The Impact of Stress Due to Digital Communication on Productivity: The Exploratory Study

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Abstract: This research aims to analyze and explain the phenomenon of the effects of digital communication in more detail. We will examine the relationship between digital communication tools and stress and whether this stress can impact staff productivity. Therefore, we will answer the central research question: how stress-induced by digital communication tools can influence productivity? To answer this we have developed a conceptual model of stress due to digital communication which is based on Transactional Theory (Lazarus & Launier, 1978), Transaction-Based Models (TBM) (Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007), The Technostress Phenomen (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008). The qualitative method was used for the exploratory study. The findings indicate the existence of specific factors that create techno-stressors among professionals using IS. These techno-stressors, in turn, cause users to be dissatisfied with their work and weaken the use of IS for their professional tasks. It also indicates that the extent of technical stress experienced by an individual depends on the specific demographics. In addition to this, the model identifies inhibitory mechanisms that organizations can deploy to cushion the causes and consequences of techno-stressors. In this context, and concerning the previous findings, the research theme takes on new meaning by changing E-HRM through digital communication (e-mail, instant messaging, telephone calls).

Keywords: Digital communication, stress, productivity, e-hrm, transactional theory

INTRODUCTION

In companies as in any organization, the information that is at the heart of their operations is not just raw data, but is a construct, and a product of a set of upward, transversal, interactive, internal and external downward flows. This exchange of flows is called communication. Communication in the organization is therefore the transmission of messages to its internal staff or to its external environment.

The advent of new technologies and the Internet has brought new communication practices, generating new opportunities but also new risks, linked to data leakage, risks of intrusions, rumors and misinformation (Men, Tsai, Chen, & Ji, 2018; Sommerfeldt & Yang, 2018).

A study by L. Dabbish and Kraut (2004) which postulates that informal spontaneous communication has a cost: interruption. This led us to think about the effects of digital communication on the individual and organizational level.

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The objective of this research is in fact part of these efforts to analyze and explain the phenomenon of the effects of digital communication in more detail. We will try to examine the relationship between digital communication tools and stress and whether this stress can have an impact on staff productivity, and therefore, we will answer the central research question: how stress induced by digital communication tools can influence productivity?

Since the theme has gone through 2 phases so even our article will respect this sequence and it will be presented as follows: section 1 will be devoted to the presentation of the final model, and section 2: to the exploratory study end the reorientation.

Theoretical Background and Development of the Proposed Model

Conceptual framework: Digital communication: is the set of digital and technological solutions used for the purpose of communication. This information technology has radically changed the methods of communication in the company, more precisely three innovations which concern this technology have more particularly influenced organizational communication namely: computer networks, wireless links, and management systems of knowledge. Through the establishment of a computer network, the company now coordinates between its employees at any time and on any point of the globe by hardware and software platforms (email, instant messaging, mobile telephones, voice mailboxes, electronic data interchange, intranets and extranets, social networks, etc.).

This relationship between digital communication and stress is explained by the inability of users to cope with new computer technologies in a healthy way (Brod & Hall, 1984; Ouiame Benali Idrissi, n.d.; Khaoula & Khalid, 2019). And these new dimensions and characteristics of this new way of working, required by these technologies, are considered by the user as stress factors and stimuli.

This Table 1 summarizes according to previous studies all the creators or stimulators of stress that are linked to the use of digital communication tools:

Table 1 *STRESS AND DIGITAL COMMUNICATION*

Stress Stimulus	Authors
Overload or techno-overload	(Felio, 2011; Ragu-Nathan et al., 2008; Tarafdar et al., 2007; Yin, Davison, Bian, Wu, & Liang, 2014)
Joinability	(Felio, 2011)
Dispersion or interruption	(Felio, 2011; L. A. Dabbish & Kraut, 2006; Datchary, 2004; Thomas et al., 2004)
Sense of urgency, instantaneity	(Felio, 2011)
Techno-insecurity	(Tarafdar et al., 2007; Ragu-Nathan et al., 2008; Yin et al., 2014)

Stress: there are several attempts to define and apply stress. Among these definitions, there is that of the transactional theory of Lazarus (1966) which considers that stress is like a particular relation between the person and the environment that he judges as imposing or exceeding its resources and endangering its well-being. Thus, cognitive assessments play a crucial role in the stress process. The evaluation processes refer to the categorization and evaluation of an encounter in relation to its well-being. Specifically, there is the primary assessment, the meetings are classified as irrelevant, benign positive or stressful.

