

Digital Transformation Strategies as an Approach to Achieving Outstanding Performance in Higher Education Institutions: A Perspective on Implementation Requirements and Stages of Advancement

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Abstract

This study aims to highlight the pivotal role that digital transformation plays in shaping the features of outstanding performance within higher education institutions, in light of rapidly evolving technological challenges. The research problem lies in how to transition universities from traditional models to an integrated digital environment that ensures efficiency and organizational effectiveness. The study adopts a descriptive-analytical approach to review the concepts of digital transformation and its dimensions, while identifying the strategic steps and essential stages required to enhance institutional performance toward excellence. The findings indicate that digital transformation is not merely a replacement of technological tools; rather, it is a comprehensive reengineering of academic and administrative processes that requires robust infrastructure and qualified human competencies. The study also attempts to highlight examples from some leading countries.

Keywords : Digital Transformation; Outstanding Performance ; Higher Education Institutions ; Electronic Learning ; Malcom Baldrige Model.

إستراتيجيات التحول الرقمي كمدخل لتحقيق الأداء المتميز في مؤسس التعليم العالي: رؤية في متطلبات التجسيد ومراحل الارتقاء

ملخص
تهدف هذه الدراسة الى تسليط الضوء على الدور المحوري الذي يلعبه التحول الرقمي في صياغة الأداء المتميز داخل مؤسسات التعليم العالي، في ظل التحديات التكنولوجية المتسارعة ، و تكمن إشكالية هذا كيفية الانتقال بالجامعة من الأنماط التقليدية إلى بيئة رقمية متكاملة تضمن الكفاءة والفعالية التنظيمية، و على المنهج الوصفي التحليلي لاستعراض مفاهيم التحول الرقمي وأبعاده، مع تحديد الخطوات الإستراتيجية والمراحل الضرورية للارتقاء بالأداء المؤسسي نحو التميز، وتوصلت الدراسة إلى أن التحول الرقمي ليس استبدال للأدوات التقنية، بل هو إعادة هندسة شاملة للعمليات الأكاديمية والإدارية، تتطلب بنية تحتية وكفاءات بشرية مؤهلة. كما حاولنا الإشارة إلى نماذج لبعض الدول الرائدة.

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Doi:

I- Introduction :

The emergence of digital technology is considered one of the most significant transformations affecting the fields and functions of any administration or institution, compelling all organizations to keep pace with this development. Digital transformation represents one of the most important drivers and catalysts of growth and advancement for major organizations and various sectors, including higher education. Digitalization has become the primary engine for reshaping administrative and academic models, and higher education institutions are no longer isolated from these changes. Rather, they are now more than ever required to adopt digital transformation not merely as an alternative technical option, but as an inevitable strategy to ensure their continuity and competitiveness.

Moreover, the transition toward the digital (smart) university goes beyond the mere digitization of documents or the use of educational platforms; it encompasses the reengineering of cognitive and organizational processes that lead to outstanding performance. Such excellence represents the highest levels of efficiency and effectiveness in delivering knowledge and research services. Nevertheless, many universities face a clear gap between possessing technology and the ability to effectively leverage it to achieve a qualitative leap in institutional performance.

Study Problem :

From this standpoint, the research problem can be formulated as follows:

"How can digital transformation strategies serve as a genuine lever for achieving outstanding performance in higher education institutions?"

Sub-questions of the Study:

Based on the main question concerning the role of digital transformation in achieving outstanding performance, the following sub-questions arise:

- What is the current state of digital readiness in higher education institutions, and how does the availability of smart platforms reflect on the speed and efficiency of academic and administrative processes?
- To what extent do digital competencies and technical skills of faculty members and administrators contribute to improving institutional performance outcomes and elevating them toward excellence?
- What procedural steps and practical stages constitute a roadmap for enabling universities to achieve comprehensive digital transformation and sustain outstanding performance?

Significance of the Study:

The importance of this study lies in the following:

- Bridging the gap between theoretical perspectives on digital transformation and distinguished administrative practices in the university environment.
- Enriching the academic literature with a contemporary topic that integrates change management and digitalization in higher education.
- Providing an updated theoretical framework linking digitalization with global standards of institutional excellence.

