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Dolna 17, Warsaw,  
Poland 00-773  
+48 226 0 227 03  
editorial\_office@rsglobal.pl

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DIGITIZATION AND ITS IMPACT ON THE QUALITY OF HIGHER  
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# DIGITIZATION AND ITS IMPACT ON THE QUALITY OF HIGHER EDUCATION IN ALGERIAN UNIVERSITIES

**Boutarfa Rochdi**

University of Oum Elbouaghi, Algeria. Social Problems in Algerian Society Laboratory.  
ORCID ID: 0009-0002-8302-1351

**Zedira Khammar**

University of Oum Elbouaghi, Algeria. Social Problems in Algerian Society Laboratory.  
ORCID ID: 0009-0005-4795-499X

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## ABSTRACT

This study aims to shed light on the reality of digitalization in higher education institutions, by exploring the strategies of the relevant ministry. These strategies include developing a framework for operationalizing the principles of digitalization and digital transformation, as well as identifying platforms and programs used to promote education and learning. The study also highlights the role of these tools in enabling researchers to effectively perform their tasks, keep abreast of developments in scientific research methods, and benefit from digitalization technology, which can help strengthen innovation and improve the quality of scientific research. It should be added that this study also aims to analyze the challenges faced by higher education institutions in implementing digitalization strategies and to formulate practical recommendations to improve the teaching and research process.

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## KEYWORDS

Digitization, Digitization of Education, Quality, Quality of Education

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## Introduction.

With socio-organizational transformations in the university environment, digitization has become an important and central element in the development of organizational processes. This variable contributes to improving the quality of higher education by providing innovative tools and techniques.

However, the digital transformation policy is accompanied by a number of challenges, including: the formation of teaching staff on the optimal use of these technologies and ensuring organizational justice in access to digital resources.

In short, digitization represents a great opportunity to enhance the quality of higher education, but it needs effective strategies to establish its principles and ensure positive impact

Supports information and communication technology and enhances the Department's capabilities to effectively control digital technologies In addition to attempting to integrate modern technology into various organizational events, especially with regard to teaching and learning processes to improve the quality of the educational process and meet the needs of actors in the university environment, digital technology is an imperative. Most university institutions seek to ensure its integration in the process of teaching, learning and acquiring knowledge in accordance with the principles of digitization, with a view to achieving its objectives and achieving organizational balance in a constantly changing environment.

The following questions were raised:

The main question:

- Can digitization contribute to improving the quality of higher education?

### **1. Study hypotheses:**

#### **Main hypothesis:**

**Digitization contributes to improving the quality of university education.**

The study's hypotheses were as follows:

#### **Sub-hypotheses:**

- The use of digital means and technologies in the university institution contributes to improving the quality of scientific research.
- The use of digital technology at the University of Algeria contributes to improving the quality of the educational process.
- Effectively embracing digital management contributes to improving community service.

### **2. Objectives of the study**

Digitization plays an important and vital role in building an exemplary and promising future in the university environment: the study of the effects of digitization with the quality of higher education comes from its paramount and growing importance in the age of modern technologies and cognitive explosion where this study can contribute to:

A deeper understanding of the impact of digital technologies and the identification of the most important positive and negative effects in various activities in the university environment, especially related to scientific research and the process of education and learning and how to make effective use of this variable to improve the quality of the educational process, This study may also help guide the organizing actors of the university institution towards adopting innovative educational and research strategies based primarily on digital technologies. scientific research ", which may improve their experiences in scientific research and enhance their regulatory roles.

### **3. The importance of the study:**

The importance of this study is demonstrated by the status of the concept of digitization, especially in the light of the detailed developments and shifts in the ways of doing business in the university environment, the emergence of many means and techniques that facilitate the process of practical research as well as the performance of pedagogical tasks and roles and make these tasks of quality and organizational effectiveness.

This study also has a knowledge weight as it reveals professors' uses of various digital technologies and their trends as a result of their use.

### **4. Previous studies:**

**The first study**, Karima Houamed (2024), was entitled: "The role of digitization in ensuring the quality of higher education, scientific research and achievement of sustainable development goals", whose main question was: What is the role of digitization and modern technology in upgrading the quality of higher education And to what extent can the University be a locomotive for sustainable development at levels of technological and digital development, This study touched upon a range of concepts related to digitization and its contexts in higher education The most important manifestation of digitization in the education sector, the study community is represented in a group of professors, students and administrators in the Department of Political Science of Bourj Baji Moukhtar Annaba University specimen ", selected at random, where the study was conducted on a sample consisting of 15 individuals s research tool ", the field study relied on the questionnaire's three-pronged set of questions, which concluded that:

- Digital technology relies on a range of advanced software for the purpose of providing quality services.
- Digital technology leads to improved service quality.

