



## Critical Factors of Technostress and its Effects on Employees of the Consulting Industry: An Empirical Case Study for the Employees of WMP Mexico Advisors

## Masterarbeit

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#### 1. Introduction

"The computer has been touted as the most significant advance in the history of civilization, but technostress shows us how humanity may be paying too high a price for progress".

#### Craig Brod, 1984

With the arrival of the COVID-19 pandemic, which completely paralyzed the world, we realized how indispensable information and communication technologies (ICT) are for ensuring the functioning of both public and private organizations. The abbreviation ICT stands for "information and communication technologies" and refers to a wide range of technological solutions in the field of information and telecommunications. The term first appeared in the so-called Stevenson Report of 1997, which was published in Great Britain. There, the transition from the term IT to ICT was addressed. "We speak of ICT in this report and add the term 'communications' to the already familiar 'information and communication technologies in all areas of society" (Böcker and Klein, 2012). The OECD's (2017) "political definition" refers to ICTs as "a set of technological tools and resources used to transmit, store, create, share, and exchange information."

This master's thesis deals with stress at the organizational level. Nevertheless, it is not about any kind of stress but one that could arise from the use of information and communication technologies. The concept of stress has been widely discussed, but one of the first definitions in the literature is that of Selye (1956), who defines stress as "the nonspecific response of the organism to some external demand" and "the state produced by a specific syndrome consisting of all nonspecific changes induced in a physiological system". Lazarus and Folkman, (1966; 1984) on the other hand, view stress not as a stimulus or a subjective response or a psychological relationship, but as a process. The transaction-based stress theory proposed by Lazarus and Folkman (1966; 1984) refers to stress as a transaction or relationship between the individual and his or her environment. Stressors or environmental demands on the individual are considered to cause the strain, which is the resulting adverse consequence or situation for the affected individual, although it is important to note that strain continues to be directly influenced by situational factors. Situational factors are processes and actions that the organization can implement, such as support, training, and incentives, to improve performance and perception of work-related tasks (Lazarus, 1984; Cooper, 2001; Ragu-Nathan et al., 2008). Accordingly, these factors moderate the impact of stressors on strain. Situational factors not only directly affect strain, but also influence other organizational outcomes such as commitment to the organization, intention to stay in the organization, absenteeism, and turnover. In addition, strain has a direct impact on organizational outcomes. That is, the level of behavioral or psychological and physiological outcomes directly affects the decision to stay in or leave an organization or the level of commitment to the organization (McGrath, 1976; Beehr, 1998; Cooper, 2001; Ragu-Nathan *et al.*, 2008).

Information and communication technologies can be a double-edged sword, as at the same time, in addition to the beneficial aspects, they are also associated with negative effects on individuals and organizations. One of them is the phenomenon of technostress, to which different definitions are assigned in the literature. The concept of technostress was first defined by US clinical psychologist Craig Brod (1982) as "the inability to deal with computer technology in a healthy way". Years later, in his book, The Human Cost of Computer Revolution, Craig Brod (1984) defined the phenomenon of technostress as "a modern disease of adaptation caused by the inability to cope with computer technologies in a healthy way."

From a general perspective, mainstream research on technostress has specifically examined how and which technostressors cause psychological and behavioral stress related to the mandatory use of ICTs in the workplace (Tarafdar *et al.*, 2007; Ragu-Nathan *et al.*, 2008; Ayyagari, Grover and Purvis, 2011; Lei and Ngai, 2014; Owusu-ansah, Azasoo and Adu, 2016; Tarafdar, Cooper and Stich, 2019). However, the focus of this master's thesis is on the factors and technostressors validated and applied by Ragu-Nathan et al., (2008).

Tarafdar et al., (2007) consider that technostress in an organizational context is caused by the employee's efforts and difficulties to cope with the constantly developing ICTs and the changing physical, social and cognitive demands associated with their use. Ayyagari et al., (2011) attribute technostress to work-home conflict and to the invasion of privacy, in other words, intrusive features of ICTs, ICT-related work overload, and role ambiguity and job insecurity.

Among other causes of technostress, one finds the constant connectivity enabled by the use of technological networks and mobile devices. Furthermore, the pressure to be always up to date with new technologies is also considered a cause. The influx of information from various channels leads to information overload, which employees can no longer cope with, and therefore they may get frustrated and technostressed. The feature of ICTs that allow the individual to perform multiple tasks simultaneously creates a pressure to accomplish all tasks, which overwhelms them and fosters the emergence of technostress (Tarafdar *et al.*, 2007; Ragu-Nathan *et al.*, 2008; Tarafdar, Tu and Ragu-Nathan, 2010; Ayyagari, Grover and Purvis, 2011). Technostressors or creators are the factors that cause technostress in organizations and represent the stressors in the transaction-based model of stress (Lazarus and Folkman, 1984; Cooper, 2001; Ragu-Nathan *et al.*, 2008).

