

Dual Use of Mobile IT and Work-to-Life Conflict in the Context of IT Consumerization

Completed Research Paper

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Abstract

Using the same technologies for both work and private life is an intensifying phenomenon. Mostly driven by the availability of consumer IT in the marketplace, individuals—more often than not—are tempted to use privately-owned IT rather than enterprise IT in order to get their job done. However, this dual-use of technologies comes at a price. It intensifies the blurring of the boundaries between work and private life—a development in stark contrast to the widely spread desire of employees to segment more clearly between their two lives. If employees cannot follow their segmentation preference, it is proposed that this misfit will result in work-to-life conflict (WtLC). This paper investigates the relationship between organizational encouragement for dual use and WtLC. Via a quantitative survey, we find a significant relationship between the two concepts. In line with boundary theory, the effect is stronger for people that strive for work-life segmentation.

Keywords: IT Consumerization, BYOD, Work-to-Life conflict, Mobile IT

Introduction

Information technology (IT) plays a significant role in the lives of many individuals. Enabled by falling costs, increased functionality, and ease of use, individuals are increasingly capable and willing to fabricate their own information system (IS). Termed individual information systems (Baskerville 2011), these systems cater to individual needs and preferences. However, when creating such systems, a variety of factors, including usefulness or peer influence, impact an individual's technological decision-making (Ortbach, Köffer, Bode, and Niehaves 2013). More often than not, the decision to use an individual IS spills over from the private realm to the business realm (Baskerville 2011; Sarker, Xiao, Sarker, and Ahuja 2012); individuals tend to apply their privately acquired consumer IT, including smartphones and social media applications, to their job (Harris, Ives, and Junglas 2012). This increased use of consumer IT in the workplace is captured by the term IT consumerization. It has been argued that companies that embrace the IT consumerization trend are able to achieve productivity, employee satisfaction, and innovation gains (Harris et al. 2012).

A workplace open to IT consumerization is expected to be more flexible and to provide employees with more freedom (Moschella, Neal, Opperman, and Taylor 2004). Granting employees more autonomy in choosing the technology that they want to use for work is one of many options organizations can elect to address this trend (Harris et al. 2012). As a result, IT consumerization furthers the blurring of boundaries between work and life. More and more employees make dual use of their work or private IT and use it for both work and private purposes—particularly in the context of mobile devices (Yun, Kettinger, and Lee 2012). When provided with sophisticated devices by their employer, for example, individuals are often less inclined to purchase another device solely for personal purposes.

The practitioner literature has mostly drawn a positive picture of the consequences raised by IT consumerization (Niehaves, Köffer, and Ortbach 2012), but research on mobile IT has always found the role of consumer IT to be ambiguous. Mobile phones have been characterized as a paradoxical technology, because they blur the boundaries between work and life (Jarvenpaa and Lang 2005). On one hand, this blurring creates flexibility and independence, but, on the other, constraints and dependencies (Arnold 2003; Jarvenpaa and Lang 2005). For instance, while mobile access to emails can be considered productive, they may, in some situations, infringe upon personal life or disrupt work flows (Middleton and Cukier 2006).

In this paper, we argue that IT consumerization encompasses additional consequences that go beyond the paradoxical nature of mobile IT. First, the dual use of IT (i.e., work use and non-work use), combined with private ownership is an apparent driver behind the blurring of work-life boundaries (Schalow, Winkler, Repschläger, and Zarnekow 2013). Second, popular consumer IT “intensifies this effect by affecting more people and more work functions, and doing so more ubiquitously” (Yun et al. 2012 p. 143).

However, this electronic integration between work and life stands in stark contrast to an individual's segmentation preference, or his or her wish to keep work life separate from private life (Edwards and Rothbard 2000). Since individuals may vary in their need to keep work and life separated, a misfit between technology and preference may result in a work-to-life conflict (WtLC) (Ashforth, Fugate, and Kreiner 2000; Kreiner 2006; Rothbard, Phillips, and Dumas 2005). Numerous research studies have validated stress, often conceptualized as work exhaustion, as an outcome variable of WtLC—outside of (e.g., Kreiner 2006) as well as within the IS context (Ahuja, Chudoba, Kacmar, McKnight, and George 2007; Yun et al. 2012). Research also intensely discusses the impact of stress on job performance, indicating severe negative consequences for performance at high stress levels (Zivnuska, Kiewitz, Hochwarter, Perrewé, and Zellars 2002). Along the same lines, we expect WtLC to carry an effect on job performance. Studies of knowledge workers have shown that lowering the boundaries between work and life spaces has a negative impact on employee productivity (Cousins and Robey 2005).

Today, with the proliferation of mobile IT, particularly smartphones, it is not unusual anymore to respond to work requests during private hours and personal requests during working hours. Frontiers between work and personal life are vanishing—and with them, the way work is conducted. Meanwhile, organizations face increasing pressure to preserve their work culture while minimizing the negative impacts that might interfere with an employee's work-life balance (Sarker et al. 2012). Research confirms that the right balance between work and personal life impacts psychological health and is a key

component of an individual's well-being (OECD 2013). Individuals that have a preference to electronically separate work from life spaces will increasingly struggle to do so, given the intensifying pressure put forth by IT consumerization. Already, employees are struggling to find answers in order to combat the demands of mobile technology when managing their work and life spaces (Groysberg and Abrahams 2014).

It is therefore important to understand the developments of IT consumerization with regards to WtLC. A rigorous investigation of the topic is still missing from the literature, and a study by Yun et al. (2012) notes that extant studies only provides inconsistent results concerning WtLC. Yun et al. (2012) also call for studies that consider the formality of organizational support with regard to WtLC. Our study tries to close this research gap by analyzing the effects of an organization's encouragement to use IT for both private and work purposes on the battle an employee faces when work and personal lives are blurring. More specifically, *we investigate the following research question: How does organizational encouragement for dual use of mobile IT affect work-to-life conflict?*

The remainder of this paper is organized as follows. In the following section, we define our major concepts, namely IT consumerization and WtLC. Next, we develop our research model and hypotheses. Afterwards, we explain our methodology, in particular data collection and analysis. After presenting our results in, the paper concludes with a discussion of results, a formulation of implications, limitations, and potential future research.

