RESEARCH IN PROGRESS

THE ROLE OF IT IDENTITY IN THE FORMATION AND MITIGATION OF TECHNOSTRESS

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The pervasive and ubiquitous nature of technology has grown exponentially in the last decades. Technostress has been a common consequence of such intensive use, causing serious damage to IT users and organizations. How technostress is formed via primary appraisal toward IT and how it can be mitigated has been overlooked by prior research. This research addresses these gaps by mobilizing an IT identity perspective. IT identity informs about individuals' attitudes towards IT and would explain the formation of negative feelings associated with the use of IT as well as how technostress mitigation occurs in a personal IT use setting.

Keywords:
IT identity, IT features, technostress, primary appraisal, mitigation

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1 Introduction

The pervasive and ubiquitous nature of digital technologies has permeated every aspect of organizational and nonorganizational settings, creating important implications and challenges for Information Systems (IS) scholars and giving rise to the so-called *dark side of Information Technology (IT) use* (Tarafdar et al., 2013). This research stream argues that some of the features that make IT powerful (e.g., reliability, usefulness, portability, user-friendliness, and fast processing) can also threaten individual well-being due to IT-induced stress, technology dependency, or IT misuse (Tarafdar et al., 2010). Within this line of research, the phenomenon of technostress has received great attention (Ragu-Nathan et al., 2018). Technostress has been defined as the stress experienced by individuals due to the constant need to adapt to new and evolving IT functionalities (Califf et al., 2020). It has been traditionally conceptualized as a negative aspect resulting from the use of IT, associated with negative consequences such as low job satisfaction, productivity, and high turnover rates (Ayyagari et al., 2011). Due to this negative denotation, how to mitigate technostress has also emerged as an important but overlooked topic (Galluch et al., 2015). Prior research has focused on technostress mitigation from an organizational perspective, disregarding how technostress mitigation takes place in a personal use setting (Salo et al., 2022).

This research takes an IT identity perspective to answer the following research question: what is the role of IT identity in the formation and mitigation of technostress in a personal IT use environment? This research contributes to two underexplored areas. First, the role of IT identity in the formation of technostress via primary appraisal toward IT, and second, how IT identity affects technostress mitigation in a personal IT use environment. *IT identity* refers to the extent to which an individual perceives the use of an IT as part of who he/she is and answers the question "Who am I in relation to this technology?" (Carter & Grover, 2015). It is therefore tied to the individual level of analysis. Today's landscape is characterized by an increasing interlacing of IT and social routines as well as higher expectations from perpetual contact with IT in more complex social structures. IT identity informs about individuals' attitudes toward IT and would explain the formation of negative feelings associated with the use of IT. We posit that IT identity plays a key role in understanding the formation and mitigation of technostress because IT

identity might lead to a successful self-verification of individuals' role identities and reduce feelings of technostress (Carter & Grover, 2015).

2 Motivation & Gap

First, although central to the understanding of the phenomenon of technostress, prior IS literature still did not fully explore the formation and shaping of individuals' primary appraisal toward IT (Tarafdar et al., 2019). An individual can evaluate IT as a challenge and a motivating factor or as a threatening and disturbing factor. A very limited number of studies have explored how individuals appraise the introduction of technologies and their impact on the formation and mitigation of technostress (Salo et al., 2022). Second, we push the boundaries of the 'user' concept that has been dominating the research stream of technostress. Although very insightful, the user concept does not cover the surroundings of the interaction between the sides of the technostress process (i.e., the person and the technological environment). As Lamb and Kling (2003) argue, users should be considered social actors. In fact, individuals are not merely and uniquely 'users' of IT, they are rather 'social actors' embedded in complex social settings; as '*their social roles and relationships are increasingly inseparable from their interactions with IT*' (Carter & Grover, 2015, p.931). We believe that the socially thin conceptualizations of individuals as merely users constitute a barrier to our understanding of such complex phenomena. Our study adopts this theoretical positioning by developing a model that captures, on the one hand, the technical and environmental settings that create technostress, and the intertwinement of social roles and IT usage in the other hand. Finally, our study mobilizes the IT identity lens to look at the formation and mitigation of technostress. IT identity helps captures the complexity of the intertwinement of IT and social structures. In fact, IT identity represents '*the set of meanings individuals attach to the self in relation to IT—as a product of individuals' personal histories of interacting with IT, as well as a force that shapes their thinking and guides their IT use behaviors*'. Thus, IT and social contexts in which individuals are embedded, are established in relation to each other and mutually and continually develop. The previous echoes with two core elements of technostress conceptualization. First, IT identity embodies the relationship between technology and social contexts as it considers IT as a social object, while technostress is theorized as a process that involves a transaction between the individual and the environment. Second, IT identity interferes with the shaping of attitudes toward IT and the use of IT while "primary appraisal" focuses on the

individual's assessment of the extent of environmental demand and influences the relationship between technology environmental conditions and techno-stressors. In consequence, considering IT as a social object that individuals categorize themselves in relationship to would inform about the formation and mitigation of technostress.

