TECHNOSTRESS: EXPLORING AND UNDERSTANDING ITS DUALITY THROUGH THE EXPERIENCES OF INDIVIDUALS WORKING IN ORGANIZATIONS

Carolina F. Castro Rodriguez; Jyoti Choudrie;
University of Hertfordshire, Hertfordshire Business School, Hatfield, Hertfordshire, AL10 9EU. United Kingdom.
E-mail: cc17ack@herts.ac.uk; j.choudrie@herts.ac.uk

IS Innovation, Adoption and Diffusion
Ubiquitous and Mobile Information Systems

TECHNOSTRESS: EXPLORING AND UNDERSTANDING ITS DUALITY THROUGH THE EXPERIENCES OF INDIVIDUALS WORKING IN ORGANIZATIONS

Abstract

The hyper-connected work environment of the 21st century poses significant challenges, such as technostress, which is stress caused by the use of ICTs. Although this condition can have detrimental consequences for individuals' well-being and organizational outcomes, some important dimensions of the phenomenon remain largely unexplored. Such is the case with techno-eustress, which is positive stress experienced when using ICTs, and the focus of this research. This led to forming the aim: To explore, understand and explain the management of technostress in organizations. To address this aim, a qualitative approach that uses interpretivism and the themes of trust, resistance to change and organizational culture will be employed for this study. For the practical application of this aim, a comparative case study of two organizations in the UK and Ireland will be used. The implication of this study for academia and industry are also included in this paper.

Keywords: Technostress, Techno-Eustress, Interpretivism, Trust, Resistance to Change, Organizational Culture

1.0 Introduction

The penetration and proliferation of Information and Communication Technologies (ICTs) has transformed society and organizations alike. This has led to global governments' investments in building reliable internet infrastructures that can provide online products and services to citizens (ITU, 2018; Choudrie et al., 2013). Consequently, organizations are investing in ICTs to increase profitability, and to reduce operational costs and human resources.

A major cause for concern for organizations (ILO, 2000; WHO, 2010) derived from the pervasive use of the innovative constant connectivity and interruptions offered by these ICTs is technostress, which is defined as "stress experienced by individuals due to the use of ICTs" (Ragu-Nathan et al., 2008), and the focus of this study. As innovative technologies become increasingly complex and change rapidly, individuals are working faster, upskilling themselves or lagging, and experiencing information overload by having blurry home-work boundaries (Tarafdar et al., 2017). This can lead to serious consequences for their well-being, such as exhaustion and burnout (Brod, 1984; Orlikowski and Scott, 2008; Salanova et al., 2013).

For organizational studies (Tarafdar et al., 2007; Ragu-Nathan et al., 2008), technostress has been conceptualized in the literature mostly as a dark phenomenon (Tarafdar et al., 2017). Despite its pervasiveness in today's organizations, this type of stress is a relatively recent condition that is not fully understood as it is just over a decade that IS scholars commenced studying the phenomenon deeper (Ragu-Nathan et al., 2008). For example, from a general stress perspective, an individual's response to a stressful situation is formerly shaped by their negative (distress) or positive (eustress) perception of the stressor (Selye, 1974), leading to beneficial or detrimental outcomes. Correspondingly, individuals who perceive ICTs-induced stress as a threat will experience techno-distress, while those who perceive it as being challenging or thrilling, will experience techno-eustress (Sethi et al., 1987).

Notwithstanding the existence of this "bright side", technostress has been conceptualized in the literature as a synonym of distress due to early clinical studies being conducted from a techno-distress perspective (Brod, 1984; Weil and Rosen, 1997); thereby, leading to research emphasising the 'dark side' (Ayyagari et al., 2011; D'Arcy et al., 2014). However, it is now being recognised that in order to fully

understand the phenomenon, its duality warrants further exploration (Tarafdar et al., 2017; Tams, 2015).