**The second study**: Bouhmida (2017) The title of the study read: "The impact of the use of digitization in raising the student's degree of academic achievement". The study began with the following hypotheses:

- There are no statistically significant differences in students' cognitive fields, in quantitative and qualitative tribal testing of the two independent groups.
- There are statistically significant teams in students' cognitive fields in the quantitative dimension test of the two independent groups.

The study relied on the semi-experimental curriculum for accurate results. The study tool used the researcher in his study on an attainment test designed by him with the help and guidance of natural science professors. The sample of the study was 72 students who were chosen intentionally and then divided into two control group groups and another experimental.

The study concluded a series of findings, including:

The process of integrating digitization into the educational class has positive effects on the degree of cognitive assimilation

**Study III:** Smili and Treki (2022) entitled: "Mechanisms for achieving the quality of higher education at the University of Algeria under the application of the L. M.L. ' The main question for this study was:

What are the mechanisms of the Algerian University for achieving the quality of higher education under the (LMD) A number of key points related to the quality of education have been highlighted, including:

The importance of institutional evaluation, emphasizing its necessary and detailed role in the process of ensuring quality education. The University seeks to achieve educational quality by applying strategies and providing the necessary resources.

Finally, the study concluded that achieving the quality of higher education at the University of Algeria requires placing academic and practical mechanisms on the ground in order to achieve the desired objectives, as well as the need to develop training programmes to raise the level of career performance.

### **I/Digitization in Higher Education Sector**

#### **1. Definition of digitization:**

One of the most important changes in the organizational environment has a close connection with modern technologies in the field of information and communication. It is a modern modular pattern in which management moves all its inputs and outputs from classical to digital style based on digital means and technologies in various organizational processes (Hamidoch & Bouzida, 2020, p. 44)

Digitization is the process of transforming materials from theoretical formats that individuals can read in a simple traditional way, to a more complex format whose content can be accessed to the availability of modern techniques and technologies such as: scanners, and other devices used to digitize content paper knowledge for digital content. (khan & Aftab, 2015, p. 139)

#### **2. Digitization in the educational process:**

Digitization can be said to be the process of converting paper data into digital data whose content can be viewed through computers.

It is a set of advanced technologies and means, with a digital dimension used in the process of transferring scientific knowledge through various media, including media and communication techniques that serve to store scientific knowledge as well as transfer it from one place to another in addition to e-learning platforms that (Bouzaeb, 2022, p. 70-69)

- A modern educational trend based primarily on information and communication technology techniques and the following electronic portals and platforms, the aim of which is to produce science and knowledge as required by stage variables and this saves time and effort. (Al-Atari, 2023, p. 23)

- Digitization in the educational process: refers to the use of modern digital technologies to improve and modernize various organizational processes in the university environment, perhaps the most important of which is the educational process, and the administrative process.

**3. Digitization Guideline (SDN):** It is an action strategy designed to prepare higher education institutions to adapt to organizational changes in a changing digital environment. It is one of the emerging sectoral projects aimed at providing material and logistical support for the gradual adoption of digital transformation inputs. (Ministry of Higher Education and Scientific Research, 2022, p. 23)

#### **The guideline for digitization provides the following:**

Building a promising future for the higher education sector with digital transformation.

Provide the various means and techniques necessary to ensure that the direction towards digitization of the various works in the university institution is needed.

The Ministry of Higher Education and Scientific Research strives to make digitization a permanent companion and a fundamental pillar of all activities of the university institution, linking it to various regulatory processes to eliminate various bureaucratic practices, establish principles of governance and facilitate various activities in accordance with the requirements of the digitization age.

One of the most important aspects of the implementation of the digital transformation policy in the University of Algeria is the establishment of 60 digital platforms and several platforms for university services.

