PREREQUISITES FOR THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES: THE CASE OF E-MAIL IN TUNISIAN COMPANY

Hassairi Ahmed Foued, University of Sfax, Higher School of Business

ABSTRACT

The objective of this research is to identify factors explaining the possible differences in the level of use of Electronic messaging in Tunisian companies. The proposals of this research are based on the theory of the richness of the media, the model of Triandis, and the Technologies Acceptance Model. The theoretical framework reviewed is based on four conceptual levels that make up the model for this research, organizational prerequisites, individual prerequisites, perceptual prerequisites, and email use behavior. The model of this research is part of an explanatory approach with a hypothetical-deductive type of approach supported by a questionnaire to which one hundred one user managers responded. The obtained results make it possible to supplement the theoretical contributions of research and to put forward the preconditions allowing predicting the use of electronic messaging. The results show that the use of electronic messaging is still the expression of an individual will that is difficult to influence. In this sense, the use of e-mail is voluntary insofar as the individual experience and perceptions of usefulness in terms of "added value in the workplace", and perceptions of ease of use in terms of "ease of connection" of users are the most determining factors in the user of this means of communication.

Keywords: ICT, Electronic Messaging, Ease Of Use, Usefulness, Use, Discriminant Analysis, TAM

INTRODUCTION

Today, companies are faced with a multitude of technological solutions that have the potential to influence the way they process and communicate information. As Such, internal electronic communication is developing in organizations. It is even a prominent phenomenon of the end of the last three decades (Jeyaraj & Dwivedi, 2020; Wang et al., 2021). It, therefore, begins to be adopted by companies by connecting different actors and facilitating information exchange and collaborative work (Russel & Woods, 2019; Salmon & Joiner, 2005). It has then become possible to create groups of individuals who can work together both within the organizational entity and externally with a multitude of partners around the world.

In this context and to exchange information within the entity, companies resort to electronic networks and more particularly to electronic messaging. The technology of electronic messaging is a "powerful vector of modernization" (Nam, 2014). It is an electronic means of providing rapid communication between the sender and receiver of information (Rahi et al., 2019). In addition, it offers the potential for "rapid and instantaneous dissemination of information to a large number of people regardless of their availability" (Russell & Woods, 2019). The appreciation of these benefits comes in part through the users of email and their level of usage. The resistance or misunderstandings that may manifest in some of them could cause an obstacle to the success of the tool. For this reason, achieving a sufficient level of use is a necessary step to achieve the expected benefits of this tool. As such, the use of electronic mail is subject to the influence of several variables. Research on the use of communication media has generated some theoretical contributions. These works tried to explain, among other things, the factors that lead to the use of electronic messaging. It is within this framework that the present research work is taking place, which tries to bring elements of answers to the following question: What are the prerequisites for the use of electronic messaging in the company from a

developing country. The objective of this research is to propose certain variables that influence the use of e-mail. The aim is to identify factors explaining the possible differences in the level of use of such a system in Tunisian companies.

THE LITERATURE REVIEW AND MODEL DEVELOPMENT

The use of Information and Communication Technologies (ICT) by individuals, groups, or organizations is one of the most addressed issues by information systems research (Jeyaraj & Dwivedi, 2020; Russell & Woods, 2019; Venkatesh et al., 2017). It is of importance as it is subject to factors relating to behaviors and assessments of individuals. Yet benefits are not expected from technology, but its use (Wang et al., 2021). Thus, understanding the why and how of the use of communication media in organizations is essential to understanding the reasons for their success. It is therefore important to examine certain models relating to the use of Information and Communication Technologies (ICT), on the one hand, and to identify the explanatory factors that lead to their use, on the other hand. The use of ICT depends on several factors. To this end, researchers have been interested in studying the explanatory elements of behavior in the use of these technologies, and the reasons for the choice of communication means (Nam, 2014; Venkatesh & Ramesh, 2006).

Generally, the debate on the prerequisites for the choice and use of means of communication makes use of several theories and models mobilized by researchers in their previous work (Venkatesh et al., 2017; Venkatesh & Ramesh, 2006). Indeed, the proposals, in this research, are based on the media richness theory, Triandis' model, and the technology acceptance model.

