

The Mechanizm of digital transformation in higher education: University of M'sila case study

Hassyna DAKHANE

Mouloud Mammeri university (Algeria), hassyna.dakhane@ummto.dz



ORCID: <https://orcid.org/0000-0001-9526-6335>

Received: 28/01/2025

Accepted: 10/03/2025

Published:31/03/2025

Abstract:

The digital transformation of higher education is undergoing cultural, mental, and technological changes as part of an overall process. Prior to COVID-19, the Ministry of Higher Education and Scientific Research of Algeria decided to adopt a comprehensive strategy to implement the digital transformation. However, the emergence of the virus prompted higher education institutions to execute their plans without sufficient prior planning. The objective of this study was to outline a model of a digital transformation strategy applicable to M'sila University.

Analytical methods were employed to examine the quantitative data obtained from M'sila University. The results showed that despite the delays in the digital transformation of Algerian universities, they have achieved significant progress. This includes improving their ranking at the national and international levels, increasing the number of lessons published on Moodle and MOOC platforms, and boosting the number of students using these platforms. Furthermore, the national platform for registering students and conducting deliberations has been effectively utilized. This platform also contains data on all human resources at the university. Additionally, the visibility of M'sila University on ResearchGate and Google Scholar has increased through the growing number of lecturer profiles. Lastly, there has been a rise in teacher training in the use of digital platforms.

Keywords : Digital transformation, Higher education, M'sila university, digital platforms.



I- Introduction:

One of the sustainable development goals (SDG 4) is to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"; education can therefore also be understood as 'a process of strengthening the capacity of the education system to reach out to all learners' (Batliwala. Y, 2022, p. 03). It is an attainable goal in Algeria (Kerras. N., Salhi.S. D, 2021). Higher education is of interest to governments, institutions and individuals because of its importance in shaping the future policies of countries and societies. This is what Algeria has consistently pursued by looking for ways to develop higher education and its institutions (Ballatrache, R. Aloutti, L, 2020). The recent trend in Algeria to decentralize educational powers has resulted in an increased requirement for classroom innovation. It is therefore a recommendation that higher education should use technology more and each teacher should use projectors in their lessons and each student should have access to a portable computer (Guessabi, F, 2021). Despite the using of the Internet, Algerians have discovered the fragility of systems that make it impossible for them to keep up with the developments of the digital age. This is precisely why the "distance education system" remains confined to its traditional framework (printed lessons are sent to participants or students via ordinary mail) (Benharzallah. M, 2019).

The Algerian Ministry of Higher Education has invested heavily in the achievement of digital transformation through the use of digital technologies in education. Despite reiterated failures, Current facts indicate that there is real evidence of application of digital tools in reality (Benharzallah. M, 2019).

From this perspective, the University of M'sila sought to adopt a strategy (2017-2022) (MHESR, 2017) to strengthen its capacity and mobilize its efforts to achieve digital transformation in its operations, through integrating digital tools in the strategic plan, to take advantages of digital transformation. On that basis, this paper provides an analysis of some activities carried out by M'sila University in the framework of digital orientation.

This study aims to realize the framework of M'sila University in recent years. Additionally, identify activities that have been digitized and analyze the potential impacts of the university's digital transformation.

1- Background: Digitization and digital transformation

2-1 Definitions :

While developing the binary numerical system in 1679, Gottfried Wilhelm Leibniz envisioned and described in his publication *Explication de l'Arithmétique Binaire* in 1703, the concept that would be known as Digitalisation (Khan, S, 2016).

There are a number of terms that are used as parts of different aspects of digitization, digitalization, and digital transformation. The term "digitalization" is often confused with other terms like mechanization, automation industry or robotization (Yücebalkan. B, 2018). According to (Bloomberg, J, 2018) it is necessary to distinct between these terms.

According to (Gartner's IT Glossary) Digitization is the process of changing from analog to digital form, also known as digital enablement. Digitalisation, is furthermore described as the conversion of analogue information into binary number of either 0 or 1: digital digits (Collin, J.,et al, 2015). In other words, a process of information conversion from the physical to the digital plane. Unlike digitization, digitalization doesn't have a

single, clear definition. "Digitization" and "digitalization" are two conceptual terms that are closely associated and often used interchangeably in a wide range of literature (Bloomberg, J, 2018). Savić. D (2019) Digitalization has three distinct phases, The initial phase, when single operations or processes are automated (such as library purchasing); the mid-phase, when related processes are automated and joined together (such as library collection management or supply chain management); and the third, most complex phase, when multiple systems that support business processes and information flows are integrated into library management systems or enterprise management systems. When the initial digitization was mainly concerned with data and various converters, digitalization concerned on the automation of various business processes and operations, as well as on information processing (Savić. D, 2019, p. 38).

In contemporary literature Digitalization is expressed as “a global megatrend that fundamentally changes the existing value chains of sectors and public institutions” or as terms like “mobile applications”, “big data”, “machine-machine”, “internet of objects”, “industrial internet”, “Industry 4.0” (Khan, S, 2016, p. 07). As generally outlined above, “digital” is not a new medium, it is an age of a new way of thinking and this age comes along with a new style of management that feeds on technology (Yücebalkan. B, 2018, p. 02)

New and high technologies in the digitalization process are characterized as “disruptive”. On the other hand, the digital transformations which are called “uberization” have proved themselves in many sectors (Yücebalkan. B, 2018, p. 02). For examples :

- There is not even a single taxi on the balance sheet of the world's largest taxi company Uber ;
- The largest accommodation companies Airbnb or Booking.com do not own real estate chains or hotel rooms ;
- The most widely used communication channels Skype and WeChat have no telecommunication infrastructures ;
- Alibaba, one of the largest retail companies do not have stocks ;
- One of the largest media company Facebook do not create contents ;
- Netflix that has the largest collection of movies has no movie theater ;
- The largest software vendors Google and Apple do not develop the applications they sell.