Stress in general and especially this stress due to digital communication has effects on the individual and the organization, and among other things, on productivity while it is normally the objective of the use of these means (Uysal, 2018).

Productivity: is defined by the economic and commercial dictionary as the ratio between the quantity produced of a good or service and the number of units of a factor of production used. Producing more using the same amount of labor and capital thus represents an increase in productivity. This indicator is not easy to measure, because in general the products and factors of production are very varied and themselves difficult to measure.

This Table 2 presents the results of some studies that deal with the relationship between digital communication and productivity

Table 2 *DIGITAL COMMUNICATION AND PRODUCTIVITY*

Articles Studied	Conclusions
De clic en clic: Créativité et rationalisation dans les usages des intranets d'entreprise, (Beaudouin, Cardon, & Mallard, 2001).	The existing studies on productivity and digital communication are focused especially on the productivity of the channels used without the introduction of the notion of stress in this relationship.
Effect of online social networking on employee productivity, (Ferreira & Du Plessis, 2009)	Other research that has shed light on stress and its effect on productivity is generally focused on a communication tool for example: e-mail.
Social Media and Productivity in the Workplace: Challenges and Constraints, (Aguenza, Al-Kassem, & Som, 2012).	Most of the technology studies highlight a very interesting idea about user perception that can be a source of positive or negative appropriation, and therefore the outcome will be positively or negatively impacted.
Workplace impact of social networking, (Bennett, Owers, Pitt, & Tucker, 2010).	Productivity is generally measured in relation to the volume of hours worked.

Development of the Proposed Model of the Stress Induced by Digital Communication

The phenomenon studied "the effects of stress due to digital communication", which puts these three variables in relation is presented in the following model:
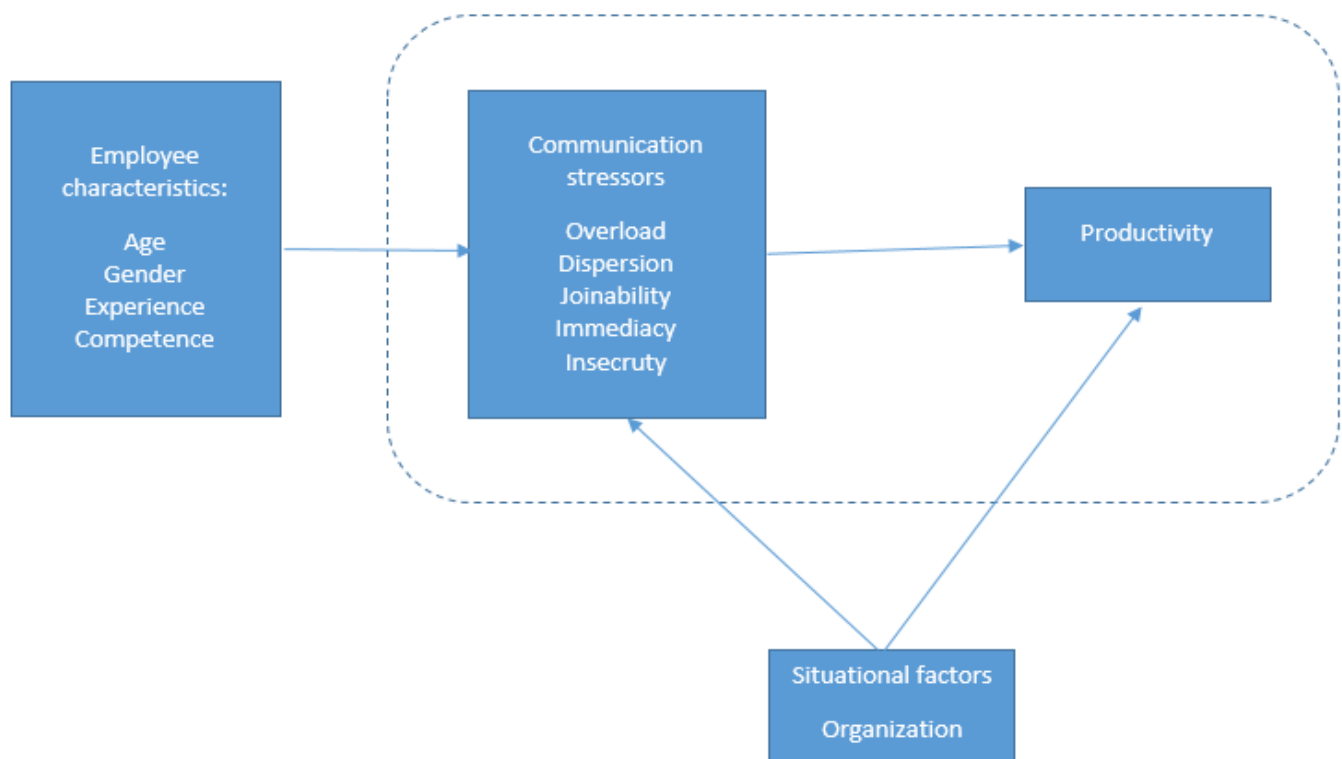

