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# HOW IT CONSUMERIZATION AFFECTS THE STRESS LEVEL AT WORK: A PUBLIC SECTOR CASE STUDY

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## Abstract

*IT consumerization refers to the adoption of consumer technologies in an enterprise context and is becoming increasingly important in both research and practice. While there are often positive effects attributed with the trend, e.g. with respect to increased performance or motivation, not much attention has yet been given to the effects it has on stress of employees. In order to close this research gap, we conduct a qualitative single case study in the public sector. We derive four major stressors that are related to IT consumerization, i.e. 1) increased reachability, 2) lack of competence, 3) workflow changes, and 4) system redundancies. These stressors are discussed with respect to related theory concepts in IS. Moreover, they are used to derive recommendations for practitioners with respect to policy development and communication. Our paper contributes to the recent discussion on theoretical implications of IT consumerization effects.*

*Keywords: IT Consumerization, Stress, Technostress, Individual Information Systems, Public Sector*

# 1 INTRODUCTION

IT consumerization refers to the adoption of consumer technology in an enterprise context and has recently been considered one of the most important IT trends (LeHong & Fenn 2012). Due to decreasing costs, modern information and communication technology (ICT) has become more widely available and an individualized setup comprising different privately-owned and company-provided IT devices is becoming increasingly common (Baskerville 2011a). Similar to other technological innovations, IT consumerization prominently affects the organizational and process structure of an organization and the way how its employees work (Nelson 1990). In this context, studies have shown positive effects of IT consumerization, for example a significant increase in worker productivity when allowing employees to work with consumer devices they are accustomed to (Dell & Intel 2012).

However, there are also downsides associated with IT consumerization. One frequently mentioned aspect in literature refers to increased stress levels due to the pressure to work longer hours (Dell & Intel 2011). If employees use consumer IT devices for their work, they are often reachable even outside the regular work hours. A study by Gens, Levitas and Segal (2011) showed that 50% of all workers have used consumer IT while on vacation. It seems plausible that such interference of work and private life induces stress for some individuals. Furthermore, IT consumerization is associated with more freedoms for employees in terms of IT choice (Harris, Ives & Junglas 2012). On the one hand, such freedom will create motivational incentives to some employees, for example the ability to partially organize their workday to their desire. On the other hand, such greater autonomy affects possible stressors like role conflict or role ambiguity for other employees, because they do not have the skills to make appropriate IT choices (Maslach & Leiter 2008). However, current research lacks a clear distinction and analysis of the background factors related to IT consumerization that impact stress, i.e. the stressors that are associated with this trend. Although IT consumerization may provide numerous positive outcomes for an organization, it is important to study the consequences of these innovations in terms of stress on individuals, as not to offset the gains..

To close this research gap, our paper addressed the following research questions:

RQ1: Which conditions created by consumerization can induce stress?

RQ2: What are potential ways organizations can react to these conditions?

Within this paper we present an exploratory case study to address the research questions. Our paper is structured as follows. First, we present suitable background literature on the topic and select a framing theory for the interpretation of the case data (section 2). Afterwards, an overview and explanation of our methodology is given (section 3), followed by the description of the case data (section 4). The discussion focuses on pointing out implications for theory and practice (section 5). The results will then be presented with regards to limitations of our research, especially in the context of idiosyncrasies of the case setting, and focus points for future research will be highlighted and discussed (section 6).

## 2 RELATED WORK

### 2.1 IT Consumerization and Individualization

Consumerization can be understood as the adoption of consumer applications, tools and devices in the workplace (Harris, Ives & Junglas 2011). It refers to „abandoning enterprise IT – both hardware and software – in favor of consumer technologies that promise greater freedom and more fun“ (Murdoch, Harris and Devore, 2010, p. 2). A significant amount of IT innovation nowadays originates in the consumer market and finds its way into organizations and professional settings from there (Cummings J, Massey AP 2009). The traditional top-down IT innovation is increasingly being replaced by a bottom-up approach (Moschella, Neal, Opperman & Taylor 2004; Harris et al. 2012). This creates several challenges for the enterprises as they have to adapt their IT infrastructure and deal with

changed work-flows, new security and compliance issues as well as integration and compatibility problems (Moschella et al. 2004; D'Arcy 2011). However, as the trend of IT consumerization is unlikely to be stopped, organizations have to consider consumer IT in their processes and establish guidelines on how it may or may not be used.