The media richness theory is developed by Daft & Langel (1986). This theory assumes that the richness of a medium is its ability to facilitate the sharing of meaning and to convey information. Media richness theory is based on four criteria (Danielle & Porismita, 2020; Lai, 2017, Salmon & Joiner, 2005):

- The Feedback: It is the possibility of immediate and rapid feedback of information.
- The multiplicity of signals and indicators: These are verbal signals (tone of voice) and non-verbal (dress, gestures...).
- The variety of language: scientific, academic, literary languages that enrich the exchange.
- Personalization: The means of communication can convey feelings and emotions.

On this basis, a classification of the means of communication according to their richness is carried out and shows that the richest is the communication in face to face followed by the telephone, the electronic messaging, and, finally, the writing (Ayaz & Yanartas, 2020). Electronic messaging is therefore considered to be an appropriate medium for the transfer of information. However, it does not promote mutual understanding. Hence, its poverty as a means of communication (Salmon & Joiner, 2005).

However, it has been established that e-mail does not necessarily generate restricted vocabulary and does not impoverish communication (Rahi et al., 2019). This idea is similar to that of Lee (1994) who shows that an electronic message is far from being a simple and passive process. Similarly, it has been shown that the use of e-mail depends on the user's perception. Seriousness in use outweighs the nature of the medium (Lai, 2017).

Triandis' (1980) model suggests that behavior in media use is determined by attitudes, social factors, habits, perceived consequences, and facilitating conditions. The latter are the objective factors in the environment that promote a behavior by supporting it (Nader & Rossouw, 2016). For example, if a person finds difficulty in accessing a computer, it will be more difficult to use it (Thompson et al., 1994). This model also stipulates that social factors play an important role when it comes to new behavior. As the behavior becomes routine, the habits of using a computer system begin to exert a greater influence against a weakening of social norms influence. Therefore, the experience will have a significant influence on usage (Nader & Rossouw, 2016; Thompson et al., 1994).

The Technology Acceptance Model (TAM) developed by Davis, et al., (1989) is considered the leader in the different theoretical approaches that explain and predict users' attitudes of information technology innovations in the area of information systems research (Lai, 2017). This model assumes that users' adoption and use of information and communication technologies are determined by people's beliefs and attitudes toward these technologies. These are two beliefs that are assumed to be, absolutely, the general prerequisites for the acceptance of information technologies and which are perceived usefulness and ease of use (Davis et al., 1989). It should be noted that beliefs and attitudes are variables internal to the individual and are considered antecedents of the intentions and uses of individuals. However, it is also important to understand the variables external to the individual that influence the formation and change in individuals' attitudes and uses (Davis et al., 1989). The theoretical framework reviewed is based on the three axes of this research, namely, organizational factors, individual factors, and perceptual factors. Four conceptual levels make up the model for this research, organizational prerequisites, individual prerequisites, perceptual prerequisites, and email use behavior.

THE USE OF THE E-MAIL

The use of e-mail is the variable to be explained in this research. Indeed, the use refers to "the functional use of the technique in a face-to-face relationship with the machine". This variable is measured according to the frequency of use. It is a subjective evaluation of the user based on a scale of 7 items which consists of questioning the investigated subjects on their personal uses of their electronic messaging (Straub et al., 1995).

ORGANIZATIONAL PREREQUISITES

Organizational prerequisites are variables that have a significant impact on the use of a given information system (Lai, 2017). Thus, two prerequisites are selected, the nature of the task and the organizational environment.

The Nature of the Task

In an organization, a multitude of functions is distributed among the different agents. The latter do not use information in the same way and they communicate with their colleagues according to the nature of their work (Wang et al., 2021). This difference is reflected in their use of e-mail. This idea is confirmed by Sproull & Kiesler (1986). In their study of the production and research and development departments of an organization, they identify a difference in the number of messages exchanged in these two departments. The number of messages in the production department (31 messages per day and person on average) is greater than the number of messages exchanged in the research and development department (20 messages per day and person on average). For their part, Donabedian, et al., (1998) show the existence of a correlation between the choice of media and the manager's function. The Managers in marketing and sales functions require information-rich media such as face-to-face communication. On the other hand, the managers in the accounting, finance, and production functions use media that are not very rich in information, such as e-mail.