Figure 1 *Theoretical Framework*

The objective of the conceptual model of stress induced by digital communication is to analyze the influence of this stress on staff productivity, it considers that digital communication tools create stress by stimulators (overload, insecurity, dispersion, feeling of urgency and immediacy), the latter influences productivity either positively or negatively.

It also specifies some contingent factors (personal characteristics) which can influence the perception of these stimulators, and finally it also highlights solutions to reduce the effect of stress on productivity.

Therefore, this model is developed using transactional stress theory (Lazarus, 1966) and TBM (Ragu-Nathan et al.,

2008) "defined below", as references and for more credibility we have added a third model that complements the TBM, it is more specific and accurately describes the technological environment.
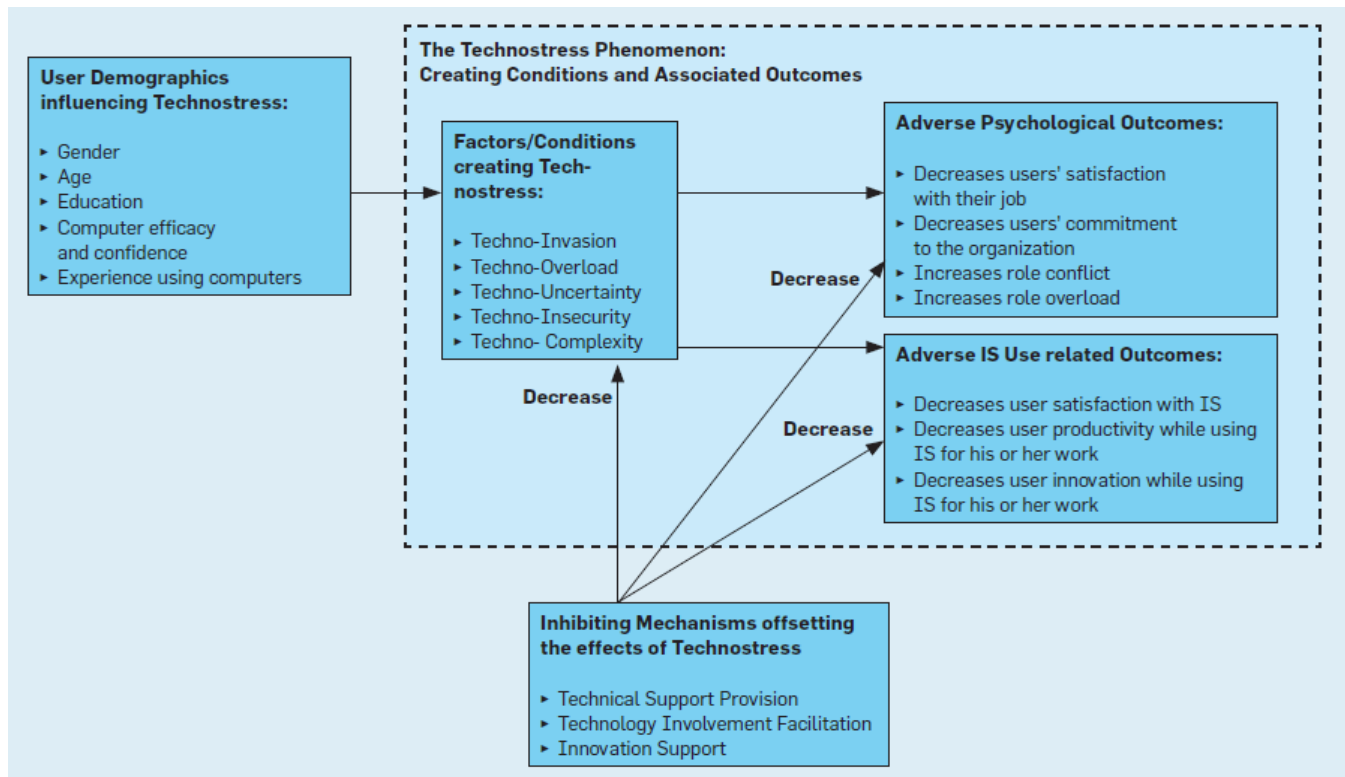