Not much research has yet been conducted in the context of IT consumerization (Niehaves, Köffer & Ortbach 2012). Most existing studies were conducted by consulting firms and focused on which particular devices were adopted and how IT strategies could be changed to address the development. Only recently, IS research has started to investigate antecedents and effects of the trend. For instance, Weiß & Leimeister (2012) identified changed expectations of users towards information systems (IS) as main driver of corporate consumer IT adoption. Users expect IT they use in professional settings to behave similarly to what they have come to know through personal use. In many cases, existing corporate IT does not fulfill these expectations, and employees turn to private IT solutions and adapt them for professional purposes. This creation of individual and decentralized solutions is also depicted by (Baskerville 2011b). Many individuals operate complex individual information systems that comprise large amounts of consumer IT in order to fulfill their work tasks. Baskerville (2011b) conceptualizes this behavior as the formation of individual information systems and categorized their components along their purpose in two overlapping classes of systems, i.e. the personal activity systems and the professional activity systems. In this sense, this IT individualization is very closely related to IT consumerization. As individualization increases, more and more consumer applications and devices are dual-used in the personal and professional system of individuals. Following idea, we see IT consumerization as the general trend of consumer IT adoption in enterprises (macro perspective) (Harris et al. 2011) where as we understand IT individualization as the process of creating individual information systems for private and business purposes according to idiosyncratic needs and preferences (micro-perspective) (Baskerville 2011a).

Recently, organizations are picking up on IT consumerization and are gradually allowing their employees to use consumer IT for professional purposes or even providing them with it. In this context existing systems are often not supportively amended, but partially or fully replaced (Baskerville 2011a). This has several effects on individuals. While some effects are considered positive, there are also negative associations with the trend. For instance, due to ubiquitous access to company data using mobile consumer devices, employees are often "less able to switch off from work" (Dell and Intel, 2011b, p. 8) during their private time. However, stress research in IS has not yet specifically targeted these effects of IT consumerization.

## **2.2 Stress Theory**

Stress is commonly defined as the result of an interaction between an individual and the environment, which includes stressful situations referred to as "stressors" (Lazarus & Folkman 1984). These stressors comprise a variety of concepts including, for instance, failure to cope with new technologies (Cooper, Dewe & O'Driscoll 2001), high workloads or lack of autonomy (Ahuja & Thatcher 2005; Moore 2000). Stressors can either be associated with negative connotations and be regarded as threats or they can be attributed positively and be seen as challenges (Lepine, Podsakoff & Lepine 2005). In this context, several opinions exist on the relationship between stressor and performance. While some authors see the relationship as strictly negative (Gilboa, Shirom, Fried & Cooper 2008), others speak of an inverted-U shaped relationship between the two constructs (McGrath 1976). This means that a moderate stress level is associated merely positively as it is both stimulating and challenging. In contrast, very low and very high stress levels negatively impact performance as they trigger boredom and anxiety (Zivnuska, Kiewitz, Hochwarter, Perrewé & Zellars 2002).

In the context of IS, authors have proposed the concept of technostress, thereby addressing the impact IT has on creating higher stress levels of individuals (Ayyagari & Grover 2011; Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan 2007). It is understood as "a modern disease of adaptation caused by an inability to cope with new technologies in a healthy manner" (Brod 1984). It can be attributed to

constant multitasking, relearning and insecurity, as a consequence of frequent IT paradigm changes (Tarafdar, Tu & Ragu-Nathan 2010) and therefore can be considered important for understanding the impact of IT consumerization on individuals. Tarafdar et al. (2011) attribute the causes of technostress to five conditions which can occur in the context of technological innovation: 1) techno-overload, referring to far greater amounts of information that needs to be handled, 2) techno-invasion, referring to situations of constant connectivity, 3) techno-complexity, addressing high efforts to learn how to cope with a particular technology, 4) techno-uncertainty, referring to frequent changes to IS that prevents building up experience, and 5) techno-insecurity, addressing the fear of being replaced due to a lack of knowledge with regards to IT.