3 Theoretical Background

3.1 Technostress: A Fragmented and Evolving Literature

The questions of how and why the use of IT generates various demands on the individual are at the heart of an emerging area of scholarly investigation in the IS domain, namely technostress (Ayyagari et al., 2011; Ragu-Nathan et al., 2008). The concept of technostress, derived from the stress concept in the psychological stress literature, refers to the dynamic process in which individuals perceive that the demands of using an IT exceed one's resources and are hard to meet (Ayyagari et al., 2011; D'Arcy et al., 2014; Galluch et al., 2015). The process includes (1) the presence of 'technology environment conditions', which are appraised as (2) demands or 'techno stressors' that are taxing the individual and require (3) coping responses resulting in (4) outcomes for the individual on the psychological, physical and behavioral levels.

Studies on technostress have substantially focused on its creators, the techno-stressors, and its outcomes. Little is known about the appraisal aspect, which unfolds how individuals appraise the technological environment conditions and interpret them as a threat and disturbing or as a challenge and opportunity (Califf et al., 2020). Indeed, our knowledge about technostress is built on 'fragmented investigation' and disparate focus on specific aspects (Tarafdar et al., 2019). For example, according to Tarafdar et al. (2019)'s literature review, the antecedents of technostress have received a considerable proportion of interest (see Ayygari et al., 2011). Technostress outcomes have also been, according to the same source, under great focus. Overall, previous research falls short to discuss how individuals appraise techno-stressors neither why they perceive digital technologies as disturbing and potentially harmful.

Primary Appraisal

One of the most overlooked dimensions of this process is the primary appraisal. Primary appraisal establishes and influences the relationship between technology environmental conditions and techno-stressors and informs about how negative feelings towards IT are formed (Tarafdar et al., 2019). Primary appraisal is the user's assessment of the expected consequences of an IT event (Beaudry & Pinsonneault, 2005). Rooted in cognitive theories, it argues that individuals, when disrupted, proceed to an evaluation of the nature of the situation: does this constitute an opportunity or a threat? Individuals also judge the personal relevance of the disrupting event and its potential consequences (Lazarus, 1966; Lazarus & Folkman, 1984). If demands are perceived as adequate to the resources, individuals could develop a positive attitude towards the event and feel it as an opportunity. If perceived as exceeding one's abilities, the individual will experience feelings of stress.

To answer this question, different theoretical frameworks have been mobilized. The Person-Environment (P-E) fit of stress (Cooper et al., 2001; Edwards 1991) has been adopted to argue the absence of equilibrium between the IT demands and the capacity of individuals to meet them (Ayyagari et al., 2011). Other studies used the prism of individual and organizational characteristics to explore which ones would favor perceiving technology environment conditions as threat-techno-stressors. On the individual level, examples range from obsessive-compulsive personalities or neurotic dispositions (Bolger & Zuckerman, 1995; Chang, 1998) to low self-efficacy (Schaubroeck & Merritt, 1997). On the organizational level, examples range from the surveillance culture (Zuboff, 1988, 2015) to high organizational expectations (Barber & Santuzzi, 2015). Two recent studies (Califf, 2022; Salo et al., 2022) adopt an affordances lens to theorize what happens in the black box of the appraisal process.

Recurrent Techno-stressors

Techno-stressors refer to "*IS stress creators appraised by the individual as threatening*" (Tarafdar et al., 2015, p. 5). Prior research has identified several techno-stressors such as invasion, privacy concerns, complexity, overload, uncertainty, insecurity, or dependency (Califf et al., 2020; Ragu-Nathan et al., 2008; Tarafdar et al., 2007). We consider the most recurrent techno-stressors found in a personal use context:

invasion, privacy concerns, complexity, and dependency (Salo et al., 2022). Dependency involves an overreliance on IT to perform daily activities (Shu et al., 2011). Privacy concerns involve feelings of compromised individual privacy (Ayyagari et al., 2011). Complexity refers to the difficulty in using IT (Fischer & Riedl, 2017; Tarafdar et al., 2007). Invasion refers to situations in which users can be reached and available at any time (Fischer & Riedl, 2017; Tarafdar et al., 2010).

