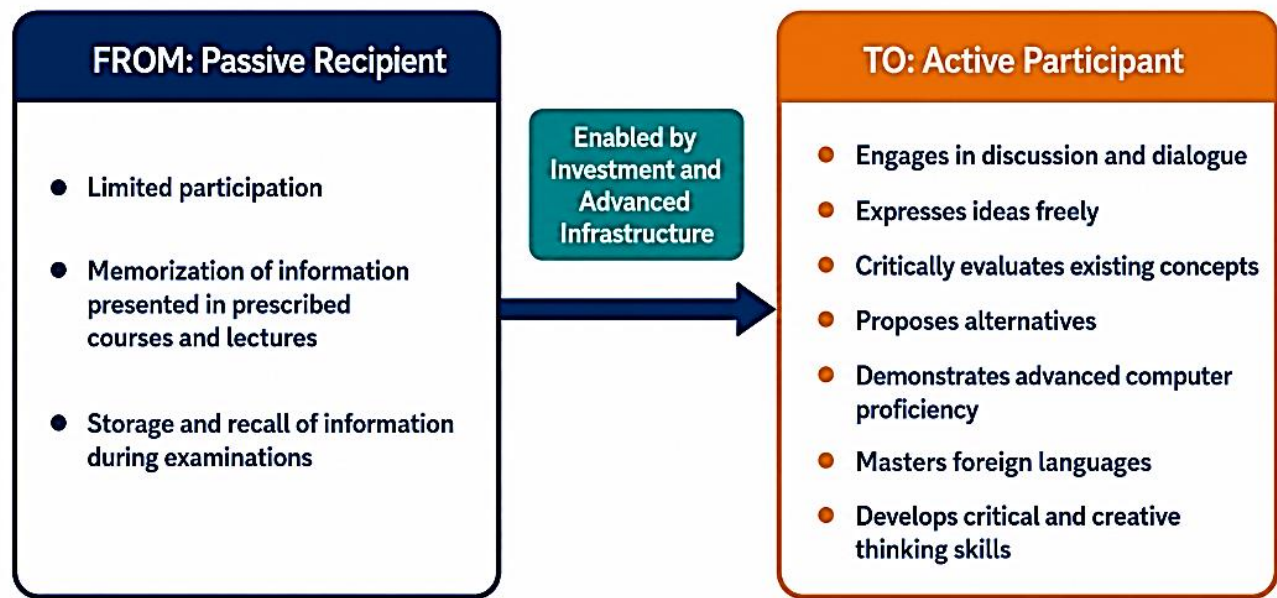
Empirical finding	Evidence	Substantive interpretation	Institutional implication
Digital transformation was evaluated positively		Digital technologies appear to be substantially embedded in the surveyed university environment	Maintain infrastructure investment while evaluating usability, accessibility, interoperability, and actual utilization
Higher education quality received positive evaluations		Faculty members associate the digitally transformed environment with improved academic and institutional processes	Align digital initiatives with teaching quality, assessment, learning outcomes, and quality-assurance standards
Digital transformation and educational quality were strongly related		More favorable perceptions of digital transformation corresponded to more favorable evaluations of educational quality	Integrate technology, pedagogy, professional development, governance, and academic support within a unified strategy
Gender did not produce significant differences		Perceptions were broadly consistent among male and female faculty members	Maintain equitable access while assessing specific digital competence and support needs
Teaching experience did not produce significant differences		Positive evaluations were shared across career stages	Offer continuous professional development without assuming that experience automatically determines digital competence
Measurement scales demonstrated strong consistency		The questionnaire generated internally coherent scores	Retain the instrument for further validation across larger and more diverse university samples

Figure 2. Required Transformations in the Quality of Curricula and Educational Programs in Higher Education Institutions



Source: Zairi, Belkacem. Potentials and Challenges of Implementing Total Quality Management in the Field of Education in Algeria. Second Conference on Planning and Development of Education and Applied Scientific Research in Arab Countries, University of Tehran, Saudi Arabia, 24–25 February 2008.

Figure 4. Students’ Roles from a Quality Perspective



Source: Gharbi, Sabah; Gassmi, Chouki. Applying Quality in the Field of Education. Paper presented at the Fourth Pedagogical Symposium on Quality Assurance in Higher Education: Justifications and Requirements, Ahmed Khider University, Biskra, 2008, p. 28.

