

A RELATIONSHIP BETWEEN TECHNOSTRESS, SATISFACTION AT WORK, ORGANIZATIONAL COMMITMENT AND DEMOGRAPHY: EVIDENCE FROM THE BRAZILIAN PUBLIC SECTOR

RELAÇÃO ENTRE TECHNOSTRESS, SATISFAÇÃO NO TRABALHO, COMPROMETIMENTO ORGANIZACIONAL E DEMOGRAFIA: EVIDÊNCIAS DO SETOR PÚBLICO BRASILEIRO

RELACIÓN ENTRE TECNOESTRÉS, SATISFACCIÓN LABORAL, COMPROMISO ORGANIZACIONAL Y DEMOGRAFÍA: EVIDENCIA DEL SECTOR PÚBLICO BRASILEÑO

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Resumo

Objetivo: O objetivo deste estudo é identificar se o technostress está impactando na satisfação no trabalho e no comprometimento organizacional dos servidores públicos. Buscou-se ainda detectar se características demográficas produzem diferenças em relação aos fatores criadores do technostress.

Metodologia/abordagem: A presente pesquisa baseou-se em abordagens quantitativas e descritivas, envolvendo a coleta e análise de dados primários. Foi aplicada a técnica de análise de equações estruturais (CB-SEM) para analisar dados coletados com usuários de TI de uma organização pública.

Originalidade/relevância: Poucos estudos foram realizados para entender os efeitos negativos dessa transformação tecnológica sobre os servidores públicos, como é o caso do presente artigo.

Principais resultados: O technostress impacta negativamente a satisfação dos trabalhadores. Porém, níveis mais elevados de technostress não implicaram em menores níveis de comprometimento dos trabalhadores. Além disso, o estudo constatou a relação dos fatores criadores do technostress com seis fatores demográficos, quais sejam: sexo, idade, escolaridade, tempo de atuação na instituição, ocupação específica e realização de trabalho via teletrabalho.

Contribuições teóricas/metodológicas: O presente trabalho valida a teoria de mensuração do technostress proposta por Tarafdar et al (2007) e Ragu-Nathan et al (2008), sem, no entanto, deixar de apontar um problema com um dos fatores indicados no literatura como criadora do technostress (tecno-insegurança). O estudo também contribui para a literatura sobre technostress, satisfação no trabalho e comprometimento organizacional ao apresentar resultados que podem ser comparados com estudos posteriores.

Palavras Chave: *technostress*; satisfação no trabalho; comprometimento organizacional; demografia; setor público

Abstract

Objective: The objective of this investigation is to identify whether technostress is impacting job satisfaction and the organizational commitment of public servants. In a complementary way, we sought to detect if the demographic characteristics produce differences in relation to the technostress creator factors.

Methodology / approach: This research was based on quantitative and descriptive approaches, involving the collection and analysis of primary data. The structural equation analysis technique (CB-SEM) was applied to analyze data collected with IT users from a public organization.

Originality / Relevance: Few studies have been carried out to understand the negative effects of this technological transformation on public servants, as is the case with this article.

Main Results: The technostress impacts the satisfaction of the workers. However, higher levels of technostress did not imply lower levels of commitment of workers. In addition, the study found the relationship of technostress creator factors with six demographic factors, which are: gender, age, educational level, length of experience in the institution, occupancy and carrying out work via teleworking.

Theoretical / Methodological Contributions: The present work validates the technostress measurement theory proposed by Tarafdar et al (2007) and Ragu-Nathan et al (2008), without, however, failing to point out a problem with one of the factors indicated in the literature as creator of technostress (techno-insecurity). The study also contributes to the literature on technostress, job satisfaction and organizational commitment by presenting results that can be compared with later studies.

Keywords: technostress; job satisfaction; organizational commitment; demography; public sector

Resumen

Objetivo: El objetivo de este estudio es identificar si el tecnoestrés está impactando la satisfacción laboral y el compromiso organizacional de los servidores públicos. De manera complementaria, se buscó detectar si las características de género, edad, educación, tiempo de experiencia, ocupación y desempeño en el teletrabajo producen diferencias en relación a los factores que generan tecnoestrés.

Metodología/Enfoque: Esta investigación se basó en enfoques cuantitativos y descriptivos, que involucran la recolección y análisis de datos primarios obtenidos a través de corte transversal. Se aplicó la técnica de análisis de ecuaciones estructurales (CB-SEM) para analizar los datos recolectados con usuarios de TI de una organización pública brasileña.

Originalidad//Relevancia: Se han realizado pocos estudios para comprender los efectos negativos de esta transformación tecnológica en los servidores públicos, como es el caso de este artículo.

Resultados principales: El tecnoestrés impacta en la satisfacción de los trabajadores. Sin embargo, mayores niveles de tecnoestrés no implicaron menores niveles de compromiso de los trabajadores. Además, el estudio encontró la relación de los factores creadores de tecnoestrés con seis factores demográficos, los cuales son: género, edad, nivel educativo, antigüedad en la institución, ocupación y realización de trabajo vía teletrabajo.

Contribuciones teóricas / metodológicas: El presente trabajo valida la teoría de la medición del tecnoestrés propuesta por Tarafdar et al (2007) y Ragu-Nathan et al (2008), sin, sin embargo, dejar de señalar un problema con uno de los factores señalados en la literatura como creador del tecnoestrés (tecno-inseguridad). El estudio también contribuye a la literatura sobre tecnoestrés, satisfacción laboral y compromiso organizacional al presentar resultados comparables con estudios posteriores.

Palabras clave: tecnoestrés; Satisfacción laboral; compromiso organizacional; demografía; Sector público

1 INTRODUCTION

Postmodernity, liquid times, hyper modernism, in the literature several names were given to the times in which we live. In spite of the different nomenclatures, there are several points of intersection between the descriptions and findings of the authors on the social and individual characteristics at present. Undoubtedly, postmodern times have brought diverse changes in social organization and human relations, both in personal and professional life. There is a time when human relations are built and are widely maintained in what Lévy (2001) announced as cyberspace. According to the author, the new ways of thinking and acting of the individual and of society emerge from cyberspace, giving the name of cyber culture (Lévy, 2001). What is observed is that society is immersed in cyberspace, not only individuals, but also businesses and governments. To maintain this new social configuration, it is imperative that organizations adapt to this global technology revolution. In this context, there has been an expansion of e-government (e-gov). This phenomenon cannot be reduced only to the adoption of information technologies (IT) is a much more comprehensive concept that involves new forms of process management and people in public initiative, focused on transparency, effectiveness and efficiency (Diniz, Barbosa, Junqueira, & Prado, 2009).