Figure 2 *The Technostress Phenomenon (Tarafdar et al., 2007)*

The above model indicates the existence of specific factors that create techno-stressors among professionals using IS. These techno-stressors in turn cause users to be dissatisfied with their work and weaken the use of IS for their professional tasks. It also indicates that the extent of technical stress experienced by an individual depends on the specific demographics. In addition to this, the model identifies inhibitory mechanisms that organizations can deploy to cushion the causes and consequences of techno-stressors.

As already announced, the construction and the assembly of this model went through a set of stages (see below): firstly the exploratory study and thereafter the reorientation of the theme considering the results of this last and finally the elaboration of the final model.

The Reorientation of the Theme and Exploratory Study

At the beginning, the phenomenon sought was the relationship between stress due to E-HRM, satisfaction and productivity, since most studies consider that E-HRM ensures efficiency... (S. U. & Chughtai, 2019; Lepak, Snell, et al., 2007). However, empirical research on the consequences of technology (IT) has revealed contradictory findings on almost all dimensions of supposed IT consequences, which prompted us to think, seek and examine the relationship between stress and E-HRM and if this relationship has effects on satisfaction and productivity. And for this we developed a preliminary model to materialize this relationship which is presented as follows:
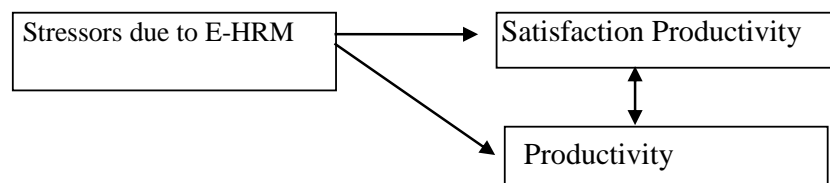

Figure 3 *The Proposed Research Model*

The Theory and the Reference Model

Transaction stress theory: describes the phenomenon of stress as a particular transaction between the person and the environment in which the situation is assessed by the individual as taxing or exceeding his resources and threatening his well-being (Folkman & Lazarus, 1984).

