The Reality of Using ICT in Teaching in Moroccan Universities from University Professors' perspective

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Abstract:

The study aimed to examine the reality of using information and communication technologies (ICT) in teaching at University from the point of view of university professors and the probability of using such technologies in distance education, particularly under the current unfavorable conditions that do not allow classroom teaching. To achieve these objectives, the research adopted the descriptive-analytical and used a questionnaire, consisting of three sections, that was administered to a sample of 140 professors at four university departments during the academic year 2021 - 2022. The study results revealed that the participants could use ICT to an acceptable degree, but used ICT programs in teaching to a medium degree. Furthermore, the participants suffered from difficulties of using ICT in higher education. The study concluded with a set of recommendations for the optimal utilization of ICT in higher education that can contribute to improving the quality of teaching and learning.

Keywords: ICT, e-learning, higher education, Morocco.

واقع استخدام وسائل الاتصالات وتكنولوجيا المعلومات في التدريس بالجامعات المغربية من وجهة نظر أساتذة الجامعة

الملخص:

تهدف الدراسة إلى الكشف عن واقع استخدام وسائل الاتصالات وتكنولوجيا المعلومات في التدريس بالجامعات المغربية من وجهة نظر أساتذةُ الجامعة. وكذلك احتمالية استخدامه في التعليم عن بعد، خاصة في ظل الظروف غير المواتية لاستخدام التعليم داخل الفصل الدراسي. لتحقيق هذه الأهداف، قمنا بدعم بحثنا باستخدام نهج وصفي تحليلي مطبق على عينة مكونة من 140 أستاذا جامعيا ينتمون إلى أربعة أقسام جامعية في المغرب خلال العام الدراسي 2021–2022، باستخدام نموذج يتكون من ثلاثة أجزاء. أدت المعالجة الإحصائية إلى النتائج التالية : يتقن الأفراد في العينة استخدام وسائل الاتصالات وتكنولوجيا المعلومات بدرجة مقبولة. يستخدم هؤلاء الأفراد برامج تكنولوجيا المعلومات والاتصالات لتدريس طلاب بدرجة أقل من المتوسط. يعاني الأفراد في دراستنا من صعوبات تعوق استخدام تكنولوجيا المعلومات والاتصالات في التعليم العالي. وأخيرا قدمت الدراسة مجموعة من التوصيات من أجل الاستثمار الأمثل لوسائل الاتصال وتكنولوجيا المعلومات في التعليم العالي، باعتبارها أدوات يمكن أن تساهم في الرفع جودةُ التعليم والتعلم.

الكلمات المفتاحية : وسائل الاتصالات وتكنولوجيا المعلومات (ICT)، التعلم الإلكتروني، التعليم العالي، المغرب.

Introduction:

There is no doubt that information and communication technology (ICT) has a profound impact on the way people live. Contemporary approaches to e-commerce service delivery, including learning and education, banking, entertainment, and many more, are gradually becoming dependent on ICT.

As for education, ICTs can improve the quality of education in several ways: increasing students' enthusiasm and commitment, enabling the acquisition of basic skills, and enhancing teacher training. ICTs are also tools that allow and achieve the transformation that, if used correctly, can encourage change in a learner-centred environment. Using ICT, in the form of videos, television, or computer multimedia software that integrates voice, text, and multi-coloured animation, can provide stimulating, thought-provoking, and authoritative content that keeps the student interested in the learning process (Sarkar, 2012).

ICTs are also used in developing course materials, submitting content and sharing content, communication between learners, teachers, and the outside world, creating and delivering presentations and lectures, academic research, administrative support, and student enrolment. When ICTs are applied in higher education, learning is no longer constrained by schedules (Talebian, Mohammadi, & Rezvanfar, 2014).

The notion that most people have that ICT is only about computers is not entirely true, but it does include computer accessories such as speakers, projectors, printers, modems, networking, electronics, and routers, to name a few. In addition, "ICT has introduced a new teaching and research method and has brought to education facilities for online learning, teaching and research collaboration in the whole world.