Conceptual Background

IT Consumerization and Dual Use

The term IT consumerization was first coined by Moschella et al. (2004), who recognized that the same devices and applications are used by businesses and consumers alike. Today, many technologies that are used for work purposes originate from the consumer market (Harris et al. 2012). Two main triggers are behind this IT consumerization trend. Firstly, the technical progress regarding mobile devices (e.g., smartphones), public network infrastructures (e.g., ubiquitous internet access), and value-added applications (e.g., apps with location-based services); and secondly, a successive generation of users that is ever more tech-savvy (Moschella et al. 2004).

IT departments are increasingly forced to take action in order to avoid an increasing influx of non-approved (i.e. shadow) IT within the company (Behrens 2009), and questions about IT tools are more and more viewed as an important criterion for employer attractiveness (Cisco 2011; Loose, Weeger, and Gewald 2013). Potential strategies to respond to the IT consumerization trend are widely discussed in the practitioner literature (Niehaves et al. 2012). For instance, a company that has strict IT policies in place may allow employees to choose among a pre-approved set of IT tools, sometimes referred to as "choose-your-own-device" (CYOD) (D'Arcy 2011), or to provide company IT that is "personally enabled" (COPE), i.e. company IT can be dual-used for personal matters (Kaneshige 2013). Alternatively, a company may allow the private ownership of IT, also referred to as "bring-your-own-device" (BYOD). In order to support these approaches, some companies have started to issue employees an IT budget that can be used for personal IT acquisitions or to cover the cost of personal mobile phone plans (Cisco 2011; Unisys 2010).

Aspect	Underlying question	Before IT consumerization	With IT consumerization
Market	Does the IT used for business originate from the consumer or business space?	Business space	Consumer and business space
Ownership	Do companies allow users to privately own the IT that they use to perform work tasks?	Mostly, no private ownership allowed	BYOD or CYOD strategies
Costs	Do companies take on some of the costs for IT that is dual used for both work and private purposes?	Dual use of IT not permitted or only implicitly tolerated	Take on some of the acquisition and mobile plan costs

Along the above mentioned aspects market, ownership, and costs, Table 1 describes situations in which IS consumerization affects boundaries between work and life. Only a few research studies have tackled the relationship between IT consumerization and WtLC. A study conducted in a public sector organization showed that IT consumerization creates a need for work-life separation (Niehaves, Köffer, Ortbach, and Reimler 2013). Another study looked at the blurring boundaries caused by the dual use of IT and found that employees who use private IT at work are also more willing to use work IT for private purposes (Schalow et al. 2013). Yet another study showed that increased flexibility through “office home smartphones,” or short “OHS”, increase perceptions of work overload (Yun et al. 2012). The authors define an OHS as a “device that can be employed for personal use as well as for nonpersonal, nonfamily purposes” (Yun et al. 2012 p. 124). The study also points out that while work overload is a strong predictor of WtLC, there is no direct effect between flexibility and productivity through OHS and WtLC.

For the purpose of this paper, we will adapt the “office home smartphone” definition in order to explicate dual use—with two modifications. First, we expand its focus from smartphones to mobile IT, including the installed applications. In doing so, we acknowledge that software is an essential part of the IT consumerization trend (Junglas and Harris 2013; Moschella et al. 2004). And second, we use the term “dual use for work and life” instead of office-home since it better reflects the ubiquitous nature of mobile IT (Gebauer and Shaw 2010). Accordingly, we define dual use as *the use of a single IT device or application for both private and work activities*. Note that dual use does not necessarily imply the use of privately owned IT, as witnessed, for example, in CYOD approaches. The use of company provided IT for private purposes equally qualifies as dual use.

Work-to-Life Conflict

Extant literature has extensively studied the notion of work-family conflict, defined as a “form of inter-role conflict in which the role pressures from the work and family domains are mutually incompatible in some respect” (Greenhaus and Beutell 1985 p. 77). Such a conflict might arise due to time-based, strain-based, or behavior-based constraints. For example, a time-based conflict is present if the time requirements for both work and life overlap. A strain-based conflict arises when strain put on one role in one domain affects an individual’s role in the other domain, for example in form of fatigue. And a behavior-based conflict happens when behaviors in one role are incompatible with expected behaviors in the other.

Numerous synonyms for work-family conflict exist throughout the literature, including any permutation of the word pairs {work-(to)-home, work-(to)-family, work-(to)-life} and {conflict, balance, interference}. In accordance with Yun et al. (2012), we use the term work-to-life conflict for the purpose of this paper for several reasons. First, the term “life” better reflects the current developments and is inclusive of things outside the workplace and does not solely focus on family aspects. And second, the word “to” between work and life differentiates our study from others that investigate disruptions stemming from private life interfering with the workplace. Moreover, practitioner literature frequently uses the term work-life balance (Perlow and Porter 2009). Hill, Hawkins, Ferris, and Weitzman (2001) define work-life balance as the ability of an individual to balance the timely and emotional requirements of work and life. In this sense, a prolonged WtLC is likely to result in an imbalance between work and life.

In the case of time-based conflict that leads to a blurring of work and personal life, boundary theory suggests that such an overlap “may foster confusion and anxiety about which role identity is or should be most salient” (Ashforth et al. 2000 p. 480). In addition, the flexibility and permeability of roles across domains, as witnessed for example in strain-based or behavior-based conflicts, may cause interruptions of role tasks without prior warning. Thus, a high work-life integration enabled through technology might be a source of heightened WtLC. At the same token, however, the very same integration might also be a source for lowered WtLC, since it eases transitioning between roles from one domain into the other (Ashforth et al. 2000).

The notion of WtLC, including the above-mentioned synonyms, has been extensively studied in organizational science and applied psychology. (For a detailed overview of studies, please refer to Yun et al. (2012)). Prior IS research has studied WtLC as both, a dependent and independent variable, in a diverse set of contexts, including technostress, technology addiction, mobile workforce and gender differences. Table 2 provides an overview of the published studies on the topic, considering journals in the

AIS basket, as well as IS journals that have a ranking point average equal to or below 20 in the journal ranking meta review (Aisnet.org 2013). Of the ten studies, six took a quantitative, three a qualitative and one a conceptual review approach without empirical data collection.