Technostress Mitigation

A few studies have addressed the question of how to mitigate technostress. Mainly from an organizational perspective, these studies explored the factors that help knowledge workers and IT professionals lower the negative feelings associated with using IT. Among these factors, researchers validated organizational programs, training, job control, and rewards (Arnetz, 1996; Hung et al., 2011; Tams et al., 2020), in addition to specific organizational support such as technical support, literacy facilitation, support with work–home boundaries, co-worker support, and user involvement (Benlian, 2020; Fuglseth & Sørebø, 2014; Maier et al., 2019; Ragu-Nathan et al., 2008; Tarafdar et al., 2015; Yan et al., 2013). On a more individual level, aspects pertaining to IT self-efficacy, IT experience and competencies have been associated with lower technostress levels (Shu et al., 2011; Tams et al., 2018) and better performance (Tarafdar et al., 2015). Studies on mitigating technostress have also explored the impact of individual actions such as positive re-interpretation, distancing or escaping from IT work on reducing technostress (Galluch et al., 2015; Pirkkalainen et al., 2019). Recent work by Salo et al. (2022) explored the formation of technostress using IT affordance as a theoretical lens (Majchrzak & Markus, 2014) and how individuals mitigate technostress feelings through a self-regulation perspective (Bandura, 1991; Baumeister et al., 1994).

3.2 IT Identity

IT identity has been articulated by prior research to better understand one's behavior with respect to IT in embedded social contexts. The conceptualization of IT identity builds on the assumption that identities represent the set of meanings and expectations that individuals internalize for their own behaviors (Carter & Grover, 2015). Identities are tied to social categories on both the collective and individual levels. While the former focuses on how identity emerges from membership in social

groups or categories (Tajfal & Turner, 2004), the latter covers several forms of identity such as role identity (e.g., family role, work role) (McCall & Simmons, 1978), person identity (i.e., values and norms that individuals define themselves with) (Burke & Stets, 2009) and material identity. IT identity, as presented by Carter and Grover (2015), falls under the material identity form where individuals tie their identity to material objects such as places or personal possessions (such as IT) (Clayton, 2003). Given that IT identity applies to the individual, this variable is tied to the individual level of analysis. Prior research on identity indicates that IT identity should be a multidimensional construct (Clayton, 2003). IT identity is reflected in individuals' perceptions of relatedness, dependence, and emotional energy with respect to the IT (Carter & Grover, 2015). *Relatedness* refers to the extent to which the boundary between the self and IT becomes blurred and individuals show feelings of connectedness with the IT. *Dependence* captures the extent to which individuals are reliant on IT to achieve important instrumental goals. *Emotional energy* captures feelings of enthusiasm and energy when interacting with an IT.

4 Preliminary Research Design and Research Model

On the one hand, our sample includes undergraduate students from a Business School in France. Students are an appropriate target because they are digital natives who widely use IT for personal purposes in a voluntary way (Craig et al., 2019). This decision is also consistent with prior research on technostress (Galluch et al., 2015) and IT identity (Carter et al., 2020). On the other hand, we will focus on a specific unit of technology given that, according to prior work, users may develop many IT identities, each one tied to a specific IT (Carter & Grover, 2015; Stets & Burke, 2005). Given that technologies with broader use are more likely to enact IT identity (Carter & Grover, 2015), we will use a social networking site (SNS) (e.g., Facebook, Instagram). In addition, Carter and Grover (2015) stated that technologies such as Facebook or Instagram with material properties such as sharing status updates and photos, instant messaging notifications, and dynamic information feeds, which are at the same time portable and networked, are particularly amenable to IT identity formation.