Eliminate the manifestations of paper and transform to digitize business, by converting paper files into user-friendly encrypted files (Ahtatech , 2023, pp. 10-11)

*Table 01: Requirements of the guideline for digitization of the higher education sector*

Axis	Its requirements and requirements
First axis: digitization to accompany the composition used to modernize interests.	Its requirements: obtaining more sophisticated equipment and satisfaction for digitizing events, as well as accompanying the composition of students and technical and administrative users in charge of digitization.
The second axis: digitization for the presentation of visual composition and for innovative pedagogy.	Encourage visual and harmonious configuration offerings over the line or remotely.
Third theme: Digitization in student service.	Develop internal equipment that encourages initiative or sponsorship of distant students, to develop the contractor's idea
Axis 4: Digitization in the service of research activities.	Increase the capacity and power of calculation, storage and access for open and stable deployment and use of artificial intelligence.
Axis V: Digitization as a pillar of basal structures.	Based on users' daily activities and their growing movement on good networking and distribution of wifi to grassroots structures.
Axis VI: Digitization as propaganda for modern management.	Development of tools, techniques and strategies For modernization of management in order to provide quality services.
Theme 7: National and international relations.	Development of international relations through digitization.

(Abbas, 2023, p. 279)

The above table represents the requirements for digitization of higher education based on Digital platforms of the Ministry of Higher Education and Scientific Research as per the Digital Guideline (SDN).

The roadmap for SDN digitization is a strategic plan aimed at transforming traditional networks into smart, adaptable networks using modern technologies and tools.

*Table 02: Digital platforms of the Ministry of Higher Education and Scientific Research as per the Digital Guideline (SDN)*

Digital Platform	Link	Usage	Directed
PADOC Platform	<a href="https://Padoc.mesrs.dz">https://Padoc.mesrs.dz</a>	Includes courses for PhD students, as developed by the Ministry's formative programme.	PhD students
Ground Publications Institutions ASJP	<a href="https://www.asjp.cerist.dz">https://www.asjp.cerist.dz</a>	A platform for electronic dissemination, containing all the journals accredited and court in Algeria.	Professors and students.
Platform for the discussion of doctoral theses.	<a href="https://Progres.mers.dz/webfve">https://Progres.mers.dz/webfve</a>	Discussion of theses and follow-up evaluation.	PhD students
Complaints Platform	<a href="https://Progres.mesrs.dz/rddoleance">https://Progres.mesrs.dz/rddoleance</a>	Lay down complaints and grievances, request an appointment or interview.	to all users.
Ground Management of PRFU formative research projects	<a href="https://www.prfu-mesrs.dz">https://www.prfu-mesrs.dz</a>	Managing formative research projects.	PhD students
Ground control and management of composition and connections.	<a href="https://Service.mesrs.dz">https://Service.mesrs.dz</a>	Monitoring and monitoring professors and doctoral students abroad in the field of scientific research and objectives to be achieved from education	Professors
Thesis Portal	<a href="https://www.pnst.cerist.dz">https://www.pnst.cerist.dz</a>	Notification of theses as a means of supporting national scientific production.	sector organisations
Scientific theft exploration platform and quotation ratio.	<a href="http://Progres.mesrs.dz/webfve">http://Progres.mesrs.dz/webfve</a>	A program for detecting quotation ratio.	sector organisations

**Source: Illustrated by the researchers**

The Ministry of Higher Education and Scientific Research in Algeria has been working on implementing digital platforms to enhance the efficiency and accessibility of education and research. These platforms, as part of the SDN (Software-Defined Networking) digitization roadmap, aim to modernize and optimize various academic and administrative processes.

#### **4. The most important digital applications in higher education:**

4-1 Digital Education Platforms: These are tools available on the Internet for each higher education institution, through which curricula are developed and educational content can be provided remotely and videos and courses are created with an interactive dimension between actors in the university environment. (Ahmed, 2022, p. 04)



- It is a digital space that allows users to interact through web technologies, by managing electronic educational content, publishing lessons and courses, developing scientific activities and developing a live broadcast feature to increase the level of academic interaction between students and professors. (Salem, 2017, p. 98)

- Through these definitions, it can be concluded that digital platforms are modern technologies imposed by new variables in the environment of educational institutions, providing a wide range of educational resources to the Internet according to databases. Perhaps one of the most important higher education platforms at the University of Algeria is the Model platform.