Considering the small number of research papers in the IS field when compared to other fields, we suggest that WtLC is still an under-researched concept. The IT consumerization trend in particular challenges individuals and organizations on an ongoing basis to re-consider their respective approaches to WtLC. Furthermore, there is also a lack of research about boundary theory assumptions in the context of technology use with regards to work-life segmentation culture and preferences. For instance, a study conducted by Yun et al. (2012) found no impact of segmentation preference on WtLC. Other studies do not consider these concepts at all.

Table 2. Work-to-Life Conflict studies in the IS literature

Authors	Concept	Related variables ^[1] _[2]	Methodology	Context
(Yun et al. 2012)	Work-to-Life Conflict	<ul style="list-style-type: none"> ← Flexibility (+/-, ns) ← Productivity (+/-, ns) ← Segmentation preference (+, ns) ← Segmentation culture (-) ← Work overload (+) → Stress (+); → User resistance (+) 	Quantitative study with 300 Korean smartphone users.	Dual use of smartphones that are used for personal uses as well as for non-personal, work-related uses.
(Ayyagari and Grover 2011)	Work-home conflict	<ul style="list-style-type: none"> ← Presenteeism (+) → Strain (+) 	Quantitative study of 661 individuals.	Investigation of stress levels due to IT use.
(Bontis, Turel, and Serenko 2011)	Work-family conflict	<ul style="list-style-type: none"> ← Technology-family conflict (+) ← Work overload (+) 	Empirical study of 241 organizational mobile email users.	Technology addiction to mobile email.
(Sarker, Chatterjee, and Valacich 2010)	Work-life conflict	<ul style="list-style-type: none"> ← Time difference (+) ← Communication types (+) ← Number of locations (+, ns) 	Quantitative study with 141 globally distributed systems developers.	Globally distributed software development.
(Cousins and Varshney 2009)	Work-life balance	<ul style="list-style-type: none"> ← Life space transitions ← Accessibility ← Space utilization 	10 qualitative case studies with mobile workers.	Managing ubiquitous computing environments to support work-life balance.
(Trauth, Quesenberry, and Huang 2009)	Work-life balance	<ul style="list-style-type: none"> → Retention of women in IT 	90 minute interviews with 92 female practitioners	Organizational factors that influence women retention in the IT workforce.
(Ahuja et al. 2007)	Work-family conflict	<ul style="list-style-type: none"> ← Job autonomy (-, ns) ← Work overload (+) → Work exhaustion (-) → Organizational commitment (-, ns) 	Semi structured interviews with 12 IT road workers. Quantitative study by 171 IT road workers.	Turnover intention among IT road warriors (IT professionals who spend most of their workweek away from home).
(Armstrong, Riemenschneider, Allen, and Reid 2007)	Work-family conflict	<ul style="list-style-type: none"> ← Work stress ← Managing family responsibilities ← Work schedule flexibility ← Job qualities 	Focus group meetings with 39 women, working in the IT department.	Study of advancement and voluntary turnover of women in IT.
(Ahuja 2002)	Work-family conflict	<ul style="list-style-type: none"> ← Social expectations (+) ← Occupational culture (+) ← Lack of role models (+) → Career choice in IT (-) → Persistence in IT (-) 	Creation of a theoretical model. No empirical testing.	Barriers for women in the information technology profession.
(Duxbury, Higgins, and Mills 1992)	Work-family conflict	<ul style="list-style-type: none"> ← After-hours telecommuting (+) ← Gender (+) ← Dual-career of men and wife (+) 	Study of 504 married managers who use a computer in their job.	Telecommuting, where work is done at home outside of regular hours.

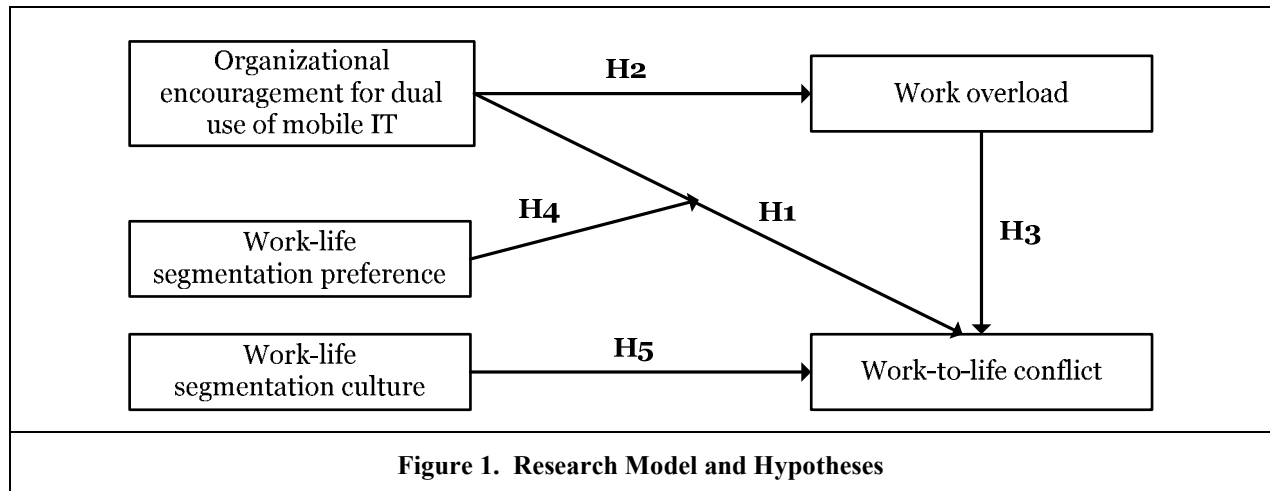
[1] A left (right) arrow indicates that WtLC was modeled as a dependent (independent) variable.

[2] A plus (minus) sign indicates a measured or proposed positive (negative) correlation between concepts. Studies that found no significant correlation are marked with "ns". Variables with no plus or minus sign indicate that the authors did not formulate explicit hypotheses; instead, the concept was the result of a qualitative or argumentative analysis.