These examples illustrate how impact Such platforms and many others similar to them on both individual as a consumer and as a workforce in the global reality called “hub economies” (Yücebalkan. B, 2018). Therefore, digitalization is not just about rewriting existing processes; it is about starting from scratch and figuring out how the potential new products, services and clients will be handled in a completely different way. In other words, how we can create value by using of digitalization.

In recent years, digital transformation (DT) has emerged as an important phenomenon in strategic IS research (Piccinini, E., et al, 2015). Despite, Digital transformation has been mostly investigated by prominent research centres in collaboration with professional experts from consulting companies, whereas academic researchers are somewhat lagging behind. From the practitioners’ point of view, there is a struggle in finding effective ways of conducting digital transformation (Ivančić, L., et al, 2019). According to Agarwal (2010) The digital transformation includes the broad and deep use of digital technologies, whether

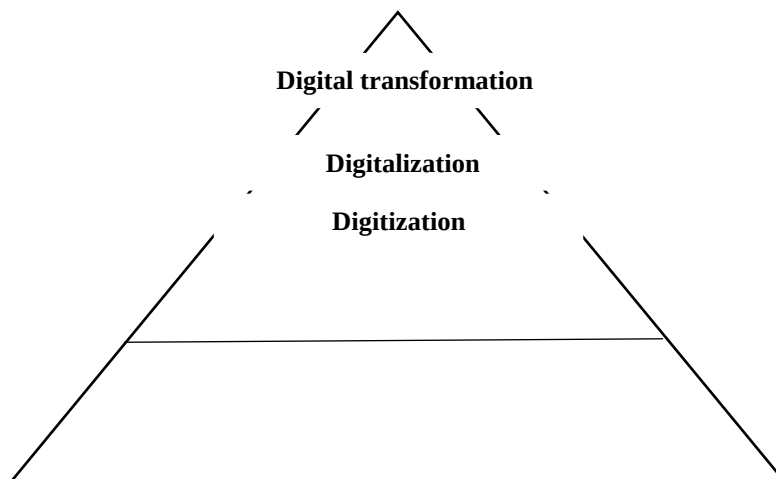
in society or in different industries (Agarwal, R., et al, 2010). In other hand, Digital transformation can be comprehended as a continuous process of climbing the scale of digital maturity through using digital and other technologies along with organizational practices to create a digital culture (Ivančić, L., et al, 2019). Vial. G (2019) constructed a conceptual definition of DT as “a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity digital technologies” (Vial.G, 2019, p. 09). About the requirement of digital transformation, it depends on: empowering environment, policies and regulation, digital infrastructure, digital skills, human capabilities, digital innovation and entrepreneurship (AU, 2020).

2-2 Digital Transformation Hierarchy

According to O’Leary. D.F (2022) there is a hierarchy of these digitization terms, moving from the simpler and easier to execute activities (digitization), to the more complex and difficult to execute (digital transformation). This hierarchy is summarized in figure 1.

As I move through the digital transformation hierarchy, the level lower generally is required to complete the next level. Thus, in general, digitization is required for each of digitalization and digital transformation, while digitalization is required for digital transformation (O’Leary. D.E, 2022).

Figure.1 : Digital Transformation Hierarchy



Source : (O’Leary. D.E, 2022, p. 04)

2- Digital Transformation in Higher Education

3-1 Main contents

Integrating deeper digital tools in higher education has been a growing trend over the past few years and is continuing to see new development (NMC, 2017). The greatest pressure on universities to change comes to respond for the needs of upcoming digital-native and nontraditional students, who demand a flexible, personalized, and real-time educational experience. University vision must place the student experience at its heart (Yesner, R, 2021). It is common to hear talk of the digital disruption of education, flipping the traditional classroom setup, and technology as a game changer (Selwyn, N, 2015). The reason of the disruption in education is the extensive use a new and high technologies in education, as we discussed above. Industrial-era schools are regularly decried as "broken", while various

digital technologies are celebrated for kick-starting "twenty-first century learning" (Selwyn, N, 2015). Alenezi. M et al (2023) refer that the innovative use of digital technologies and tools in education is known as digital education. Engaging learning opportunities can be created by educators by exploring the use of digital technologies. Students and teachers will both benefit from this innovative use of digital technology. Educators discover better and more advanced methods for teaching students by experimenting with new approaches. This makes learning enjoyable and encourages engagement (Alenezi, M. et al, 2023).