This largely unexplored area led to the motivation for this study, which will be pursued from an IS and Organizational Behaviour perspective and focused on understanding and exploring the positive or negative cognitive appraisals of ICTs and their usage. This led to forming the aim: ***To explore, understand and explain the management of technostress in organizations.*** To determine this aim, the overarching research question to be applied in this study is: ***What, why, where, and how can we learn from individuals' insights on the management of technostress that may assist in shaping the way ICTs are implemented and used to reduce technostress levels in the workplace?***

By completing this research, the benefits to academia are a novel perspective on the management of technostress in terms of trust, resistance to change and organizational culture, which is presently missing in this research area. Moreover, as this is an exploratory study, the findings could be used as a base to examine other IS and organizational behaviour, or strategy issues. For industry, the findings could help bridge the gap between research and the business context and benefit senior managers in large organizations by providing them with empirical evidence that motivates them to further reduce techno-distress in the workplace and generate work environments that promote techno-eustress experiences instead. Finally, the benefits of this study for policy makers will be to generate robust policies that attend to the wellbeing of the workforce, which is a major issue in the current times. To inform readers, this paper is structured as follows. The next section presents a summary of the literature on techno-eustress and the gaps that have served as a base for this study that led to the conceptual framework formation and the themes to be used in this study. Following this, the methodology and methods that this study will use are explained. This is then followed by the implications of this research for theory and practice. The final section provides a conclusion, limitations and future directions.

2.0 Theoretical Background

In this section, the gaps found in the research area of technostress are discussed.

2.1 Techno–Eustress

IS scholars have mainly focused on technostress creators and detrimental outcomes, while overlooking individual's cognitive appraisals on the technostress process (Tarafdar et al., 2017). However, positive or negative appraisals of ICTs-related stressors are a key issue because they dictate individuals' experiences of techno-eustress and techno-distress (Le Fevre et al., 2003). Moreover, the transactional model of stress and coping (Lazarus and Folkman, 1984), which is widely used in technostress research explains how individuals appraise stressors as challenges or threats, yet most studies on technostress seem to assume that stressors are automatically perceived as threats (Califf and Martin, 2016). This assumption limits the constructs that have been used to investigate the phenomenon and consequently, the findings. To overcome such gaps, this study will emphasise appraisals and eustress (Tarafdar et al., 2017) and understand how and why individuals respond differently to similar stressful events (Srivastava, 2015). This will be achieved using research designs that elicit in-depth subjective opinions from individuals in their work environment (Cooper et al., 2001).

2.2 Trust

Trust, defined as "the willingness to be vulnerable based on positive expectations about the actions of others" (Zand, 1972) is an important concept that should be studied when considering technostress as it is a vital technology adoption determinant (Li et al., 2008). At an organizational level, trust influences relationships, enabling cooperation (Oreg et al., 2008). However, employees who do not trust the organization or top management, may resist ICT initiatives; thereby, leading to resistance to change (Oreg, 2006). Additionally, "cybertrust", defined as "trust in the Internet and related information and communication technologies" (Dutton and Shephard, 2006) may be hindered by lack of reliability or security (Ratnasingam and Pavlou, 2003), usefulness of the information, the organizational attitude towards employees' feedback and the transparency of its policies (Shankar et al., 2002). Being such a key construct, the only study that was found to mention it was Tams et al.'s (2018), where trust was an implication of smartphone withdrawal findings.

2.3 Resistance to Change

Resistance to change, is "a multidimensional disposition that comprises behavioral, cognitive, and affective components" (Oreg, 2003), and has four distinct dimensions: routine seeking, emotional reaction to change, short-term focus and cognitive rigidity. In the technostress area, resistance to change has been underexamined, although it is an important factor in IS studies since organizations' return on investment (ROI) can be significantly hindered if end-users do not adopt or use ICT implementations (DeLone and McLean, 2003). Furthermore, resistance has been linked to trust (Oreg et al., 2008) and scholars have demonstrated that individuals who exhibit higher computer self-efficacy are less resistant to ICT changes (Shu et al, 2011). However, the only four studies in the technostress literature that focused on resistance to change have examined different dimensions of the concept, which led to diverse findings.

2.4 Organizational Culture

In technostress literature a factor that has been viewed as important, but still less researched is the influence of organizational culture. Organizational culture is defined as: "a system of shared norms, beliefs, values, and assumptions that binds people together, thereby creating shared meanings", (Gray and Larson, 2008:72). It is recognised to be an influencer of managerial processes that affects the implementation and use of ICTs in the workplace (Leider and Kayworth, 2016).

Schein (1985) defined three levels of organizational culture: artefacts (aspects that can be easily distinguished but difficult to understand); espoused values (conscious strategies, goals and philosophies); and basic underlying assumptions (difficult to discern as they exist at a deeply unconscious level). The latter are the key to gain a real understanding of how the organization works because underlying assumptions represent interpretations that aid individuals' sense-making of reality; thereby establishing the basis for collective action (Reichers and Schneider, 1990). Hence, it can be inferred that to understand the culture of an organization and its influence on employees' technostress experiences, it is important to examine not only its physical aspects but also to observe how employees interact within the work environment. From a literature review of technostress, it was found that there is only one relevant study that has explored organizational culture in this area.