However, the main focus of the scientific literature is on the positive benefits of using IT and it is indisputable that with the implementation of fully electronic processes the gains of transparency, efficiency and effectiveness were innumerable. However, it must be borne in mind that innovations are accompanied not only by positive effects, but also of negative effects. In the international literature we find a growing number of studies that show that along with technological innovation occur phenomena that cause distress and malaise to the servants of public organizations inserted in this new technological context. In the Brazilian public sector; however, few studies have been carried out to understand the negative effects of this technological transformation on servers, there is a gap to be filled by the academy in order to understand such undesirable phenomena, in order to allow them to be worked on in order to minimize them.

International studies have been presenting the concept of technostress, that is to say, the stress caused by the difficulty of adapting to the technological innovations in the work environment, being that this organizational phenomenon, in some contexts, was able to affect stress at work, satisfaction with work and organizational commitment (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008; Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007). Considering that the studies on the negative impacts of the use of IT on public servers are insipient in Brazil, the following research question emerges: What is the relationship between technostress, work satisfaction and organizational commitment in a Brazilian public institution? Thus, the objective of this investigation is to identify whether technostress is impacting job satisfaction and the organizational commitment of public servants. In a complementary and exploratory way, we sought to detect if the characteristics of gender, age, educational level, time of experience, occupancy and teleworking produce differences in relation to the technostress creator factors.

2 LITERATURE REVIEW

2.1 Technostress creator factors

Technostress is the stress caused by using IT, being considered an adaptation problem that the individual faces when he/she is not able to cope or become accustomed to the use of the new technology instruments (Tarafdar et al., 2007). According to Tarafdar et al. (2007) and Ragu-Nathan et al. (2008) the technostress construct is formed by the combination of the concepts: techno-overload, techno-complexity, techno-insecurity, techno-invasion and techno-uncertainty, being called by the authors of technostress creator factors. Technical burglary occurs when individuals are forced to work faster and faster because of the use of information technology; techno-complexity refers to situations in which individuals feel that they do not have sufficient capacity to deal with technological innovations; techno-insecurity is about constant changes in the systems of organizations, which forces the user to be in constant learning; the techno-invasion is the difficulty of separating moments of personal life with professional life, with the workers being at all times connected with work by means of email, telephone, messages, etc.; finally, techno-uncertainty, which is the fear that employees have to be replaced by younger professionals with more skills and ability to deal with technological

innovations (Marchiori, Mainardes, & Rodrigues, 2018; Ragu-Nathan et al., 2008; Tarafdar et al., 2007).

What is observed is that the introduction of IT strengthens the already existing organizational stress in organizations and institutions and in their workers and employees negatively impacting satisfaction, commitment, their productivity and consequently the quality of service (La Torre, Esposito, Sciarra, & Chiappetta, 2018; Marchiori et al., 2018; Ragu-Nathan et al., 2008; Tarafdar, Monideepa; Tu, Qiang; Ragu-Nathan, 2011; Tarafdar et al., 2007).

2.2 Job Satisfaction

The concept of satisfaction was broadened over time with the studies carried out. The construction of the concept begins only covering the conquest of aspects external to the individual, that is, it relates job satisfaction with remuneration, relation with the boss and the colleagues, working conditions, opportunity of promotion and level of security with the institution, among other factors. However, it is important to observe that there are, also, in the construction of job satisfaction, aspects related to factors internal to the individual, such as: age, gender and school level (Cappi & Araujo, 2015).

We can see, therefore, that satisfaction cannot be given a one-dimensional approach, as being only a good feeling, or positive feeling of the individual in relation to their field or professional environment (Cappi & Araujo, 2015; Yücel, 2012). Satisfaction must be addressed with a multifactorial approach, influenced by several aspects that come together until the perception of the work environment as satisfactory (Cappi & Araujo, 2015). It should be borne in mind, however, that the notion of satisfaction is fluid, always being magnified by new looks, new ideas and new emotions that influence how the individual feels and sees himself in the professional environment. In this line, connecting the technological environment of the organization and the level of employee satisfaction, a positive relationship was identified between the quality of IT services provided to users and the reported levels of job satisfaction (Gorla, 2012). The importance of analyzing the indexes of job satisfaction in an institution is due to the fact that studies indicate that such a construct influences in several other aspects of work life, such as: motivation, impact of work in society and contact with

society (Taylor, 2014), productivity (Hoboubi, Choobineh, Kamari Ghanavati, Keshavarzi, & Akbar Hosseini, 2017) and stress at work (Bhatti, Hashmi, Raza, Shaikh, & Shafiq, 2011). Considering the evidence that the tension generated in workers with the introduction of new technologies in the work environment can negatively impact satisfaction, we present the first hypothesis:

H1: Technostress has a negative relationship with job satisfaction.

2.3 Organizational Commitment

Commitment is the relationship of identity and involvement of the individual with the institution or company in which it operates (Bourgeois III, 2010; Im, Campbell, & Jeong, 2016). The literature points to three dimensions that indicate how the relationship takes place: affective commitment, normative commitment and instrumental or continuous commitment. By affective commitment, it is understood the bond that exists from an emotional foundation, that is, the worker identifies with the company, with its objectives and foundations and, from there he/she strives for the benefit of the company or organization by feeling good in the work environment. As for the normative commitment, it occurs when the individual is linked to the company by personal aspects of responsibility. Thus, they produce in a compromised way, with a view to believing this is the way one must behave, or also committing themselves to the institution due to the norms established in the labor relationship.

Finally, the instrumental or continuous commitment that occurs because the worker feels the harm they can have with a job loss. In this way, they strive, based on the fear of losing their job and, consequently, their source of income and survival (Im et al., 2016; Lizote, Verdinelli, & Nascimento, 2018). Empirical evidence indicates that technostress creators are negatively related to the organizational commitment of employees (Hwang & Cha, 2018; Kumar, Lal, Bansal, & Sharma, 2013). In this context, we present a second hypothesis:

H2: Technostress has a negative relation with commitment.