- Equipping university decision-makers with mechanisms for transitioning from traditional management to smart digital management.
- Highlighting digital human capital as a fundamental pillar of excellence, thereby supporting the effective allocation of training and development budgets.
- Reducing organizational waste and enhancing the university's international competitiveness by improving research outputs.

Objectives of the Study:

This study seeks to achieve the following strategic objectives:

- Identifying requirements, developing a roadmap, and proposing a model for institutional advancement.
- Defining the theoretical frameworks of digital transformation and outstanding performance in the contemporary higher education environment.
- Identifying the technical, human, and organizational requirements necessary for successful digital transition.
- Analyzing the relationship between the adoption of digital tools and improvements in institutional performance indicators (speed, accuracy, and quality).
- Proposing an operational model that includes practical steps for advancing universities toward global levels of excellence.

1. The Concept of Digital Transformation

Digital transformation refers to the comprehensive integration of digital technologies into all areas of an organization, fundamentally reshaping how it operates and delivers value. It goes beyond the simple adoption of new tools, representing instead a deep structural and cultural shift in processes, decision-making, and service delivery. This evolution enables institutions to enhance efficiency, improve responsiveness, and create innovative models of operation. At its core, digital transformation is driven by data, connectivity, and intelligent systems that allow organizations to adapt more effectively to changing environments and increasing demands.

1.1 Definition of Digital Transformation

Digital transformation, or digitization, is the process of acquiring and managing collections of electronic texts by converting information sources available on traditional storage media into electronic form. Consequently, traditional content becomes digital content that can be accessed through computer applications. **(Faraj, 2009, p. 11)**

Digital transformation is the process of converting information sources, in their various forms, into a format that can be read by computer technologies through the binary system ("data bytes"), which is considered the fundamental unit of information in computer-based information systems. This involves transforming information into a set of binary digits, a process carried out using a range of specialized technologies and devices. **(The Digital Transformation and Protection of Digital Heritage, 2016, p. 06)**

Digital transformation means using technology to support fundamental changes in organizational processes. **(Mayes, 2009, p. 11)**

It is also described as the transformation of business activities, processes, competencies, and models in order to fully leverage the profound and rapid changes and

opportunities enabled by digital technologies and their societal impact, in a strategic and prioritized manner. **(Tarfa, 2020, p. 270)**

Accordingly Digital transformation can be understood as the transition from activities based on traditional manual processes to operations where technology (platforms and applications) forms the core foundation.

1.2 Objectives of Digital Transformation

Digital transformation achieves several objectives for both customers and organizations, including: (Ghrici & others, 2021)

- Reducing time and costs while improving operational efficiency.
- Enhancing innovation through digital technology outputs, enabling organizations to deliver entirely new forms of services.
- Strengthening competitiveness within the organizational environment to gain new market shares.
- Providing high-quality products and services, thereby enhancing customer and public well-being.

1.3 Characteristics of Digital Transformation

Digital Transformation is a profound, organization-wide process that leverages digital technologies to fundamentally change business models, operations, customer experiences, and value creation. It goes beyond simple digitization or digitalization to create sustainable competitive advantage. The Key characteristics include the following:

- **Customer-Centricity:** Digital transformation places the customer at the center of all strategies by leveraging data analytics, digital platforms, and personalized services to understand needs, enhance experiences, and build long-term loyalty. **(Peter, Verhoef, & al, 2021, pp. 889- 901)**
- **Agility and Operational Flexibility:** It enables organizations to respond quickly to market changes through agile processes, cloud technologies, automation, and streamlined operations that support rapid adaptation and innovation. **(Vial, 2019, pp. 118-144)**
- **Data-Driven Decision Making:** A fundamental characteristic is the reliance on big data, advanced analytics, and artificial intelligence to support informed, evidence-based decisions that improve efficiency, reduce risks, and drive performance. **(Reis & et al, 2023)**
- **Integration of Technology, Processes, and People:** Successful transformation requires the deep integration of digital technologies with redesigned business processes and human elements, including cultural shifts and the development of new digital skills across the workforce. **(Peter, Verhoef, & al, 2021, pp. 889- 901)**
- **Continuous Innovation and Business Model Transformation:** Digital transformation is an ongoing process rather than a one-time project; it drives continuous innovation and the reinvention of business models, often shifting toward platform-based ecosystems and new value-creation mechanisms. **(Vial, 2019, pp. 118-144)**