Literature Review:

ICT has opened a new vision of globalisation, enabling access to the Internet and implementing web portals that allow universities to carry out most of their activities everywhere.

Higher education:

Higher education falls within the framework of educational services as a vital public service that strives to provide its services to various students in various academic and scientific disciplines and contribute to construction in all aspects of economic, social, and political life. Consequently, the concept of higher education can be studied within a range of functional theories since the fifties and sixties of the last century.

The education sector plays an essential role in building and developing societies. Education and development cannot be separated; both are actions of transformation and development. Education is a means of change intended by man and his mind. However, development is a more comprehensive process of change than education because it does not focus on a specific individual in a particular institution; instead it covers every human in the society and thus includes heritage, systems, and productive activities. Accordingly, education can be seen to have two main functions: the economic function, which seeks to provide the necessary number of technical human resources to achieve the economic and social development envisaged by the state, and the social function, which aims

to prepare students for the workforce technically, culturally and socially in line with the new economic, technical and professional environments. That is, raising social levels to bring about the social transformation necessary for the ongoing economic changes to upgrade the social system by integrating individuals' two essential professional and social dimensions (Gharbi, 2008).

Thus, higher education falls within multiple concepts, including academic and educational disciplines and scientific research, representing a great need for development in developing and modernising higher education and scientific research (Zmlauah, 2008). The concept of higher education also enters the springs from which the individual derives the elements of personality and builds the self-concept (Boukabsha, 2013). While the encyclopaedia of educational knowledge defines it as the arrangement and organisation of information to produce learning, this requires the transfer of knowledge from a source to the future, and this process is called communication (Aziz, 2007, p. 1082). As a result of the fact that effective education depends on renewed attitudes and knowledge, obtaining effective education requires the achievement of an effective communication process between the parties to the educational process, and educational and technological means can be essential factors in increasing the effectiveness of the communication process (Aziz, 2007). Finally, higher education is the total educational services in various scientific disciplines, and universities and higher institutes provide post-secondary academies.

Information Communication Technologies (ICT):

The history of the media has been recorded in a new stage that brought about revolutions in the system of broadcasting, production, and media in general by setting up new channels such as satellite and audio-visual discs. This transformation is described by most researchers as the digital revolution (Bertrand, 1999).

ICT is used to describe an extensive range of technological inventions, especially in the field of computers; and it was discovered that the rate of change brought about by these innovations is much faster than the previous rates, which is difficult to absorb during an expected period. That is why it is necessary to think carefully about managing this community change (Bader, 1996, p. 460).

ICT can also be defined as computer tools and techniques for collecting and using information. According to Yusuf (2005), ICT includes hardware, software, network, and many other devices (video, audio, photographic camera, etc.) capable of converting information, images, and sound into a shared digital form. In addition, it includes electronic information related to processing technologies such as computers, the Internet, and fixed-line communications networks. ICT is the selective application of computing, communications, and satellite technology (Ahandar, 2020).

E-learning:

The educational literature uses common names when referring to the concept of distance learning, such as "distance learning," "distributed learning," "resource-based learning," "flexible learning," and other terms used in the literature.

In principle, distance education does not require the learner to be present simultaneously with the teacher in the classroom. So, both the teacher and the learner lose the experience of direct dealing with each other. Hence there should

be a mediator between them. This mediation is done through various means, including audio, video, image, and text.

These technologies and programs give adults the chance for college education and reach out to people who are the less fortunate, in terms of lack of time, distance, or physical disability.

Moore and Kearsley (1996) define ICT as a group of teaching methods in which the learning behaviour is separate from the educational behaviour, and it includes those means in which communication between the teacher and the learner takes place through printing devices and tools, mechanical and electronic devices, etc.