If we focus on the binomial higher education and technology, we can see that the use of technology continues to be more technical and curriculum centred, rather than practical and critical; it is seen as a catalyst for professional development to facilitate the use of technology in pedagogy. There needs to be a realistic recognition of the vital part technology plays in the educational process at the top levels of administration at the institution in order for fundamental change to happen at all levels of the ecosystem (Melki, A. et al, 2017). Rodríguez-Abitia et al. proposed a framework to assess the level of digital maturity in universities, different action plans have been drawn up, consisting of three guiding principles with their corresponding measures: (Rodríguez-Abitia, G. et al , 2020)

- Improving the use of digital technologies in the teaching and learning processes: better Wi-Fi connections in schools, use of self-assessment tools and digitally certified diplomas.
- Acquiring and developing digital skills to support the digital transformation: creation of a platform in higher institutions to improve teaching–learning processes; development of scientific digital skills—open science; cyber security in education; and training in digital skills and entrepreneurship.
- Improving education systems on the basis of research, innovation and good practices that help to build a digital culture (digital literacy, digital competences, inclusion and citizenship).

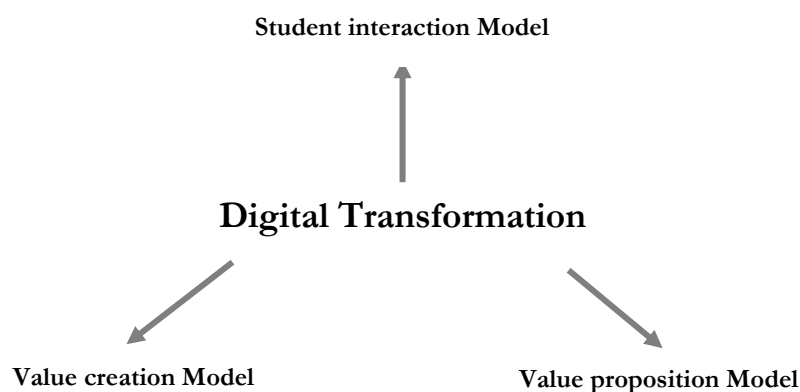
Assuming that the overall objective of digital transformation in higher education is to achieve rapid technological changes involve new disruptive processes (Tamer, H. Knidiri, Z, 2023). that mean a redefinition of education services and accompanying re-development of operational processes, there are at least three different possible paths which have to be considered: (Sandkuh. K, Lehmann.H, 2017)

- Service-first transformation focusing on a change and redefinition of services before addressing major improvements and changes in operations.
- Operation-first transformation aiming at new and improved digital internal processes as a basis for later redefinition of services.
- Service – operation combination attempting an integrated transformation of both aspects.

Operation-first would essentially call for digitizing all value creation and the majority of auxiliary services. Everything associated to a student's educational process, including admission, registration for programs and courses, course examinations, program development and quality assurance, etc., is considered to be part of higher education's value creation process. Facilities management, study planning, scheduling, instructor allocation, and many more supportive services are available. In essence, this calls for a campus management system that is integrated and includes support for mobile workers and knowledge management. Service-first would have to concentrate on developing new

educational materials and converting physical materials into digital ones. It entails converting educational materials to digital format and giving students, teachers, and students access to digital tools (Sandkuh. K, Lehmann.H, 2017, p. 53). In this context Gleiss. A, et al (2019) illustrate the impact of digital transformation on higher education by three dimensions (fig. 2) value creation, value proposition and student interaction. The first dimension includes the technology influence on education processes, the general organization, and the workforce on higher education. The second dimension includes the influence on the selection of products and services proposed to the students. The third dimension includes all types and mechanisms of interaction with students teachers (Gleiss,. A, et al, 2019).

Figure.2 : The dimentions of Digital Transformation on higher education



Source : (Gleiss,. A, et al, 2019, p. 02)

3-2 Benefits of digital transformation in Higher Education

Digital transformation is a trend that is inevitable in higher education. Furthermore, all economic, social, and educational activities have come to a complete stop as a result of the global onset and spread of the COVID-19 pandemic in early 2020. The online learning strategies therefore used to cope with the epidemic serve to further emphasize the importance of digital transformation in education. These are just a few of the numerous tangible advantages that digital transformation offers higher education institutions (Ouy,V,K. et al, 2023).

Higher education institutions are able to anticipate, prepare for, manage, and optimize all aspect of their operations, including human resources, organizational structure, faculty, scientific research, international collaboration, and facility investment. Additionally, digital transformation can can personalize learning and bring real benefits to learners (Ouy,V,K. et al, 2023).

The management of higher education institutions will need to change. Thus, higher education institutions will have to change their management from traditional methods to the application of information technology solutions based on digitized databases. Greg Snow stated that digitization is that digital is an important driver of productivity, the same efficiency and effectiveness improvements that have occurred in the private sector over the past ten to twenty years are only beginning to take effect in the international non-governmental organization sector, particularly in developing countries (Accenture , 2017).

3- The use of digital tools in Algerian Higher Education

The Mechanizm of digital transformation in higher education: University of M'sila case study

The integration of digital tools in education has become a key priority in many developing countries. Although, that Algeria has made continuous improvements in higher education; especially in the field of ICT. However, digital technology use is still in its infancy (Laifa. M, et al, 2023). According to a report by the Austrian Federal Ministry of Education, universities are actively helping to shape the process of digitization. People and their needs, as well as the requirements arising from the digitization process, are at the heart of these efforts. Universities provide space for critical examination and reflection on digital transformation processes. They also provide and promote the freedom needed for new, innovative and original research. By helping students and graduates become digitally competent and multiplier citizens, universities make an essential contribution to building a responsible digital society (AFME, 2022).

The Algerian government plans to better align the VET curricula with job market needs, and to broaden the use of information and communication technology in the Ministry of National Education, the Ministry of Higher Education and Scientific Research, and the Ministry of Professional Training and Education (MSF & KDI, 2013). Despite, the adoption of Algerian government an ambitious development strategy aimed at strengthening the country's ICT capabilities and encouraging innovation and investment in this field. However, there are still many challenges to overcome (Kahlane. A, 2023).

