Understanding students' attitudes towards distance learning in covid-19 period

TRIMECH ANYSSA
Department of quantitative methods
Faculty of economic sciences and management
Cité Riadh – 4023 – Sousse
TUNISIA

WISSAL JLASSI
Faculty of economic sciences and management
Cité Riadh – 4023 – Sousse
TUNISIA

Abstract: The COVID-19 pandemic shows that distance education is no longer just a real opportunity to transform the landscape of performance, knowledge and skills. But it is also a means of social distancing that seems to be the favorable solution to curb the number of infections. A student survey is developed to assess the experience of online teaching and the chance of its success in Tunisia, especially as its implementation is facing certain constraints, including the lack of adequate infrastructure and technical difficulties which still not favorable for its dissemination as well as serious hunches that the current social fabric in Tunisia cannot allow a broad integration of this learning mode. The multiple correspondences analysis of data shows that the distance learning required following the containment decisions has become an obligation to ensure the continuity of learning. Nevertheless, it must be understood that it is a culture to implement before being an obligation.

Keywords: distance learning, covid-19, tunisia , multiple correspondence analysis, data analysis, student attitude

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1. Introduction

The digital transformation of universities is a topical issue that many parties must feel concerned about. This shift proposes the integration of sustainable management in order to be able to adapt to the changes imposed by new technologies (Abad-Segura et al., 2020). Indeed, the integration of Information and Communication Technologies in all areas of life is constantly increasing. Therefore, universities as a training engine need to be up to the task of preparing professionals who are able to meet challenges and provide solutions (Sandkuhl et al., 2017). Over the past decade, ICTs have provided access to a growing number of digital educational resources, granting a revolutionary opportunity to transform education. The academic potential of digital resources challenges the educational process, stimulating its transformation and innovation (Siddiq et al., 2016).

On January 30, 2020, when the World Health Organization (WHO) declared COVID-19 a pandemic, the outbreak had significant impacts on several global sectors and systems. One of the policies adopted by countries around the world to prevent the spread of the disease was to completely closeschools and educational institutions (Alsafi et al., 2020), affecting more than 900 million students worldwide (UNESCO, 2020). As a result, the COVID-19 pandemic has accelerated the quickly presented in a limited number of days, digital transformation and developments in higher education which would normally have taken many years due to different management regulations (Strielkowski, 2020). Indeed, preventing the risk of COVID-19 contamination is seen as an important benefit of e-learning, which is consistent with several studies that have highlighted the need to prioritize safety and well-being students as well as educators during the pandemic (Bozkurt, 2020; Sahu, 2020).

The main objective of our research is to explore the success chances of higher education distance learning in Tunisia taking into account the students profile and the context of this experience. This is how we set a number of objectives aimed at tracing the main factors that can contribute to its failure or success in the Faculty of Economics and Management of Sousse (FSEG). In other words, we look for the most discriminating variables when identifying students' behaviour towards distance learning, while focusing on the factors that play a role in the success of this experience.

2. Concepts Definitions

The term "e-learning" is an abbreviation of "electronic learning". It is a recent English expression that means online learning or training which covers all training methods that allow learning by electronic means. E-learning is a subset of distance learning and encompasses a wide range of technological applications and learning processes, including computer-assisted learning, web-based learning, virtual classrooms and digital collaborations (Azliza et al., 2012). In addition, it takes the form of comprehensive courses with access to content for "just-in-time" learning. Course content is disseminated through all electronic media, including the Internet, intranets, extranets, satellite broadcasts, audio/video cassettes, interactive televisions and CD-ROMs. It is, actually, a training process in which there is no physical presence of the teacher and the student. Indeed, "The Internet has become one of the essential means of making research resources available and learning to share and acquire information for both teachers and students" (Hartshorne and Haya,2009). In addition, according to Fry (2001) "Technology-based e-learning includes the use of the Internet and other technologies to produce learning materials, teach learners, and also regulate courses in an organization." Similarly, Nichols (2003) defines a very close relationship between online learning and the web "as being strictly accessible using technological tools that are either web-based, or web-compatible."

The definition proposed by Rosenberg (2001) identifies the three main characteristics of the network-based educational process. First, the development of educational activity on a network basis allows for immediate updating, storage, retrieval, distribution and easy sharing of content as well as information. Second, all communication processes and educational resources are incorporated into network-based learning environments. Third, educational resources are beyond the traditional framework through the use of ICT, which leads to new methodological solutions.

Several authors (for example, Wentling et al (2000); Maltz et al (2005); Clark and Mayer (2016)…) support the idea that learning is based on the use of information and communication technologies as a complement to traditional classrooms in various education processes to support and improve learning, either via online mode or via mixture of the two modes, in higher education institutions.