Stress TBM (Ragu-Nathan et al., 2008): The TBM model developed by Ragu-Nathan et al. (2008) is based mainly on transactional theory, it comes to clarify and explain stress by the correlations that exist between these 4 components:
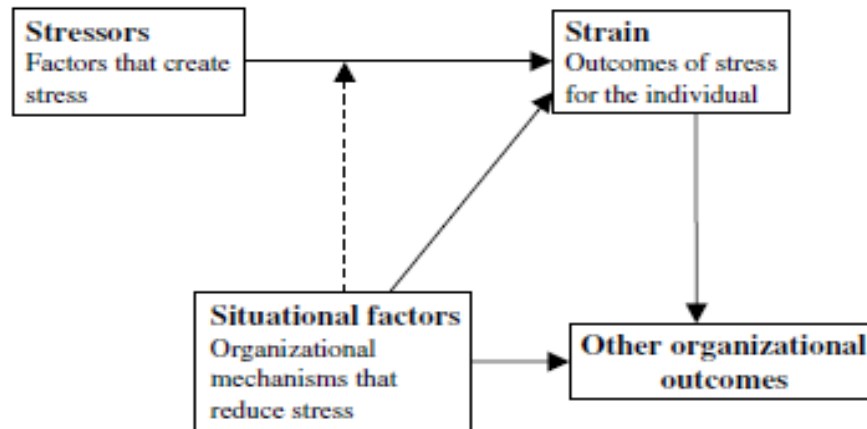

Figure 4 *TBM Model*

Given the shortage of research that links stress to e-hrm, we went into the field in the spirit of understanding from user experiences the threads of this relationship, and this through an exploratory survey conducted in the form of interviews with three HR managers.

THE EXPLORATORY STUDY

The Methodology

The choice of one methodology over another depends on the problem studied, the nature of the study (exploratory, confirmatory, etc.), the accessibility of certain populations and the means available to the investigator. Therefore, the researcher must choose the most appropriate survey method for his subject and field, without entering into the debate on the superiority of studies, which remains a sterile debate.

In our research and as already mentioned, we chose to answer our problem: the use of the two methods, the qualitative method for the exploratory study and then the quantitative method to verify if the generalization of the conclusions of the preliminary qualitative study can be considered.

First of all, this choice of coupling methods is justified by the fact that our research problem contains quantitative variables measured by ordinal and nominal scales such as stress, and others that are quantitative in nature and require interval or proportion scales such as productivity. The second reason for our choice is to seek the complementarity of the two methods and to reduce their disadvantages as much as possible when they are applied to a particular phenomenon, for example the problem of the subjectivity of qualitative studies.

The coupling of the two study methods in the same research has pushed us to adopt for each study phase the approach that suits it: for the first exploratory study phase, it was carried out by the qualitative study in a hypothetical-inductive process, which means that we started from the field to build the hypotheses and refine the proposed model, and then we did the confirmatory study by following the quantitative approach with a hypothetical-deductive process that helped us to confirm or invalidate the hypotheses built during the first phase.

The approach used to guide our methodology is presented in the following diagram:
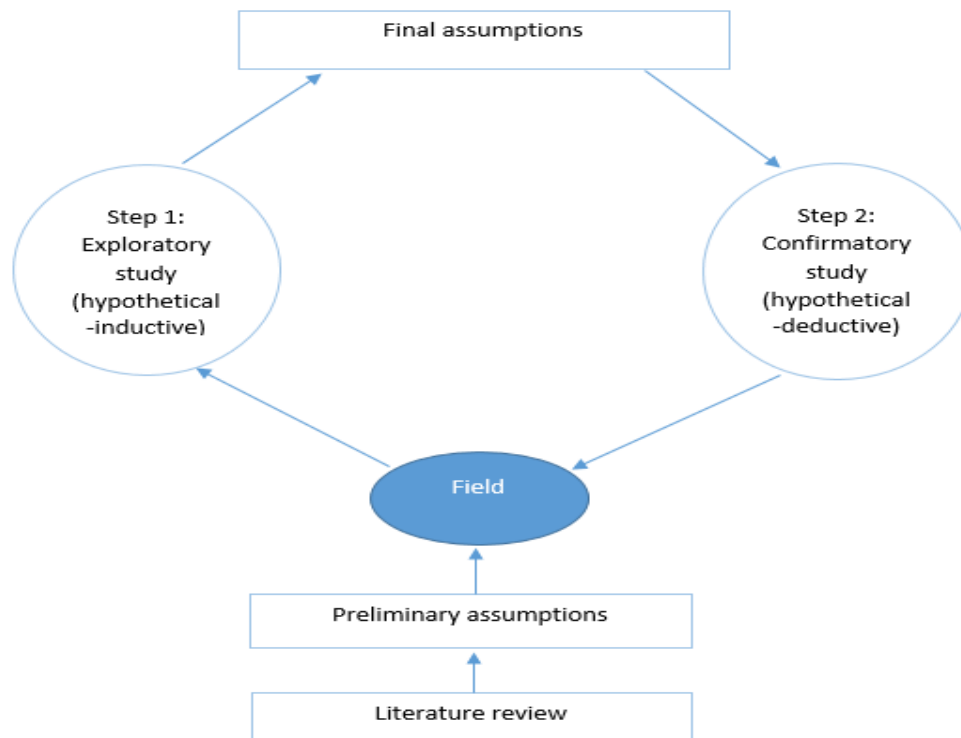
Figure 5 *Methodology*