- **Focus on Sustainability and Ethical Considerations:** Modern digital transformation increasingly emphasizes sustainability, data privacy, ethical use of AI, and broader societal impacts to ensure responsible and long-term value creation. (Peter, Verhoef, & al, 2021, pp. 889- 901)

1.4 Requirements of Digital Transformation

Digital transformation is achieved through a combination of four key elements: (Yasser, 2018, p. 214)

- **Technologies:** This involves a system of devices, data, storage, and software operating within a technological environment and information centers that enable efficient and uninterrupted use of resources. It also requires ensuring appropriate service levels through effective management of technical systems and network infrastructure, supported by responsible teams serving employees, customers, and suppliers.
- **Data:** Organizations must systematically and effectively manage and analyze data to ensure the availability of reliable, comprehensive, and high-quality information. This includes developing appropriate tools for statistical analysis and predictive insights, as well as continuous monitoring to ensure data flow aligns with organizational goals.
- **Human Resources:** Human capital is a vital component, as digital transformation cannot be successfully implemented without qualified personnel capable of using and analyzing data for effective decision-making. It also requires expertise, practical experience, and a strong commitment to change and innovation.
- **Processes:** Organizations must establish an effective technical framework that enhances performance internally and externally. This includes developing policies and procedures that cover all activities and processes, integrated with necessary technologies, applications, and processed data.

Additional requirements for successful digital transformation include: (Alouti, 2008, p. 138)

- Strong commitment from top management to convert all paper-based transactions into digital formats.
- Training and qualifying human resources to effectively perform tasks using available digital tools.
- Providing the necessary infrastructure, including networks, secure software, and modern communication tools.
- Digitizing and archiving legacy paper documents through scanning, classification, and electronic storage for easy retrieval.

1.5 Dimensions of Digital Transformation

The main dimensions of digital transformation can be summarized as follows: (Zerouali, Rabie, Jaber, & Mehdi, 2022, p. 364)

- **Structural and Organizational Dimension:** Digitalization requirements significantly impact the entire institution. Simply acquiring technological equipment or appointing a digitalization officer is insufficient. institutions must undertake profound changes and make strategic, sustainable decisions within an organizational culture that supports digital transformation and learning environments.

- **Human Resource Functional Dimension:** From this perspective, organizations must approach development from a human-centered viewpoint. The sustainable implementation of digital technologies depends largely on training, capacity building, and addressing the knowledge needs of all stakeholders, including employees, executives, and strategic managers.
- **Technical and Informational Dimension:** Digital transformation requires enhancing communication efficiency and embedding technological tools into organizational processes. Digital competencies must be effectively utilized across all operations and activities.

In the university context, digital transformation is not limited to the automation of manual tasks; rather, it represents a fundamental cultural and organizational shift. It involves comprehensive reengineering of academic (teaching and research) and administrative processes through the integration of smart technologies across all institutional structures. The ultimate goal is to create a flexible learning environment capable of rapidly responding to global technological and knowledge changes, while transforming raw data into strategic knowledge that supports decision-making.

2. The Concept of Outstanding Performance in Higher Education Institutions and Its Steps

Higher education institutions are entities responsible for overseeing the stage of specialized academic learning following general education, across all its types and levels. They nurture individuals with competence and excellence, structure and develop their capabilities and skills, and contribute to meeting the diverse needs of society in both the present and the future, in line with beneficial progress that fulfills the goals and aspirations of the nation.