Algeria, like other countries, was not prepared to shift towards the inclusion of digital tools in education, but since the crisis of COVID-19 pandemic has prompted many governments (prepared or not) to move and switch to integrating e-learning (ITU, UNESCO, UNICEF, 2020). Since then, the Algerian government has adopted e-learning and the use of digital tools in education as a strategy in all universities, through their affect education and scientific research.

4- M'sila University : an overview

Mohamed BOUDIAF University of M'sila was created in conformity with the Executive Decree No 01274 of September 18, 2001. It is a multidisciplinary public institution, medical science excluded. Today, at the beginning of the academic year 2017-2018, it counts more than 36,000 students, 1,410 teachers and 1,307 technical administrative staff, spread over seven (07) faculties: Technology Sciences, Mathematics and Computer Science, Law and Political Sciences, Economic Sciences, Arts and Languages, Humanities and Social Sciences and two national institutes: Management of Urban Techniques, Sciences and Techniques of Physical and Sports Activities. The university, at its inception, inherited the infrastructure and resources of the former M'sila University Center which was erected in 1985 (MHESR, 2017). It has 23 research laboratories. The university has established several research conventions cooperating with academic institutions in countries such as France, Romania, Turkey, Tunisia, United Arab Emirates and Jordan. These are designed to facilitate scientific exchange and develop the mobility of research professors, students and academic staff.

5-1 The number of permanent lecturers and students in University of M'sila

According to the '(table.01), The number of permanent lecturer at the University of M'sila is estimated at about 1479 lecturers distributed according to grade, and the number of registered students is estimated at about 36368 students distributed according to levels (Bachelor: L) (Master: M) (Doctorat).

Table. 1 : The number of permanent lecturers and students in University of M'sila

Faculty	Number of lecturers					Σ	Number of Students					Doctorat	Σ	Supervision rate
	Prof	MCA	MCB	MAA	MAB		L1	L2	L3	M1	M2			
Faculty of Economic and Management	18	90	32	32	5	177	1332	1224	1189	1152	779		5676	32.07
Faculty of human and social sciences	37	90	50	59	3	239	1672	1220	1607	1458	1281		7238	30.28
Faculty of law and political sciences	10	59	25	42	4	140	1098	718	736	594	482		3628	25.91
Faculty of Mathematique and computer science	16	21	24	55	5	121	569	380	366	173	214		1702	14.07
Faculty of Technology	22	51	94	69	7	242	940	771	811	659	659		3840	15.87
Literatures and languages faculty	22	61	37	53	23	196	1270	1271	1358	1256	1497		6652	33.94
Faculty of sciences	20	34	65	70	9	198	1101	1053	967	541	638		4300	21.72
G.T.U Institue	5	3	12	44	1	65	84	77	113	59	153		486	7.48
Institue of staps	13	51	27	09	0	100	160	121	434	674	379		1768	17.68
Total	163	460	366	433	57	1479	8226	6835	7581	6566	6082	1078	36368	23.86

Source : Statistique from university of M'sila (2019-2020)

5-2 Licence and Master's degrees at University of M'sila 2019/2020

The students are divided into 11 training domain distributed as follows:

- 102 academic master's majors and 06 professional master's degree.
- 67 licence degree, including a professional licence degree.
- 1078 doctoral students, of them 540 are third-cycle doctorates (LMD) and 538 are doctoral sciences (classical).

5-3 Missions and objectives of M'sila University

The University of M'sila's primary responsibilities are as follows:

- In order to achieve the economic, social, and cultural growth of the nation, the training of managers is necessary;
- Exposing students to research methodologies and advancing education for research;
- Participate in the creation, sharing, acquiring, and advancement of knowledge;
- Seek to ensure access to high quality education ;
- Strengthen the initiatives of professional integration ;
- Encourage support and autonomy of students

In other hand, the university's primary responsibilities in scientific research and technical development are represented as follow:

- Contribute to the national effort for scientific research and technological development;

The Mechanizm of digital transformation in higher education: University of M'sila case study

- Promote and disseminate national culture;
- Participate in strengthening national scientific potential;
- Evaluate research results and disseminate scientific and technical information;
- Exchange and enrich knowledge in the local and international cultural communities.

6- The Mechanism of digital transformation in M'sila University

The university of M'sila initial digital focus was on adopting a strategic plan 2017-2022. The administration of the University aimed to accomplishing digitization goals in both academic, learning, and administrative processes. The main elements used on this strategic are: (MHESR, 2017)

6-1 strategic of Zero paper: Since the academic year 2018/2019, a zero-paper policy has been implemented by creating Facebook pages for all administrative levels and for each faculty. In addition, using a digital platforms for lessons (Such as: Moodle, Mooc...etc). Besides dispense with the printed announcements of student's marks and conducting the doctoral defence electronically. This strategic was effect on consumption of papers at about 5,000,000 DZD (around 30, 000,00 USD), besides contributing to environmental conservation.

6-2 Professional e-mail: The University of M'sila has allowed professional e-mail correspondence for all 1,470 academics, as well as all 1,300 administrative workers and administrators, since 2018 (.....@univ-msila.dz). The aime of this strategic is to reducing procedures time (through conducting more rapid communications) and reducing paper usage expenses.