Starting from the idea that commitment is the bond between the individual and the institution, the existence of the construct and its relationship with the other constructs already analyzed in the present study is of paramount importance. In this sense, other studies indicate the existence of a relationship between job satisfaction and organizational commitment (Fu, 2014; Fu & Deshpande, 2014; Lizote et al., 2018). A study conducted in China with 507 employees working for 3 state-owned enterprises indicated that job satisfaction with promotion, on the work colleague and supervision brought positive impacts to the ethical commitment and behavior of the individuals surveyed (Fu, 2014; Ragu-Nathan et al., 2008). Faced with the concepts of job satisfaction and organizational commitment presented, the importance of their occurrences in the work environment and the studies already carried out, we present the following hypothesis:

H3: Job satisfaction is positively related to the commitment.**2.4 Individual characteristics and the technostress**

Research has been carried out to investigate the relationship between individual characteristics and the perception of technostress (Hsiao, 2017; Hsiao, Shu, & Huang, 2017; Krishnan, 2017; Liu, Cheng, & Chen, 2019). Studies indicate that the perception of technostress varies from individual to individual depending on the existence of certain individual characteristics. According to a study developed by Marchiori, Mainardes and Rodrigues (2018), in a public institution, the individual characteristics, such as: gender, age and schooling, influence the technostress creator factor most felt by the individual.

Regarding the influence of gender in the use of new communication and information technologies, research indicates that women tend to be more interpersonal relationship-oriented and are less likely to underestimate their performance at work, while men are more performance oriented, more aggressive and more competitive (Fletcher, 2009; Gabriel & Gardner, 1999; Henrich, 1991; Wahn, 2003). Research indicates that women tend to value aspects related to the ease of use of IT more easily and take it into account when assessing the

usefulness of a technological solution, while men are more concerned with considering how much the new IT tool can improve their professional performance (Venkatesh & Morris, 2000). In this context of the use of new technologies, it is important to present the research that related the gender to the use of computers. According to studies carried out by Huffman et al. (2013) the data indicate that men present more positive attitudes towards the use of computers, being more comfortable to use the device, and lower anxiety levels (Coffin & Macintyre, 1999; Cooper, 2006; Young, 2000). While women's data indicate less confidence and greater anxiety about using computers (He & Freeman, 2010; Huffman et al., 2013). The studies are not unanimous in pointing out which sex is most affected by technostress. Some studies indicate that women are (Çoklar & Sahin, 2011) while other studies indicate that men are (Jena & Mahanti, 2014; Ragu-Nathan et al., 2008; Tarafdar, Monideepa; Tu, Qiang; Ragu-Nathan, 2011).

Age is also a demographic factor that has been studied to analyze the impact of the technostress on the different generations. Some literature points out that younger generations are better at dealing with IT, so the younger the users are, more ease with the use of new technologies (Burton-Jones & Hubona, 2005; Prensky, 2001; Venkatesh et al., 2003; Zemke, Raines, & Filipczak, 1999). Regarding the impact felt by the technostress, there are studies that point out that the younger ones are more impacted by the tension with the use of new technologies (Hsiao, 2017; Ragu-Nathan et al., 2008; Sahin & Çoklar, 2009; Tarafdar, Monideepa; Tu, Qiang; Ragu-Nathan, 2011), as well as studies that point to the opposite side, and finding higher levels of technostress in older people (Çoklar & Sahin, 2011; Jena & Mahanti, 2014).

Other studies have found evidence of the moderating effect of the educational level of users and their reactions to the use of IT (Agarwal & Prasad, 1999; Elie-Dit-Cosaque, Pallud, & Kalilka, 2011; Mikkelsen, Ogaard, Lindoe, & Olsen, 2002; Ragu-Nathan et al., 2008; Tarafdar, Monideepa; Tu, Qiang; Ragu-Nathan, 2011). The studies suggest that educational level may be indicative of users' cognitive potential, facilitating the learning process of new technologies (Agarwal & Prasad, 1999), as well as that people with a higher level of formal education are more exposed to the use of computers in general, which facilitates technological adaptation and reduces anxiety with the use of new technologies (Elie-Dit-Cosaque et al., 2011; Mikkelsen et al., 2002; Tarafdar, Monideepa; Tu, Qiang; Ragu-Nathan, 2011).

3 METHODOLOGY

The present research was based on quantitative and descriptive approaches, involving the collection and analysis of primary data obtained by means of cross-section. We invited 870 IT users occupying a Brazilian judicial branch to participate in the study, chosen for being characterized by the intensive use of IT in its most important business processes. The workers were asked to answer an electronic questionnaire, structured and not disguised, that was available between October 10 and 26, 2018. Thus, from a non-probabilistic sampling strategy, 263 questionnaires were adequately filled out, representing a response rate of 30.2%.

The electronic questionnaire, made available through the SurveyMonkey platform, was divided into three parts. The first one, containing seven questions, collected the information used to characterize the sample, such as age, gender, degree of education, job role, occupancy, time of professional experience, as well as if the users provided services to the organization by some modality of telecommuting. The second part was devoted to capturing levels of technostress experienced by the organization's workers, by measuring the five factors that created the phenomenon, using the scale proposed by Ragu-Nathan *et al.* (2018). More precisely, we measure the levels of Techno-overload (5 items), Techno-invasion (4 items), techno-complexity (5 items), techno-uncertainty (4 items) and techno-insecurity (5 items). For this purpose, we use 5-point Likert scales ranging from totally disagree to fully agree. Following and in accordance with the objectives of the present research, the third part of the questionnaire was prepared to compose the constructs job satisfaction and organizational commitment. Therefore, job satisfaction was measured by taking the 4-item scale used by Taylor (Taylor, 2014) and the organizational commitment was captured through a 4-item scale based on the instrument used by Im *et al.* (Im *et al.*, 2016). The two constructs presented were also measured with five-point Likert-type scales, which also ranged from totally disagreeing to totally agreeing.

Before sending the electronic questionnaire, the questions were submitted to a test to verify the degree of comprehension of the possible participants. Thus, a group of 8 users received and analyzed a preliminary version of the questionnaire, without any problems being recorded. Thus, the questionnaire was sent to the set of IT users of the organization,

who received an email containing the link to the electronic form, as well as general search guidelines.

Data analysis, performed with the aid of IBM, SPSS, IBM and AMOS statistical packages. Considering that the use of the structural equations modeling approach (SEM) applied in the present study is based on covariates (CB-SEM), the process was preceded by the verification of the existence of possible multivariate outliers, identified by calculating the square distance of Mahalanobis (D^2). For this purpose, we specified a preliminary structural model (measurement model), containing all the items of the questionnaire associated to the respective constructs, but before making any adjustment in the model (Marôco, 2014). Thus, we excluded 52 responses that presented p^2 values higher than 0.05. Thus, the final sample used in the analyzes was reduced to 211 observations. In the sequence, the normality of the observed variables was evaluated by means of the analysis of the respective coefficients of asymmetry (Sk) and kurtosis (Ku), with no indication of violation of the normal distribution being detected ($|Sk| < 2$ and $|Ku| < 7$) (Marôco, 2014).