Among the typologies used to categorize tasks, we should mention that of Wang, et al., (2021). They classify tasks on a scale from "structured" to "unstructured". The structured" tasks are those that require the use of well-defined procedures. The unstructured" tasks are those that do not require the use of defined procedures. These tasks are characterized by high ambiguity and require the presence of experts for their resolution. The task variety is defined by the frequency with which unexpected and novel events occur. The high task variety implies the difficulty of predicting events or problems in advance. The low variety means that individuals operate in a context of certainty and can predict the occurrence of future events. A task is analyzable when pre-established solutions to problems exist and procedures are known and available. Thus, the more analyzable the task, the less varied it is, the more routine and non-

complex it is. In such a situation, managers resort to media that are not very rich in information, such as e-mail. This tool is more appropriate for non-complex and routine tasks than face-to-face communication. As a result, managers choose rich media to convey complex messages and low-rich media for non-complex messages (Donabedian et al., 1998). In the same sense, when a manager's work is highly non-routine and complex, the use of e-mail is relatively infrequent (Daft & Langel, 1986). The use of e-mail is, therefore, positively correlated with the simplicity of the task and its routine aspect. This observation gives rise to sub-Hypotheses H1a.

H1a: The nature of the task has a positive impact on email use.

The Organizational Environment

The organizational environment is one of the prerequisites for the use of e-mail (Venkatesh et al., 2003). The IS literature provides a frame of reference that characterizes this environment by a set of actions taken to encourage the use of e-mail, namely support from the general management and technical support. Venkatesh, et al., (2003) use the term "facilitating organizational conditions" to refer to the existence of an organizational and technical infrastructure to promote the use of an information system. Igbaria, et al., (1995) divide the organizational context into two categories: management support and end-user involvement. The first category contains the encouragement of senior management and the resources allocated for this encouragement. The second category represents the existence of support for the development of a computer system, the availability of specialized instructions and user guides to facilitate the use of computer applications. In this sense, the use of an electronic means of communication in an organization is influenced not only by the users but also by the people who implement the technology, who provide training and instruction, and who propose guidelines for use (Yates et al., 1999).

However, for the successful use of information and communication technologies, training and awareness plans for users and the formalization of appropriation rules for employees in the form of a charter or a specific code of conduct must be put in place. These actions influence the appropriation process by facilitating or channeling it. The neglect of these actions could harm the use and success of the technology. This is why, for example, the implementation of an Intranet can be accompanied by several risks, among which the organizational risks are related to the lack of support and encouragement from senior management (Russell & Woods, 2019). The same is true for electronic messaging.

In this sense, the use of electronic messaging depends on the policy pursued by management and the involvement of users. Thus, the following sub-Hypotheses are proposed:

H1b: Organizational environment has an impact on email usage.

The hypotheses (H1a and H1b) advanced above represent research sub-hypotheses that led to the formulation of Hypotheses H1:

H1: Organizational context, in terms of the nature of the task and the organizational environment, has an impact on email usage.

INDIVIDUAL PREREQUISITES

Individual variables are, often, used in the study of information technology use. In this study, the variables, age and experience are retained to analyze their influence on e-mail use.

Age

Among the demographic characteristics, age is considered by some authors as a determining factor in the information technology use (Wang et al., 2019). Indeed, several researchers see age as a discriminating variable in the use of technology, as older users use the least computer tools (Wang et al., 2019). More specifically and focusing on email, the age

variable contributes to the explanation of the use of this technology among individuals. In this sense, it is a fact that age positively explains the usefulness perceived by users of e-mail. Indeed, the youngest executives, those aged between 20 and 40, use e-mail more in their work than their predecessors. They consider it easier to handle. This is manifested by the reluctance of older managers to use new technologies. They show that the attitudes of older people towards computer tools are more negative than those of younger people. It appears, therefore, that there is a negative correlation between the use of e-mail and the age of the user. Thus, the following sub-Hypotheses are formulated:

> *H2a: User age has an impact on email usage.*

Experience

The use of technology can be determined by a set of personal variables including the experience of the users (Hart & Sutcliffe, 2019). Thus, the computer knowledge and know- how acquired during the working years are prerequisites for the successful use of technology. Hence, the use of a particular communication means differs from one individual to another according to his or her experience, comfort in using the medium, and knowledge acquired about the tool. This idea is, particularly, valid concerning the new means of communication. The latter show, moreover, that the individual enriches his experience with the use of the tool. He can, thus, improve his perception of the interest to use the means of communication. Thus, they show that over time, a person's experience with information and communication technologies helps him or her to develop a better understanding of the objectives and uses of an electronic communication medium. In addition, Schmitz & Fulk (1991) introduce three variables that determine e-mail usage. These variables are experienced with the tool, computer experience, and keyboarding skills. They state that users without much experience in ICT cannot grasp the richness and usefulness of e-mail, even in an environment that encourages its use. Furthermore, the lack of experience or skills with e-mail can lead to a negative attitude towards this tool or even a refusal to use it, as a result (Trevino et al., 2000). Thus, the experience and computer literacy with e-mail can help explain user behavior. Users with high computer literacy use email more often and even several times a day (Ayaz & Yanartas, 2020). Similarly, the number of years of experience in using e-mail is positively correlated with the frequency of its use (Hart & Sutcliffe, 2019). These results show that experience in ICT is a determining factor for the use of e-mail. Indeed, the use of this means is associated with the acquired competence (Trevino et al., 2000). Furthermore, the experience of using a communication channel and communicating with a partner contributes to the improvement of the perception of the richness of the medium (Hart & Sutcliffe, 2019). In light of the above, the following sub-Hypotheses are formulated:

> *H2b: User experience has a positive impact on email usage.*

The two sub-hypotheses (H2a and H2b) thus formulated give rise to Hypotheses H2:

> *H2: Email usage has a positive relationship with individual prerequisites.*

PERCEPTUAL PREREQUISITES

Usefulness and ease of use are two perceptions that can determine the choice of using a communication medium (Rahi et al., 2019). The IS literature suggests that managers' perceptual prerequisites for using email are important to consider as an incentive to use this technology. Users who perceive email as useful and easy to learn or use are the most likely to use it (Minsky & Marin, 1999).

Perceived Usefulness

The perceived usefulness of a given technology is defined as "the degree to which a

person believes that the use of such a technology improves his or her performance work" (Davis et al., 1989). The notion of usefulness is linked to the user's performance. If the user believes that his or her performance is enhanced by the use of information technology, then the probability of its use increases. In this sense, usefulness is a major determinant of the acceptance and use of a system (Davis et al., 1989). The usefulness of e-mail determines not only the intention to use the tool but also the actual use. This is what Ayaz & Yanartas (2020) assert by concluding that the usefulness gave to e-mail and the reaction towards this tool can explain its use. Thus, the following sub-Hypotheses are formulated:

H3a: The perceived usefulness of email has an impact on its use.

Perceived Ease of Use

Ease of use is defined as "the degree to which an individual believes that using a technology does not require physical and mental effort. According to Davis, et al., (1989), ease of use is believes to have a significant effect on attitudes toward system use. That is ease of use influences the perceived usefulness of the system. In particular, attitude toward e-mail use is associated with ease of use of the technology (Trevino et al., 2000). For other authors, ease of use refers to "the ease with which the user has learned to use the tool, the ease with which he or she accomplishes his or her goals, the simplicity of his or her relationship with the tool, and the experience gained with the tool". For Ayaz & Yanartas (2020), if the user feels that they have easy access to the messaging system, their usage will be higher. So, in general, the ease of use of a given technology is a determinant of the use of that technology.

However, it has been shown through the IS literature that ICT usability is treated differently by researchers. Some of them suggest that usability is influenced by the style of interaction the user may have with the system (Wiedenbeck & Davis, 1997; Lai, 2017). Human-computer interaction is translated here as the accessibility of the system and its quality. The ability to access a computerized communication system makes current and future use of the system possible. Some researchers refer to this as physical and informational accessibility. Physical and informational accessibility to email is among the variables that make the tool easy to manipulate and use (Lai, 2017). In this sense, physical accessibility refers to the degree to which an individual can access the hardware deployed to operate the system. Informational accessibility refers to the ability of the user to have the desired information from the system.