However, these conditions are rather generic and not particularly suitable to explain stress as consequence of consumer IT adoption within enterprises. Kahn & Byosiere (1992) claim that research on organizational stress often concentrates “on the consequences of stressful situations and has neglected the causes of those situations”. Moreover, current IS research has mainly focused on the causes and effects of stress with regard to end users. However, according to recent studies, IS professionals experience stress that shares some common elements with technostress as well (Lim & Teo 1999; Sethi, King & Quick 2004). Thus, it can be considered important to develop stressors that include both perspectives and that are specifically associated with IT consumerization. Within this study, we will derive an initial set of stressors by means of an exploratory case study

### 3 RESEARCH METHODOLOGY

In order to address our research questions, we conducted an exploratory single-case study in a medium-sized city administration in Germany. The city was selected because it recently had to deal with a lot of demands for consumer IT from its employees. To obtain data for the qualitative evaluation on the subject, 17 semi-structured on-site interviews were conducted over a timespan of two days in November 2012. The position of the interviewees within the organization varied in order to gain insights from different perspectives and included e.g. head of IT, district administrator and delegate (see Table 1). The age of the interviewees ranged from 32 to 75 years. All interviews were conducted in German and then translated into English.

	# of Interviews	Departments and Functions	Interview Time	# of Words Transcribed
East Farmland	17	IT, Delegates, Head of Council, District Administrator, Building Authority	942 minutes	98,006 words

Table 1. Overview of the case study

After the interviews were conducted and transcribed, they were anonymized and sent to the interview partners for editing and to request approval for use in the research. The interview data was evaluated using grounded theory methods (Glaser, Strauss & Strutzel 1968), namely the coding procedures proposed by Strauss and Corbin (1998). During open coding relevant citations were taken from the interviews and examined discretely for similarities and differences by the four researchers to come up with distinct coding categories. The individual findings were then aggregated in a collaborative effort. Axial coding was used to derive connections between the concepts and categories identified during open coding. During this step, the researchers revisited and refined the open codes. We argue that selective coding is not appropriate for our study because reducing the variability of findings to a core category would be counterproductive.

### 4 CASE DATA

Based on the codes from the case data, we derive several main constructs related to consumerization which may impact the stress level of employees. These stressors and some associated sample codes are

shown in Table 2. The following paragraphs will explain them in more detail and give example quotes from the data.

Construct / Stressor	Sample Codes	Total number of codes
Increased Reachability	Always on call, Invasion of private life, Limiting rules, Need for flexibility, Work-life overlap	17
Lack of competence	Excessive IT complexity, Frequent updates and changes, Insufficient Knowledge, Not familiar with the new technologies	24
Workflow changes	Faster communication expected, Frequent interruptions, More impersonal communication, Technological distraction	5
System redundancies	Frequent changes of systems, Increased multi system usage, Lack of comfort, Redundancies of data	8

Table 2. Identified stressors and sample codes

#### 4.1 Increased Reachability

The case data suggests that consumerization especially affects stress levels of employees because of increased reachability. Due to ubiquitous internet access and the possibility to call anyone at any time, employees experience a blurring of boundaries between private and business life. This is commonly regarded as problematic. One employee stated:

*“A major disadvantage is, of course, the constant reachability. It can lead to having less private life and an overwhelming professional life.”*

The increased availability may lead to more interruptions of private life through business matters. This includes both voluntary breaks to increase work flexibility as well as involuntary disruptions through calls or e-mails. Many employees felt, that if there is the possibility to be reached during off-hours or vacation, these possibilities will also be used more often. One interviewee told us:

*“It certainly poses a risk in the way that if you have the possibilities they will be used more intensely. It often already leads to a disappointment of the family, when I check my mails at home.”*

Interview partners were mostly concerned with the possibility of being always on call. This was considered problematic despite the fact that there may be policies regulating the times of availability. Several interviewees explained that these policies are not always followed strictly. One employee stated:

*“Constant reachability has many disadvantages. Free time will increasingly be cut off. This often means that eight working hours a day are not enough anymore. Even if there are company policies regulating availability during off-hours, there are always people that demand that you can be reached at any time.”*

In this context, many interview partners combined increased reachability not only with the requirement for establishing rules that help limit the drawbacks but also with changing the company culture to strictly follow these rules. This was commonly associated with unspoken mutual agreements between individuals not to call off-hours.