We then proceeded to the analysis phase, through the specification of a structural model constructed from the hypotheses presented. For this purpose, the strategy of conducting a confirmatory factor analysis (CFA), divided into two-step (Anderson & Gerbing, 1988). Thus, the first step was to specify the structural sub model of measurement, for which we used all 31 variables collected in the questionnaire. To analyze the degree of fit of the model, we used the χ^2 statistic, the degrees of freedom associated with (DF), as well as the division of the χ^2 by DF. We calculated several goodness of fit indexes, ranging from incremental, absolute and parsimony. In this sense, the following indicators were used: GFI (goodness of fit index); CFI (comparative fit index); TLI (Tucker-Lewis index); RMSEA (root mean square error of approximation); PCFI (parsimony-corrected fit index); PGFI (parsimony goodness of fit index); as well as the indicator SRMR (standardized root mean square residual). Thus, after designing the model, we calculated the adjustment indicators and the factor loadings related to the observed and latent variables, which resulted in insufficient values. More precisely, the first results found were: $\chi^2 = 817.699$; $DF = 413$; $\chi^2/DF = 1.908$; $GFI = 0.841$; $CFI = 0.881$; $TLI = 0.864$; $RMSEA = 0.060$; $PCFI = 0.783$; $PGFI = 0.701$, as well as $SRMR = 0.0725$.

However, an analysis of the trajectories indicated that some items had low factor loadings, bearing in mind that all factor loadings must necessarily be greater than 0.5, and

preferably greater than 0.7 (Hair, Black, Babin, Anderson, & Tatham, 2009). Thus, adopting a conservative strategy and with the intention of preserving the recommended value of 3 observed variables for each latent construct (Hair et al., 2009), we opted for the elimination of items with factor loadings lower than 0.6, considering also that the constructs have a reflexive nature. Thus, we eliminate the following items from the model: TIS5(0.40); TIS4(0.43); TSO4(0.46); TIC1 (0.47); COM2(0.55), TCO3(0.55), TCO4(0.57) and SAT3(0.58). Note that we deleted the items one by one, in the sequence presented, with the re-calculation of the model at each elimination.

Following, we carried out the fitting of the models, involving the establishment of correlation trajectories and elimination of items with high degree of external correlation, that is, with constructs different from those proposed by the theoretical reference used as a basis (Marôco, 2014). Thus, considering that the analyzed model is reflexive, that is, the items are manifested by the latent factor and its eventual withdrawal does not compromise the construct (Hair et al., 2009), we chose to exclude the variable TIV1. Subsequently, a covariance link was established between the deviations of the variables TSO3 and TSO4, both under the techno-overload construct, based on the change index of 4.093. Thus, the result of this stage started to count on 22 observed variables, distributed among the 7 specified constructs, that remained with a minimum of 3 variables each, as recommended by Hair *et al.* (2009). Thus, we observed a significant improvement in the fit indexes. More specifically, the following indicators were observed in the measurement model: $\chi^2 = 259.763$; $DF = 187$; $\chi^2/DF = 1.386$; $GFI = 0.903$; $CFI = 0.964$; $TLI = 0.955$; $RMSEA = 0.043$; $PCFI = 0.780$; $PGFI = 0.667$, as well as $SRMR = 0.0527$.

We also calculated reliability levels (CR), as well as the values of the average variance extracted (AVE), which allowed to test the convergent and discriminant validity of the constructs used in the model. Table 1 presents the results in detail, accompanied by the acceptance criteria of each test, considering Hair *et al.* (2009).

Table 1
Reliability and Validity Indicators of the Constructs

| CONSTRUCT | RELIABILITY | CONVERGENT VALIDITY | DISCRIMINANT VALIDITY | | | | | | |
|--------------------------|---------------|---------------------|-----------------------|-------|-------|-------|-------|-------|-----|
| | CR ≥ 0.7 | AVE ≥ 0.5 | AVE $> r^2$ | | | | | | |
| | CR | AVE | r ² | | | | | | |
| | | | TOV | TIV | TCO | TUC | TIS | SAT | COM |
| Techno-overload (TOV) | 0.882 | 0.653 | | | | | | | |
| Techno-invasion (TIV) | 0.803 | 0.582 | 0.438 | | | | | | |
| Techno-complexity (TCO) | 0.832 | 0.623 | 0.175 | 0.192 | | | | | |
| Techno-uncertainty (TUC) | 0.724 | 0.472 | 0.007 | 0.001 | 0.001 | | | | |
| Techno-insecurity (TIS) | 0.776 | 0.546 | 0.123 | 0.143 | 0.361 | 0.027 | | | |
| Satisfaction (SAT) | 0.877 | 0.705 | 0.033 | 0.034 | 0.003 | 0.026 | 0.042 | | |
| Commitment (COM) | 0.766 | 0.523 | 0.036 | 0.014 | 0.003 | 0.008 | 0.021 | 0.498 | |

We have identified that all composite reliability indicators (CR) of the constructs were satisfactory (i.e. above 0.70), according to Hair *et al.* (2009). Turning to the convergent analysis, we identified that one of the constructs related to technostress had an AVE lower than the reference value of 0.5 (Hair et al., 2009). More precisely, the slightly insufficient AVE was identified in the techno-uncertainty construct (0.472). However, in view of the proximity to the reference value, we carried out subsequent analyzes. Finally, the discriminant validity indicators were satisfactory for all constructs. Thus, we proceeded to the next phase, that is, the specification of the structural model, according to the assumptions made in the present research.

As an intermediate step, however, a new construct, the technostress, was specified using second order factor analysis techniques, Marôco (2014). That is, the correlation trajectories existing among the 5 creators of the technostress were eliminated, as well as the respective residue indicators. We then insert the new construct, linked to technostress creators, with the objective of testing the theory proposed by Ragu-Nathan *et al.* (2008). Following, the other proposed relationships were drawn in the presented hypotheses, resulting in the final structural model used in the sequence of the present research.

Finally, the existence of differences between groups of users was investigated through the specification of seven models of Multiple Imputation and Multiple Causes (MIMIC), with the use of SEM, as proposed by Joreskog and Goldberger (1975). According to Marôco (2014), this is an agile way to identify differences between groups by using dummy variables. The groups were identified based on gender, age, education level, length of

professional experience, (administrative or judicial area and occupancy in the capital or in the countryside), as well as on the exercise of activities under the modality of telecommuting.