2.1 Definition of Outstanding Performance in Higher Education Institutions

Outstanding performance depends on the availability of a set of unique skills, capabilities, and expertise within an institution, which, when effectively utilized, enable it to achieve advanced and unprecedented levels of performance. This is clearly reflected in the delivery of high-quality, distinctive, and unique services within its field. (Amari, 2022, p. 79)

Outstanding performance represents a state of continuous institutional excellence, whereby the university surpasses conventional performance levels to attain leadership and innovation. It is characterized by the ability to balance the optimal use of resources (human, financial, and technological) with the delivery of high-quality educational and research outputs, as well as rapid adaptability to various changes.

In higher education institutions, outstanding performance refers to distinguished managerial practices achieved through the effective and efficient realization of strategic objectives at levels exceeding planned targets. This results in delivering optimal value to stakeholders, ensuring the sustainability and continuity of the university. Distinguished institutions strive to satisfy their beneficiaries through achieved results and transparency in their processes and procedures. To evaluate such performance, several countries have developed models specifically designed for educational institutions, including higher

education, such as the Scottish model, the Singaporean model, and the American model. These will be referenced later to derive excellence criteria suitable for the Algerian higher education context. (Driouch & Boubjedat, 2022, p. 339)

2.2 Indicators for Measuring Outstanding University Performance

Several indicators can be used to measure outstanding university performance, including:

(Chiboui & Ben Lekhal, 2019, p. 432)

- **Quality improvement:** Continuous enhancements undertaken by the university to meet the expectations and aspirations of students and faculty. This requires the involvement of all university members, the provision of a suitable environment, minimizing time waste, and eliminating non-value-adding activities.
- **Scientific research:** Refers to intellectual contributions in publications and academic journals by faculty and student researchers. Scientific research is a structured, modern approach requiring material and human resources to achieve practical results that contribute to societal development by diagnosing problems and proposing appropriate solutions.
- **Community service:** The university's ability to address societal issues and provide recommendations to economic organizations, government bodies, and civil society. It also includes contributions such as patents, technology transfer, and organizing conferences and forums. A successful university is one that responds to community needs.

2.3 Justifications and Drivers of Digital Transformation in Higher Education

Institutions

Several factors have driven higher education institutions toward digitalization, including:

(Abassi & Hafidhi, 2022, p. 174)

- Increased spending on traditional resources and the time and effort required for research;
- The need for libraries to remain competitive in the information services market.
- The growing volume of traditional resources.
- The ability of digital systems to extend services and overcome geographical barriers.
- The desire to promote collaborative work and share digital information resources across institutions via the internet.
- Improving services through access to digital information sources that support lifelong learning.

2.4 Steps Toward Achieving Outstanding Performance in Higher Education Institutions

In light of fundamental transformations in the management of higher education institutions and the growing role of stakeholders in shaping service standards, institutions must strive to enhance their performance across all areas to ensure excellence. This can be achieved through high-quality service delivery and the adoption of modern approaches, including: (Amari, 2022, p. 80)

- Establishing high performance standards for all employees and progressively raising them.
- Developing staff, especially leadership, through job rotation and continuous learning.

- Continuously improving the work environment, including organizational culture, policies, and structure.
- Recruiting new talents and competencies and appointing qualified managers to address organizational challenges.

From this, it can be concluded that digitalization is not an end in itself but a driving force for achieving institutional excellence and global leadership. Since institutional performance reflects human resource performance, three main approaches can be adopted.

• **Employee Performance Development:**

- Focusing on strengths and adopting a positive approach to performance challenges, leveraging employees talents and skills.
- Aligning desired performance with actual performance by enabling individuals to engage in tasks that match their interests.
- Linking personal goals with job performance to ensure alignment and motivation.

• **Job Design Development:**

Improving job roles by expanding tasks, enhancing responsibility, reducing monotony through job rotation, and promoting skill development through cross-training and teamwork opportunities.

• **Work Environment Development:**

- Ensuring alignment between organizational levels and work structures.
- Enhancing communication and interaction among employees and stakeholders.
- Designing flexible work schedules.
- Establishing balanced supervision systems.
- Improving communication quality between employees and management.