#### 4.2 Lack of Competence

Many of the employees perceived the fast pace of technological innovation in the consumer market as a main reason why not to follow it. Feeling that current knowledge on particular technologies would lose its relevance quickly, employees considered keeping up with the developments to be stressful and not worth the effort. One employee stated:

*“It is virtually impossible to stay up to date in all areas regarding IT. Knowledge doubles about every two years which makes it impossible to follow up on everything.”*

However, not only the quantity of necessary knowledge on innovative technology solutions was considered an issue. Many interview partners said to be overwhelmed by the complexity of modern consumer IT as well. They were reluctant to actually concern themselves with these technologies and had a negative attitude up front, because they perceived it as too complicated and did not feel competent enough to use it. With respect to modern consumer IT, one interviewee explained:

*I really don't want to concern myself with these things. I would need somebody to explain it to me. I always think about the possibilities and that it would be nice to use it but I feel that I don't really want to use it. [...] For me this is just too complicated and I don't really understand it. And I don't want to, either.*

This was especially an issue for older employees. They have learned to cope with the existing IT in their area of work, but are not familiar with any technologies apart from these. The fact that they barely incorporate technology into their daily lives leaves them trailing behind when there are new innovations introduced in the workspace. One employee told us:

*“If you did not grow into it, it is really hard. [...] You can really tell that the younger people are way ahead of us. [...] The earlier you start working with these technologies, the better you are handling them later on.”*

Many rely on the help of others, which consumes additional resources, just to enable them to continue doing their actual job. This is stressful for both themselves, as they have to learn how to cope with the systems besides working on their daily tasks, as well as for the employees that have to explain the technology to them. In this context, one employee within the IT department stated:

*“There are people that know how to use it and people that will never learn it. But they just don't want to, probably because this makes it easier for them. It has to work and it is easier to continue asking for help instead of working it out by yourself. [...] It is really hard to stay calm if they ask hundreds of times.”*

### **4.3 Workflow Changes**

Consumerization also has a significant impact the way employees conduct their daily work in East Farmland. Concerning stress, most mentioned by interview partners were interruptions in the workflow that can break concentration and make it hard to work efficiently on a given task. On the one hand, the use of private IT in professional settings entails the possibility to get distracted by private matters during office hours. Pertaining to this matter, one interviewee stated:

*“There will always be employees who quickly get lost in [the distractions technology provides]. The more possibilities there are, the greater is the potential for misuse, whether intentional or not.”*

Modern consumer IT goes hand in hand with an increase in the pace of work and communication. This is especially evident when it comes to email traffic. Many employees stated that they are ubiquitously bombed with emails on all their devices and are not able to follow up on all of them. The ubiquitous nature of consumer IT changes the work and communication processes which is perceived as stressful by several employees. One of them told us:

*“It happens that you look for new e-mails way too often. That's a classic. I have developed the habit of only looking for new mail every two hours. If I do happen to see a new e-mail, I often refrain from reading it until I have finished my task at hand. Or I don't pick up the phone for every call. These things are very unnerving.”*

However, not only these direct impacts of consumer IT on communication behavior were evident in the data. There could also be observed a more subtle mechanism of changed expectations towards

employee communication that leads to increased pressure on employees. Through consumer technologies the expected speed of reply has been continuously increasing. One employee told us:

*“With an e-mail I am expected to instantly deliver a reaction. You have a lot more pressure and a lot less time.”*

#### **4.4 System Redundancies**

Modern ICT has enabled users to send and receive information through a myriad of different channels. In this context, the main stress related factor mentioned during the interviews at East Farmland was the necessity to frequently switch contexts between multiple different channels. The main reason for this can be found in the lack of integration between the newer consumer IT and existing systems. Users frequently have to switch between different mobile devices and desktop systems to receive the information they require. This is especially evident in the context of mobile phones. Here, one employee stated:

*“I found it tremendously unnerving back then to have separate systems or separate phones. The battery dies on one, and then on the other one, next I don’t know where this contact is saved etc. Ideally there would be less redundancy.”*