4 ANALYSIS AND DISCUSSION OF RESULTS

The analysis of the data began with the characterization of the sample. We observed that the most common respondent was female, between 30 and 39 years old, with educational level of specialization (graduate), occupying a judicial technical position, with professional experience ranging from 6 to 10 years, occupying in the capital and who do not perform teleworking. Thus, we detected no significant differences in the distribution of characteristics of the sample servers and population, from a comparison with the data available in the human resources bases of the organizations, no biases or tendencies have been observed that could compromise the representativeness of the sample.

We then proceeded to the execution of the last stage of the CFA, that is, the specification of the causal model, which allowed to relate all the constructs involved and to test the presented hypotheses. Thus, the first point should be given to the fact that the trajectory between techno-uncertainty, one of the factors pointed out by Tarafdar *et al.* (2007) and Ragu-Nathan *et al.* (2008), did not present statistical significance for the second order construct ($P = 0.786$). That is, the results indicate that techno-uncertainty, as conceived and measured in the present study, would not be sufficiently related to the hierarchically superior factor presented as technostress. Thus, we opted for the removal of the construct techno-uncertainty of the structural model. Likewise, we detected no statistical significance in the relationship between technostress and organizational commitment. Thus, we eliminated the direct relationship from the model, as shown in figure 1. The other trajectories were statistically supported. We obtained the results from a structural model with high goodness of fit indexes.

Table 2
Significance of effects

| | | Estimate | S.E. | C.R. | P |
|-------------------|--------------------------|----------|-------|--------|-------|
| Satisfaction | <--- <i>Technostress</i> | -0.155 | 0.056 | -2.762 | 0.006 |
| Techno-overload | <--- <i>Technostress</i> | 0.580 | 0.072 | 8.074 | *** |
| Techno-invasion | <--- <i>Technostress</i> | 0.589 | 0.083 | 7.088 | *** |
| Techno-complexity | <--- <i>Technostress</i> | 0.481 | 0.068 | 7.061 | *** |
| Techno-insecurity | <--- <i>Technostress</i> | 0.281 | 0.047 | 6.015 | *** |
| Commitment | <--- Satisfaction | 0.540 | 0.071 | 7.603 | *** |

*** Sig 0.01

Figure 1 presents the final causal model, with the respective estimates of the structural coefficients, the factor weights and the individual reliability of each item. Appendix 1 presents the final version of the questionnaire.

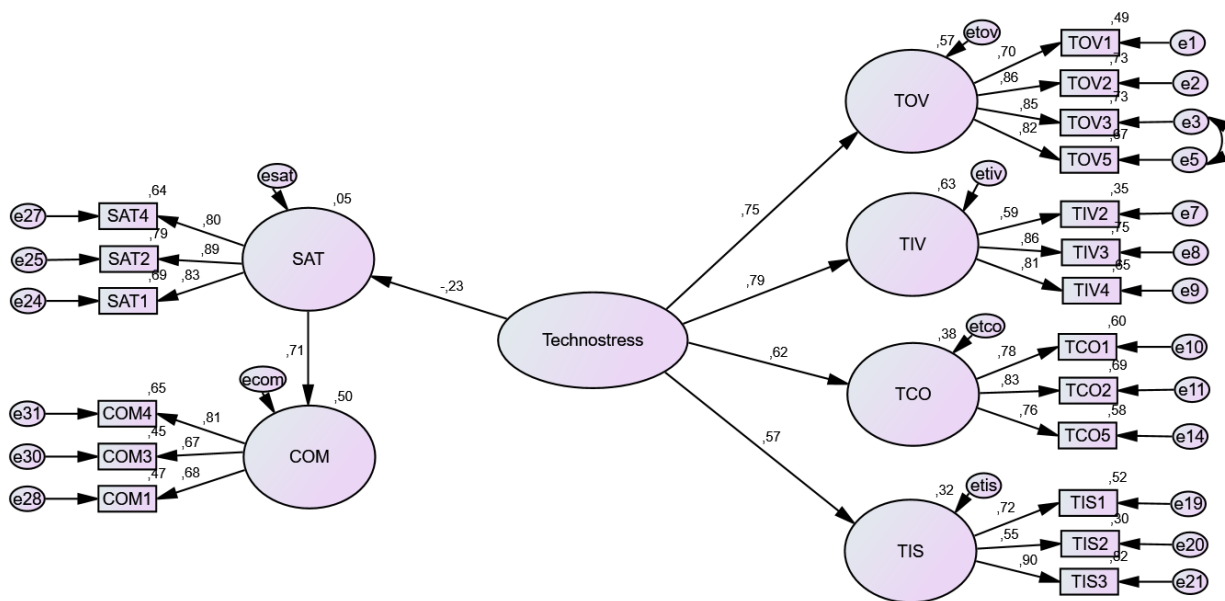


Figure 1 -Final structural model

The results pointed to the existence of a latent factor, of the second order, which underlies the technostress creator factors, as proposed by Tarafdar et al. (2007) and Ragu-nathan et al. (2008), with the exception of techno-uncertainty, a construct that does not seem to harmonize with the other factors, according to the observed indicators. One possible explanation for the relationship between techno uncertainty and technostress not being found in the present research, is that the studies conducted by Ragu-Nathan et al. (2008); Tarafdar et al. (2007) were carried out with workers from the private initiative and this research was carried out together with the employees of a public institution. In this context, it is important

to point out that the relationship between servers and the body in which service is provided is regulated by Brazilian legislation according to which servers have stability, that is, they only lose their position due to a final judgment or disciplinary administrative proceeding, therefore, the administration must justify, by means of a procedure, the dismissal of the public servant. We see that in order for a public servant to lose their position, much more is required than in private initiative. It should be noted that in the private initiative the simple will of the employer not to want to continue the relationship with a certain employee, even without justification, already allows the extinction of the relationship.

Moving forward to the analysis of the presented hypotheses, the first hypothesis (H1) investigated in this study proposed that the technostress would be negatively related to job satisfaction. The results of the structural model supported this hypothesis, that is, the data suggest that the higher the levels of technostress among IT users the lower the levels of job satisfaction. This result is in line with studies by Kumar et al. (2013), Lee et al. (2016) and Ragu-Nathan (2008).