In addition, the computer infrastructure allows for easy and accelerated use of the computer system. The characteristics of this infrastructure are physical, technological, and social. The physical characteristics indicate the ability to access the system. The technological characteristics represent the quality attributes of the system, and the social characteristics contain the ability to access information. The following sub-Hypotheses can be derived from the above:

H3b: Ease of use of email has a positive impact on its use.

The sub-hypotheses (H3a and H3b) lead to Hypotheses H3:

H3: Perceptual prerequisites in terms of usefulness and ease of use have a positive impact on the use of email.

Figure 1 illustrates the conceptualization of the relationships between the different categories of prerequisites that determine the use of e-mail.
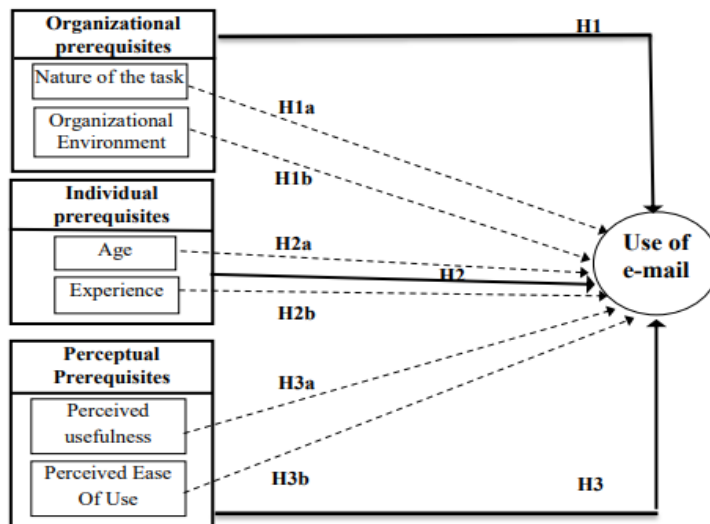
FIGURE 1
THE CONCEPTUAL MODEL OF THE PREREQUISITES OF E-MAIL USE

METHOD

The conceptual model is based on a set of variables supposed to influence the use of e-mail. These variables are divided into three main axes: organizational prerequisites, individual prerequisites, and perceptual prerequisites. Before proceeding to the analysis of the data collected, it is appropriate to present the data collection tool, the research field, and to study the characteristics of the sample obtained.

The Questionnaire

The data collection is carried out using a questionnaire that consists of eleven closed questions. To validate the importance and the validity of the prerequisites determining the use of electronic messaging in the Tunisian context, a presentation of the conceptual model is carried out in front of suppliers and editors of collaborative work software, such as the intranet and the electronic messaging. Then, the various explanatory variables retained in this research and affecting the use of the technology are measured employing a scale of measurement of Likert in five modes. The identification of the items corresponding to the measurement of the variables is carried out based on a broad review of the literature in the IS field. Once the questionnaire is established, the research field is chosen and the questionnaire is administered.

Research Field

A series of companies that have already adopted electronic messaging are selected. The choice of the population is guided by a single criterion, namely, the existence of electronic messaging already operational within the company. The editors and suppliers of this type of software represent the main sources of information for composing a population of about fifty companies. In each company, five or six respondents are designated by the management to answer our questionnaire. It should be noted that the unit of this study is defined as the email user. Thus, the respondent could be an IT manager, senior or middle managers, or data entry clerks. In total, the final population is made up of two hundred and fifty individuals who use e-mail.

The first series of questionnaires (one hundred) is administered between January and March 2018 following three modes, the self-administered survey, the face-to-face survey, and the computer-based survey (E-mail). The number of responses to the questionnaire is Fifty-Seven (57). The second round of questionnaires is then administered by mail supported by telephone follow-ups between June and August 2018. This second wave of questioning allowed

the collection of Fifty-One (51) additional questionnaires for a total of One Hundred Eight (108) respondents, of which One Hundred One (101) were valid for analysis, an effective response rate of (40.4%).

RESULTS

The Sample Characteristics

The structure of the sample is described through the set of respondents that make it up, taking into consideration certain characteristics of these respondents. The distribution of the respondents in the sample is based on the following criteria: gender, age, departments to which the respondents belong, seniority in their positions, and their geographic dispersion. Indeed, most of the respondents are men (80%), with an age between (26 and 35 years), who represent several services and departments of their companies. They are divided between the administrative and financial departments, the accounting department, the sales, and marketing department, the personnel and human resources department, the IT department, the production department, the supply department, the quality insurance department, the management control department, and the maintenance department. Most of the respondents have been in their positions for less than ten years.