Because of this, employees were eager to only use their private devices even if they would be eligible to be provided with a smartphone by the organization. The redundancy as well as compatibility issues were seen as major inhibiting factors. One of the interviewees stated:

*“Why should I have another phone from my employer or the office which I have to eventually return again? [...] I am entitled to a business mobile phone, even a smart phone, but I refused. I already own one so I don’t need another one and I don’t want two phone numbers.”*

## **5 DISCUSSION**

### **5.1 Implications for Theory**

Our findings can be considered a first step in the development of a stress theory in the context of IT consumerization and individual information systems. While we focused on negative, stress-related aspects, the four stressors that could be derived from the data can be considered valuable for future researchers investigating the impact of IT consumerization on organizations. Figure 1 shows an overview on the derived effects on stress.

The codes associated with reachability describe situations in which the ubiquitous availability blurs the line between private and professional lives and leads to insufficiencies in balancing them. To satisfy the demands of both the organization as well as family and friends individuals often put themselves under great pressure. As soon as a device doubles as a private and professional tool or can be moved around and therefore is present in both private and business life, there is no clear line separating the areas. Work-life balance is often significantly impacted which may lead to higher stress levels of employees. In this sense, increased reachability is closely related to the concept of techno-invasion defined as “the need to be constantly connected” (Tarafdar et al. 2011, p. 116). Similarly, Ayyagari & Grover (2011) speak of a work-home conflict and state that “constant connectivity provided by ICTs encroaches on the personal space of individuals” (p. 848). They also develop a second construct called invasion of privacy which they relate to the feeling of being always at work.

Our construct lack of competence describes situations in which users are overwhelmed by the complexity of technology they have to work with. They are frequently forced to readjust to changes and innovations of this technology and also find it hard to catch up to current technological developments due to insufficient prior knowledge. This resembles the construct of techno-complexity describing situations where “the complexity associated with IS forces professionals to spend time and effort in learning and understanding how to use new applications” (Tarafdar et al. 2011, pp. 116-117).



Other related concepts in IS research include computer anxiety or computer self-efficacy (e.g. Bennett & Perrewé 2002). For tech-savvy workers, however, competences of selecting appropriate consumer IT and their use is usually not an issue. For them, IT consumerization could thus actually help alleviate the phenomenon of techno-complexity, thereby reducing stress at work. These differences between younger and older workers with respect to IT adoption have been addressed e.g. by digital divide research (e.g. Rice 2003; Loges & Jung 2001).

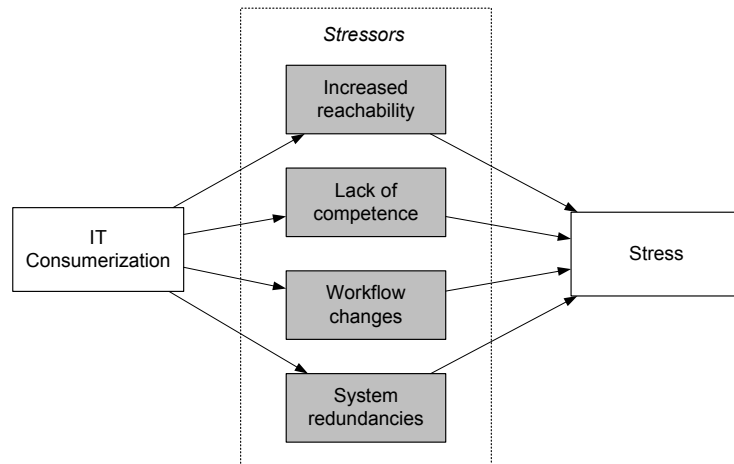


Figure 1. Effects of IT Consumerization on Stress

The codes associated with the stressor workflow changes relate to the issue that individuals need to process more information in a given period of time than they are able to handle. Interviewees have described to be sometimes overwhelmed by the amount of information they have to process. It also relates to increased expectations individuals face when it comes to attending to those matters. This often requires multitasking, where workers need to switch contexts to deal with incoming information. Furthermore, it creates interruptions in their workflow and thus prevents them from working efficiently. In this sense, it is closely related to techno-overload (Tarafdar et al. 2011). Also, it can be associated with work overload which refers to the increase in speed of work flow and expectations of productivity induced by constant connectivity (Ayyagari & Grover 2011).