**MOODLE:** One of the digital systems associated with the management and organization of open source e-learning, by providing a sophisticated learning environment to keep abreast of the environmental developments associated with digital transformation policies, this platform can be used at the individual or institutional level (Bukhaltout, 2022, p. 39)

**PROGRES:** Digital ground designed to digitize the various organizational processes, whether administrative or pedagogical at the university institution (Titouch & Gharbi, 2022, p. 08)

This digital floor contains many spaces for the administrative staff as well as pedagogical and student space. (Roudi & Laamor, 2023)

#### 4-2 Digital Applications for Reference Management:

It is a variety of digital academic research tools, consisting of huge databases that regulate the bibliographic work of researchers according to sound standards, by storing references and citations electronically and retrieving what is needed to be used in the completion of various scientific research. (Chabonia & Liana, 2022, p. 212)

##### Application (ZOTERO):

One of the most important research tools, designed to assist researchers in managing their audit in a digital way, assists researchers in the process of citation and editing in a smooth and accurate manner. The application includes a large database that enables the researcher to record bibliographic data in an automated manner. (Abdallah & Rizk, 2019, p. 1080)

The application is also one of the free open source research tools with many functions. It is important: to arrange, preserve, organize and share research with various academics. It also helps to manage and classify references. (Tmourtbir & Djazairi, 2022, p. 08)

##### Application (MENDLY):

It is a digital research application, used in the management of references and the organization of academic scientific works with many functions of the most important: the management of references, storage and exchange of files, academic cooperation in the field of scientific research. (Hicks, 2011, p. 127)

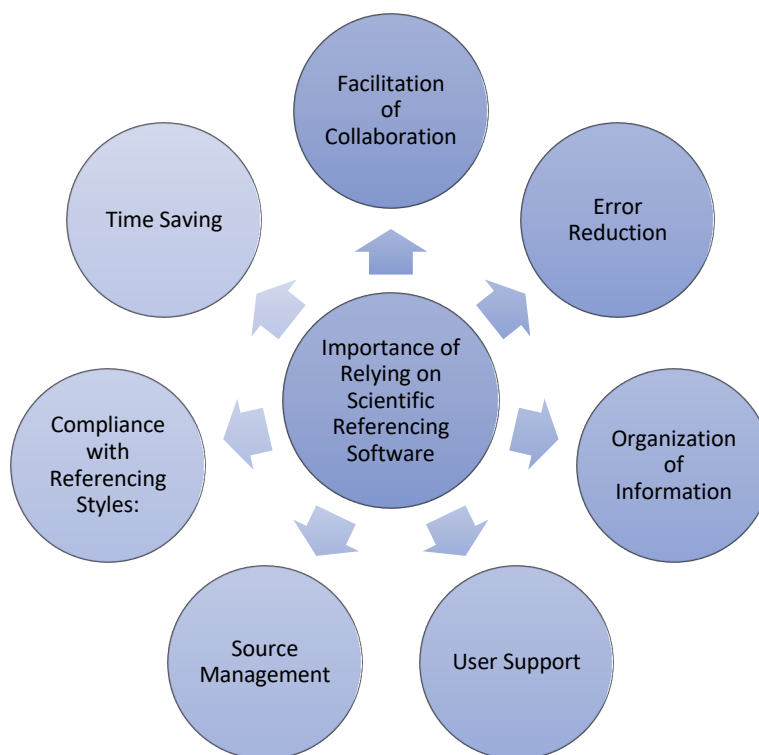
**MENDLY** program enables researchers to create a new reference library, as this app is one of the most important reference tab software, which has an important feature: the ability to retain reference scientific information in an easy and accurate manner. (Al-Nafiai, p. 24)

*Table 03: Other applications for reference management*

Name	Description	Key Features
End Note	A comprehensive reference and information management program.	Support for multiple formats, library search, and team collaboration.
Ref Works	A cloud-based reference management tool.	Support for various citation styles, collaboration capabilities, and reference storage.
Bib TeX	A reference formatting tool for LaTeX.	Ideal for academic research, automatic reference formatting.
Papers	An application that combines reference management and research organization.	Attractive user interface, advanced search, and collaboration features.
Citavi	A comprehensive tool for knowledge and reference management.	Project management, text integration, and citation support.

Source: Illustrated by the researchers

Reference management programs are tools that help researchers and students organize and manage the references and sources they use in their research or studies



*Fig. 01: The importance of relying on scientific documentation software for programs.*

*Source: Illustrated by the researchers*

#### **4-3 Digital libraries:**

Digital platforms providing electronic sources and references in their original form or converted from traditional paper-to-digital format can be accessed through the web. (Mahi & Bougandel, 2020, p. 178)

##### **➤ Al Manhal Digital Library:**

A digital platform that provides the service of providing Arab or foreign scientific references and sources, which can be subscribed to periodically through this feature. The researcher can access the latest scientific references. This library is available on a huge and important database of various academics in the form of files with a direct download feature. (Muhanna & Mohammed, 2020, p. 23)