The Explanatory Analyzes

For the analysis, the variable to be explained, the frequency of e-mail use, measured on a six-item scale, is subjected to intermediate treatment to give rise to two groups of user categories which give this variable a nominal character. However, most of the explanatory variables are measured on a five-point Likert scale. In addition, the KMO analysis provided an index of 0.567. This index is low for there to be a relationship between the explanatory variables. Hence, the absence of multicollinearity between the variables. The Box's M test is used to verify the H0 Hypotheses: equality of variances-covariance's in the groups. The Fisher test shows an approximate F of 0.691 with a significance of 0.657. The risk of rejection of H0 is 65.7 %. This is too high a rate to reject these Hypotheses. Hence, the equality of the variance- covariance of the groups. At this level of the research, it is necessary to verify the various hypotheses and sub-hypotheses already formulated.

Testing of Hypotheses H1

The H1 Hypothesis is intended to establish the relationship between the organizational context and the use of e-mail. The results of the group equality of means tests performed on the nature of the task and organizational environment items are presented in Table 1. For the items of the nature of the task, namely, daily and similar tasks, the existence of understandable steps, routine work, standard and operational procedures, repetitive activities in the work, and defined and clear knowledge, the values are taken by the Wilks' lambda are close to 1. The values of F are too low and the thresholds of significance are too high (they exceed by far the threshold of 0.05, therefore, not significant). The extreme values are taken by the "routine work" item. In other words, the nature of the task has no significant influence on the use of e-mail in Tunisian companies. These results reject Hypotheses H1a. For the items of the organizational environment, namely staff training, staff awareness, staff encouragement, the charter of use, and the existence of staff, the values taken by F are also low with probabilities of significance greater than (0.05). These results reject Hypotheses H1b and show that the organizational environment has no significant effect on the use of e-mail. In sum, the variables selected to express the organizational context, namely the nature of the task and the organizational environment, do not affect the use of e-mail in Tunisian companies. Thus, the H1 Hypotheses are rejected.

Table 1 RESULTS OF THE EQUALITY OF AVERAGES TESTS FOR H1			
Items	**Lambda de Wilks**	**F**	**Signification**
Daily and similar tasks	0.946	0.089	0.674
Existence of understandable steps	0.877	1.345	0.256
Routine work	0.987	0.010	0.923
Standard and operational procedures	0.934	0.543	0.432
Repetitive activities in the work	0.993	0.403	0.528
Defined and clear knowledge	0.978	1.543	0.234
Staff training	0.924	0.564	0.467
Staff awareness	0.986	0.398	0.465
Staff encouragement	0.993	0.456	0.531
The charter of use	0.876	4.231	0.064
The existence of staff	0.965	0.654	0.485

Significance level: $p < 0.05$

Testing Hypotheses H2

Hypotheses H2 is designed to establish the relationship between individual prerequisites and email usage. The results of the group mean equality tests performed on the variables age and experience are presented in Table 2.

Table 2 RESULTS OF THE EQUALITY OF AVERAGES TESTS FOR H2			
Items	**Lambda de Wilks**	**F**	**Signification**
Age	0.943	0.939	0.298
Experience with new technologies	0.823	9.614	0.004
Experience with electronic messaging	0.825	9.699	0.002

Significance level: $p < 0.05$

For the age variable, a value of $F = 0.939$ with a probability $p = 0.298$ not significant. These results reject the H2a Hypotheses. For the experience variable measured by the experience with new technologies and the experience with electronic messaging, the results present respective F values of 9.614 and 9.699 with probabilities of significantly lower than 0.05, namely 0.004 and 0.002. These results show that experience with new technologies and experience with e-mail have a significant effect on the use of e-mail. This confirms Hypotheses H2b.

In sum, the variables selected to express the individual prerequisites have an effect on the use of e-mail only at the level of the experience variable. Thus, Hypotheses H2 is partially accepted.