The Conduct of the Exploratory Study

At the beginning we planned to do at least ten interviews but during the study with just three cases we were able to understand and be convinced that the theme is poorly elaborated and requires rehabilitation, which pushed us to take a step back from our problem and converge the theme towards the most suitable paths (see above part of the theme reorientation).

The qualitative data collection tool chosen is: the semi-directive interview, which is considered to be the most convenient and widely used method (Roussel & Wacheux, 2005).

We conducted three semi-directive interviews lasting between 20 minutes and 60 minutes. The interviews were conducted face-to-face by note-taking.

These results have led us to think of redirecting the subject towards the track or the most abundant phenomenon in Moroccan companies and also the most understandable and experienced by the target population (managers). In this context, and in relation to the previous findings, the research theme takes on new meaning by changing E-HRM through digital communication (e-mail, instant messaging, telephone calls).

After this transition of the models we eliminated the satisfaction variable as a result since this stress problem due to digital communication - satisfaction - is already consumed and treated several times under different nails. And the new model is presented above.

The Results of the Exploratory Study

Table 3 *EXPLORATORY STUDY RESULTS*

The Sample	The Methodology Followed	The Conclusions
Case 1: HR manager of the Alpha company of the aeronautical sector with a staff of 150 people. Case 2: HR manager of the beta company of the automotive sector with a staff of 500 people. Case 3: HR manager of the mega company of the automotive sector with a staff higher than 5000 people.	Our exploratory study was carried out according to the qualitative method with a hypothetico-inductive process. The qualitative data collection tool chosen is: the semi-directive interview with an interview guide. We began our study with three interviews lasting between 20 minutes to 60 minutes. The interviews took place face to face by note-taking. Data analysis: Case-by-case analysis: We transposed the maintenance corpus into a number of content-representative themes. We then searched for matches with the predefined variables. Transversal analysis of the themes: the comparative study or cross-analysis which allows to generalize the observations through several representations of these themes.	Moroccan companies are still lagging behind the use of e-HRM tools, despite the fact that the sample chosen is composed of companies that belong to the major sectors of Morocco. Not all e-GRH tools create stress on the contrary there are those that contribute to the well-being of users. The stress results are not all negative, users can experience a stress level that helps them to improve. There are variables that can be moderating this relationship stress satisfaction ... The tools that create stress among users are the tools that their characteristics give rise to stressors such as dispersion, insecurity, overload ... These tools are mainly summarized in communication tools. The communication that is considered stress-generating can be internal or external, linked to the HR service as the intranet or not as email and phone ..., institutional or domestic, concerns the staff of the whole company not only of the HR department. The sample must also include other profiles to vary the analysis visions.

CONCLUSION

The aim and the purpose of this research is to invalidate or confirm the hypotheses established via an empirical study which will be carried out soon. At the beginning, the research idea was to analyze the effects of stress due to E-HRM on satisfaction and productivity but after the exploratory study we were forced to converge on digital communication to adjust and adapt to the field. Therefore, after a thorough reading and an analysis of the possible correlations, the theme became: analysis of the stress effect induced by digital communication tools (e-mail, instant messaging, telephone calls) on staff productivity. The latter will also undergo an exploratory continuum of studies to refine the final model, in order to finally move on to empirical confirmatory treatment.

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