There are four main characteristics of distance education:

1. Space between the learner and the teacher.

2. Space among learners themselves.

3. More than one medium is used to carry and distribute educational content to students.

4. A communication channel to facilitate the interaction between the teacher and the learner and support the learners.

On the other hand, Jugon (2003) defines E-learning as individualised instruction delivered over public (Internet) or private (intranet) computer networks. E-learning is also used to refer to online learning, web-based learning (WBL), and the virtual classroom. E-learning was first called 'internet-based training' then 'web-based training.'

E-learning applications and processes include web-based learning, computer-based learning, virtual classrooms, and digital collaboration. Content is delivered via the Internet, intranet, extranet, satellite TV, and CD-ROM with multimedia capabilities (ISP, 2004).

Previous Studies:

A study conducted by Yusuf (2005) revealed that the presence of ICT in education is clear, but the impact has not been as widespread as in other areas of work. Similarly, based on a survey, Vajargah, Jahani, and Azadmanesh (2010) examined to what extent obstacles and risks accompany the use of ICT in teaching and learning in higher education. Furthermore, Salome and Chukwunwendu (2014) conducted a study to determine the role of ICT in teaching and learning accounting in Ekiti State, Nigeria. The study findings indicated that the participants appreciated the role of ICT in performing their academic duties. In a recent study, similar to the current study, Ahandar (2020) investigated university professors' opinions about the use of ICT and found an awareness among these professors of the importance of employing ICTs to improve the quality of learning in higher education. However, some professors did not have positive attitudes toward using the ICT programs. The study also revealed some difficulties that hinder employing these programs. The study also confirmed that ICT use in teaching is not linked to gender, age, or years of teaching experience (Ahandar, 2020, p.192-193).

According to Zhao and Cziko (2001), there are three necessary conditions for teachers to introduce ICT into their classrooms: i) understand the efficacy of the

technology; ii) believe that the use of technology will not generate any disruption; and iii) ultimately acknowledge that they have control over the technology. However, other research studies show that most teachers do not make good use of the potential of ICT to contribute to improving the quality of learning, even though they know this potential extensively. Smeets (2005) and Moursund (2005) conducted case studies in three primary schools and three secondary schools, with a focus on practices of innovative education that includes ICTs. They concluded that the benefits of ICTs will accrue when teachers are confident that the use of ICTs can improve the quality of learning in the classroom and its impact on life and future jobs.

Learning in this context is seen as creating meaning rather than memorising facts. Berge (1998) believes that contemporary ICT learning approaches can constructively contribute to many resources for constructivist learning. By developing and enhancing resource-based and student-centred environments and allowing education to be relevant to context and practice, any use of ICTs in learning environments can support different aspects of knowledge building. The more students use ICTs in their learning processes, the more clearly it affects the quality of education. Educators create meaningful and engaging learning experiences for their students, using ICT strategically to enhance learning. Students enjoy independent learning and research that can foster creative and appropriate use of knowledge and essential 21st century skills they need in their future lives.

E-learning is a developing, dynamic, and rapidly changing educational opportunity resulting from an advanced information technology environment. It is the process of transferring skills and knowledge through a network (Anon, 2006). The Internet is the largest and most influential technology tool in communicating knowledge, information, and trends without communication between teachers and students. It includes several million computers connected with the Internet used by millions of people worldwide. As more and more colleges, universities, primary and secondary schools, businesses, and individuals meet online, more possibilities are open up for distance education. Through the Internet, all sources of information on various topics are available anytime and anywhere. In this context, Bassi and Van Buren (1998) emphasised that in 1997, large leading companies delivered 21% of their training via learning technologies, with 70% being in instructor-led courses. Accordingly, Domingo (2004) points out that the percentage of training time provided by learning technologies such as the Internet and e-learning is steadily increasing. Therefore, e-learning is rapidly expected to play a more critical role at the top level, where higher education, middle and primary school education, and non-formal education will become one of the main areas of e-learning.