Our last identified construct refers to stress induced by system redundancies and incompatibilities. This stressor cannot be associated with existing concepts in IS literature. While Karimi, Somers & Gupta (2004) develop a compatibility construct, it is not related to stress but to IS satisfaction. Moreover, to our knowledge, the more important redundancy aspect is not addressed in IS research to this point in time. Thus, while we were able to match three of our derived stressors to existing IS constructs in the context of technostress, we did not find any research addressing the issue of system redundancies in current literature. Therefore, this stressor seems to be unique for IT consumerization in terms of dual-use (Moschella et al. 2004) and could be explored further by future research.

## 5.2 Implications for Practice

The identified stressors may be used by practitioners to guide their implementation strategies with respect to consumer IT at the workplace. In this context, several principles can be derived based on the identified stressors.

*Implement contacting policies.* The increased reachability calls for the implementation of policies regarding the times an individual may be contacted by the organization. As a recent example, Volkswagen technically restricted its mobile device access after work hours (BBC News, 2011). However, the case study revealed that it is not enough to implement consumerization-related policies but that these policies need to be communicated effectively within the organization. In addition, it is

reasonable that not all employees will appreciate technology restrictions that are centrally imposed by the organization.

*Consider the private life.* Nowadays people have an individual desire to integrate or separate the private and work roles (Rothbard, Phillips & Dumas 2005). Such personal views should be considered by organizations, particularly in the context of IT equipment. If the company culture is not changed towards accepting the private life and respecting the need to minimize disturbances, employees will increasingly be affected in their stress level once consumer IT is adopted. Thus, especially managers need to function as role models and closely evaluate the need to contact their employees during off-hours or vacation. Ideally, contacting is kept to a minimum, thereby improving both the work climate as well as the stress level of employees.

*Create possibilities for knowledge exchange.* The case data revealed that non-tech-savvy employees often fear to change their existing IT infrastructure and adopt consumer IT for work purposes. In the East Farmland case, this could especially be observed for older employees. From a managerial view, it is important to reduce this fear to take advantage of existing innovation potential. In many cases, the reluctant employees are knowledgeable experts for their particular processes but did not grow into using innovative IT tools. Thus, establishing internal mechanisms for knowledge exchange between them and younger, tech-savvy workers may lead to more efficient bottom-up IT innovation.

*Re-evaluate the adoption strategy.* There have been several strategies proposed in recent publications on how to deal with IT consumerization. For instance, Harris, Ives & Junglas (2012) developed a strategy framework reaching from a laissez-faire policy where everything is tolerated but not regulated all the way to an authoritarian strategy with tight and strict control over hard- and software entering the enterprise. The results of our case study suggest that if consumer IT is handed out by the organization, there may be acceptance problems due to redundancies or compatibility issues. Thus, a close evaluation of the IT usage among employees is necessary, especially with respect to private devices, in order to prevent frustration.

## 6 CONCLUSION

Within this paper, we conducted an exploratory analysis of potential stressors associated with IT consumerization. We were able to identify four major stressors that may influence the stress level of employees, i.e. 1) increased reachability, 2) lack of competence, 3) workflow changes, and 4) system redundancies. We were able to link them to several related constructs in IS literature which will open up possibilities for future theory building efforts. As current practitioner literature about IT consumerization emphasizes positive aspects of IT consumerization, our paper contributes to an objective discussion about theoretical implications. In addition, we also provide practitioners with an initial set of guidelines on how to address the different stressors by means of policy and cultural changes.

However, our findings are beset with certain limitations. First of all, we only took into account one case organization. Due to the limited number of 17 interviews, it may be the case that there are additional stressors associated with IT consumerization which we could not derive from the case data. In addition, because the interviews were conducted within a public sector organization, results may be biased due to idiosyncrasies of the organization type. Moreover, we recognize that consumer technology can also take a dual role regarding stress creation (Patel, Ryoo & Kettinger 2012). For instance, the increased mobile usage of consumer IT will also increase flexibility of work times and locations. These aspects were not yet considered by our research. However, besides these limitations, we believe that our results are still valid and may be projected to the private sector due to the fact that we were able to find similar technostress constructs in IS research conducted in private sector organizations.