This new learning environment based on electronic networks has enabled university learners to benefit from individualized support and also to have learning schedules more adapted to them separately from the other learners. This facilitates a high level of collaboration and interaction between instructors or teachers and their peers in relation to the traditional learning environment. In universities, e-learning, characterized by the use of multimedia constructs, has made the learning process more active, interesting and enjoyable (Liaw et al, 2007).

This is, in fact, a third revolution that will be accompanied by political, social and intellectual changes. Characterized by the rapid transfer of information flows, personalization, differentiation of the training offered, interactivity and time savings in exchanges, it will enable the implementation of e-learning. Today, it is used in various sectors and forms. It is made available to students in an electronic form. Furthermore, it can provide teaching or administrative services (Pegrum et al., 2013).

Safety can be an important benefit of online learning during wars, natural disasters and diseases (Bozkurt, 2020). However, online education has been proposed as a "revolutionary" solution to various problems of inequality in education (Allen et al., 2016).

3. Materials and Methodology:

Our study focuses on several variables to analyze the use of digital: whether it is a part of the student practice or not, influencing factors, perception of distance learning, etc… For example, we selected a number of variables which summarize, on the one hand, the impact of infrastructure, material availability and knowledge acquired in the success of distance learning (as cited in table 2: material, connexion, mastery of tools, Knowledge of platforms , Course before COVID-19, type of education, e-mail, Utilization…), on the other hand, the evaluation of the online experience through the identification of the difficulties encountered, the students'perception of the online teaching and their proposals that guarantee its success (as cited in table 2: Inequality, understanding, Learning, problem encountered, Appreciation, effects, requirements…).

Being interested in the evaluation of distance education in Tunisia, we decided to conduct our study at the Faculty of Economics and Management of Sousse (FSEG). In fact, the FSEG of Sousse provides, within the framework of the LMD system, an academic training related to the economics and management fields. Due to time constraints, exceptional conditions and containment decisions, we limited our survey to a sample of 305 students.

The data were collected by a questionnaire taking two forms: Digital version created through Google forms distributed by e-mail to FSEG students and a paper version circulated over a direct contact with students. The various responses collected are entered and coded into a database under the IBM-SPSS software. This database is explored through Multiple Correspondence Analysis, a factor analysis of data, enriched by descriptive statistics and graphical representations.

The main objective of this analysis is to highlight the dependencies between the qualitative variables. In particular, we aim to identify the most relevant variables that contribute to monitoring online courses. This is how we will apply the Correspondence Factor Analysis, which is a factor analysis method adapted to qualitative data. The Multiple Correspondence Analysis is a generalization of the Correspondence Factor Analysis allowing studying the relationships between several

qualitative variables and which is generally used in the treatment of opinion surveys. Its objectives are the search for the main factors and the identification of a first main plan of giving meaning to its axes (Goavert, 2003; Pagès, 2003). As a multidimensional descriptive statistical method, it allows a graphical representation of similarities in a qualitative data set and, therefore, the conclusion and generalization of certain behaviours.

4. Analysis of students' attitudes towards distance learning:

Following the implementation of a Multiple Correspondence Analysis, the summary of the model presented in Table 1, mainly provides us with a measure of reliability through the Cronbach alpha coefficient. Thus, all the variables considered in our study are consistent and have a satisfactory level of reliability with an average alpha Cronbach value of order 0.731, In particular, the representation of the variables in a first main plane of two dimensions reveals an excellent coherence of the variables (0.801) which contribute to the formation of the first dimension although that of axis 2 seems more at least questionable (0.610). A priori, it can be concluded that the results of the Multiple Correspondence Analysis appear satisfactory and significant.

Table 1
Model Summary

Dimension	**Alpha of Cronbach**	**Explained variance**		
		Total (eigenvalue)	**Inertia**	**% Explained variance.**
1	0,801	4,062	0,239	23,892
2	0,610	2,350	0,138	13,822
Total		6,411	0,377	
medium	0,731[a]	3,206	0,189	18,857