The second hypothesis (H2) indicated that technostress would be negatively related to organizational commitment. However, the results did not support the hypothesis, that is, higher levels of technostress did not imply lower levels of commitment of the workers to the organization. This result is confronted by studies by Hwang et al. (2018) and Kumar et al (2013). That is, the result indicates that the public servers of the researched Brazilian public institution, despite the tension generated by the introduction of new technologies, did not relate this to their sense of belonging to the institution, or to the values related to the public body and the pride of working in it.

The third hypothesis (H3), in turn, proposed that job satisfaction is positively related to organizational commitment. Once again, the results support the hypothesis, which indicates that workers more satisfied with their work will have higher levels of commitment to their organization. This result is in line with the studies by Hoboubi et al. (2017), Fu, Deshpande (2014) and Lizote, Verdinelli and Nascimento (2017).

Finally, in order to meet the complementary objective of the present study, i.e., to identify possible variations in the levels of technostress creator factors based on the user groups, the results of the seven structural models are presented below. Appendix 2 presents the resulting structural models for each demographic characteristic.

Gender

Techno-overload was higher among women ($P = 0.04$), the results found are consistent with the studies performed by Marchiori et al (2018) and Çoklar and Sahin (2011). Techno-overload is the tension caused by the need to work faster and faster because of the use of information technology. The result may be justified by the female characteristics of being more oriented to interpersonal relationships, which can cause greater tension with the use of technological tools and computers, corroborating the data found in previous research that confronts the demographic characteristic of gender in the interaction with IT (Barnett & Karson, 1989; Coffin & Macintyre, 1999; Cooper, 2006; Fletcher, 2009; Gabriel & Gardner, 1999; Henrich, 1991; Huffman et al., 2013; Wahn, 2003; Young, 2000).

It should also be pointed out that women seek in the new technologies facilitation in the exercise of their personal tasks, while men seek better professional performance (Venkatesh & Morris, 2000). These characteristics may justify the result in the research that indicates that the women were most affected by the technostress in the research institution, making it evident that the speed and the speed increase that the new technologies imply to the public servants does not cause tension in men, but it negatively impacts women. It is worth stressing that, in the current social organization, women not only have the professional journey, but also the responsibility for household chores, such as organizing the home and caring for children and spouses. In addition to the concern with oneself, which imposes the accomplishment of physical activities, health care and aesthetics.

In this context, it is possible that this broad set of tasks and activities to be developed by women, coupled with the volume and speed that the implantation of new technologies imposes and the anxiety with the use of computers, have impacted on the techno-overload perceived by the women of the surveyed institution.

Age

The techno-complexity was higher among the older servers ($P = 0.008$), Çoklar and Sahin (2011) and Jena and Mahanti (2014). It should be remembered that techno-complexity refers to situations in which individuals feel that they do not have sufficient capacity to deal with technological innovations. Thus, a possible explanation for the results found is that as

older people have less interaction with the new communication and information technologies, and therefore feel less able to use them, while the younger generations have been born in a more technological world that makes them digital natives (Cappi & Araujo, 2015; Zemke et al., 1999), that is, better adapted and integrated with the new communication and information technologies.

Education

The techno-invasion was higher among those with higher level of schooling ($P = 0.02$). On the other hand, the techno-complexity was greater among those with lower education level ($P = 0.034$). The data found suggest that regardless of the educational level, users are feeling the effects of the technostress, what has been perceived is a difference of the technostress creator factor to which each demographic level is subject. The results are in line with research by Agarwal and Prasad (1999) and by Tarafdar et al (2011), which indicate that IT users with a higher education level are more exposed to the use of new technology tools, so adaptation is more successful. However, because they are more exposed, their personal lives are more invaded by technologies implemented in the workplace, occurring the phenomenon of work-home conflict (Lambert, Hogan, Camp, & Ventura, 2006; Smith, Hughes, DeJoy, & Dyal, 2018). The data indicated that the public servers with the highest educational level are more impacted by techno-invasion, not being able to adequately separate the moment of work with personal life. The same argument of greater or lesser exposure to new technologies supports the data found regarding public servers with lower educational level, because they do not have so much access to new technologies, they feel less able to work with them, and because of this, they felt techno-complexity more.

Professional experience

The techno-complexity was higher among those who had more experience in the institution ($P = 0.065$). We noticed a connection with the data found regarding the age of the interviewees, considering that those who have more time in the institution are also older. Thus, the lack of familiarity with the technological innovations, indicated that the individuals

with greater time of experience in the institution are more affected by the techno-complexity. Therefore, the data found also relate to the question and to the studies already pointed out that the fact that the younger generations have already been born in a society with much more access to new technologies and therefore its adaptation is easier and with less tension (Cappi & Araujo, 2015; Zemke et al., 1999).

Occupancy (Administrative versus Judicial)

Techno-overload ($P = 0.011$) and techno-complexity ($P = 0.019$) were higher among the public servants of the judicial area. The servers that work with the activities related to trial processes were more affected by the use of new technologies, given that the distribution of new cases is numerically higher when compared to the servers that work in the administrative activities of the institution. In addition, it is important to note that the tasks performed by the jurisdictional area in the new systems of technologies are much more complex, since they go beyond the production of documents. It should be noted that IT also involves statistical measurements that are extremely important, because it is the means used to measure the production of the organization. In the sectors of administrative activities, despite the implantation of new systems of technologies, the number of cases dealing with administrative matters is much smaller compared to the judicial area, which allows the employees of the administrative sectors a more progressive and slow adaptation. In addition, there are no statistical controls on administrative proceedings.

Occupancy (Capital versus Countryside)

No statistical differences were observed between users of the country and the capital. The possible explanation for not having found statistical differences between the users of the countryside or of the capital is that, regardless of the location, they use the same system and are subject to the same tensions and difficulties. One could think that the geographical distance could cause greater impact of the technostress to the public servers located in the countryside, in view of the difficulty of access to the support of new technologies since the technology sectors are in the capital. It should be noted, however, that the standardization of the first user support service, regardless of the occupancy in the capital or in the countryside,

with remote support, that is, via telephone, email and even messaging applications (e.g., WhatsApp) explains why the data did not point to differentiation in the levels of technostress creator factors.

Telecommuting

The techno-invasion was higher among the servers that carry out teleworking ($P = 0.033$). Considering that when working at home, we need to deduce that there is difficulty in separating the moment of work from the moment of personal activities. The data indicate that the teleworkers are not able to delimit the frontier between work and home, which generates the work-home conflict (Lambert et al., 2006; Smith et al., 2018).