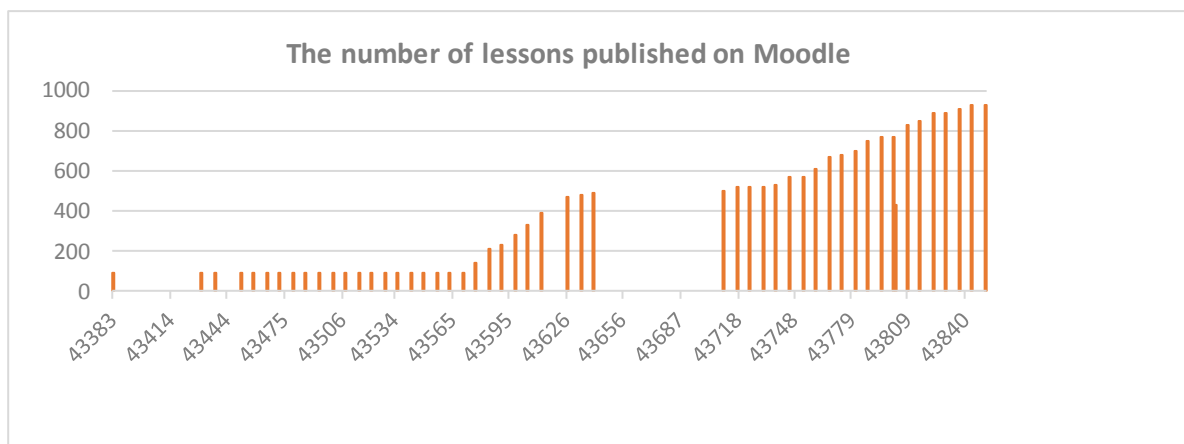
6-3 The official university app for mobile devices: University of M'sila is an application which allows users to view all of the university's advertisements and communicates directly with the university's main website.

6-4 Adding lessons to the Moodle platform: At the end of the academic year 2018–2019, 700 lessons were supposed to be uploaded to the Moodle platform (Moodle: LCMS platform, for online courses and distance learning). As a consequence, 517 lessons it mean 74% of the total which put in the Moodle platform.

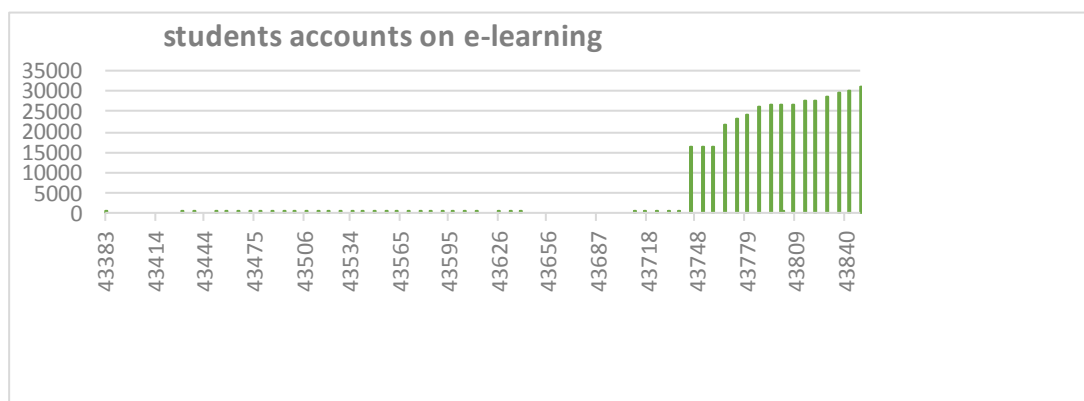
In the Corona pandemic, there were 3,600 lessons on the Moodle platform in 2020, and the total number of university students accounts on accounts on e-learning platform was 36,000. M'sila University is the leader in the field of Online education and distant learning in Algeria.

The number of lessons published on the Moodle platform is illustrated in the following figure (fig.3)

Figure.3 : The number of lessons published on Moodle platform



The following figure (fig.4) represent the students accounts on e-learning platform
Figure.4 : The students accounts on e-learning platform



6-5 Recording audio and video lessons on the Mooc video lecture platform:

In 2019, 76 audio and video lessons were recorded on the Mooc video lecture platform, with 10 of them being processed and published on the university's website. This procedure aims to encourage online teaching for those disciplines that do not require students to be present. In 2020, 125 video classes recorded and taught on the Mooc video lecture platform.

The following figure (fig.5) represent the number of lessons on the Mooc video lecture platform (edited and registered)