##### **➤ University Digital Warehouses:**

Digital data storage and management systems that include academic scientific production of doctoral articles and theses, and graduation memoirs of various phases, this facilitates access to scientific content in its digital form specially designed to accommodate huge amounts of data and files of different types. (Kouskous & Ben Taiab, 2023, p. 03)





Fig. 02: The importance of digital libraries and their role in improving the quality of bibliographic research.  
Source: Illustrated by the researchers

**4-4 Statistical Analysis Programs:** are a variety of programs whose primary function is to perform various processes associated with statistical data analysis whether quantitative or how, these software provide accurate and accurate data results as well as time and effort, provide sufficient information to companies about the labor market, help with large-sized sample studies (Abonasrah, 2021, p. 06)

➤ **Social Science Statistical Packages Program (spss):**

One of the most widely used digital statistical programs in the field of data analysis in social research, this is for its characteristics, including: ease of use, clarity of instructions and the possibility of transmitting its results to other programs, including: rose and excel, as well as in scientific research containing digital data, this application contains various statistical tests (Mensi & Al-Sharif, 2014)

➤ **Statistical Program (PAYTHON):**

It is an open source programming language used to build independent software, using graphical interfaces that attract the attention of many developers, data scientists and analysts (dixit, 2023, p. 09)

Table 04: Other Digital Applications for Statistical Package Analaysais

Application	Description
<b>Stata</b>	A data analysis program known for advanced statistical analysis, commonly used in social and economic sciences.
<b>R</b>	An open-source programming language used for statistical analysis and data visualization. It supports a wide range of statistical packages.
<b>SAS</b>	An integrated data analysis system used in large organizations, with strong capabilities in statistical analysis and data management.
<b>MATLAB</b>	A programming language used for data analysis and signal processing, offering powerful statistical tools and multidimensional analyses.

Source: Illustrated by the researchers.

Programs for statistical data analysis are software tools used to collect, analyze, and interpret data to uncover patterns, relationships, and trends. These programs are essential in fields such as research, business, economics, and healthcare, where data-driven decisions are crucial.

#### **4-5 Scientific theft detection programs:**

It is an application and software available on the web in free or paid formats, its primary function is to detect moral plagiarism and non-systematic infiltration as well as to prepare reports and guide researchers (alharbi & alharbi, 2015, p. 17)

##### **➤ TURNITIN:**

From scientific theft detection programs, created by a group of researchers at the University of California in 1996, it works by comparing user-uploaded texts with a huge database containing an enormous number of diverse academic sources.

Its primary function is to detect plagiarism and prepare reports. (Hussein, 2017, p. 17)

##### **➤ Program (PLAGIARISM DETECTION.ORG):**

A program designed to assist researchers and provide cognitive fraud verification services, through a working mechanism based on advanced digital technologies by detecting refined or infused scientific content.

One of the disadvantages of the program is its incompatibility with some languages and its inability to examine many documents in one time. (Al-Issani, 2017, p. 65)

## **II/Quality of higher education:**

### **1. Quality Definition:**

Indicates the extent to which a product or service meets the requirements of customers and customers, according to the American Institute of Standards: A variety of features to be provided in a particular product or service such as degree of reliability, ceiling of expectations, durability and design. This service is capable of satisfying the needs and satisfaction of the customer. (oumra, 2022, p. 89)

- It is the process of meeting customers' and customers' needs by providing a service or product that meets the aspirations of the customer network and achieves their full satisfaction through a set of standards measuring product quality. (Saad & Aroudj, 2024, p. 177)

- Through our previous group we have concluded that quality: is to provide what individuals and communities aspire to according to pre-defined standards by competent authorities.

### **2. Definition of quality of education:**

One of the important concepts in the environment of higher education institutions, it encompasses many organizational variables and is closely linked to all the functions of the university institution such as: curriculum, educational programs, scientific research as well as the provision of services to the local community according to international standards. (Adjal, 2018, p. 823)

#### **Another definition of quality of education:**

According to Farid Al-Najjar: It is a useful study for the creation of excellence and institutional development accompanied by continuous improvement and development strategies according to the Kaizen system to satisfy all organizational actors in the university environment. (Kaabar & Hanoun, 2022, p. 747)

The quality of education can be defined according to the point of view of the researcher. It is a modernist direction linked to institutional effectiveness. It aims to develop the cognitive and behavioral potential of actors in the university environment as well as to enable them to acquire knowledge according to the requirements of the times, especially with regard to digitization.