We plan to perform a mixed-methods design. Mixed-methods design is an appropriate method because of its ability to "*address confirmatory and explanatory research questions*" (Venkatesh et al., 2016, p. 437). As our focus is on understanding the role

of IT identity in the formation and mitigation of technostress, we first plan to conduct a qualitative study to help us develop the research model and understand how the different variables are related to each other. We plan to conduct focus group to understand how SNS features are appraised by students, how primary appraisal affects recurrent techno-stressors, and how students' IT identity affects primary appraisal and technostress mitigation. Once the hypotheses and research model are developed based on the first study, a quantitative approach will be followed for the empirical testing. Figure 1 shows the preliminary model we might test. We plan to develop a survey instrument adopting existing Likert scale measures of IT features, IT identity, and recurrent techno-stressors to ensure content validity. We will survey students from the same institution with a screening question to only include those students using the chosen SNS. IT features will be specified as a second-order composite construct and will include four dimensions: functionality, bandwidth, mobility, and malleability (Carter & Grover, 2015; Esmaeilzadeh, 2021). IT identity will be considered a second-order composite construct with three reflective dimensions whose items will be adopted from Carter et al. (2020). Measures of the techno-stressors will be adapted from prior work on technostress (e.g., Ragu-Nathan et al., 2008; Tarafdar et al., 2007; Tarafdar et al., 2017).

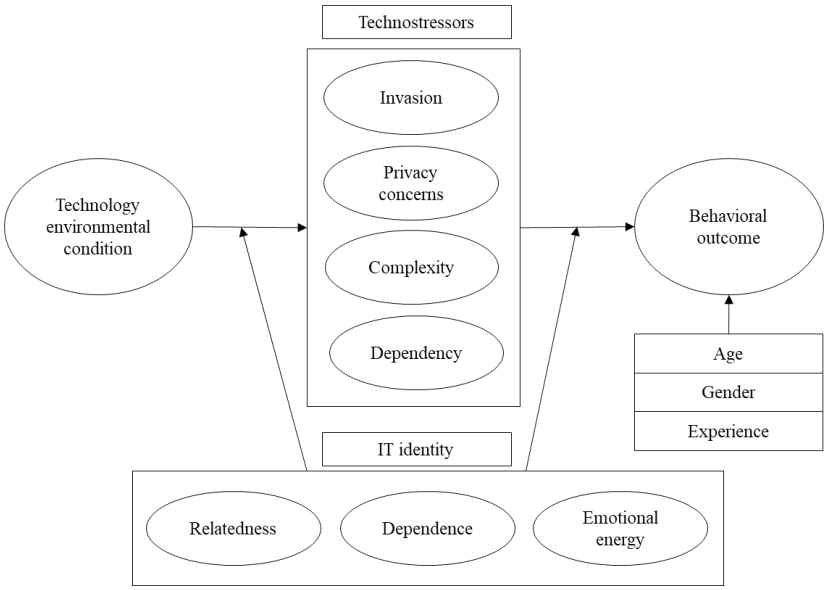

Figure 1: Research model

5 Conclusion and Expected Contributions

In order to expand the understanding of technostress, examining the formation of negative feelings towards IT and how users mitigate their effects represents a focal point. As part of that endeavor, this study looks at the formation and mitigation of technostress through the lens of IT identity. While prior IS research has acknowledged that understanding the role of IT use is critical to understanding how technostress forms over time via primary appraisal and how its mitigation takes place, our literature review reveals that little is known about the role of IT identity in such phenomena.

The potential contributions of this research are the following. First, we contribute and extend prior work on technostress formation and mitigation by investigating how primary appraisal for threat techno-stressors happens when IT identity is considered while examining whether IT identity is a way to mitigate technostress. Second, IT identity has been understudied in prior IS research. Although there are studies that explain who people are in relation to IT, they do not treat IT as an integral part of one's self (Esmaeilzadeh, 2021). This study will examine IT identity associated with a SNS and its role in the formation and mitigation of technostress. We will be able to elucidate whether IT identity reinforces or weakens the relationship between technology environmental conditions, techno-stressors, and user behavior. Therefore, this work will contribute to theory building on IT identity by also providing empirical evidence for the multidimensional nature of the construct.

References

Arnetz, B. B. (1996). Techno-Stress: A perspective psychophysiological study of the impact of a controlled stress-reduction program in advanced telecommunications systems design work. *Journal of Occupational and Environmental Medicine*, 38(1), 53-65.

Ayyagari, R., Grover, V., & Purvis, R. (2011). Technostress: Technological antecedents and implications. *MIS Quarterly*, 35(4), 831-858.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational behavior and human decision processes*, 50(2), 248-287.

Barber, L. K., & Santuzzi, A. M. (2015). Please respond ASAP: Workplace telepressure and employee recovery. *Journal of Occupational Health Psychology, 20*(2), 172–189.