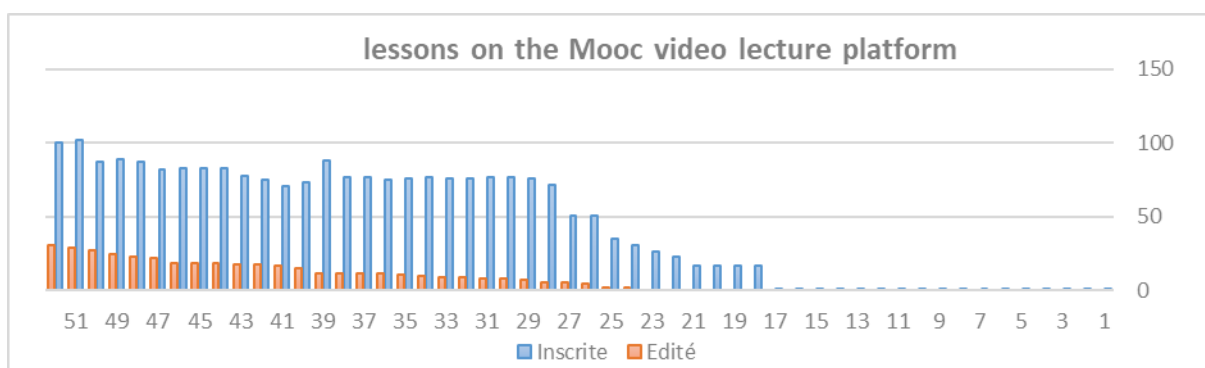


Figure.5 : the number of lessons on the Mooc video lecture platform

6-6 University ranking

The university was able to take up the honorable ranks among the national universities. it ranked third in Webometrics, the famous Spanish classification (webometrics, 2023). Is a ranking system for the world's universities based on a composite indicator that takes into account both the volume of the Web content (number of web pages and files) and the visibility and impact of these web publications according to the number of external inlinks (site citations) they received, a new categorization updated every every six months. (htt1).

UniRank classification. classified University of M'sila in the second nationally and 45th internationally (htt2). UniRanks is an American research center, which aims to provide an approximate global ranking of world Universities and Colleges based on their web presence and popularity in terms of estimated traffic, domain trust, authority and quality link popularity (htt3).

On D-Space institutional classification of the university's, it classified M'sila university on the first at national level. It is a classification issued by the research center "Webometrics", and is concerned with the university's warehouse of scientific research.

6-7 Progress National Digital Platform:

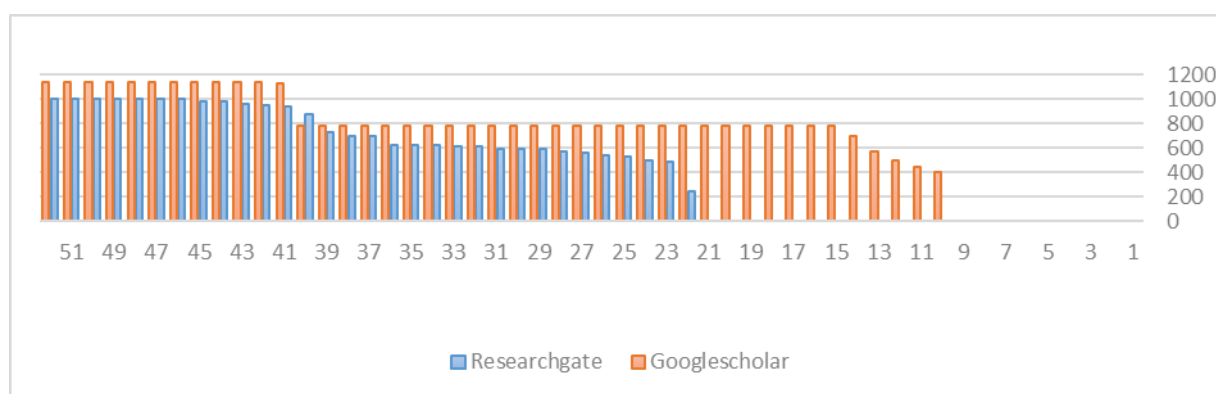
It is a digital platform that affiliated to the Ministry of Higher Education and Scientific Research in Algeria. This platform allow the university of M'sila to register students, in addition to that conduct the deliberations, besides the platform includes data and information for all human resources for give a visibility of the university at the national level.

6-8 Visibility of the University of M'sila

Professors are committed to publishing their reaseraches and scientific paper. In this context, the University of M'sila had assumed to helping them for open accounts in ResearchGate ; Significant advance has been observed in a short period, as the number of accounts on the platform reached 1006 accounts out of 1502 Professors, and the number of accounts on Google Scholar reached 1135 out of 1502, in January 2020.

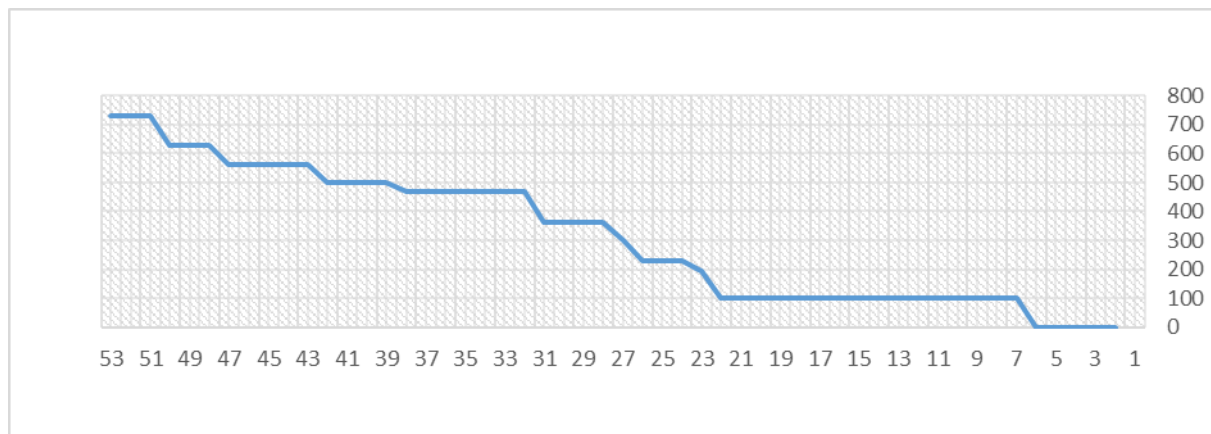
Figure.6: The Visibility of the University of M'sila on ResearchGate and Google Scholar

6-9 The training and formation of M'sila University professors



The number of M'sila University professors who have take advantage from training and formation on the using of digital platforms such as (Moodle, Mooc... etc), has seen continual development across all faculties and institutes of the university, especially after covid-19. The number of professors formed on this platform has reached 730 in 2020.