Verification of Hypotheses H3

Hypotheses H3 is designed to establish the relationship between the perceptions of usefulness and ease of use and the use of email. The results of the group mean equality tests performed on the variable's utility and ease of use are presented in Table 3.

Table 3
RESULTS OF THE EQUALITY OF AVERAGES TESTS FOR H3

Items	Lambda de Wilks	F	Signification
Faster work	0.856	12.049	0.000
Higher value-added task	0.864	11.654	0.000
Easier work	0.899	7.875	0.009
Email is useful	0.854	10.511	0.001
Ease of learning	0.893	6.987	0.009
Answers to information needs	0.976	0.56	0.789
Competence in using the system	0.854	7.206	0.012
Ease of use	0.778	15.731	0.000
Easy access	0.763	17.053	0.000
Easy connection	0.735	19.784	0.000
Arrival of messages	0.838	13.432	0.000
Availability of information	0.869	14.368	0.000

Significance level: p<0.05

For the items of the utility variable, the values taken by F are high ranging from 7.875 for the item "easier work" to 12.049 for the item "faster work" with probabilities of significantly lower than 0.05 ranging from 0.000 to 0.009. In other words, the perception of the usefulness of electronic messaging significantly influences the use of this system in Tunisian companies. These results accept Hypothesis H3a. For the items of the variable ease of use, the results provide even higher values of F and probabilities of significance that converge to 0, except for the item "responses to information needs" which has a lambda of Wilks=0.976, an F=0.56 and a p=0.789. Indeed, the perception of ease of use significantly influences the use of email in Tunisian companies. These results accept Hypothesis H3b. In sum, the variables selected to express the perceptions of usefulness and ease of use has a significant effect on the use of e-mail in Tunisian companies. Thus, Hypotheses H3 is accepted.

Interpretation and Predictive Power of the Discriminant Function

The discriminant function presents the set of explanatory variables that discriminate the most between the groups of individuals. In the case of two groups, the analysis reveals a single discriminant function. This is simple discriminant analysis. The Eigenvalue of the discriminant function has inertia equal to 73.5 %. This rate is considered satisfactory. The canonical correlation is equal to 0.651 and allows bringing satisfactory discrimination. The discriminant function is retained by using standardized or non-standardized discriminant coefficients. For our research, the choice of standardized coefficients is necessary because the measurement units of the different variables are not the same. Hence, the discriminant function is written as follows

Z=0.551 experience with new technologies+0.677 higher value added task+0.556 easy connection.

Of the three items that discriminate between the two groups, the perception that "email allows tasks with greater added value" was the most important. The stronger this perception, the more the use of email is frequent. The experience with new technologies and ease of connection also discriminate between the two groups, but to a lesser degree. To appreciate the predictive objective of the discriminant function, the predictive quality of this function is judged. Indeed, the percentage of well classified is equal to 86%, *i.e.,* the discriminant function can predict 86% of the number of users. To retain the discriminant function provided by the analysis, it is necessary to assess the percentage of well classified. At this level, it is necessary to compare this percentage with the result of a random classification, using the z-statistic. In our research,

z=5.43>2. This means that the independent variables retained in the discriminant function have a significant contribution to the prediction. In other words, the 86% well-ranked percentage is much better than a random ranking with a 95% chance.

The empirical analysis also identified the items that discriminate most between groups. The experience with new technologies, the perception that e-mail adds value to work, and ease of connection are the items that distinguish between the groups. It should be noted that each item belongs to a Hypotheses confirmed by the research.

DISCUSSION

The results of this research revealed the importance of three variables on the level of use of e-mail. These variables are experience, perceived usefulness, and perceived ease of use of the tool. First, the user experience was an important factor in determining the level of email usage. This factor included items related to experience with new technologies and that of email. However, the experience with new technologies appears to be the most important item to distinguish between the users' groups. Indeed, the longer this experience is, the more the use of e-mail is frequent. This result tends to emphasize the importance of the use of new technologies to support the use of e-mail. Second, perceived usefulness is also a necessary condition for using an e-mail. This perception is based on the fact that the users find in the e-mail a means of getting their work done more quickly and easily, while at the same time adding more value to their tasks. This last statement is validated by the empirical analysis. This can be explained by the fact that a user can perform his work efficiently by saving time and minimizing his efforts. Therefore, he will improve his work performance. This is in line with the results of Davis et al., (1989). Finally, the perception of ease of use is a necessary condition for using e-mail. This perception is based on the fact that the users find the electronic messaging easy to learn and use, and its use skills quickly improved. These results confirm the work of Ayaz & Yanartas (2020).