Hypotheses Development

Based on the conceptual background of our study, we propose a research model that investigates the effects of organizational encouragement for dual use of IT on WtLC. First, our concepts and relationships reflect the influence of particular organizational policies on WtLC. Second, by drawing on boundary theory, we measure the influence of work-life segmentation culture and preferences on WtLC. We included the concept of work overload in our model, since it is a widely acknowledged predictor of WtLC in the literature. Table 3 summarizes our definition of the concepts. Figure 1 depicts our research model. In the following, we will discuss each in detail.

Concept	Definition
Work-to-Life Conflict due to mobile IT	Inter-role conflict in which the role pressures from work-related IT use interfere or are incompatible in some respect with private role pressures (adapted from Greenhaus and Beutell (1985))
Organizational encouragement for dual use of mobile IT	Organizational promotions, rules and strategies that encourage the dual use of a single IT device or application for both private and work activities
Work overload	An “individual’s perception that they cannot perform a task because they lack critical resources”, such as time, accessibility to a resource (quantitative overload), or a required skill to solve the task (qualitative overload) (Ahuja and Thatcher 2005 p. 435).
Work-life segmentation preference	Degree to which an employee prefers to keep work matters out of personal life (adapted from Kreiner (2006)).
Work-life segmentation culture	An individual’s perception of the extent to which the workplace and its surroundings allow the separation of work life from personal life (adapted from Kreiner (2006)).



Organizational Encouragement for Dual Use of Mobile IT

Following the example of teleworking environments (Duxbury et al. 1992), a workplace that provides substantial freedom and autonomy enables employees to schedule their activities according to their personal segmentation preferences (Armstrong et al. 2007). However, a study conducted by Ahuja et al. (2007) did not find a significant direct relationship between job autonomy, defined as the degree to which a job provides substantial freedom (Hackman and Oldham 1976) and WtLC.

The dual use of mobile IT is likely to increase an individual's sense of job autonomy since it further intertwines private and work schedules as well as procedures. It is therefore not surprising that autonomy and freedom are often used synonymously in the context of IT consumerization (Dell and Intel 2011). Elements of job autonomy can also be found in the case studies by Cousins and Varshney (2009). They advocate individuals to better manage their accessibility and reachability as well as to pay closer attention to their transition patterns between work and life spaces when using ubiquitous technologies, as technology "facilitates frequent switching from work to life activities and vice versa" (p. 118).

Besides promoting job autonomy, using mobile IT for both work and private life is likely to interfere with established boundaries between work and life spaces. Dual use can give rise to a variety of conflicts with regard to WtLC. For instance, dual usage might lead to time-based conflicts when receiving email notifications during off-hours or on vacation; it may also lead to strain-based conflicts when an employee is exhausted due to a business call after work hours to accommodate the international counterpart; it may also lead to behavior-based conflicts when employees receive work-related requests while attending a family gathering. Particularly individuals that are using one smartphone for both work and private purposes set themselves up to be easily reached by others. Those individuals are more likely than others to receive phone calls from friends during working hours and to be contacted by colleagues during their private time. As a result, individuals might have "feelings of being overwhelmed by being accessible and working all the time" (Cousins and Varshney 2009 p. 118). This behavior has been conceptualized under the term presenteeism, defined as "the degree to which the technology enables users to be reachable" (Ayyagari and Grover 2011 p. 10). The authors measure a strong relationship between presenteeism and WtLC. These findings confirm the assumption that mobile IT, including cellphones and laptops, contributes to negative outcomes through increased presenteeism (Davis 2002; Jarvenpaa and Lang 2005). Likewise, Middleton and Cukier (2006) identified mobile email usage patterns that are dangerous, distracting, anti-social and interfere with work-life boundaries.

Based on this, we conclude that organizational means to encourage the dual use of mobile IT are likely to trigger the aforementioned effects. Furthermore, policies and strategies have a direct effect, since they reflect the culture and values of the organization (Rothbard et al. 2005). Hence, we hypothesize:

H1: Organizational encouragement for dual use of mobile IT increases work-to-life conflict.

Studies that have investigated presenteeism and job autonomy in relation to WtLC also included the concept of work overload. While presenteeism was found to be a strong predictor of work overload (Ayyagari and Grover 2011), job autonomy was observed to lessen work overload (Ahuja et al. 2007). The latter finding is in contrast to the findings by Yun et al. (2012), who investigated features of smartphones as antecedents of work overload. While there was no direct influence present on WtLC, flexibility, a concept similar to autonomy, exerted a positive effect on work overload. In the same study, usefulness, conceptualized as productivity was found to have a negative impact on work overload. This finding is in line with Ayyagari and Grover (2011), who asserted that technology, which enhances users' abilities to do things faster and to be more productive reduces work overload. Likewise, a study by Cousins and Varshney (2009) found that by using smartphones, individuals try to maximize their productive time (e.g., being able to work while traveling).

Although research has been inconclusive, we assert that the effect of dual use of mobile IT is intensifying the perceptions of work overload for two reasons. First, we argue that dual use has a stronger effect on flexibility than on productivity with mobile IT, thus, increasing work overload (Yun et al. 2012). While dual use influences only a subset of features of mobile IT (e.g., calendar synchronization) that can enhance usefulness, it affects a broad range of business operations concerning employees' control and flexibility in deciding how to perform tasks (Yun et al. 2012). And second, the effect of presenteeism is strengthened through dual use as employees are unlikely to switch off their dual used smartphones. Based on the argumentation above, encouraging dual use of mobile IT increases the work overload of employees. Thus, we can hypothesize:

H2: Organizational encouragement for dual use of mobile IT increases perceived work overload.

Work Overload

Previous research has indicated that knowledge workers, particularly IS professionals, are susceptible to work overload (Moore 2000). In the context of work exhaustion and stress, several IS studies came to the conclusion that a positive relationship exists between work overload and WtLC (see Table 2). In other words, the higher the work load is perceived, the higher the WtLC. In fact, a study conducted by Ahuja et al. (2007) described work overload as *the* major reason for both work exhaustion and WtLC among IT road warriors, i.e., employees that work at clients' sites and only rarely, or not at all, in their corporate offices. Due to their workplace flexibility, those employees rely heavily on mobile IT.