5 CONCLUSIONS

The objective of this study was to identify how they relate, technostress, job satisfaction and the organizational commitment. Complementing with analyzes on the relationship between demographic characteristics and technostress creator factors. For this purpose, we specified a structural equation modelling that allowed the identification of a group of questions that robustly captured the constructs related to the hypotheses presented in the paper. The results indicated that technostress, latent construct of second order, negatively impacts the satisfaction of the workers, however, in the present study, higher levels of technostress did not imply lower levels of commitment of workers to the organization. Finally, the results indicated that satisfaction is positively related to workers' organizational commitment. In addition, the study found the relationship of technostress creator factors with six demographic factors, which are: gender, age, educational level, length of experience in the institution, occupancy (administrative vs. judicial and capital versus internal) and carrying out work via teleworking. In this way, we can consider that the study reached its objective.

The work has limitations that should be highlighted. In order to use a non-probabilistic sampling method, the generalization of results is impaired. In addition, it is important to highlight that the study was conducted in only one Brazilian public institution, of a specific sector (judiciary). Thus, generalizations of the results should be made with caution. On the

other hand, we open the opportunity for future researchers to complement the present study from the investigation of new geographic and sector contexts.

As academic implications, the present work contributes to technological stress, to the extent that it validates the measurement theory proposed by Tarafdar et al (2007) and Ragu-Nathan et al (2008), without however failing to indicate a problem with one of the factors indicated in the literature as technostress creator (techno-insecurity). The study also contributes to research on technostress, job satisfaction and organizational commitment, as it tests relationships and presents results that can be compared with later studies. In the practical field, the study provides public managers with a statistically validated instrument, for the measurement of important organizational phenomena, that is, technostress, job satisfaction and organizational commitment. In addition, in the face of evidence of the negative effects of the technostress on the organizational environment, as well as the relation of the demographic characteristics with each specific technostress creator factor, public managers are urged to take measures to mitigate this problem. For example, organizations can invest in IT literacy programs (literacy facilitation), to provide adequate technical support (technical support provision) and, mainly, to involve the users in the planning and implantation of new technological solutions (involvement facilitation), considering that the scientific literature indicates that these factors are effective in combating technological stress in organizational environments (Ragu-Nathan et al., 2008). Along these lines, it has recently been identified that public servants can benefit more from technology if the development of technological solutions occurs in parallel with the process of learning end users and with the development of organizational requirements (Avdic, 2018).

REFERENCES

- Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies? *Decision Sciences*, 30(2), 361–391.
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411–423.
- Avdic, A. (2018). Second Order Interactive End User Development Appropriation in the Public Sector. *Journal of Organizational and End User Computing*, 30(1), 82–106.
- Bhatti, N., Hashmi, M. A., Raza, S. A., Shaikh, F. M., & Shafiq, K. (2011). Empirical Analysis of Job Stress on Job Satisfaction among University. *International Business Research*, 4(3), 121–131.
- Bourgeois III, L. J. (2010). On the measurement of organizational slack. *Academy of Management Review*, 6(1), 29–39.
- Burton-Jones, A., & Hubona, G. S. (2005). Individual differences and usage behavior:

- Revisiting atecnology acceptance model assumption. *ACM SIGMIS Database*, 36(2), 58–77.
- Cappi, M. N., & Araujo, B. F. von B. de. (2015). Satisfação no trabalho, comprometimento organizacional e intenção de sair: um estudo entre as gerações x e y. *Revista Eletrônica de Administração*, 21(3), 576–600.
- Coffin, R. J., & Macintyre, P. D. (1999). Motivational influences on computer-related affective states. *Computer in Human Behavior*, 15(5), 609–623.
- Çoklar, A. N., & Sahin, Y. L. (2011). Technostress levels of social network users based on ICTs in Turkey. *European Journal of Social Science*, 23(2), 171–182.
- Cooper, J. (2006). The digital divide: The special case of gender. *Journal of Computer Assisted Learning*, 22(5), 320–334.
- Diniz, E. H., Barbosa, A. F., Junqueira, A. R. B., & Prado, O. (2009). O governo eletrônico no Brasil: perspectiva histórica a partir de um modelo estruturado de análise. *Revista de Administração Pública - RAP*, 43(1).
- Elie-Dit-Cosaque, C., Pallud, J., & Kalilka, M. (2011). The influence of individual, contextual, and social factors on perceived behavioral control of information technology: A field theory approach. *Journal of Management Information Systems*, 28(3), 201–234.
- Fletcher, J. K. (2009). *Disappearing acts: Gender, power and relational practice at work*. Cambridge, MA: *Mit Press*.
- Fu, W. (2014). The Impact of Emotional Intelligence, Organizational Commitment, and Job Satisfaction on Ethical Behavior of Chinese Employees. *Journal of Business Ethics*, 122(1), 137–144.
- Fu, W., & Deshpande, S. P. (2014). The Impact of Caring Climate, Job Satisfaction, and Organizational Commitment on Job Performance of Employees in a China's Insurance Company. *Journal of Business Ethics*, 124, 339–349.
- Gabriel, S., & Gardner, W. L. (1999). Are there “his” and “hers” types of interdependence? The implication of gender difference in collective versus relational interdependence for affect, behavior, and cognition. *Journal of Personality and Social Psychology*, 77(3), 642–655.
- Gorla, N. (2012). Information Systems Service Quality, Zone of Tolerance, and User Satisfaction. *Journal of Organizational and End User Computing*, 24(2), 50–73.
- Hair, J., Black, W., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2009). *Análise multivariada de dados*. (Bookman, Ed.). Porto Alegre.
- He, J., & Freeman, L. A. (2010). Are men more technology-oriented than women? The role of gender on the development of general computer self-efficacy of college students. *Journal of Applied Computing and Information Technology*, 21(2), 203–213.
- Henrich, K. T. (1991). Loving partnerships. *The Journal of Higher Education*, 62(5), 514–538.
- Hoboubi, N., Choobineh, A., Kamari Ghanavati, F., Keshavarzi, S., & Akbar Hosseini, A. (2017). The Impact of Job Stress and Job Satisfaction on Workforce Productivity in an Iranian Petrochemical Industry. *Safety and Health at Work*, 8(1), 67–71.
- Hsiao, K.-L. (2017). Compulsive mobile application usage and technostress: the role of personality traits. *Online Information Review*, 41(2), 272–295.
- Hsiao, K.-L., Shu, Y., & Huang, T.-C. (2017). Exploring the effect of compulsive social app usage on technostress and academic performance: Perspective from personality traits. *Telematics and Informatics*, 679–690.
- Huffman, A. H., Whetten, J., & Huffman, W. H. (2013). Using technology in higher education: The influence of gender roles on technology self-efficacy. *Computers in Human*