Figure.7: The evolution of training of M'sila university professors on the using of digital platforms



7- Digital transformation challenges in Algerian higher education institutions

The digitization of education in Algeria has led to the development of new approaches to online learning and has strengthened access to education for rural populations and people with disabilities. The distribution of technological tools such as tablets to schools is commendable. However, to ensure the success of this approach quality content is essential (Kahlane. A, 2023, p. 06).

Promoting its development should be an absolute priority to nurture, evolve, and generalize this process of digitization of the Algerian education system. However, there are still many challenges to overcome for wider adoption and much more effective use of existing technologies in these sectors. (Kahlane. A, 2023)

7-1 Technological accessibility issues

Algeria as middle income country face to a main challenge related to expensive and unstable technical Infrastructure, the availability and affordability of the technical infrastructure (DAAS & DANI, 2020). As many countries are still struggling to provide strong internet infrastructure and logistical support, teachers and students are often faced with the Innovative Higher Education financial burden of a lack of basic technologies, including internet, computers and projectors can limit the implementation of digital transformation in universities (Ashraf, M. A., et al, 2021). As Nammyssova et al suggest that one solution is to provide computer laboratories on the campuses of higher education institutions (Namyssova, G., et al, 2019). This requires concerted action by the government and the private sector to increase and capitalize on fundamental infrastructure investments. Democratize access by promoting competition, develop digital skills, and promote the adoption of digital technologies by all segments of society (Kahlane. A, 2023).

In Algerian universities, where work has begun on the preparation of infrastructure, the preparation of human resources, as the state has provided Algerian universities with internet lines, computerization centers and information in all college locations, Despite all this, communication is still weak between faculty members and students, and the lack of online content of courses all the time and in a way that encourages study, many faculty members still rely on traditional teaching to provide lectures and lessons as a way of teaching, and this calls for knowing the reality of using this type of education in Algerian universities (Guessar, S, 2020).

7-2 Refusing to change

The use of technology in education in developing countries is relatively new compared to developed countries, teachers and staff lack IT skills and need adequate training (Laifa. M, et al, 2023). In a report carried out by DAS (Deutsche Algerischer Akademiker und studierende verein) and Digital Arabia network) included that the university system doesn't cover the needs of the market and lack of skills in digital technology area (DAAS & DANI, 2020). Besides that, as a result of their study, Smith, and Hill (2019) postulate that additional teacher training should be conducted for the staff prior to the implementation of e-learning (Smith, K., & Hill, J, 2019). That mean, the development of skills seems to require a shift in Higher education from traditional learning environments to ones that allow for interactive methods of learning (Namysova, G., et al, 2019).

A lack of internal capabilities and skills to develop a digital transformation platform, including initial architecture and design skills; other areas include application management, development, and integration skills. Staff need to be able to manage the platform and cloud vendor relationships, have the skills to adopt and take advantage of the platform, and absorb the user specifications and help translate them into new service Investing in existing employees to teach them new skills can be a strategy that helps by reducing the need to look for expensive and scarce outside hires and by offering valuable employees, who have institutional knowledge and historical background on legacy systems, a way to obtain new skills and work on cutting-edge projects. Skills in DevOps and DevSecOps, data management, cybersecurity, and managing hybrid cloud technologies are key areas of investment, as well as certifications on specific solutions (Yesner, R, 2021, p. 16).

7-3 Lack of digital awareness

Digital transformation requires a commitment to change over the long term and resiliency to turn challenges into opportunities. Higher education institutions face a fundamental challenge of digital transformation is the need to change legacy culture and processes, which are embedded in the institutional structure. Academia is notoriously siloed with faculty operating independently and schools and departments having autonomy. Siloed technology and business structures often mean resistance to platforms enabling digital transformation (Yesner, R, 2021). In addition to that a lack of awareness of stakeholders and their resistance to e-learning and using of digital tools in education. While technological issues can be solved by providing cheaper and better equipment and infrastructure, changing rigid mindsets is more challenging in many developing countries (Islam, M. K., et al, 2022). The digital identity of academic researchers and academic institutions can be seen as a directed to digital transformation. Therefore, digital awareness of using the digital tools and technologies, as well as the developpment of their use skills., must be provided (Brada, A., et al, 2022).

Despite the efforts provided by the government to ease the shift towards to digital transformation, The Algerian universities facing impediments related with both teachers and students. First, instructors and students acquired a fear of technology because they were aware of the accessibility problems and lack of technical assistance they will face (Guessabi, F, 2021). Second, students preferred in-class communication and engagement to be able to discuss the studied topic and to avoid feeling isolated. All of that is a result of lacke awarness about the benefits of digital transformation (Rahmani, A., & Zitouni, K. S. , 2022).