Overall, achieving outstanding performance in higher education institutions requires solid foundations, including the provision of material, human, technological, and knowledge resources. It also depends on integrating technology with human competencies to improve outputs and quality. Digitalization, therefore, serves as a catalyst for institutional excellence and international leadership.

2.5 Strategic Challenges Facing Digital Transformation in Higher Education Institutions in Algeria

The use of information and communication technologies (ICT) in higher education in Algeria faces several challenges, including: (**Khawas, 2021, p. 89**)

- Insufficient number of computer laboratories.
- Lack of specialized software for academic subjects.
- Absence of internet access in classrooms.
- Administrative environments that do not encourage ICT use in education.
- Limited internet speed and connectivity, placing Algeria among the lowest-ranked countries in the region.
- Limited proficiency among faculty in using modern technological tools.

Additional constraints include:

- **Financial barriers:** High costs of technology and equipment.

- **Time-related barriers:** Challenges in integrating technology effectively within appropriate timeframes.
- **Human barriers:** Resistance or lack of readiness among some faculty members.
- **Legal barriers:** Issues related to intellectual property rights and software protection.

To enhance digital transformation in higher education institutions, the following measures are recommended: **(Khawas, 2021, p. 90)**

- Transitioning from traditional to digital higher education systems.
- Strengthening communication channels among faculty, administration, and student.
- Improving ICT infrastructure.
- Increasing funding for digital education programs and research in information technology.
- Encouraging collaboration among all stakeholders, including ministries.
- Coordinating with relevant ministries such as finance, telecommunications, and innovation.
- Promoting initiative and reducing bureaucratic barriers among faculty members.

3. International Models for Achieving Outstanding Performance in Higher Education Institutions

A number of countries have taken the lead in embracing the digital challenge by integrating electronic means into the functioning of higher education institutions and achieving outstanding performance. These countries successfully met the challenge of effectively implementing digitalization in practice. Among the most prominent experiences are the Scottish model, the Singaporean model, and the American Malcolm Baldrige model. **(Driouch & Boubjedar, 2022, p. 342)**

3.1 The Scottish Model

The Scottish model provides a scientific and methodological guideline for measuring and improving performance in educational institutions. It has been adopted by several developed countries such as Australia and England. The model aims to ensure continuous improvement while reducing administrative complexity. The system (SQMS) consists of ten criteria that address the comprehensive characteristics of educational management systems, including: strategic management through policy formulation, quality management to meet stakeholders' expectations, marketing and customer care, human resource development, ensuring equal opportunities for students and staff, maintaining a safe and healthy environment, providing student guidance services addressing psychological, academic, and social needs, designing curricula aligned with labor market requirements, and assessment and certification.

3.2 The Singapore Excellence Model

The Singapore Excellence Model is a self-assessment framework used by educational institutions to measure continuous improvement and achieve excellence. It is based on the comprehensiveness and integration of systems and educational programs, with a strong emphasis on balancing academic content and student activities to ensure holistic learner development across all educational stages. The model consists of ten criteria divided into two main components:

- **Enablers (practices):** leadership, strategic planning, workforce management, resources, and student-centered processes.
- **Results:** administrative outcomes, workforce results, partnerships, societal impact, and key performance results.

3.3 The American Malcolm Baldrige Model

The Baldrige model (for educational excellence) defines outstanding educational performance as an integrated approach to managing systemic performance to ensure continuous delivery of enhanced value to students and other stakeholders in terms of educational quality and learning processes, while improving organizational effectiveness and adaptability. It also emphasizes both organizational and individual learning.

The Baldrige education criteria were first introduced in 1999, providing educational institutions with a comprehensive system that aligns core objectives with future vision, values, and financial resources necessary for progress. The model is based on criteria related to total quality management philosophy, continuous improvement, and service to the institution, environment, and society. It emphasizes leadership, strategic planning, information analysis systems, human resource development, and performance measurement (enablers). One of its key distinguishing features is its focus on producing qualified and well-trained human capital aligned with labor market needs, as well as promoting community service and institutional partnerships (results).