### **3. Quality requirements in higher education institutions:**

There are many dimensions to be met for the proper application of the quality system in education, the most important of which are:

#### **⇒ Pedagogical Frame Quality:**

It is the human resource of professors and components who are qualified and able to enrich the educational process according to the requirements imposed by the stage. The pedagogical framework here occupies an important place in the success of the educational process through its skill and ability to perform its roles in the direction of various actors in the university environment.

#### **⇒ Curriculum Quality:**

This concept is linked to the effectiveness and relevance of educational content and teaching methods as required by modern evaluation standards, especially related to digital transformation, as well as the ability of these curricula to build the academic personality of a student and develop his acquisition, allowing him to solve his problems and the ability to integrate into the labour market (Makhlouf & Ghrabi, 2019, pp. 49-50)

⇒ **Student Development:**

By building a model for a distinguished student and this by refining his academic knowledge according to a sound scientific model, as well as a good interest in the student by providing a high service as they are the focus of the educational process in the university environment.

⇒ **Technical grassroots establishments:**

It consists of the digital base structure, which mainly includes the technological equipment needed to adopt digital in the higher education sector, provide computer networking, and ensure the provision of high-flow Internet (Hadjji & denbri, 2024, p. 722)

⇒ Building a strong relationship with society:

The strength of the relationship between the university institution and its external environment through its commitments to its tasks demonstrates the direction of its environment as well as its adherence to the ethics of the profession and its ability to find solutions to social problems.

⇒ Development of evaluation systems:

Diversify assessment methods and methods in the university environment, abandon classical patterns and trend towards modernizing this process according to the requirements and stakes of the stage and relying on digital methods. (Moula, 2024, p. 155)

#### **4. Regulatory measures to implement the quality of higher education at the University of Algeria:**

These measures taken by the relevant ministry and all the relevant authorities include the activation of monitoring bodies such as: the National Council for the Evaluation of High Media, and the establishment of bodies whose roles are to implement the quality system.

✓ **CIAQES:**

**Its functions:** to prepare a national manual for quality assurance in accordance with international standards. (Smilli, 2023, p. 242)

✓ **National Council for the Evaluation of Higher Education (CNE):**

It has been reactivated in accordance with a ministerial decision. It has been entrusted with the task of managing, evaluating and ensuring quality in higher education institutions and has included quality assurance cells whose mission is: to follow up the work programme in the light of the continuous improvement of the quality of the training programs. (Atoui, 2018, p. 365)

✓ **Quality Assurance Cells (CAQ):**

A body of the Rector composed of a group of actors, from various pedagogical and administrative bodies, appointed by the Rector of the University, RAQ, drafts an internal law and an annual workplan, which meets once a tripartite meeting on an exceptional basis.

Its organizational functions and roles are:

Ensuring the quality of education by contributing to the establishment of solid foundations in ensuring the development process at the university institution, these tasks contain a set of important roles to implement, follow up, evaluate, and form. Let's know, call.

This body is a liaison between the University and the national assessment bodies.

Ensures the follow-up of NAPs in light of the continuous improvement of the quality of training programmers.

Organizes media days to raise awareness and highlight its tasks and roles. (Ben Oum Saad, 2019, p. 06).

#### **Recommendations:**

The topic of digitization and the quality of education is one of the important and emerging topics at the level of the university environment. It has had a number of direct effects on the rationale of university construction. This is why we, as researchers, have drawn up a set of recommendations that we have deemed important and that the need for digital transformation has a significant impact on the quality of education:

⇒ Developing digital infrastructure: in order to contain digitization policies and ensure the proper functioning of the various processes associated with them, as well as strengthen the process of education and learning.

✍ Training educational and managerial competencies: Through the allocation of training programmes on the use of digital technologies and the enhancement of their skills to establish a culture of digital transformation.

✍ Continuous research: by assessing the effects of this variable on the quality of education and identifying shortcomings.

### Conclusions.

In the midst of the world's digital revolution, the pivotal role played by digital technology in conducting various activities in the university environment, especially related to the quality of education, cannot be denied.

From this point of view digitization has proven its ability to bring about radical changes in university construction by providing it with innovative tools and means to run various events especially related to the quality of education.

Integrating digitization into the educational process is not only about providing digital content but also about developing teaching methods and methods and providing a more flexible and creative learning environment. We also help researchers to develop their research skills by using modern techniques to reach more accurate results with less effort and time.

In conclusion, we can say that digitization in higher education is a modern direction to improve the quality of the educational process, but achieving the desired results requires an effective strategy capable of establishing the principles of digital transformation.

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