2.5 Proposed Conceptual Framework

Based on the aforementioned discussion and gaps in the literature, a conceptual framework has been developed (Figure 1). To apply this framework in practice, the next phase involved identifying and developing a suitable research approach.

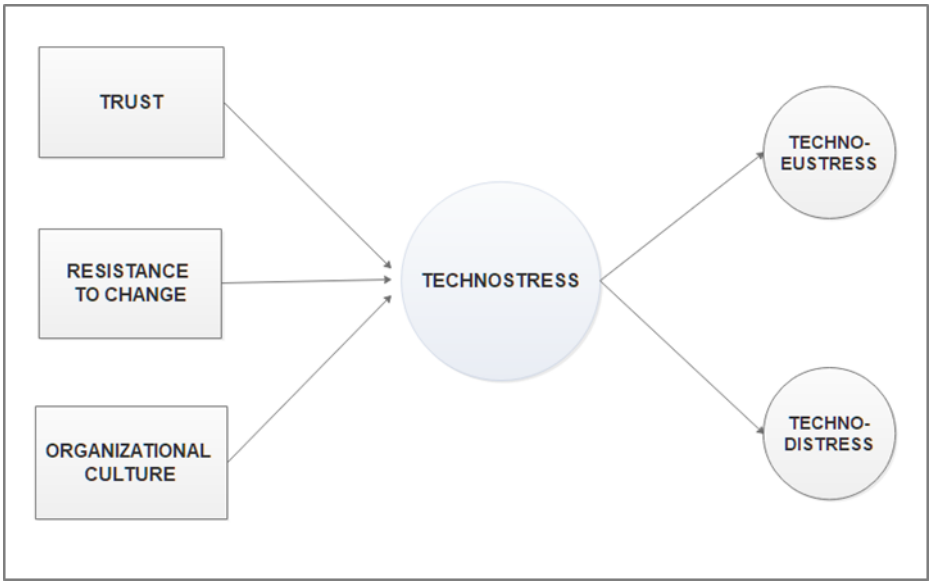

Figure 2. Proposed conceptual framework for this study

3.0 Proposed Research Approach

This study explores "how" and "why" individuals respond differently to similar stressful ICT-related events; thus, it was deemed necessary to design a research approach that departed from the controlled standpoint of positivism. For this reason, the study uses a subjective and interpretivist view that is fulfilled using a comparative case study. The case studies are a large, private sector organization in England and a public sector organization in Ireland. For the data collection, semi-structured interviews, observation and reference to archival documents will be used, which will ensure triangulation (Lincoln and Guba, 1985). The interviews will contain open-ended questions that will also be used as formative evaluation to help enhance the study's trustworthiness (Saunders et al., 2012). This study will be conducted in three phases. First, an interview protocol will be developed where the construct and content validity will be assessed by 15 experts. The experts will include diverse industries' practitioners and academics who will have knowledge of the thematic areas. The questions to be used will include demographics and a predefined list of essential

questions, categorised by the themes identified in the previous section. The interview protocol will also involve seeking participants' informed consent and awareness of recordings. The expert panel is needed to identify, edit or remove weaknesses, such as irrelevant terms and confusing questions; thus, enhancing clarity and removing ambiguities. This will be followed by a pilot phase. Participants for this study will be determined using theoretical saturation; i.e. until there is a high level of duplication in the participants' responses and no new themes emerge (Yin, 2003). For this and the next phase, participants with miscellaneous demographics will be selected using three non-probability heterogeneous sampling techniques (snowball, purposive and convenient sampling), based on the researcher's judgement and a selection criterion, i.e. individuals working with ICTs in organizations. For the data analysis, thematic analysis and interpretivism will be used. The findings will be anonymised and coded using concepts drawn from grounded theory (open coding).

4.0 Implications of this Research

This research study has theoretical and practical implications. For academia, technostress will be explored and understood using the themes of trust, resistance to change and organizational culture. For industry, the findings could inform them of ways that technostress would benefit their organization, rather than hindering them. This, in turn, could be beneficial to both employees and organizations through the enhancement of job satisfaction, well-being and performance and a possible reduction in absenteeism and turnover intentions. Finally, relevant policy makers, such as NDPBs (non-departmental public bodies); HR Advisory Boards; or Health and Wellbeing Services, could use the findings of this study to form future policies and guidelines based on technostress.