In the context of mobile computing, Bontis et al. (2011) found that elevated levels of work overload along with an increased technology-family conflict fosters WtLC. Overworked employees may feel stressed and drained, and therefore might be reluctant to spend time on family-related issues. The study suggested that individuals who spent "family-time" while working with an invasive device face family disagreement. Likewise, in their study about office-home smartphones, Yun et al. (2012) found a strong relationship between work overload and WtLC after using a smartphone for work purposes. The authors emphasize the influence on work overload to be caused by the enhanced flexibility of smartphones. In general, users of mobile IT have an increased degree of freedom; they decide when, how, and where to perform their job (Davis 2002). Considering past research, we therefore hypothesize:

H3: Perceived work overload increases work-to-life conflict.

Work-Life Segmentation Preference

The consequences of work-life segmentation or integration on WtLC, stress, and job satisfaction were closely researched in the context of boundary theory. Recall that individuals vary in their preferences to keep work and life integrated or separated (Kreiner 2006; Rothbard et al. 2005). With regard to boundary theory, it can be assumed that an individual's preferences for higher work-life segmentation will positively influence WtLC in the context of IT consumerization. Since dual use of technologies fosters work-life integrations, a miss-fit between segmentation preferences and culture is more likely. For this reason, Yun et al. (2012) include work-life segmentation preference as a control variable for WtLC, but were unable to measure any significant positive correlation between those concepts.

In contrast, Middleton and Cukier (2006 p. 256) argue that mobile IT, although blurring work-life boundaries, is "not a leash but a liberator" for most people. Similarly, it can be argued that for integrators, i.e., people that strive to integrate work and personal life, the dual use of mobile IT is rather an inhibitor of WtLC. For individuals seeking integration mobile IT could be used to schedule work and life activities more efficiently. Rothbard et al. (2005) found that individuals who prefer segmentation between work and private life (i.e., segmentors) are less satisfied if an organization offers greater access to integrating policies (e.g., onsite childcare) since their personal desires are inconsistent with boundary reducing policies. This finding can be directly transferred to the dual use of mobile IT. Segmentors who have access to organizational policies that prescribe dual use of mobile are expected to be less content.

Furthermore, extant research has pointed out that integration and segmentation lie on a continuum (Ashforth et al. 2000; Sarker et al. 2012), which complicates categorizing employees into integrators and segmentors. For example, an individual might appreciate the dual use of her or his smartphone, while, at the same time, wants to maintain a solid barrier between work and leisure space. Thus, a relationship between work life segmentation preferences and WtLC that does not look into these behaviors in more detail is likely to contain effects that offset each other. Kreiner (2006) uses "person-environment fit" theory to describe mismatches between preference of the individual and provisions of the workplace. A match increases well-being, whereas a mismatch increases WtLC. With this backdrop in mind, we can claim the following:

H4: For people that prefer segmentation between work and life spaces, the effect of organizational encouragement for dual use of mobile IT on work-to-life conflict is stronger.

Work-Life Segmentation Culture

Organizations that pay close attention to policies in human resource management and workplace climate rather than promoting boundary integration endorse a culture of segmentation. According to person-environment fit theory, a segmentation culture has a strong influence on WtLC (Kreiner 2006). A workplace, so the conclusion, that favors separating work and private life spaces protects employees from blurring between the two roles, and thus decreases WtLC (Ashforth et al. 2000; Kreiner 2006). These results are also strengthened by Yun et al. (2012), who found a negative relationship between segmentation culture and WtLC due to the use of office-home smartphones. Hence, we include the following hypotheses in our model:

H5: Work-life segmentation culture lessens work-to-life conflict.

Research Method

Data collection

Our data was collected using an online survey. The survey was implemented with the Limesurvey tool (Schmitz et al. 2011), using three languages English, German, and Romanian. All items were originally developed in English and then translated by native speakers into other languages. The participants were free to select between the three languages. A cover page explained the terminology of the study. Respondents were told that the term "mobile IT" refers to two types of mobile devices: 1) laptop computers and 2) smartphones. We focused on those two devices since laptop computers and smartphones are the mostly used devices for business purposes. In contrast, tablet use for business purposes in organizations is rather sparse (Cisco 2011; Gens, Levitas, and Segal 2011). To be qualified as a participant for the survey, respondents had to either use a smartphone or a laptop computer (privately-owned or company provided) for work purposes at least several times per week. To motivate respondents' participation, the title page mentioned that the authors will donate 2 EUR for every completed response for palliative care services in Romania.

The questionnaire was completed by 135 people with a rejection rate of 18 percent. Since questions regarding work overload and WtLC might be indicative of an individual's organizational commitment and motivation, there is a potential for method bias. Respondents might edit their answers to be more socially desirable (Podsakoff, MacKenzie, Lee, and Podsakoff 2003). In order to ensure honest answers of the respondents, we highlighted that all answers were taken anonymously. Anonymity was further demonstrated by asking only for intervals in age and tenure instead of continuous values. Furthermore, answering questions was entirely voluntary.

When checking whether respondents qualified for our survey, 68 percent mentioned that they use a smartphones for work purposes at least several times a week. With regards to laptop computers, this number accounted for 91 percent. Following Hair, Hult, Ringle, and Sarstedt (2013), ten responses were discarded, because respondents either did not meet the qualifying criteria (4 responses), due to suspicious response patterns (3 responses), or due to the significant number of missing values (3 responses). 125 respondents remained in the sample ($n = 125$). As can be seen in the demographic details presented in Table 4, respondents covered a wide variety of industries, display different levels of job tenure, and mostly stem from Germany, Romania, and the US.

To evaluate our research model we applied partial least squares structural equation modeling (PLS-SEM), using SmartPLS 2.0 (M3) software (Ringle, Wende, and Will 2005). Algorithmic settings (e.g., sign change option, number of bootstrap samples, weighting scheme, etc.) were made based on the recommendations by Hair, Sarstedt, Ringle, and Mena (2012). Furthermore, we applied mean centering as a missing value treatment, since the percentage of missing values for every item was below five percent (Hair et al. 2013). Our research model contains one moderating effect. Since our moderating variable is not categorical, we used the product indicator approach as proposed by Chin, Marcolin, and Newstedt (2003). This approach is valid if both the independent and the moderator variable are reflective, as is the case in our research model. To perform a disaggregated analysis of particular organizational dual use

encouragement strategies, we used IBM SPSS to calculate correlations between the indicators of organizational encouragement for dual use of mobile IT and WtLC.