Ragu-Nathan et al., (2008) list five scenarios in which technostress symptoms can occur and affect, for example job satisfaction among employees. These creators of technostress are:

techno-overload, techno-invasion, techno-complexity, techno-insecurity and techno uncertainty.

The use of ICT can also have negative consequences for organizations as well as for the people working in them (Ragu-Nathan et al., 2008; Tarafdar et al., 2007; Tarafdar, Tu and Ragu-Nathan, 2010). Technostress could have consequences for the mental and physical health of individuals and for organizations. From a psychological perspective, technostress may reduce job satisfaction and organizational commitment among workers (Ragu-Nathan et al., 2008; Suh and Lee, 2017). Moreover, technostress causes an increase in workload as individuals feel compelled to work faster due to ICTs (Ragu-Nathan et al., 2008). Technostress can create a work-home conflict as employees do not have a clear separation of work and private spaces due to continuous connectivity. This allows new information to flow in constantly and as a result the individual is overloaded and cannot process it efficiently, which in turn leads to poor performance and employee dissatisfaction (Ragu-Nathan et al., 2008; Ayyagari, Grover and Purvis, 2011). Technostress inhibitors in the conceptual model of technostress represent the situational and/or moderating factors of the transaction-based theory of stress (Lazarus and Folkman, 1984; Cooper, 2001; Ragu-Nathan et al., 2008). Technostress inhibitors have the inherent capacity to mitigate the effects of technostress on individuals. These inhibitory factors include a variety of organizational mechanisms and adaptations that can minimize the negative effects associated with the use of information and communication technologies (Ragu-Nathan et al., 2008). The inhibitors considered, in this master's thesis are: literacy facilitation, technical support provision and involvement facilitation (Ragu-Nathan et al., 2008). Organizational outcomes represent the component strain in the transaction-based model of stress, which focuses on the change in coping responses of individuals to stress-creating factors (Cooper, 2001; Ragu-Nathan et al., 2008). In the context of this master's thesis, specifically the job satisfaction of employees related to stress caused by use of information and communication technologies will be presented. Beyond that, the effects of technostress on two further organizational outcomes will be investigated. First, the commitment of WMP Mexico Advisors employees to the organization and their intention to remain in the workplace. These, will be explained more in detail in the present section.

In this master's thesis, a detailed review of the existing and current literature on technostress was made, focusing on factors that cause technostress and the effects on variables such as job satisfaction and organizational commitment. it can be stated that the use of information and communication technologies can cause proven stress among individuals in organizations. The research articles selected for this literature review were mainly based on three theory to research technostress, the sociotechnical theory (Tarafdar *et al.*, 2007), the person-environment (P-E) theory (Ayyagari, Grover and Purvis, 2011), and the transaction-based theory of stress (Ragu-Nathan *et al.*, 2008).

In the framework of this master's thesis, the research focuses specifically on business consulting employees in Mexico. The reason that Mexico was chosen for the empirical investigation is the

lack of relevant scientific literature regarding technostress at the organizational level in this geographical location. Most of the studies on this research topic take place either in developed countries or countries in the Asian region as shown in the literature review of this master's thesis. This, creates a gap in the cross-cultural understanding of this phenomenon, which is also considered global (Chen, 2015). Furthermore, Aviation industry, educational sector, public sector, IT services, banking and other general office related occupations, are a few examples of the occupational areas mostly considered in the literature for technostress (Kumar *et al.*, 2013; Alam, 2016; Owusu-ansah, Azasoo and Adu, 2016; Bourlakis, Nisar and Prabhakar, 2023). The business consulting industry however, has been neglected and is scarce in the research for technostress. For this reason, it was decided to carry out the empirical analysis and the survey in a business consulting firm for the purpose of this master's thesis. specifically, WMP Mexico Advisors.

These identified research gaps translate into the following research questions:

*RQ 1:* How do technostress creators and inhibitors affect job satisfaction, organizational commitment, and continuance commitment among WMP Mexico Advisors employees?

RQ 2: What are the factors creating and/or inhibiting technostress in WMP Mexico Advisors?

#### And beyond:

*RQ 3:* What measures could WMP Mexico Advisors as organization implement to counteract any negative effects and the emergence of technostress on employees?