Researchers in distance education, especially Moore and Kearsley (1996) and Willis (1998), believe that distance education requires educational design techniques, interactions, and skills to match the specific characteristics of distance learning programs and courses. Aside from these techniques and skills, some researchers believe that the theoretical basis for instructional design is essential. For example, McIsaac and Koymen (1988) have stated that "to assist the instructional developer and instructional designer, a theoretical basis is needed for effective teaching in distance education" (McIsaac & Koymen, 1989, p. 247). In the same vein, Moore and Thompson (1990) claimed that distance education

should be understood as more than simply applying a modern communication tool to an existing educational institution. Significant pedagogical, didactic, and philosophical implications arise from the more or less permanent separation between the teacher and the learner.

Research problem:

Despite the firm belief in the importance of e-learning in improving the educational process, fighting illiteracy, and other positive aspects of life, it is not being used correctly. Many confusing questions must be answered before getting excited about e-learning, which concerns everyone in the community. Some questions must be answered, including:

1. what extent are ICTs used in university education in Morocco from professors' point of view?

2. What are the difficulties of using ICTs at Moroccan universities?

3. What are the prospects of applying ICTs at Moroccan universities?

This study also seeks to show the extent to which educational information and communication technology contributes to achieving the aspirations of political and academic leaders in improving higher education. It explicitly reveals the point of view of educational actors - teachers in particular - regarding the ability and efficiency of technical means in activating the educational process.

Significance of study:

This study is significant as it investigates ICTs that aim to develop the higher education sector through the new university reform in Morocco in order to expand its educational system in line with the requirements of quality and the international systems of excellence, and in line with the needs and goals of society.

Study objectives:

The current research attempts to achieve the following objectives:

1. Investigating the actual use of ICTs at Moroccan universities.

2. Identifying the difficulties of using ICTs at Moroccan universities.

3. Examining the prospects of applying ICTs at Moroccan universities.

Study hypotheses:

To achieve these objectives, the following hypotheses can be formulated:

1. University professors are proficient in the use of educational information and communication technology.

2. University professors use educational information and communication technology in distance and in-class education.

3. There are difficulties facing university professors in applying educational information and communication technology.

Methodology:

The study used the descriptive-analytical method. The data were collected from two sources; secondary source (previous studies) and primary source (the study sample).

Study population and sample:

The study population is about 219 university professors in four departments at two Moroccan universities. 140 professors were selected as the study sample following the simple random method. Table (1) shows the sample distribution.

Table (1): Distribution of the study sample

Characteristic		N	%
Specialization	Social sciences	35	25
	Economics and management sciences	35	25
	Literature and languages	35	25
	Physical sciences	35	25
Academic degree	Associate Professor	61	44
	Assistant Professor	36	26
	Qualified professor	19	14
	Professor of higher education	24	17
Years of Experience	5-10	70	50
	11-15	26	19
	16-20	19	14
	>21	25	18
	Total	140	100

Table (1) shows that professors were equally distributed according to specialization (total = 35). According to the academic degree, more than two fifths were associate professors (44%), followed by assistant professors (26%), professors of higher education (17%), and qualified professors (14%). Regarding years of experience, half of them had 5-10 years, followed by those with 11-15 years (19%), those with 16-20 years (14%), and those with > 21 years (18%).

Data collection tools:

To collect data, a questionnaire, consisting of 30 items, was developed and given to a jury of experts for validation. After checking the validity of the questionnaire, the number of items was decreased to 24 items, which were divided into three dimensions: the software mastered by professors (items 1 to 7); the use of ICTs (items 8 to 15); and difficulties facing university professors (items 16 to 24). The result of the questionnaire validity was (0.96), which is a high percentage. Reliability, on the other hand, was also verified by using the split-half method, and the correlation coefficient was (R = 0.94). Then the length was adjusted using the Spearman-Brown equation so that the overall stability coefficient was (R = 0.96), and this value shows and confirms that the tool is characterised by having a high reliability.

Study results:

Results of 1ˢᵗ hypothesis:

Table (2) shows the results related to the 1ˢᵗ hypothesis which states that "University professors are proficient in the use of information and communication technology in education."