Table 4. Demographics of Respondents	
Gender	43.5% (female), 56.5% (male)
Age	8.9% (below 25), 64.5% (25-34), 16.1% (35-44), 4.8% (45-54), 5.6% (over 54)
Tenure	12.1% (less than 6 months), 32.3% (between 6 months and 2 years), 22.6% (between 3 and 5 years), 22.6% (between 5 and 10 years) 10.5% (more than 10 years)
Country	40.3% (Germany), 25.8% (Romania), 24.2% (USA), 9.7% (Other)
Industry	17.7% (Communications and High Tech), 15.3% (Professional services), 13.7% (Financial services), 10.5% (Products), 7.3% (Public sector), 5.6% (Retail), 29.8% (Other)
Job role	70.2% (Salaried employee), 16.9% (Manager), 6.5% (Intern), 6.4% (Other)

Measurement Development

Measures for organizational dual use encouragement for mobile IT were developed following the principles outlined by Moore and Benbasat (1991). All measurement-items used a seven-point Likert scale. To ensure a high validity, we deliberately oversampled the construct using nine reflective indicators. DUF-1 to DUF-3 were inspired by the segmentation culture concept as proposed by Kreiner (2006). The items reflect study questions by Junglas and Harris (2013). Three indicators were derived from Schalow et al. (2013), who identified enabling data access from private devices (DUF-4) as well as the permission to use company IT for private purposes (DUF-7, DUF-9) as preconditions of blurring boundaries between work and life through IT consumerization. Other items were self-developed and derived from IT consumerization strategies mentioned in the literature (D'Arcy 2011; Harris et al. 2012).

Concept	Items	Source
Work-to-Life Conflict due to mobile IT	<p>WtLC-1: Using mobile IT for work interferes with my personal life.</p> <p>WtLC-2: Things I want to do at home do not get done because of the demands mobile IT puts on me for work.</p> <p>WtLC-3: The work use of mobile IT produces strain that makes it difficult to fulfill private duties.</p> <p>WtLC-4: Due to the use of mobile IT for work, I have to make changes to my plans for private activities.</p> <p>WtLC-5: Using mobile IT for work keeps me from my family and friends more than I would like.</p>	(Adams, King, and King 1996), also used by (Ahuja et al. 2007; Yun et al. 2012)
Organizational encouragement for dual use of mobile IT	<p>DUF-1: My workplace encourages the use of one single device for private and work purposes.</p> <p>DUF-2: My workplace encourages the use of privately owned mobile devices for work purposes.</p> <p>DUF-3: My workplace encourages the use of private software accounts (e.g., email, social media) for work purposes.</p> <p>DUF-4: It is easy for me to access company data and emails from my privately owned mobile IT.</p> <p>DUF-5: My company offers support for my privately owned IT, if I use it for work purposes.</p> <p>DUF-6: My company provides me a budget I can use for buying whatever mobile devices and applications I need for my job.^[1]</p> <p>DUF-7: My workplace allows the use of company provided mobile IT for private purposes.</p> <p>DUF-8: My workplace carries the cost for any private calls I may make with company provided mobile IT.^[2]</p> <p>DUF-9: My company allows the installation of private applications (e.g. video player, games) on my company IT.</p>	Self-developed and derived from (Junglas and Harris 2013; Schalow et al. 2013)

Work overload due to the use of mobile IT	WO-1: Using mobile IT for work creates many more requests, problems, or complaints in my job than I would otherwise experience. WO-2: I feel busy or rushed due to using mobile IT for work. WO-3: Using mobile IT, I feel that the amount of work I do interferes with how well it is done. WO-4: I feel pressured due to the use of mobile IT for work.	(Ahuja et al. 2007; Moore 2000)
Work-life segmentation preference	SP-1: I don't like to have to think about work while I'm at home. [2] SP-2: I prefer to keep work life at work. SP-3: I don't like work issues creeping into my home life. SP-4: I like to be able to leave work behind when I go home.	(Kreiner 2006), also used by (Yun et al. 2012)
Work-life segmentation culture	SC-1: My workplace lets people forget about work when they are at home. SC-2: Where I work, people can keep work matters at work. SC-3: At my workplace, people are able to prevent work issues from creeping into their home life. SC-4: Where I work, people can mentally leave work behind when they go home.	(Kreiner 2006), also used by (Yun et al. 2012)

[1] This indicator was deleted in the data examination due to an exceeding number of missing values.

[2] This indicator was deleted in the data analysis due to insufficient outer loadings.

All other latent variables have been previously used in the WtLC literature. Items for work overload and WtLC were slightly changed in wording and adopted to the context of mobile IT. Assessments of discriminant, convergent, and nomological validity led to the removal of two items (DUF-8, SP-1) due to inadequate factor loadings. DUF-6 had to be excluded from the analysis due to an exceeding number of missing values. Table 5 provides an overview of the measurement items and sources.

Results

Measurement Model

The procedure for outer model relevance testing followed the recommendations by Hair et al. (2013). Indicators with an outer loading between 0.4 and 0.7 were selectively deleted and their impact on the AVE and composite reliability was tested. If the deletion increased the AVE and the composite reliability above a threshold of 0.5 and 0.7, the indicator was eliminated from the final model.