This master's thesis has the following structure: in the first chapter, with the aim of creating a theoretical foundation and general understanding, information and communication technologies are defined and described in detail. Furthermore, stress in general and work-related stress are defined and classified according to different authors. After that, the transaction-based theory of stress, which is the basis for the model setup of this master's thesis, is presented and described in detail. Furthermore, a rigorous and detailed literature review of the existing research on technostress, from which the research questions could be derived, is provided. In the third chapter, the establishment of the research model for technostress, which is based on the transaction-based theory of stress, is presented as well as the resulting hypothesis development. In the fourth chapter, the Mexican work environment and the consulting firm WMP Mexico Advisors, whose employees are the target of this research, is introduced. In the fifth chapter, the design, set-up methodology and implementation of the survey are presented. In the sixth chapter, the results of the empirical analysis are presented in whole, followed by a discussion of the eventual rejection or acceptance of the hypotheses, as well as coping strategies recommendations and limitations. Theoretical and practical implications are then presented.

2008; Ayyagari, Grover and Purvis, 2011). Proper implementation of literacy facilitation mechanisms, also contributes to increasing employees' job satisfaction and commitment to the organization as it was the case for WMP Mexico Advisors' employees. Another aspect that is also important in avoiding technostress is the composition of the IT department. Here, managers should ensure that in this department there are employees who have a strong IT background so that they can respond well to employees' requests. In addition, the employees in the IT department should be easy and quick to reach in order to be able to solve ICT-related problems promptly. Finally, as empirically proven in this thesis, a good provision of technical support contributes to the increase of job satisfaction and organizational commitment of the employees of WMP Mexico Advisors.

### 11. Conclusions

ICTs have proven to be ubiquitous and indispensable in today's working world, given the constant technological change among organizations. They have many advantages but also disadvantages. Among other things, the emergence of technostress is attributed to the use of ICTs (Tarafdar *et al.*, 2007; Ragu-Nathan *et al.*, 2008; Tarafdar, Tu and Ragu-Nathan, 2010; Ayyagari, Grover and Purvis, 2011). The concept of technostress has changed over the years. It started with Craig Brod (1984), who describes this phenomenon as "a modern disease of adaptation caused by the inability to cope with computer technologies in a healthy way". However, the American Psychological Association provides another definition of technostress in their dictionary: it is defined as "a type of work stress associated with information and communication technologies. These ICTs cover, among others, the Internet, mobile devices and social media. Technostress is observed in many organizations at all levels, where working with computerized environments, where information flow is permanent, causes employees to be anxious or overwhelmed" (APA, 2023).

This master's thesis dealt therefore with the phenomenon of technostress. In order to find out which factors cause and inhibit technostress and what effects technostress has on the job satisfaction of the employees of WMP Mexico Advisors, an empirical analysis was conducted using an online survey. Furthermore, the empirical analysis investigated the effects of technostress inhibitors on the job satisfaction, organizational commitment and continuance commitment of the employees of WMP Mexico Advisors.

After doing a rigorous literature research according to Webster and Watson (2002), it was recognized that most of the studies were either in developed countries or countries in the Asian region. Scientifically relevant research related to technostress is very scarce in Latin America. This, led to the decision to select Mexico as the location to conduct the empirical analysis. Furthermore, it was identified that the professional groups considered for the technostress research included among others, mostly the education sector, public sector, medical sector.

However, the business consulting industry was widely neglected. For this reason, it was decided to choose the employees of the company WMP Mexico Advisors as a specific professional group of business consulting, for the implementation of the survey.

More specifically, the following three research questions were established:

RQ 1: How do technostress creators and inhibitors affect job satisfaction, organizational commitment, and continuance commitment among WMP Mexico Advisors employees?

RQ 2: What are the factors creating and/or inhibiting technostress in WMP Mexico Advisors? And beyond:

RQ3: What measures could WMP Mexico Advisors as organization implement to counteract any negative effects and the emergence of technostress on employees?

In order to carry out the empirical analysis, the theorized and empirically validated survey of Ragu-Nathan et al., (2008) was adapted, translated into Spanish and German and validated. The survey was distributed online within WMP Mexico Advisors to all eight departments. A total of 115 responses came back from 140 surveys sent out.

The data collected was analyzed using Smart PLS 4 software. First, the data was checked for reliability. Then the measurement model was evaluated and finally the structural equation model was evaluated regarding quality criteria in order to obtain meaningful results to answer the hypotheses. In the evaluation of the measurement model, difficulties arose at the beginning, since some of the data did not meet the quality criteria, whereupon these items respectively constructs were eliminated in order to guarantee the integrity of the theoretical model.

After applying the PLS-SEM for the analysis of the survey, a total of four out of the six hypotheses tested were confirmed. The hypothesis that technostress inhibitors increase job satisfaction and organizational commitment of WMP Mexico Advisors employees was confirmed. However, the hypothesis that technostress inhibitors have a statistically significant effect on continuance commitment had to be rejected.