a. a The average Cronbach Alpha value is based on the average own value

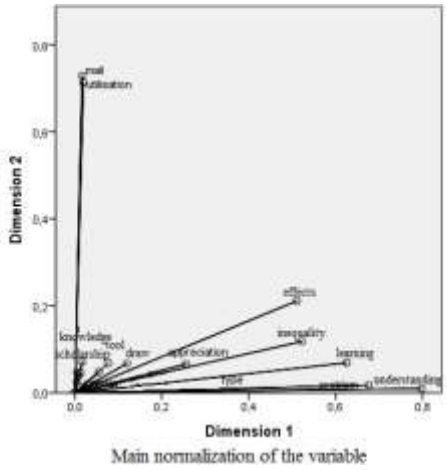
Note that the Multiple Correspondence Analysis will be limited to two dimensions since it is so difficult to deal with multidimensional plans. However, the proposed first main plane provides a quantity of information evaluated through the totality of the eigenvalues (the eigenvalue of an axis gives an idea of its inertia) such that the dimension 1 is more important. The importance of each variable in the first main plane is described in Table 2. These are measures of discrimination that help identify the most relevant variables, that is, the ultimate discriminating variables. The main discriminant variables in our study are those that have a fairly high measure and that are deterministic of the dimension meaning. These measurements can be translated into Figure 1.

Table 2
Measures of discrimination

Variable	Dimension		Mean
	1	2	
Material	0,055	0,048	0,051
Connexion	0,004	0,025	0,014
Scholarship	0,005	0,047	0,026
Mastery of tools	0,009	0,040	0,024
Knowledge of platforms	0,017	0,071	0,044
Course before COVID-19	0,013	0,047	0,030
Type of education	0,336	0,003	0,169
Inequality	0,522	0,118	0,320
Courses draw	0,120	0,067	0,094
Understanding	0,798	0,010	0,404
Learning	0,626	0,069	0,347
Problem encountered	0,677	0,018	0,347
Appreciation	0,256	0,066	0,161
Effects	0,511	0,211	0,361
E-mail	0,019	0,713	0,366
Utilization	0,017	0,729	0,373
Requirements	0,077	0,068	0,073
Total active	4,062	2,350	3,206
Percentage of variance explained	23,892	13,822	18,857

Figure 1

Discrimination Measures



Based on Table 2 and the accompanying graph, we select the most specific variables for axis 1: effects (0.511), inequality (0.522), learning (0.626), problems encountered (0.677) and understanding (0.789). In fact, they are correlated with this axis and have been located in its right end. In addition, e-mail (0.713) and usage (0.729) are the most relevant variables located at the upper end and which contribute to the explanation of dimension 2.

Identification of the meaning of dimension 1

On the one hand and in addition to the problems encountered the inequality of opportunities, the opinions on the appropriate mode of learning, namely distance learning, are either different or identical or complementary to the course in question. Also, the levels of understanding of a virtual course relative to a classroom course are representative variables of student bias and their perceptions of distance learning. Thus, we can conclude that this axis is dominated by the students'perception of online teaching reinforced by the problems encountered during the course follow-up. Knowing that the first dimension always brings more information, it can be concluded that the success of distance learning is strongly dependent on mentality, prejudice and lack of will to change the habits of traditional knowledge acquisition. This highlights the role of direct information transmission and especially the psychological influence of direct contact with the teacher.

In fact, some of the respondents are students who cannot spend a lot of time taking online courses. They prefer face-to-face teaching because according to them, they encounter problems when using online teaching platforms that they do not know how to handle, the network problem, and the too high cost of internet. For example, they claim that online learning has a negative impact on their social life due to their feeling of being isolated. The majority of these students believe that distance learning will reinforce the knowledge inequality between learners.

Students who have taken online courses during the COVID-19 period are convinced by the importance of knowledge transmission continuity through opting for online courses. In addition, they did not experience access problems as most use the computer and connect via Wi-Fi. The majority of them (46.6%) consider that teaching digitization has positive effects on the teaching quality in relation to their university "FSEG", 30.2% consider that it is an obligation due to confinement, 13.1% say that higher education digitization has an economic impact and 9.5% reveal it is necessary to be adapted to global development. However, they are aware that distance learning has a positive effect on their personality: they become more confident in the presentation of their ideas, they save transport and printing courses costs, and they are more secure against the risk of COVID-19 contamination.