6. Conclusion

This study examined the role of digital transformation in enhancing the quality of higher education at the Faculty of Economic, Commercial and Management Sciences of the University of Algiers 3. Using data collected from 51 faculty members, the analysis assessed the perceived level of digital transformation, the quality of higher education within the digitally transformed environment, the relationship between these constructs, and possible differences associated with gender and teaching experience.

The measurement instrument demonstrated strong internal consistency. Cronbach’s alpha was .874 for the digital transformation scale, .938 for the higher education quality scale, and .945 for the complete questionnaire. These results indicate that the instrument produced internally coherent measurements of the study constructs. Because the data departed significantly from normality, nonparametric procedures were appropriately employed for hypothesis testing.

The findings indicate that faculty members perceived digital transformation as being adopted at a comparatively high level. The first Wilcoxon signed-rank test was statistically significant, , , supporting H1. This result suggests that digital infrastructure, electronic learning platforms, and digitally delivered academic and administrative services have become substantial components of the institutional environment.

Faculty members also reported positive assessments of higher education quality under digital transformation. The second Wilcoxon test produced a statistically significant result, , , supporting H2. Digital transformation was perceived as contributing to teaching, assessment, academic interaction, access to educational resources, learning-related outcomes, and institutional services.

The most important empirical finding was the strong positive association between digital transformation and perceived higher education quality, , . H3 was therefore supported. Faculty members who evaluated the level of digital transformation more positively also tended to report higher levels of educational quality. This result highlights the strategic relevance of digital transformation to contemporary university development.

Nevertheless, the correlation should not be interpreted as proof of direct causality. Both constructs were measured through self-reported responses collected at a single point in time. Digital transformation may interact with other institutional conditions, including leadership, faculty competence, organizational culture, infrastructure, governance, technical support, and resource availability. Its educational value consequently depends on how effectively these components are coordinated.

No statistically significant differences were found according to gender or years of teaching experience, with all relevant values exceeding .05. H4 was therefore not supported. This result suggests that the perceived importance of digital transformation was broadly shared across the demographic groups represented in the sample. However, it does not establish that all faculty members possess identical digital competencies or professional-development needs.

Overall, the study concludes that digital transformation represents an important institutional capability for enhancing higher education quality. Its success should not be evaluated solely through the number of devices, platforms, or electronic

services introduced. Meaningful transformation requires alignment between technology, pedagogy, academic quality standards, human-resource development, governance, cybersecurity, and the needs of faculty members and students.

The findings must be interpreted in light of the study's limitations. The research was conducted within one faculty at a single university and included a relatively modest sample. Its cross-sectional and perception-based design restricts causal inference and broader generalization. Despite these limitations, the study provides useful institutional evidence and establishes a foundation for more extensive research on digital transformation within Algerian higher education.

7. Recommendations

Based on the study's findings, the following recommendations are proposed:

1. Develop an integrated institutional digital strategy. The university should adopt a clearly defined strategy connecting digital investment with teaching, assessment, research, student services, governance, and quality-assurance objectives.
2. Strengthen technological infrastructure. Reliable internet access, secure servers, updated computer facilities, learning management systems, digital libraries, and appropriate technical equipment should be made consistently available.
3. Ensure system interoperability. Academic, administrative, assessment, and student-information systems should be integrated to reduce duplication, improve data exchange, and facilitate evidence-based decision-making.
4. Invest in continuous faculty development. Training should extend beyond basic technical use and include digital pedagogy, online and blended teaching, digital assessment, data literacy, accessibility, academic integrity, and responsible use of artificial intelligence.
5. Assess individual training needs. Although no significant differences were found by gender or professional experience, institutions should not assume uniform digital competence. Periodic skills assessments should inform differentiated professional-development programs.
6. Strengthen digital governance. Clear responsibilities should be established for technology selection, procurement, implementation, maintenance, data management, quality monitoring, and institutional accountability.
7. Enhance cybersecurity and data protection. Universities should introduce comprehensive policies covering privacy, access control, secure data storage, incident response, ethical data use, and awareness training.
8. Align digital transformation with academic quality standards. Technology should be evaluated according to its contribution to learning outcomes, teaching effectiveness, assessment validity, interaction, accessibility, and student success.
9. Promote learner-centered curricula. Digital transformation should support movement from content transmission and memorization toward active learning, interdisciplinary study, critical thinking, creativity, collaboration, and problem-solving.
10. Improve digital assessment practices. Institutions should develop transparent, reliable, inclusive, and secure digital assessment systems that provide timely feedback and support continuous learning.
11. Provide accessible technical support. Dedicated support units should assist faculty members and students with platform use, system errors, digital content development, and cybersecurity concerns.
12. Monitor digital-service quality continuously. Universities should regularly evaluate usability, reliability, accessibility, responsiveness, and user satisfaction through faculty and student feedback.
13. Benchmark curricula and digital services internationally. Educational content, academic programs, digital platforms, and quality-assurance practices should be compared periodically with recognized international standards.
14. Use objective performance indicators. Future institutional evaluations should complement perception surveys with data on platform usage, student engagement, assessment turnaround time, course completion, service efficiency, and learning outcomes.
15. Promote inclusive digital access. Policies should ensure that technological transformation does not disadvantage students or faculty members because of disability, limited connectivity, financial constraints, or unequal digital competence.
16. Expand the research across institutions. Future studies should include multiple faculties and Algerian universities, larger probability-based samples, student and administrative perspectives, and comparisons across disciplines.
17. Employ longitudinal and mixed-methods designs. Subsequent research should combine surveys with interviews, focus groups, observations, institutional data, and repeated measurements to clarify how digital transformation affects educational quality over time.
18. Test explanatory mechanisms. Future studies should examine whether digital competence, leadership support, institutional readiness, service quality, organizational climate, or governance mediates the relationship between digital transformation and higher education quality.

Declarations

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Conflict of Interest

The authors declare that they have no financial, professional, institutional, or personal conflicts of interest that could have influenced the research, analysis, or presentation of the findings.

Author Contributions

Mansour Aissani contributed to the conceptualization, research design, methodology, supervision, data interpretation, and preparation of the original manuscript. Ali Bouamama contributed to the literature review, questionnaire development, data collection, statistical analysis, and interpretation of the results. Youssef Bahi contributed to data organization, validation, visualization, manuscript editing, and critical revision. All authors reviewed and approved the final version of the manuscript and accept responsibility for its content.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available because they contain information collected from study participants and are subject to confidentiality considerations.

Confidentiality and Anonymity

The information collected through the questionnaire was used exclusively for academic research purposes. Participants' identities were not disclosed in the analysis or reporting of the findings, and the data were handled confidentially.

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Use of Artificial Intelligence Tools

Generative artificial intelligence tools were used only to support language editing and improve the clarity and organization of the manuscript. The authors reviewed and verified the final text and assume full responsibility for its accuracy, originality, citations, analysis, and conclusions. Artificial intelligence tools were not used as authors or to fabricate, generate, or manipulate research data.

Research Integrity Statement

The authors confirm that the manuscript represents original scholarly work, has not been published previously, and is not under consideration by another journal. All sources have been appropriately acknowledged, and the reported results have not been fabricated, falsified, or inappropriately manipulated.

Ethical Approval

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Institutional permission was obtained from the participating institutions before data collection, participation was voluntary, and the anonymity and confidentiality of the participants were preserved throughout the research process.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

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Declaration of Generative AI and AI-Assisted Technologies

The authors declare that no generative artificial intelligence (AI) or AI-assisted technologies were used in the design of the study, data collection, analyses, or interpretation of the scientific content of this manuscript. Any language-editing support was reviewed and verified by the authors, who take full responsibility for the content of the published article.