Furthermore, the hypothesis that the job satisfaction of the employees of WMP Mexico Advisors positively influences their organizational commitment was equally accepted. Similarly, the hypothesis that organizational commitment has a positive impact on continuance commitment was also supported.

Moreover, in the context of this master's thesis, the results of the survey showed that the employees of WMP Mexico Advisors have a high level of job satisfaction. The same applies to the organizational commitment.

It should be emphasized that the results also indicate that the organizational mechanisms perceived by the employees of WMP Mexico Advisors, such as literacy facilitation and a provision of good technical support, are an important tool for companies that can be used within the organizational framework to increase job satisfaction while counteracting the emergence of technostress.

However, the model failed to capture a statistically significant moderating influence of technostress inhibitors on the relationship between technostress creators and the job satisfaction of WMP Mexico Advisors employees.

Similarly, the first hypothesis assumed that technostress creators have a negative influence on the job satisfaction of WMP Mexico Advisors employees. Again, this hypothesis could not be supported due to a lack of statistical evidence. The support or rejection of the hypotheses yielded in this master's thesis are partially consistent with the results of the study by Ragu-Nathan et al., (2008). As mentioned in *chapter 9*, the differences in results between the analyses can possibly be attributed to the fact that a different occupational group was considered or that the data collection took place in Mexico. However, further research would be needed to confirm or reject such a statement.

Although the results found no significant impact of the creators of technostress on job satisfaction, this does not mean that stress is not felt by WMP Mexico consultants. In fact, three of the five technostress dimensions were identified as factors that cause statistically significant technostress. These are techno-overload with the strongest influence, techno-invasion with a relatively strong influence, and techno-uncertainty with a rather moderate influence.

Thus, based on the results obtained from the analysis conducted here, the three research questions can be answered as follows:

RQ 1: Technostress creators have no statistically significant influence on the job satisfaction of WMP Mexico Advisors' employees. Technostress inhibitors, however, have a statistically significant positive impact on both job satisfaction and organizational commitment of WMP Mexico Advisors employees. However, the same does not hold for the effect of technostress inhibitors on the continuance commitment of the employees of WMP Mexico Advisors, because here no statistically significant influence could be detected by the analysis.

RQ 2: A total of five technostress-creating factors were examined, but only techno-overload, techno-invasion and techno-uncertainty were identified as responsible for the creation of technostress among employees in WMP Mexico Advisors. Similarly, a total of three technostress inhibitors have been studied, of which only literacy facilitation and technical support provision have been identified as factors that can counteract the emergence of technostress among WMP Mexico Advisors' employees.

RQ 3: The coping strategies that can be implemented by WMP Mexico Advisors include many measures suggested in the literature, for example, to counteract the emergence of technooverload, Ayyagari et al., (2011) recommend creating time within the scheduled work hours to complete accumulated work tasks without being interrupted. For this purpose, Ayyagari et al. (2011) recommend that employees make an announcement stating that they will not answer emails, phone calls, or participate in meetings during a certain period of the workday.

Furthermore, according to Ayyagari et al., (2011) the emergence of techno-invasion can be prevented if managers set certain policy measures as well as boundaries to avoid misuse of ICTs. They suggest that answering e-mails or phone calls should be allowed until a certain time

of the day, so that employees feel relieved and the pressure to constantly check and answer emails decreases.

Literacy facilitation is an organizational mechanism that can inhibit the development of technostress. Managers can therefore develop training programs before introducing new or updating existing software. Managers should also encourage teamwork, so that employees with more experience support those who are less familiar with ICTs or who have a harder time adapting to changes in ICTs (Ragu-Nathan *et al.*, 2008). Another aspect that is also important in avoiding technostress is the composition of the IT department, here managers should ensure that in this department there are employees who have a strong IT background so that they can respond well to employees' requests. In addition, the employees in the IT department should be easy and quick to reach in order to be able to solve ICT-related problems promptly (Ragu-Nathan *et al.*, 2008). It can be assumed that even if the employees of WMP Mexico Advisors feel the stress caused by the use of ICT, it has no influence on how satisfied they are with their work. At this point, therefore, in order to also be based on the transaction-based theory of stress, it is recommended that in future research that considers business consulting as an occupational group, instead of considering job satisfaction as a dependent variable or coping response, other coping responses such as anxiety or anger should be investigated.

One thing is for sure, technology is an integral part of today's society and most likely of the future society. This implies for people that they will also have to deal with the negative sides of it. Therefore, it is much more important to work on dealing with technologies than to avoid their use. It is highly recommended to have an optimistic and positive attitude towards technology. Namely, by focusing more on the potential benefits that can be derived from ICT use.