The described limitations open up several possibilities for future research. On the one hand future studies could further elaborate upon how organizations can overcome the stress-related downsides by

means of suitable implementation strategies and policies. On the other hand, a major question to address concerns the positive effects of the adoption of consumer IT in an enterprise context. While we only addressed the negative aspects of consumerization in this study, there are stress reducing and performance enhancing aspects associated with this trend as well. In this regard, not only the derivation of these concepts but also the identification of context factors that moderate IT consumerization effects with respect to stress and performance can be considered an important research objective.

## References

- Ahuja, M.K. & Thatcher, J.B. (2005). Moving Beyond Intentions and Toward the Theory of Trying: Effects of Work Environment and Gender on Post-Adoption Information Technology Use. *MIS Quarterly*, 29(3), 427–459.
- Ayyagari, R. & Grover, V. (2011). Technostress: technological antecedents and implications. *MIS Quarterly*, 35(4), 831–858.
- Baskerville, R. (2011a). Design Theorizing Individual Information Systems. Proceedings of the Pacific Asia Conference on Information Systems (PACIS).
- Baskerville, R. (2011b). Individual information systems as a research arena. *European Journal of Information Systems*, 20(3), 251–254. Nature Publishing Group.
- Bennett, J. & Perrewé, P.L. (2002). An Empirical Examination of Individual Traits as Antecedents to Computer Anxiety and Computer Self-Efficacy. *MIS Quarterly*, 26(4), 381–396.
- Brod, C. (1984). Technostress: the human cost of the computer revolution. Addison-Wesley.
- Cooper, C.L.; Dewe, P. & O’Driscoll, M.P. (2001). *Organizational Stress: A Review and Critique of Theory, Research, and Applications*. Thousand Oaks, CA, USA: Sage Publications.
- Cummings J, Massey AP, R. (2009). Web 2.0 proclivity: understanding how personal use influences organizational adoption. 27th ACM international conference on design of communication. Bloomington.
- D’Arcy, P. (2011). CIO Strategies for Consumerization: The Future of Enterprise Mobile Computing. Dell CIO Insight Series.
- Dell & Intel. (2011). *The Evolving Workforce: The Workforce Perspective*. Round Rock, Texas, USA.
- Dell & Intel. (2012). *The Evolving Workforce. Report #3: The Business Perspective and Research Summary. Part 2: Productivity*. Round Rock, Texas, USA.
- Gens, F.; Levitas, D. & Segal, R. (2011). 2011 Consumerization of IT Study: Closing the Consumerization Gap. Framingham, Massachusetts, USA: IDC.
- Gilboa, S.; Shirom, A.; Fried, Y. & Cooper, G. (2008). A meta-analysis of work demand stressors and job performance: Examining main and moderating effects. *Personnel Psychology*, 61(2), 227–271.
- Glaser, B.G.; Strauss, A.L. & Strutzel, E. (1968). The Discovery of Grounded Theory; Strategies for Qualitative Research. *Nursing Research*, 17(4), 364.
- Harris, J.G.; Ives, B. & Junglas, I. (2011). The Genie Is Out of the Bottle: Managing the Infiltration of Consumer IT Into the Workforce. Accenture Institute for High Performance.
- Harris, J.G.; Ives, B. & Junglas, I. (2012). IT Consumerization: When Gadgets Turn Into Enterprise IT Tools. *MIS Quarterly Executive*, 2012(September), 99–112.
- Kahn, R. & Byosiére, P. (1992). Stress in organizations. In D. Hough (Ed.), *Handbook of industrial and organizational psychology* (Vol. 3, pp. 571–650). Palo Alto, CA, US: Consulting Psychologists Press.
- Karimi, J.; Somers, T.M. & Gupta, Y.P. (2004). Impact of Environmental Uncertainty and Task Characteristics on User Satisfaction with Data. *Information Systems Research*, 15(2), 175–193.
- Lazarus, R.S. & Folkman, S. (1984). *Stress, appraisal, and coping*. New York (Vol. 116). Springer.
- LeHong, H. & Fenn, J. (2012). *Hype Cycle for Emerging Technologies, 2012*. Stamford, Connecticut, USA.