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Genişletilmiş Özet

Giriş

Dijital dönüşüm, çağdaş yükseköğretim kurumlarının öğretim, değerlendirme, araştırma, yönetim ve akademik hizmet süreçlerini yeniden yapılandıran stratejik bir değişim alanıdır. Bu dönüşüm yalnızca geleneksel işlemlerin elektronik ortama aktarılmasını değil; teknolojik altyapının, insan kaynaklarının, kurumsal stratejinin, pedagojik uygulamaların ve kalite güvence mekanizmalarının bütünleşik biçimde geliştirilmesini ifade etmektedir. Üniversiteler, artan bilgi üretimi, değişen öğrenci beklentileri, esnek öğrenme ihtiyacı ve uluslararası rekabet karşısında dijital teknolojilerden daha yoğun biçimde yararlanmaktadır. Öğrenme yönetim sistemleri, elektronik değerlendirme araçları, dijital kütüphaneler, öğrenci bilgi sistemleri ve çevrim içi iletişim platformları, eğitime erişimi kolaylaştırma ve kurumsal verimliliği artırma potansiyeli taşımaktadır. Bununla birlikte teknolojik araçların bulunması, eğitim kalitesinin kendiliğinden gelişeceği anlamına gelmemektedir. Başarılı bir dönüşüm; uygun altyapı, öğretim elemanlarının dijital yeterlikleri, liderlik desteği, veri güvenliği, düzenleyici çerçeveler ve kullanıcı gereksinimleriyle uyumlu bir uygulama modeli gerektirmektedir. Bu araştırma, dijital dönüşümün üniversite kurumlarında yükseköğretim kalitesinin geliştirilmesindeki rolünü incelemektedir. Çalışmanın temel amacı, Cezayir 3 Üniversitesinde dijital dönüşümün benimsenme düzeyini belirlemek, dijitalleşmiş ortamda algılanan eğitim kalitesini değerlendirmek ve iki değişken arasındaki ilişkiyi ortaya koymaktır. Ayrıca öğretim elemanlarının değerlendirmelerinin cinsiyet ve mesleki deneyime göre farklılaşıp farklılaşmadığı araştırılmıştır. Bu kapsamda dijital dönüşüm; öğretim kalitesi, akademik değerlendirme, öğrenme çıktıları, etkileşim, hizmet sunumu ve üniversite yönetimiyle ilişkili çok boyutlu bir kurumsal kapasite olarak ele alınmıştır.

Yöntem

Araştırmada nicel, kesitsel ve betimsel-analitik bir araştırma deseni kullanılmıştır. Araştırmanın evrenini, 2025–2026 akademik yılında Cezayir 3 Üniversitesi İktisadi, Ticari ve Yönetim Bilimleri Fakültesinde görev yapan öğretim elemanları oluşturmuştur. Elektronik ortamda uygulanan yapılandırılmış anket aracılığıyla 51 geçerli yanıt elde edilmiş ve bütün yanıtlar istatistiksel analize dâhil edilmiştir. Katılımcıların 33'ü erkek, 18'i kadındır. Mesleki deneyim bakımından 22 katılımcı beş yıldan az, 10 katılımcı beş ile on yıl arasında, 12 katılımcı on ile on beş yıl arasında ve yedi katılımcı en az on beş yıllık öğretim deneyimine sahiptir. Araştırma aracı, dijital dönüşüm ve yükseköğretim kalitesi olmak üzere iki temel boyutta toplam 20 maddeden oluşmuştur. Maddeler, “kesinlikle katılmıyorum” ile “kesinlikle katılıyorum” arasında değişen beşli Likert ölçeğiyle değerlendirilmiştir. Ölçeğin kapsam ve görünüş geçerliği uzman değerlendirmeleriyle incelenmiştir. İç tutarlılık analizinde dijital dönüşüm boyutu için Cronbach alfa .874, yükseköğretim kalitesi boyutu için .938 ve ölçeğin tamamı için .945 olarak hesaplanmıştır. Veriler IBM SPSS Statistics 27 programıyla analiz edilmiştir. Frekans ve yüzdelere örneklemen tanımlanmasında kullanılmıştır. Kolmogorov–Smirnov ve Shapiro–Wilk testleri değişkenlerin normal dağılmadığını göstermiştir. Bu nedenle hipotezlerin sınanmasında parametrik olmayan yöntemler tercih edilmiştir. Düzey değerlendirmelerinde Wilcoxon işaretli sıralar testi, değişkenler arasındaki ilişkide Spearman sıra korelasyonu, cinsiyete göre karşılaştırmada Mann–Whitney ve deneyim gruplarının karşılaştırılmasında Kruskal–Wallis testi kullanılmıştır. Anlamlılık düzeyi olarak belirlenmiştir.