3.4 The Algerian Experience in E-Learning in Universities

The Ministry of Higher Education and Scientific Research in Algeria initiated the adoption of e-learning in 2020 by equipping institutions with the necessary tools to implement both e-learning and distance education. This initiative aims to complement face-to-face teaching by reducing classroom overcrowding, overcoming spatial and health-related barriers, and improving the quality of education in line with international standards.

This transition is based on a long-term strategy structured around three phases: (**Gandouz, 2021, p. 318**)

- **Phase One:** The use of basic technologies, such as video lectures, to accommodate large numbers of students while gradually improving teaching quality.
- **Phase Two:** The adoption of modern pedagogical technologies, particularly web-based learning and e-learning, to achieve medium-term quality improvements.
- **Phase Three:** The integration phase, where the distance e-learning system is fully implemented and disseminated through the “Knowledge Channel,” targeting a broader audience beyond university students, including lifelong learners and those seeking specialized knowledge.

Currently, distance education relies on a network of platforms for video lectures and e-learning distributed across most higher education institutions. Access is provided through the National Research Network (ARN), which includes 20 institutions serving as both transmission and reception sites, while four additional institutions function as reception-only sites. This project covers 77 educational institutions nationwide, including universities, university centers, and higher schools. The Scientific and Technical Research Center serves

as the central hub of the project, with lectures broadcast from various universities across the country.

In practice, Algerian universities have increasingly adopted digital solutions, particularly following Ministerial Directive No. 56 (January 29, 2020), which emphasized the necessity of digitalization in university management and the implementation of distance e-learning using various digital applications to ensure academic continuity during the pandemic. For example, platforms such as Moodle have been used to deliver lectures and practical work. Additionally, this period witnessed the rise of virtual scientific events, which demonstrated a satisfactory level of success in remote organization.

In general, the development and modernization of higher education institutions is a continuous and vital process. Enhancing the success of digital transformation in universities depends not only on improving technological capabilities and administrative systems but also on achieving a qualitative shift across all areas. This transformation ultimately aims to maximize efficiency and achieve outstanding performance, thereby elevating higher education institutions to higher levels of excellence.

II – Conclusion

In conclusion, it can be stated that digital transformation in higher education institutions is no longer an alternative technical option; rather, it has become a fundamental determinant and an inevitable necessity for universities to sustain themselves and achieve outstanding performance. The study has demonstrated that digitalization constitutes a nurturing environment for institutional excellence, contributing to the quality of academic and research outputs and enhancing the efficiency of administrative processes.

Moreover, the transition toward excellence through the adoption of digitalization represents a strategic pathway that requires the integration of technological requirements with human competencies, alongside the presence of a clearly defined plan that begins with accurate diagnosis and ends with continuous evaluation. The core conclusion drawn is that outstanding performance in the digital age is not a static state, but a continuous development process that depends on the university's ability to leverage artificial intelligence applications and digital tools to reengineer its traditional roles.

III – Results

- Digital transformation is a driver of performance, not merely a tool.
- Digital transformation enables universities to penetrate various fields and achieve a competitive position.
- Digital transformation contributes to delivering university outputs with appropriate quantity and quality, at the right time and at minimal cost.
- Digital transformation in universities represents a shift from traditional activities to digital operations based on modern technologies.
- The availability of highly qualified and competent human resources is essential for the successful implementation of digital transformation.
- The development and achievement of outstanding university performance involve a set of activities aimed at optimally utilizing and developing all stakeholders to fulfill the university's mission and enhance its performance.

- Digital transformation in universities requires qualified human resources capable of performing tasks within a digital environment.
- Among the approaches that support outstanding performance and reinforce digital transformation are competency-based workforce planning, competency-based recruitment, training, career management, and competency-based compensation systems.
- Developing human resources (students, staff, and faculty) enhances performance and is a key requirement for digital transformation.
- The study highlighted international experiences of countries that have achieved outstanding performance and become leaders in this field through digital transformation and the digitalization of their various activities.

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