5.0 Conclusions

To explore, understand and explain technostress, this study uses the themes of trust, resistance to change and organizational culture and a qualitative approach. The research approach will also employ a cross comparative case study and the data collection techniques of semi-structured interviews, observations and reference to archival studies. To analyse the findings, a thematic and interpretivist approach will be pursued. The limitations of this study are: As the proposed research strategy is a

comparative case study, the findings cannot be generalised to the larger population. Instead, this study will seek to attain relatability and allow readers to make an informed judgement of the transferability and replicability of the findings, by reporting the methodology, methods, and data gathered in a robust and detailed manner. To overcome these limitations, future directions proposed for this study are: To use a large sample population and quantitative methods to provide generalization. The conceptual framework of this study is also envisaged to be applicable to longitudinal studies or field experiments to extend the findings and further explore the relationships.

References

Ayyagari, R., Grover, V. and Purvis, R. (2011) 'Technostress: technological antecedents and implications', *MIS Quarterly*, 35(4), pp. 831–858. DOI: 10.2307/3250951.

Brod, C. (1984) Technostress: The human cost of the computer revolution. Reading, Mass. : Addison-Wesley

Califf, C. B. and Martin, T. C. (2016) 'Rethinking technostress: A transactional approach through affordances', *AMCIS 2016: Surfing the IT Innovation Wave - 22nd Americas Conference on Information Systems*, pp. 1–10.

Choudrie, J., Ghinea, G. and Songonuga, V. N. (2013) "Silver surfers, e-government and the digital divide: an exploratory study of UK local authority websites and older citizens", *Interacting with Computers,* vol. 25, no. 6, pp. 417-442.

Cooper, C., Dewe, P. and O'Driscoll, M. (2001) Organizational stress: A review and critique of theory, research, and applications. Sage, Thousand Oaks, CA.

D'Arcy, J., Gupta, A. and Tarafdar, M. (2014) 'Reflecting on the "dark side" of information technology use', *Communications of the Association for Information Systems*, 35(5), pp. 109–118. DOI: 10.17705/1CAIS.03505.

DeLone, W. H. and McLean, E. R. (2003) "The DeLone and McLean model of information systems success: A ten- year update," *Journal of Management Information Systems* (19:4), 9-30.

Dutton, W. and Shepherd, A. (2006) Trust in the internet as an experience technology. *Information, Communication and Society*, 9:4, 433-451, DOI: 10.1080/13691180600858606

Gray, C.F. and Larson, E.W. (2008) Project management: The managerial process. 4 th edn. McGraw Hill International Edition

ILO (2000) Mental health in the workplace. Geneva: International Labour Organization.

ITU (2018) *ITU's approach to using ICTs to achieve the United Nations sustainable development goals*. International Telecommunication Union. Available at: https://news.itu.int/icts-united-nations-sustainable-development-goals/

Lazarus, R. S. and Folkman, S. (1984) Stress, appraisal, and coping. Springer, New York.

Le Fevre, M., Kolt, G. S. and Matheny, J. (2006) "Eustress, distress and their interpretation in primary and secondary occupational stress management

interventions: which way first?" *Journal of Managerial Psychology* (21:6), pp. 547-565.

Leider, D. E. and Kayworth, T. (2016) 'Review: A review of culture in information systems research: Toward a theory of information technology culture conflict', MIS Quarterly - *Management Information Systems*, 30(2), pp. 357–399. Available at: url: https://www.jstor.org/stable/25148735.

Li, X., Hess, T. J. and Valacich, J. S. (2008) Why do we trust new technology? A study of initial trust formation with organizational information systems. *Journal of Strategic Information Systems*, 17(1), 39–71.

Lincoln, Y. S. and Guba, E. G. (1985) *Naturalistic inquiry*. Newbury Park, CA: Sage Publications.

Oreg, S. (2003) Resistance to change: Developing an individual differences measure. *Journal of Applied Psychology*, 88(4), 680-693. doi:10.1037/0021-9010.88.4.680

Oreg, S. (2006) Personality, context, and resistance to organizational change. *European Journal of Work and Organizational Psychology*, 15(1), 73-101. doi:10.1080/13594320500451247

Oreg, S., Bayazit, M., Vakola, M., Arciniega, L., Armenakis, A., Barkauskiene, R., Bozionelos, N., Fujimoto, Y., González, L., Han, J., Hřebíčková, M., Jimmieson, N., Kordaĉová, J., Mitsuhashi, H., Mlaĉić, B., Ferić, I., Topić, M. K., Ohly, S., Saksvik, P. Ø., Hetland, H., Saksvik, I. and van Dam, K. (2008) 'Dispositional resistance to change: Measurement equivalence and the link to personal values across 17 nations', *Journal of Applied Psychology*, vol. 93, no. 4, pp. 935-944. https://doi.org/10.1037/0021-9010.93.4.935