Table (2): Results of treating the first hypothesis

No.	Software perfected by the professor (>70%)	Yes		No	
		N	%	N	%
1	Internet	101	72.14	39	27.86
2	Word processing programs	105	75.00	35	25.00
3	Table processing programs	62	44.29	78	55.71
4	Presentations	85	60.71	55	39.29
5	Multimedia software	42	30.00	98	70.00
6	Photo and video processing	27	19.29	113	80.71
7	E-mail	118	84.29	22	15.71
	Total	540	55.10	440	44.90

By extrapolating the results in the table above becomes clear that more than half of the study sample members (55.10%) use communication technology and educational media software. The majority of university professors (84%) use emails to communicate with their colleagues and supervise students who supervise their scientific work. Word processing programs were used by three fourths of the study participants (75%), which confirms professors' knowledge of this software, which is due to its importance in preparing exams on the one hand, and in conducting scientific research and interventions, on the other. This shows that professors are aware of the importance of ICT in their work which is based on continuous and renewed scientific research

Based on all of the above results, the extent of using software by professors is clear, because they are aware of its importance for their work, which is based on continuous and updated scientific research, especially since we live in a post-modern society, which is also called the knowledge society.

These low percentages may indicate the difficulty of using these programs and software and the nature of the specialization of each professor. It could also be due to the difficulty of learning these programs, which require training courses because they are highly technical and challenging to build and design. The lack of mastery of educational software is due to the specificity of some disciplines that do not require these programs, except in some professions such as journalism and physics, so they use them to a lesser extent.

It can be concluded that the study participants use educational information and communication technology programs at a medium degree of (55.10%). This result is attributed to the exceptional efforts of the professors, considering that they are researchers, which requires them to master at least some educational programs to implement their research. We cannot imagine a university professor who is

not proficient in word processing programs. Tables and presentation programs must present scientific works in all local events and conferences, educational and international scientific fields, or publish scientific papers in journals. The application of educational information and communication technology in the educational process has become an inevitable and obligatory to overcome many challenges, including the horizontal expansion of education, the flow of knowledge, the problems of individual differences, and the multiplicity of sources of knowledge.

Results of 2nd hypothesis:

Table (3) shows the results related to the 2nd hypothesis which states that "University professors use educational information and communication technology in the teaching process."

Table (3): Results of treating the 2nd hypothesis

No.	Using ICT in teaching	Yes		No	
		No	%	No	%
1	I use the presentation software to present my lectures.	78	55.71	62	44.29
2	I use the e-mail to send the content to the students.	23	16.43	117	83.57
3	I use Facebook to discuss lessons with students.	47	33.57	93	66.43
4	I use a word processor program to print summaries for students.	92	65.71	48	34.29
5	I own an online educational website.	3	2.14	137	97.86
6	I rely on electronic exams in evaluating students.	0	0.00	140	100.00
7	I encourage students to present their scientific work using education. information and communication technology.	38	27.14	102	72.86
8	I use the Table processor program to save the results and grades of the students.	38	27.14	102	72.86
	Total	319	28.48	801	71.52

By examining the results in the table above related to the second dimension, (the use of educational information, and communication technology in university teaching), the majority of participants (65.71%) agreed with this statement: "Use a word processor program to print summaries for students," followed by (55.71%) for the statement that reads "Use the presentations program in teaching." In comparison, the percentages for the rest of the items of the second dimension were low ranging between (33.57%, 27.14%,16.43%, 02.14%, 0.00%). Therefore, it can generally be said that there is reluctance among the study participants to use ICTs in university education, which may be due to the

professors not benefiting from training and practice courses they receive on ICT, despite their belief in its importance.

A large percentage of the participants (83.57%) do not do not use e-mail to send summaries, or lectures to students. Concerning the item "Use Facebook to discuss lessons with students" (66.43%) of the study participants did not agree with it. However, Facebook is considered one of the most widely used social media.

It can be concluded from the above results that almost three fourths (71.52%) of the study participants do not use ICT programs in the university educational process, compared to less than one third (28.48%) who use ICT in their teaching, which requires taking all measures that would enhance the use of ICT.