Concept	Item	Outer loading	t-value	Concept	Item	Outer loading	t-value
Work-to-Life Conflict due to mobile IT (WtLC)	WtLC-1	0.845	24.89	Work overload due to the use of mobile IT (WO)	WO-1	0.724	10.42
	WtLC-2	0.925	42.03		WO-2	0.864	20.02
	WtLC-3	0.897	32.11		WO-3	0.853	23.86
	WtLC-4	0.873	31.49		WO-4	0.891	33.15
		WtLC-5	0.939	90.80	Work-life segmentation preference (SP)	SP-2	0.998
Organizational encouragement for dual use of mobile IT (DUF)	DUF-1	0.771	14.01	SP-3		0.604	2.45
	DUF-2	0.812	17.28	SP-4		0.607	2.53
	DUF-3	0.698	9.89	Work-life segmentation culture (SC)	SC-1	0.855	9.14
	DUF-4	0.661	9.87		SC-2	0.900	12.17
	DUF-5	0.688	10.73		SC-3	0.920	13.34
	DUF-7	0.713	11.77		SC-4	0.864	11.19
	DUF-9	0.650	8.67				

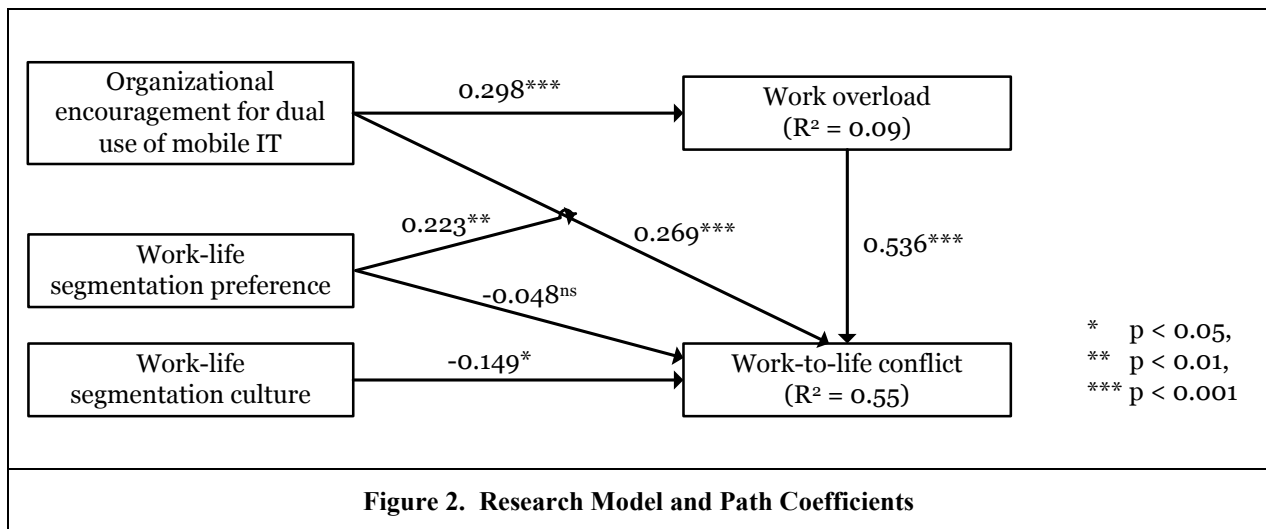
We used the internal consistency reliability (ICR) measure to evaluate indicator reliability. ICR was higher than the suggested threshold of 0.7 for all latent constructs (Bagozzi and Yi 1988). To assess convergent validity we considered the average variance extracted (AVE). AVE values were higher than 0.5 for all our latent constructs, indicating that the construct can explain more than half of the variance of its indicators (Bagozzi and Yi 1988). In order to assess discriminant validity, we compared the square root of the AVE to its correlations with other latent constructs. As all correlations were lower, discriminant validity was assumed (Fornell and Larcker 1981). The detailed test results are shown in Table 7.

Concept	ICR	Mean	SD	WtLC	WO	DUF	SP	SC
WtLC	0.953	2.909	1.593	0.896				
WO	0.902	2.981	1.489	0.649	0.836			
DUF	0.879	3.231	1.484	0.405	0.299	0.715		
SP	0.794	5.232	1.463	-0.133	-0.043	-0.023	0.759	
SC	0.935	4.300	1.452	-0.199	-0.038	0.019	0.237	0.885

[1] Leading diagonal (greyed) shows the squared root of AVE for each construct. SD = standard deviation.

Hypotheses testing

After validating the adequateness of our measurement model, we tested our structural model. The variance explained (R^2) for our central dependent variable WtLC accounted for 55 percent, which has been deemed as moderate (Hair et al. 2013). The R^2 for work overload accounted for 9 percent. Its low value can be explained by the many determinants of work overload that were not included in our model (cf. Ayyagari and Grover 2011). Compared with results drawn from other IS studies, our R^2 values for WtLC and work overload, however, are comparable, or even higher (Ahuja et al. 2007; Yun et al. 2012). Figure 2 depicts our research model including the results from hypotheses testing.



We used bootstrapping to determine the significance of our path coefficients. For H1, we found a path coefficient of 0.298 ($t = 3.651$), confirming H2. H1 was also confirmed with a path coefficient of 0.269 ($t = 3.699$). The moderation effect of work-life segmentation preference on H1 was measured with a path coefficient of 0.223 ($t = 3.120$), confirming H4. As required by the product indicator approach for moderation analysis, we included a control relationship between work-life segmentation preference and WtLC, which turned out to be non-significant. H3, or the relationship between work overload and WtLC was supported by our study ($\beta = 0.536$, $t = 7.825$); and the relationship between work-life segmentation

culture and WtLC (or H5) was confirmed at a low significance level ($\beta = -0.149$, $t = 2.132$). While the latter underlines the results of previous IS research (Yun et al. 2012), we also acknowledge that its value is below the suggested minimum threshold for path coefficients of 0.2 (Chin 1998).

The indicator analysis of organizational encouragement for dual use of mobile IT showed high correlations with WtLC for strategies that encouraged the dual use of privately owned IT. The highest correlation was measured for DUF-2 (“My workplace encourages the use of privately owned mobile devices for work purposes”), followed by DUF-3 (“My workplace encourages the use of private software accounts for work purposes”), and DUF-5 (“My company offers support for my privately owned IT, if I use it for work purposes”). Correlations for the encouragement for dual use of company provided IT were considerably lower. Correlation coefficients and t-values as well as mean and standard deviations are shown in Table 8.