Orlikowski, W. J. and Scott, S. V. (2008) Sociomateriality: Challenging the separation of technology, work and organization. *The Academy of Management Annals* (2)1, pp. 433-474

Ragu-Nathan, T. S., Tarafdar M., Ragu-Nathan B.S. and Tu, Q. (2008) 'The consequences of technostress for end users in organizations: Conceptual development and validation', *Information Systems Research*, 19(4), pp. 417–433. DOI: 10.1287/isre.1070.0165.

Ratnasingam, P. and Pavlou, P. (2003) Technology trust in internet-based interorganizational electronic commerce. *Journal of Electronic Commerce in Organizations*, [online] 1(1), pp.17-41. Available at: https://www.researchgate.net/publication/220203346_Technology_Trust_in_Internet-Based_Interorganizational_Electronic_Commerce>

Reichers, A. E. and Schneider, B. (1990) "Climate and culture: An evolution of constructs," in *Organizational Climate and Culture*, B. Schneider (ed.), Jossey-Bass, San Francisco, pp. 5-39.

Salanova, M., Llorens, S. and Cifre, E. (2013) 'The dark side of technologies: Technostress among users of information and communication technologies', *International Journal of Psychology*, 48(3), pp. 422–436. DOI: 10.1080/00207594.2012.680460.

Saunders, M., Lewis, P. and Thornhill, A. (2012) Research methods for business students. 6th ed. Essex: Pearson Education Limited.

Selye, Hans (1974) Stress without distress. Philadelphia: J.B. Lippincott Company.

Sethi, A. S., Caro, D. H. J. and Schuler, R. S. (1987) In Sethi, A. S., Caro, D. H. J. and Schuler, R. S. (Ed.), Strategic management of technostress in an information society, C. J. Hogrefe, Inc., Lewistown, NY, 1-16.

Shankar, V., Urban, G. and Sultan, F. (2002) A stakeholder perspective, concepts, implications, and future directions. *The Journal of Strategic Information Systems*, 11(3-4), pp.325-344.

Schein, E. H. (1985) Organizational culture and leadership. San Francisco: Jossey-Bass Publishers.

Shu, Q., Tu, Q. and 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*. DOI: 10.1080/10447318.2011.555313.

Srivastava, S. C., Chandra, S. and Shirish, A. (2015) 'Technostress creators and job outcomes: Theorising the moderating influence of personality traits', *Information Systems Journal*, 25(4), pp. 355–401. doi: 10.1111/isj.12067.

Tams, S. (2015) 'Challenges in technostress research: Guiding future work', 2015 *Americas Conference on Information Systems*, AMCIS 2015, pp. 1–7.

Tams, S., Legoux, R. and Léger, P. M. (2018) 'Smartphone withdrawal creates stress: A moderated mediation model of nomophobia, social threat, and phone withdrawal context', *Computers in Human Behavior*, 81, pp. 1–9. doi: 10.1016/j.chb.2017.11.026.

Tarafdar, M., Tu, Q., Ragu-Nathan B. and Ragu-Nathan, T. (2007) 'the impact of technostress on role stress and productivity', *Journal of Management Information Systems*. DOI: 10.2753/MIS0742-1222240109.

Tarafdar, M., Tu, Q. and Ragu-Nathan, T. S. (2010) 'Impact of technostress on end-user satisfaction and performance', *Journal of Management Information Systems*, 27(3), pp. 303–334. DOI: 10.2753/MIS0742-1222270311.

Tarafdar, M., Cooper, C. L. and Stich, J. F. (2017) 'The technostress trifecta - techno eustress, techno distress and design: Theoretical directions and an agenda for research', *Information Systems Journal*, pp. 6–42. DOI: 10.1111/isj.12169.

Weil, M. M. and Rosen, L. D. (1997) TechnoStress: coping with technology @work @home @play. John Wiley, New York.

WHO (2010) Authored by Stavroula, L. and Aditya, J. Health impact of psychosocial hazards at work: An overview. World Health Organization.

Yin, R. K. (2003) *Case study research: Design and methods*. 3 (5). Thousand Oaks.; Sage Publications.

Zand, D. (1972). Trust and managerial problem solving. *Administrative Science Quarterly*, 17 (1972), pp.229-239