Bulgular

Ölçme aracına ilişkin bulgular, araştırmada kullanılan ölçeklerin güçlü bir iç tutarlılığa sahip olduğunu göstermiştir. Dijital dönüşüm ölçeğinin Cronbach alfa katsayısı .874, yükseköğretim kalitesi ölçeğinin katsayısı .938 ve bütün anketin katsayısı .945 olarak belirlenmiştir. Dijital dönüşüm maddelerine ilişkin korelasyonlar .457 ile .650, yükseköğretim kalitesi maddelerine ilişkin korelasyonlar ise .482 ile .603 arasında değişmiş ve bütün ilişkiler düzeyinde anlamlı bulunmuştur. Normallik analizlerinde hem dijital dönüşüm hem de yükseköğretim kalitesi değişkenleri normal dağılımdan anlamlı biçimde sapmıştır. Bu nedenle hipotezler parametrik olmayan testlerle incelenmiştir. Birinci hipoteze ilişkin Wilcoxon işaretli sıralar testi, öğretim elemanlarının dijital dönüşümün benimsenme düzeyine yönelik değerlendirmelerinin anlamlı derecede yüksek olduğunu göstermiştir (). Böylece birinci hipotez desteklenmiştir. İkinci Wilcoxon testi, dijital dönüşüm ortamında algılanan yükseköğretim kalitesinin de olumlu ve anlamlı biçimde yüksek olduğunu ortaya koymuştur (); dolayısıyla ikinci hipotez kabul edilmiştir. Dijital dönüşüm ile algılanan yükseköğretim kalitesi arasında güçlü, pozitif ve istatistiksel olarak anlamlı bir ilişki belirlenmiştir (). Bu sonuç, dijital dönüşümü daha olumlu değerlendiren öğretim elemanlarının eğitim kalitesini de daha yüksek değerlendirdiklerini göstermiş ve üçüncü hipotezi desteklemiştir. Buna karşılık cinsiyete ilişkin Mann–Whitney testi ile mesleki

deneyime ilişkin Kruskal–Wallis testinde bütün anlamlılık değerleri .05'in üzerinde kalmıştır. Öğretim elemanlarının değerlendirmeleri cinsiyet veya deneyim düzeyine göre anlamlı biçimde farklılaşmadığından dördüncü hipotez desteklenmemiştir.

Sonuç

Araştırma, dijital dönüşümün Cezayir 3 Üniversitesinde yükseköğretim kalitesiyle güçlü biçimde ilişkili önemli bir kurumsal kapasite olarak algılandığını ortaya koymuştur. Öğretim elemanları dijital dönüşümün benimsenme düzeyini ve dijitalleşmiş ortamda sunulan yükseköğretimin kalitesini olumlu değerlendirmiştir. İki değişken arasında belirlenen güçlü pozitif ilişki, dijital altyapı, akademik platformlar ve elektronik hizmetler geliştikçe öğretim, değerlendirme, iletişim ve kurumsal hizmetlere yönelik kalite algısının da yükseldiğini göstermektedir. Bununla birlikte kesitsel araştırma deseni ve öz bildirime dayalı ölçümler nedeniyle bu ilişki doğrudan nedensellik biçiminde yorumlanmamalıdır. Dijital dönüşümün eğitim kalitesine etkisi; liderlik, örgütsel hazırlık, öğretim elemanlarının dijital yeterlikleri, teknik destek, yönetim ve kurumsal kültür gibi başka faktörlerle birlikte şekillenmektedir. Cinsiyet ve mesleki deneyime göre anlamlı farklılık bulunmaması, dijital dönüşümün önemine ilişkin değerlendirmenin katılımcılar arasında genel olarak paylaşıldığını göstermektedir. Ancak bu sonuç, bütün öğretim elemanlarının aynı beceri veya destek gereksinimlerine sahip olduğu anlamına gelmemektedir. Üniversitelerin teknolojik altyapıyı güçlendirmesi, sistemler arası uyumluluğu sağlaması, siber güvenlik ve veri koruma politikalarını geliştirmesi ve sürekli mesleki gelişim programları düzenlemesi önerilmektedir. Dijital yatırımlar öğretim kalitesi, öğrenme çıktıları ve kalite güvence standartlarıyla ilişkilendirilmeli; başarı yalnızca kullanılan araçların sayısı ile değerlendirilmemelidir. Gelecek araştırmalarda daha geniş ve çok kurumlu örneklemeler kullanılmalı, öğrenci ve yönetici görüşleri dâhil edilmeli ve öz bildirim verileri nesnel performans göstergeleriyle desteklenmelidir. Boylamsal ve karma yöntemli çalışmalar, dijital dönüşümün yükseköğretim kalitesi üzerindeki uzun vadeli etkilerini daha güvenilir biçimde açıklayabilir.