In addition, the ease of use of this technology is reflected in the technical possibilities it offers in terms of physical accessibility (ease of access and connection) and informational accessibility (availability of information on time). The ease of connection has been the most striking since it allows, according to the results of our research, to discriminate between the groups of users of electronic messaging. Indeed, the easier the connection is, the more frequent the use becomes. In sum, the results show the importance of experience with new technologies and perceptions of usefulness in terms of "added value in the workplace", and ease of use in terms of "ease of connection".

Nevertheless, the level of use of email in Tunisian companies is not dependent on the age of the user. In this sense, the study did not find a significant effect of the organizational context on the level of use of e-mail. Nature (routine or complex) of the user's task did not influence the use of this tool. This can be attributed to the fact that the user only uses e-mail for simple communication tasks (broadcasting and exchanging information). The organizational environment, as reflected in the existence of actions to promote the use of e-mail, also does not have a significant influence. Indeed, the lack of training, awareness, and encouragement for staff from management is a matter of culture. Company managers are not aware of the importance of such a system in managing their business yet. In addition, most companies do not have a user guide for the e-mail system but do have IT staff that intervenes in the event of problems detected by the system. All these results confirm some of the hypotheses put forward. They show that the use of electronic messaging is still the expression of an individual will that is difficult to influence. In this sense, the use of e-mail is voluntary insofar as the individual experience and perceptions of users are the most determining factors in the user of this means of communication.

CONCLUSION

The objective of this work has been to study the prerequisites of email use. The theoretical framework proposed in this research is based on the media richness theory, the

Triandis model, and the technology acceptance theory. This literature and the body of work in this area have revealed the relevant prerequisites determining the use of email. The empirical validation of this study was carried out on a population of one hundred one users of the electronic messaging belonging to about fifty Tunisian companies. The obtained results make it possible to supplement the theoretical contributions of research and to put forward the preconditions allowing to predict the use of electronic messaging. To this end, empirical research has led to several findings. The use of e-mail depends essentially on the users' perceptions of the usefulness and ease of use of this system. Similarly, experience is another factor that influences e-mail use.

However, the organizational context did not influence the use of e-mail. Moreover, the results lead to the conclusion that the use of this system is independent of the user's age. The empirical analysis also shows that the experience with new technologies, the ease of connection, and the perception that e-mail adds value to work are likely to distinguish between the groups of users. Indeed, the greater the experience with new technologies is important, the more frequent the use of e-mail is. The easier the connection to the e-mail system is, the more frequent the use of this system becomes. The greater the perception that email adds value to the work, the more frequent its use becomes. This may highlight the practical contribution of this research work. Indeed, the results obtained offer implications for practitioners who wish to promote the use of e-mail in their organizations. This promotion can aim, for example, at stronger adequacy between the nature of the tasks performed and the tool, as well as an improvement of the organizational environment. These actions can be strong incentives to use an email.

Beyond these results, this research has some theoretical and methodological limitations. From a theoretical point of view, the number of variables tested in this research (six) remains small concerning all the possible determinants. In this sense, other prerequisites related to the companies themselves can influence the use of e-mail, such as the size of the company, the sector of activity, the environment, the culture, the trust, etc. In addition, the work of Venkatesh et al., (2017) which focuses on theories and models enhancing the Technology Acceptance Model (TAM) should be considered. Methodologically, this study was limited to a sample of 99 users belonging to about 50 Tunisian companies. Although the sample is representative of this research, a larger study could generate more significant results. In addition, the data in the empirical study is collected at a given point in time. They do not allow for changes in usage over time. Finally, the diversity of administration modes (the self-administered survey, the face- to-face survey, and the computer and mail survey) presents limitations in terms of divergent attitudes and perceptions toward each category of administration mode. Consideration of these limitations leads to suggestions for future research that involves testing other prerequisites that may influence e-mail use and spreading the study over a larger sample.

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