According to Guessar (2020) there is little interest or awareness: Awareness of the professor as well as his lack of interest in this type of education due to the lack of interest on the part of officials in this type of education because they are from the traditional education generation. Besides that, the student's lack of desire for this type of learning because he wants ready-made lectures, and prefers the traditional method so that the latter is characterized by the lack of effort on the part of the student who is content to receive only. Thus, Algerians have not yet adapt and adopt digital services fully. This is due to sticking to traditional educational tools through classroom education and refusing to change (DAAS & DANI, 2020).

8- Conclusion

Digital transformation of M'sila university have resulted in dramatic improvements in both education and research activities. The original contribution of this study lies in establishing the key pillars elements and necessary stages for the implementation of digital transformation strategy for higher education in Algeria. Based on the experience of M'sila university in this field. We recognized that Digital transformation is a process linked to the extensive use of digital technologies including digital platforms (Moodle, MOOC, Progress), in order to improve educational process. Besides that it means the ability to meet the requirements and expectations in a manner consistent with the needs and satisfaction of all members of the university on the one hand and to upgrade the level of the university as a whole and the level of students especially. Among the effects of the digital transformation on M'sila university, we can identify an increase in the university's visibility at both national and international levels, as well as an improvement in its ranking on Webometrics, UniRank and D-Space.

This is why the concept of digital transformation has become an imperative for various types of organizations, especially institutions of higher education in Algeria.

9- Recommendation

Based on the findings of this study, the Algerian government should establish a plan to promote and increase the use of digital technology tools in higher education through university mechanization. Such a plan should intend to develop higher education technology and to overcome the challenges that impeded Algerian universities from digital transformation such as the availability and affordability of the technical infrastructure, Providing digital tools and developing digital skills for users, highly necessary for university teachers, educationalists, and policy-makers. Inescapably, teachers are required to be well aware of new technologies and well trained on using them. Accepting the change and support digital transformation in Algerian institutions.

10- References

- Khan, S. (2016). Leadership in the digital age – A study on the effects of digitalisation on top management leadership. Stockholm Business School Master Thesis 30 HP, Spring semester 2016, Supervisor: Henrikki Tikkanen, p.06.
- Collin, J., Hiekkänen, K., Korhonen, J.J., Halén, M., Itälä, T., Helenius, M., (2015). IT Leadership in Transition-The Impact of Digitalization on Finnish Organizations. Research rapport, Aalto University. Department of Computer Science.

- Piccinini, E., Gregory, R. W., and Kolbe, L. M. 2015a. "Changes in the producer-consumer relationship-towards digital transformation," *Wirtschaftsinformatik Conference*, Osnabrück, Germany: AIS Electronic Library, pp. 1634-1648
- Melki, A.; Nicolas, M.; Khairallah, M.; Adra, O. Information and communications technology use as a catalyst for the professional development: Perceptions of tertiary level faculty. *Int. J. Educ. Dev. Using Inf. Commun. Technol. (IJEDICT)* 2017, 13, 128–144. [Google Scholar]
- Rodríguez-Abitia, G.; Martínez-Pérez, S.; Ramírez-Montoya, M.S.; López-Caudana, E. Digital Gap in Universities and Challenges for Quality Education: A Diagnostic Study in Mexico and Spain. *Sustainability* 2020, 12, 1–14, doi:10.3390/su12219069.
- Laifa, M, Giglou, R.I. Akhrouf, S
- Ashraf, M. A., Yang, M., Zhang, Y., Denden, M., Tlili, A., Liu, J., & Burgos, D. (2021). A systematic review of systematic reviews on blended learning: Trends, gaps and future directions. *Psychology Research and Behavior Management*, 14, 1525–1541. <https://doi.org/10.2147/PRBM.S331741>
- Namysova, G., Tussupbekova, G., Helmer, J., Malone, K., Afzal, M., & Jonbekova, D. (2019). Challenges and benefits of blended learning in higher education. *International Journal of Technology in Education*, 2(1), 22–31.
- Smith, K., & Hill, J. (2019). Defining the nature of blended learning through its depiction in current research. *Higher Education Research & Development*, 38(2), 383-397
- Namysova, G., Tussupbekova, G., Helmer, J., Malone, K., Afzal, M., & Jonbekova, D. (2019). Challenges and benefits of blended learning in higher education. *International Journal of Technology in Education*, 2(1), 22–31.
- Islam, M. K., Sarker, M. F. H., & Islam, M. S. (2022). Promoting student-centred blended learning in higher education: A model. *E-Learning and Digital Media*, 19(1), 36–54. <https://doi.org/10.1177/20427530211027721>
- Brada, A., Sali, M., Yousri, S. (2022). Digital transformation in Algeria University, *Journal of Mediterranean Thought*, Vol 11, No.02, pp. 300-320.
- Guessabi, F. (2021). Flipped classrooms in higher education in Algeria during period of covid19: Challenges and difficulties. *International Journal of Linguistics Literature and Translation*, 4(2), 196– 202. <https://doi.org/10.32996/ijllt.2021.4.2.23>
- Rahmani, A., & Zitouni, K. S. (2022). Blended learning and flipped classrooms application during post pandemic. *Arab World English Journal*, 13(2), 451–461. <https://doi.org/10.24093/awej/vol13no2.31>
- Guessar, S. (2020). Algerian university during the corona virus pandemic: COVID-19 – Bechar university as a sample. *European journal of education*, 3(2), 73-81. Retrieved from <https://ideas.repec.org/a/eur/ejedjr/91.html>