Despite the faculty member's mastery of some ICT educational programs, more attention should be paid to rolling out the use of ICT, because we live in the age of growing electronic transformation that is one of the indicators of the quality of higher education, However, its use in the educational process does not reflect the aspirations of higher education with a global view in the digital era and the rapid spread of information and its constant change. Memory-based teaching methods do not work.

Results of 3rd hypothesis:

Table (4) shows the results related to the 3rd hypothesis which states that "There are difficulties facing university professors applying educational information and communication technology."

Table (4): Results of treating the third hypothesis

No.	Challenges of using ICT in university education	Yes		No	
		N	%	N	%
1	Insufficient number of computer laboratories	76	54.29	64	45.71
2	The inadequacy of educational software for the specialization I am studying.	68	48.57	72	51.43
3	The computers in the computer laboratories do not match the number of students.	115	82.14	25	17.86
4	The nonexistence of the Internet in the classroom	130	92.86	10	7.14
5	The administrative climate does not support the use of ICT.	106	75.71	34	24.29
6	I believe that ICT does not serve the university educational process.	51	36.43	89	63.57
7	The vulnerable infrastructure does not support the application of ICT in university education.	61	43.57	79	56.43
8	Lack of a policy aimed at applying ICT in university education.	112	80.00	28	20.00

Table (4): Continued

No.	Challenges of using ICT in university education	Yes		No	
		N	%	N	%
9	The use of ICT in teaching affects my future career	77	55.00	63	45.00
	Total	796	64.20	464	35.80

Having a closer look at Table (4), the results related to the third dimension (of 9 items) are discussed. The items focus on the difficulties in using ICTs in university education from the point of view of professors. (92.86%) of the study sample indicated that internet connection is not available in classrooms, and (82%) of the study participants agreed that the number of computers in laboratories does not match students' numbers. In addition, (80%) of them opined that there is no policy for applying information and communication technology in university teaching. (75.71%) of the participants agreed that the administrative environment does not encourage the use of ICT in teaching. All these high percentages suggest some difficulties facing university professors to use ICT

Interpretation of the results:

Based on the responses of the study participants and in the light of the theoretical framework, and previous studies, it can be concluded that more than half of the university professors are proficient in the use of ICT. This result is in agreement with the results of Murad (2014) and Al-Naabi (2010). We cannot imagine a university professor who is not proficient in word processing programs, tables, and presentation programs for presenting scientific works at local events and conferences.

Despite the faculty members' mastery of some educational software, their use in the educational process does not reflect the ambitions and aspirations of higher education with a global view in this digital era of the fast spread of information and constant change.

The study sample also suffer from many challenges that hinder them from utilizing ICT programs. This result is consistent with the results of Al-Amayreh (2003) and Murad (2014). This is can be attributed to many reasons, including poor equipment, especially modern ones, and the poor Internet service and the absence of a clearly defined policy that integrates the university vision the University educational ICT.

Conclusion:

ICT applications have become essential elements in achieving the quality assurance of higher education institutions. These applications would enable Moroccan universities to deliver good training for the learner, which is the crucial element and the primary goal of all local and global educational policies. This is due to the presence of modern infrastructure, on the one hand, and on the other hand, the achievement of a high-performance university education, which requires making the educational process flexible for the learner. It also requires faculty members with modern teaching methods and professional skills of using ICT programs, especially educational ones.

In conclusion, the real value of applying educational technologies according to the quality system would help the university administration to achieve development, distinction, and advancement among other universities, making a name for itself in international forums.

Recommendations:

Given the results presented above, a set of recommendations can be as follows:

- Holding seminars and workshops aimed at raising awareness about the importance of integrating ICT in higher education to develop a strategy that is applicable to reality.

- Opening effective and democratic communication channels between the faculty and administration to achieve digital transformation.

- Activating the regulations and rules for employing ICT programs.

- Strengthening the concepts of informatics among members of the university.

- Forming a committee to integrate ICT applications at the university level.

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