Identification of the meaning of dimension 2

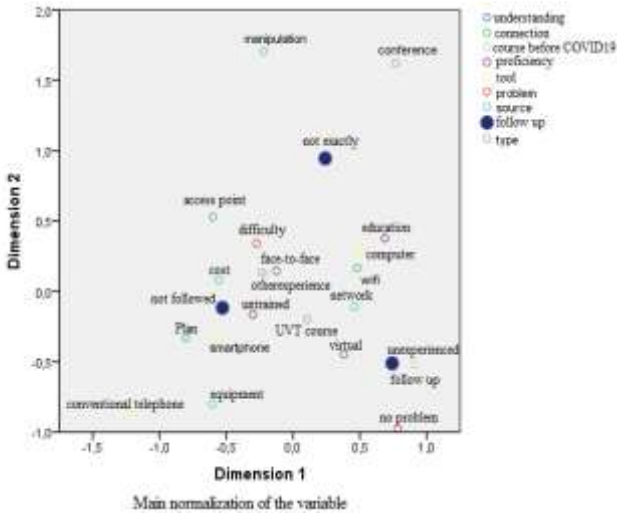
On the other hand, the nature of the e-mail address and its use by any student contribute to the meaning of the second dimension of the main foreground. It is indeed the key entry to an online course, so the equipments and means of connection do not really constitute an obstacle to the success of remote teaching. Indeed, the majority of FSEG students are subtracting/considered to be coming from the worst annual income category of the average cases (63.5% are non scholarship holders), they generally have the connection tools namely computers and smartphones. It is necessary to change the habits of email addresses use; it is not a simple tool of messaging but rather a password to development and change of life quality and cultures. It should be noted that the FSEG of Sousse has made available to each student a Microsoft address and a password ensuring the connection to both platforms of Fseg sousse, Edupage, and Virtual University. Unfortunately, we noticed a lack of awareness in relation to university address usefulness access.

Positioning of the variable followed by online courses in the first main plane

In order to describe the success of the online courses in the FSEG of Sousse, we will study the location of the following variable modalities (in terms of course follow-up, not followed or not really) in the first main plan compared to the responses collected.
The attached diagram of modality points (Figure 2) gives us an idea concerning the elements that guaranteed the success or failure of a distance education during the confinement period.

Figure 2

Attached Diagram of Modality Points



Indeed, students who have taken online courses do not encounter any difficulties in the use of digital tools and platforms. They are satisfied with the content provided and are able to understand their virtual courses despite not having this experience prior to COVID-19.Yet, they have received some training. Their connection is ensured by a computer and a Wi-Fi network. In addition, the lack of online courses follow-up can be explained by a lack of connectivity since the students in question log inusing their smartphones via an expensive Internet plan that quickly runs out. They encountered difficulties when entering the UVT platform knowing that they had not received a special training or experienced a virtual course before. However, the status of students who did not actually take the distance courses is not justified. It can be considered an attitude not explained by their response profiles. Referring to the feedbacks collected, we mention the problem of network availability that prevents the smooth running of virtual courses, the too high costs of accessing the Internet and the lack of training on the

manipulation of digital platforms. Thus, in order to succeed in online teaching, students have proposed a number of recommendations, including 40.3% of students are for the implementation of a hybrid teaching (joint teaching between face-to-face and online), 29.5% emphasize the need for a digital room in the faculty, 25.9% of students require a minimum connection rate while only 4.6% of students require training on using the platforms.

5. Conclusion

Universities have undergone a series of important changes, induced by technological and social trends towards digitization. The recent pandemic has given an intense boost to digitize the education in Tunisia. The survey carried out among the students of the FSEG of Sousse made it possible to identify certain evaluations of this experience.
The connection hardware does not really cause a problem (possession of computer, smartphone). However, there is a lack of connectivity. For its part, FSEG Sousse provided students with equipped digital rooms and installed several Internet access points. In addition, to avoid the complexity of the platform and the lack of manipulation of communication tools (bigbluebottom, videoconferencing, Microsoft teams, etc.), it made use of a simpler platform to manage through which it organized an online pedagogical follow-up period (during the second confinement in 2021) while offering the necessary technical assistance to students.

Students' awareness of safety concerns has probably been a driving force for faster adaptation to the new approach. Faced with the scarcity of other solutions, even students who are not so tech savvy have tried to adapt to the shift to online mode. However, among the negative aspects that prevent, its success is the feeling of isolation, since human contact and social communication is a peculiarity of student life, and the prejudice of 40,3% of students that this method will reinforce the inequality of achievements. In fact, Wang & Eccles, 2013 investigated studied the student attitude in classroom, on particular the face to face teaching, and they conclude that there is student engagement which includes behavioral, emotional, and cognitive factors. However, Anderson, 2003 define the student engagement as a students' interaction with the online classroom environment since the teacher has not the same opportunities to engage with the student (Martin & Bolliger, 2018). As a result, distance education was imposed following the COVID-19 crisis and especially containment. It has become an obligation that ensures the continuity of learning, but we must understand that it is a culture to implement before being an obligation.
As a research perspective, this study should be further investigated taking into account macroeconomic variables. It is necessary to understand student's attitude towards distance education in order to implement an educational system adapted to the economic, cultural and social context of the country.

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