Baumeister, R. F., Heatherton, T. F., & Tice, D. M. 1994. Losing Control: How and Why People Fail at Self-Regulation, San Diego, CA: Academic Press.

Beaudry, A., & Pinsonneault, A. (2005). Understanding User Responses to Information Technology: A Coping Model of User Adaptation. *MIS Quarterly*, 29(3), 493–524.

Belk, R. W. (1988). Possessions and the Extended Self. *Journal of Consumer Research*, 15(2), 139-168.

Benlian, A. (2020). A Daily Field Investigation of Technology-Driven Spillovers from Work to Home. *MIS Quarterly*, 44(3).

Bolger, N., & Zuckerman, A. (1995). A framework for studying personality in the stress process. *Journal of Personality and Social Psychology, 69*(5), 890–902.

Burke, P. J., & Stets, J. E. 2009. Identity Theory, New York: Oxford University Press.

Califf, C. B. (2022). Stressing affordances: Towards an appraisal theory of technostress through a case study of hospital nurses' use of electronic medical record systems. *Information and Organization*, 32(4), 100431.

Califf, C., Sarker, S., & Sarker, S. (2020). The bright and dark sides of technostress: A mixed-methods study involving healthcare IT. *MIS Quarterly*, 44(2), 809-856.

Carter, M., & Grover, V. (2015). Me, Myself, and I(T): Conceptualizing Information Technology Identity and its Implications. *MIS Quarterly*, 39(4), 931-957.

Carter, M., Petter, S., Grover, V., & Thatcher, J. B. (2020). Information Technology Identity: A Key Determinant of IT Feature and Exploratory Usage. *MIS Quarterly*, 44(3).

Cavanaugh, M. A., Boswell, W. R., Roehling, M. V., & Boudreau, J. W. (2000). An Empirical Examination of Self-Reported Work Stress among U.S. Managers. *Journal of Applied Psychology*, 85(1), 65-74.

Chang, E. C. (1998). Dispositional optimism and primary and secondary appraisal of a stressor: Controlling for confounding influences and relations to coping and psychological and physical adjustment. *Journal of Personality and Social Psychology, 74*(4), 1109–1120.

Clayton, S. (2003). Environmental Identity: A Conceptual and an Operational Definition, in Identity and the Natural Environment, S. Clayton and S. Opotow (eds.), Cambridge, MA: MIT Press, pp. 45-67.

Cooper, C. L., Dewe, P. J., & O'Driscoll, M. P. (2001). Organizational Stress: A Review and Critique of Theory, Research, and Applications, Thousand Oaks, CA: SAGE Publications.

D'Arcy, J., Herath, T., & Shoss, M. (2014). Understanding Employee Responses to Stressful Information Security Requirements: A Coping Perspective. *Journal of Management Information Systems*, 31(2), 285-318.

Edwards, J. R. (1991). Person-Job Fit: A Conceptual Integration, Literature Review, and Methodological Critique. *International Review of Industrial and Organizational Psychology*, 6, 283-357.

Esmaeilzadeh, P. (2021). How does IT identity affect individuals' use behaviors associated with personal health devices (PHDs)? An empirical study. *Information & Management*, 58(1), 103313.

Fuglseth, A. M., & Sørebø, Ø. (2014). The effects of technostress within the context of employee use of ICT. *Computers in Human Behavior*, 40, 161-170.

Galluch, P., Grover, V., & Thatcher, J. (2015). Interrupting the Workplace: Examining Stressors in an Information Technology Context. *Journal of the Association for Information Systems,* 16(1), 1-47.

Hung, W. H., Chang, L. M., & Lin, C. H. (2011). Managing the Risk of Overusing Mobile Phones in the Working Environment: A Study of Ubiquitous Technostress. In Proceedings of the Pacific Asia Conference on Information Systems, Brisbane.

Kahn, R., & Byosiere, P. (1992). Stress in organizations in M. D. Dunnette, and L. M. Hough (eds.) Handbook of industrial and organizational psychology (2nd ed.), vol. 3, Palo Alto: Consulting Psychologists Press, 571–650.

Lamb, R., & Kling, R. (2003). Reconceptualizing Users as Social Actors in Information Systems Research. *MIS Quarterly*, 27(2), 197-235.

Lazarus, R. S. (1966). Psychological stress and the coping process, New York, NY, USA: McGraw-Hill.

Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal, and coping, New York, NY, USA: Springer publishing company.