- Lepine, J.A.; Podsakoff, N.P. & Lepine, M.A. (2005). A meta-analytic test of the challenge stressor - hindrance stressor framework: An explanation for inconsistent relationships among stressors and performance. *Academy of Management Journal*, 48(5), 764–775. Academy of Management.
- Lim, V.K.G. & Teo, T.S.H. (1999). Occupational stress and IT personnel in Singapore: factorial dimensions and differential effects. *Int. J. Inf. Manag.*, 19(4), 277–291. Amsterdam, The Netherlands, The Netherlands: Elsevier Science Publishers B. V.
- Loges, W.E. & Jung, J.Y. (2001). Exploring the Digital Divide: Internet Connectedness and Age. *Communication Research*, 28(4), 536–562. Sage Publications.
- Maslach, C. & Leiter, M.P. (2008). Early predictors of job burnout and engagement. *The Journal of applied psychology*, 93(3), 498–512.
- McGrath, J.E. (1976). Stress and behavior in organizations. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1351–1395). Chicago: Rand McNally.
- Moore, J.E. (2000). On the Road to Turnover: An Examination of Work Exhaustion in Technology Professionals. *MIS Quarterly*, 24(1), 141–168.
- Moschella, D.; Neal, D.; Opperman, P. & Taylor, J. (2004). The “Consumerization” of Information Technology. *El Segundo: CSC Research White Paper*.
- Nelson, D.L. (1990). Individual Adjustment to Information-Driven Technologies: A Critical Review. *MIS Quarterly*, 14(1), 79–98. *MIS Quarterly & The Society for Information Management*.
- Niehaves, B.; Köffer, S. & Ortbach, K. (2012). IT Consumerization – A Theory and Practice Review. *Proceedings of the Eighteenth Americas Conference on Information Systems*. Seattle, Washington, USA.
- Patel, J.; Ryoo, S. & Kettinger, W.J. (2012). Theorizing the Dual Role of Information Technology in Technostress Research. *Proceedings of the Eighteenth Americas Conference on Information Systems*. Seattle, Washington, USA.
- Rice, R. (2003). Comparing internet and mobile phone usage: digital divides of usage, adoption, and dropouts. *Telecommunications Policy*, 27(8-9), 597–623. Elsevier.
- Rothbard, N.P.; Phillips, K.W. & Dumas, T.L. (2005). Managing Multiple Roles: Work-Family Policies and Individuals? *Desires for Segmentation*. *Organization Science*.
- Sethi, V.; King, R.C. & Quick, J.C. (2004). What causes stress in information system professionals? *Communications of the ACM*, 47(3), 99–102. New York, NY, USA: ACM.
- Strauss, A.L. & Corbin, J. (1998). *Basics of qualitative research. Techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Tarafdar, M.; Tu, Q.; Ragu-Nathan, B. & Ragu-Nathan, T.S. (2007). The Impact of Technostress on Role Stress and Productivity. *Journal of Management Information Systems*, 24(1), 301–328.
- Tarafdar, M.; Tu, Q. & Ragu-Nathan, T.S. (2010). Impact of Technostress on End-User Satisfaction and Performance. *Journal of Management Information Systems*, 27(3), 303–334.
- Tarafdar, M.; Tu, Q.; Ragu-Nathan, T.S. & Ragu-Nathan, B. (2011). Crossing to the Dark Side: Examining Creators, Outcomes, and Inhibitors of Technostress. *Communications of the ACM*, 54(9), 113–120.
- Weiß, F. & Leimeister, J.M. (2012). Consumerization, IT Innovations from the Consumer Market as a Challenge for Corporate IT. *Wirtschaftsinformatik*.
- Zivnuska, S.; Kiewitz, C.; Hochwarter, W.A.; Perrewé, P.L. & Zellars, K.L. (2002). What is too much or too little? The curvilinear effects of job tension on turnover intent, value attainment, and job satisfaction. *Journal of Applied Social Psychology*, 32, 1344–1360.