- Behavior*, 29(4)(1779–1786).
- Hwang, I., & Cha, O. (2018). Examining technostress creators and role stress as potential threats to employees' information security compliance. *Computers in Human Behavior*, 282–293.
- Im, T., Campbell, J. W., & Jeong, J. (2016). Commitment Intensity in Public Organizations: Performance, Innovation, Leadership, and PSM. *Review of Public Personnel Administration*, 36(3), 219–239.
- Jena, R. K., & Mahanti, P. K. (2014). An Empirical study of Technostress among Indian Academicians. *International Journal of Education and Learning*, 3(2), 1–10.
- Joreskog, K. G., & Goldberger, A. S. (1975). Estimation of a model with multiple indicators and multiple causes of a single latent variable. *Journal of American Statistical Association*, 70(351), 631–639.
- Krishnan, S. (2017). Personality and espoused cultural differences in technostress creators. *Computers in Human Behavior*, 66, 154–167.
- Kumar, R., Lal, R., Bansal, Y., & Sharma, S. K. (2013). Technostress in Relation to Job Satisfaction and Organisational Commitment among IT Professionals. *International Journal of Scientific and Research Publications*, 3(12), 1–3.
- La Torre, G., Esposito, A., Sciarra, I., & Chiappetta, M. (2018). Definition, symptoms and risk of techno-stress: a systematic review. *International Archives of Occupational and Environmental Health*, 1–23.
- Lambert, E. G., Hogan, N. L., Camp, S. D., & Ventura, L. A. (2006). The impact of work-family conflict on correctional staff: A preliminary study. *Criminology and Criminal Justice*, 6 (4), 371–387.
- Lévy, P. (2001). *Cyberculture*. (U. of M. Press, Ed.). Minneapolis.
- Liu, C.-F., Cheng, T.-J., & Chen, C.-T. (2019). Exploring the factors that influence physician technostress from using mobile electronic medial records. *Informatics for Health & Social Care*, 92–104.
- Lizote, S. A., Verdinelli, M. A., & Nascimento, S. do. (2018). Relação do comprometimento organizacional e da satisfação no trabalho de funcionários públicos municipais. *Revista de Administração Pública*, 51(6), 947–967.
- Marchiori, D. M., Mainardes, E. W., & Rodrigues, R. G. (2018). Do Individual Characteristics Influence the Types of Technostress Reported by Workers? *International Journal of Human-Computer Interaction*, 35(3), 218–230.
- Marôco, J. (2014). *Análise de equações estruturais*. (P. Pinheiro, Ed.). ReportNumber.
- Mikkelsen, A., Ogaard, T., Lindoe, P. H., & Olsen, O. E. (2002). Job characteristics and computer anxiety in the production industry. *Computers in Human Behavior*, 18(3), 223–239.
- Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the Horizon*, 9(5), 1–6.
- Ragu-Nathan, T. S., Tarafdar, M., Ragu-Nathan, B. S., & Tu, Q. (2008). The consequences of technostress for end users in organizations: Conceptual development and validation. *Information Systems Research*, 19(4), 417–433.
- Sahin, Y. L., & Çoklar, A. N. (2009). Social networking users' views on technology and the determination of technostress levels. *Procedia - Social and Behavioral Sciences*, 1(1)(1437–1442).
- Smith, T. D., Hughes, K., DeJoy, D. M., & Dyal, M. A. (2018). Assessment of relationships between work stress, work-family conflict, burnout and firefighter safety behavior outcomes. *Safety Science*, 103, 287–292.
- Tarafdar, Monideepa; Tu, Qiang; Ragu-Nathan, T. (2011). Impact of technostress on end-user

- satisfaction and performance. *Journal of Management Information Systems*, 27. v. 03.
- Tarafdar, M., Tu, Q., Ragu-Nathan, B., & Ragu-Nathan, T. (2007). The Impact of Technostress on Role Stress and Productivity. *Journal of Management Information Systems*, 24(1), 301–328.
- Taylor, J. (2014). Public service motivation, relational job design, and job satisfaction in local government. *Public Administration*, 92(4), 902–918.
- Venkatesh, V., Hall, M., Davis, G. B., Davis, F. D., Walton, S. M., & Morris, M. G. (2003). User acceptance of information technology: Toward a unified. *MIS Quarterly*, 27(3), 425–478.
- Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, 24(1), 115.
- Wahn, J. (2003). Sex differences in competitive and compliant unethical work behavior. *Journal of Business and Psychology*, 121–128.
- Young, J. P. (2000). Boy talk: Critical literacy and masculinities. *Reading Research Quarterly*, 35(3), 312–337.
- Yücel, I. (2012). Examining the Relationships among Job Satisfaction, Organizational Commitment, and Turnover Intention: An Empirical Study. *International Journal of Business and Management*, 7(20), 44–57.
- Zemke, R., Raines, C., & Filipczak, B. (1999). Generations at work: Managing the clash of veterans, boomers, xers, and nexters in your workplace. *AMACOM*.

APPENDIX 1

Final version of the questionnaire

Technostress creator factors

Techno-overload

- I am forced to work faster because of the Information Technology used in my work.
- I am forced to work more than I withstand because of the Information Technology used in my work.
- I am forced to work with very tight timelines because of the Information Technology used in my work.

Techno-invasion

- I have contact with my work even during my vacations because of the Information Technology used in my work.
- I have to sacrifice my vacation time and weekends to keep myself updated with new technologies.
- I feel that my personal life is being invaded because of the Information Technology used in our organization.

Techno-complexity

- I do not know enough about Information Technology to deal satisfactorily with my job.
- I need a long time to understand and use new technologies in our organization.
- I often find it very complex to understand and use new technologies used in our organization.

Techno-insecurity

- I feel a constant threat to my safety in the position or function I hold due to new technologies.
- I have to constantly update my skills to avoid being replaced.
- I feel threatened by coworkers who have the most up-to-date technological skills.

Job satisfaction

- I am very satisfied with my current job.
- Most days I get excited about my job.
- I enjoy my job.

Organizational Commitment

- I have a sense of belonging to my organization.
- The values I consider important are very similar to the values that my institution cultivates.
- I am proud to tell others about my place of work.

APPENDIX 2

Multiple Imputation and Multiple Causes Models