Maier, C., Laumer, S., Wirth, J., & Weitzel, T. (2019). Technostress and the hierarchical levels of personality: a two-wave study with multiple data samples. *European Journal of Information Systems*, 28(5), 496-522.

Majchrzak, A., & Markus, M. L. (2014). Technology Affordances and Constraints in Management Information Systems (MIS), in Encyclopedia of Management Theory, E. H. Kessler (ed.), Thousand Oaks, CA: SAGE Publications.

McCall, G. J. (2003). The Me and the Not-Me: Positive and Negative Poles of Identity, in Advances in Identity Theory and Research, P. J. Burke, T. Owens, R. T. Serpe, and P. A. Thoits (eds.), New York: Springer, pp. 11-26.

McCall, G. J., & Simmons, J. L. (1978). Identities and Interactions, New York: Free Press.

Pirkkalainen, H., Salo, M., Tarafdar, M., & Makkonen, M. (2019). Deliberate or instinctive? Proactive and reactive coping for technostress. *Journal of Management Information Systems*, 36(4), 1179-1212.

Ragu-Nathan, T., Tarafdar, M., Ragu-Nathan, B., & Tu, Q. (2008). The consequences of technostress for end users in organizations: Conceptual development and empirical validation. *Information Systems Research*, 19(4), 417-433.

Salo, M., Pirkkalainen, H., Chua, C. E. H., & Koskelainen, T. (2022). Formation and Mitigation of Technostress in the Personal Use of IT. *MIS Quarterly*, 46(2), 1073-1108.

Schaubroeck, J., & Merritt, D. (1997). Divergent effects of job control on coping with work stressors: The key role of self-efficacy. *Academy of Management Journal*, 40(3), 738-754.

Shu, Q., Tu, Q., & Wang, K. (2011). The Impact of Computer Self-Efficacy and Technology Dependence on Computer- Related Technostress: A Social Cognitive Theory Perspective. *International Journal of Human–Computer Interaction*, 27(10), 923-939.

Stets, J. E., & Burke, P. J. (2005). A Sociological Approach to Self and Identity. In Handbook of Self and Identity, M. R. Leary and J. P. Tangney (eds.), New York: The Guilford Press, pp. 128-152.

Tajfal, H., & Turner, J. C. (2004). The Social Identity Theory of Intergroup Behavior. In Political Psychology: Key Readings, J. T. Jost and J. Sidanius (eds.), New York: Psychology Press, pp. 276-293.

Tams, S., Ahuja, M., Thatcher, J., & Grover, V. (2020). Worker stress in the age of mobile technology: The combined effects of perceived interruption overload and worker control. *Journal of Strategic Information Systems*, 29(1), Article 101595.

Tams, S., Thatcher, J. B., & Grover, V. (2018). Concentration, competence, confidence, and capture: An experimental study of age, interruption-based technostress, and task performance. *Journal of the Association for Information Systems*, 19(9), 2.

Tarafdar, M., Cooper, C., & Stich, J. (2019). The technostress trifecta-techno eustress, techno distress and design: Theoretical directions and an agenda for research. *Information Systems Journal*, 29(1), 6-42.

Tarafdar, M., Gupta, A., & Turel, O. (2013). The Dark Side of Information Technology Use. *Information Systems Journal*, 23(3), 269-275.

Tarafdar, M., Pullins, E. B., & Ragu-Nathan, T. S. (2015). Technostress: negative effect on performance and possible mitigations. *Information Systems Journal*, 25(2), 103-132.

Tarafdar, M., Tu, Q., & Ragu-Nathan, T. (2010). Impact of technostress on end-user satisfaction and performance. *Journal of Management of Information Systems*, 27(3), 303-334.

Tarafdar, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. S. (2007). The impact of technostress on role stress and productivity. *Journal of Management Information Systems*, 24(1), 301-328.

Venkatesh, V., Brown, S. A., & Sullivan, Y. (2016). Guidelines for conducting mixed-methods research: An extension and illustration. Venkatesh. *Journal of the Association for Information Systems*, 17(7), 435-495.

Yan, Z., Guo, X., Lee, M. K., & Vogel, D. R. (2013). A conceptual model of technology features and technostress in telemedicine communication. *Information Technology & People*, 26(3), 283-297.

Zuboff, S. (1988). In the Age of the Smart Machine: The future of work and power, New York, NY: Basic Books.

Zuboff, S. (2015). Big other: surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology*, 30(1), 75-89