Strategy	Item	Mean	SD	Correl	t-value
Encourage use of one single device	DUF-1	3.137	1.987	0.278	2.828
Encourage use of private devices	DUF-2	2.966	1.974	0.400	4.448
Encourage use of private software	DUF-3	2.605	2.022	0.332	3.557
Easy access to company data from private IT	DUF-4	3.950	2.361	0.243	2.430
Offer support for private IT	DUF-5	3.000	2.168	0.332	3.558
Provide a budget for IT purchases	DUF-6	2.736	2.186	0.284	2.979
Allow private use of company IT	DUF-7	3.876	2.174	0.221	2.165
Carry costs for private calls, made with company IT	DUF-8	4.045	2.295	0.202	1.848
Allow private software on company IT	DUF-9	3.317	2.263	0.285	3.002

Discussion

In this paper, we set out to investigate the relationship between organizational encouragement for dual use of mobile IT and WtLC. By drawing on a quantitative survey among 125 practitioners, we found a significant relationship between the two concepts. Moreover, the effect is stronger for people that strive for a separation between work and life spaces. The results are likely to inform practitioners about potential strategies to balance the relationship between work and life spaces for both integrators and segmentors; it is also likely to inform researchers about the theoretical underpinnings regarding antecedents of WtLC within the IS context.

Our study extends the findings by Yun et al. (2012) who were unable to measure any influence of segmentation preference on WtLC. Furthermore, our study transfers earlier results from boundary theory research to the context of IT consumerization (Rothbard et al. 2005). An employee whose company favors IT consumerization might find it hard to follow an integrative culture if he prefers a clear delineation between work and private spaces. Likewise, an employee who prefers to integrate work and personal life might find it difficult to obey a separating culture within the organization.

Our results still hold when including the notion of work overload as an additional variable into our model. Work overload has been deemed a strong predictor of WtLC in numerous previous studies. Furthermore, our results also show, quite illustratively, that organizational encouragement for dual use and work-life segmentation culture are distinct concepts that may, or may not, overlap. In fact, dual use policies within the organization are more important with regard to WtLC than a work-life segmentation culture. This underscores the fact that mobile IT has become an essential part of the workplace, and policies regulating their use have become an essential factor influencing the well-being of employees.

In order to address our research question in more detail, we conducted an indicator analysis of organizational strategies for facilitating dual use of mobile IT. The results show that the effect on WtLC is stronger for facilitating dual use of privately owned IT than dual use of company provided IT. Schalow et

al. (2013) deduct that using privately-owned IT at work and using company provided IT for personal matters is highly related. In contrast, our results suggest that people perceive different outcomes on WtLC depending on the IT ownership. More specifically, the use of company provided IT triggers less conflict between work and life. This finding suggests that organizations should rather provide dual use facilitation for company provided IT in order to minimize negative effects on WtLC, i.e. following rather a CYOD or COPE than a BYOD strategy.

Implications for Research

Most quantitative studies that have investigated the notion of work-life segmentation preference view it as a summative concept, aggregating an individual's held beliefs about his or her preferences into one. However, boundary management strategies suggest that preferences fall along a continuum, ranging from integration to segmentation. In other words, individuals hold different segmentation preferences for different situations — and even for different technologies in the same situations. For example, employees might prefer not to log into the corporate Intranet after working hours, but might feel quite at ease for checking company email before going to bed from the privately owned mobile phone. Thus, future studies might place electronic segmentation preferences along a spectrum that uses WtLC as its markers. Technologies that are perceived as highly disruptive for life, for example, would be classified as high on segmentation, and vice versa.

But even if both match, i.e., an individual's preference matches that of the organization's approach toward IT consumerization, it can nevertheless cause a set of problems. For example, employees who make a point of separating between work and life may still be viewed as low in motivation or, in the worst of cases, as low performers—irrespective of the culture. This effect is mostly driven by the fact that IT consumerization, by default, favors integrators—not segmentors, i.e. organizations increasingly accept WtLC, assuming it increases presenteeism and productivity of their employees (Perlow and Porter 2009). In these sense, our results may be interpreted as a societal challenge. If individual preferences of segmentors are consequently undermined, their work and life spaces will surreptitiously morph into one without any opportunity to “switch off” from work every now and then.

Assuming a crucial role of the IS field in addressing societal challenges (Stahl, Eden, Jirotko, and Coeckelbergh 2014), research is called not only to focus on the organizational perspective, but also to investigate individuals' well-being in the context of overlapping work and life spaces. Thus, longitudinal studies that take into account aspects of work-life satisfaction are likely to inform organizations about the value of potential IT consumerization strategies (e.g. Harris et al. 2012). In the IS field, for example, Hossain, Moon, Yun, and Choe (2012) found a positive relationship between work-life satisfaction and user performance. By differentiating between integrators and segmentors, future research may be able to develop a disaggregated model that investigates the relationships between job performance, work life satisfaction, and WtLC for both groups independently and in relation to certain features of consumer IT.

Implications for Practice

Our study results suggest that organizations need to be alert regarding the effects of organizational policies around mobile IT use. Even though dual use encouragement is likely to boost productivity to some degree, it is not without its drawbacks, e.g., in form of long-term negative impacts on employees' well-being. While companies may claim that they follow a work-life segmentation culture to allow employees to switch off from work, only a few have taken action to combat the increasingly technological burden to electronically separate work and life spaces. Fearing long-term consequences in form of stress and burnout, Volkswagen, for example, has disabled email access for mobile phones after hours (BBC News 2011). Daimler deletes emails employees receive during their vacation (Daimler AG 2012). And in France, labor unions and organizations have agreed to institute an eleven hours downtime, spanning from dusk to dawn, for corporate emails (Sayare 2014). These developments underscore that both employees and organizations see the need to take action. However, centrally applied technology restrictions that push employees toward work-life segmentation might deprive employees of their previously gained flexibility, such as checking emails anytime and anywhere.

At present, organizations are primarily interested in the segmentation of work and life for data security and compliance reasons — work-life preferences are only of secondary concern. Given the results from our

study, employers should aim to satisfy individual segmentation preferences. Acknowledging the continuum between integration and segmentation, a strategy might be to put employees into the driver's seat by realizing their preference. For integrators, dual use encouragement policies may be appropriate to increase employees' fit with the work-life segmentation culture. However, numerous employees might still pursue work-life segmentation.

An employer that invests in technological and organizational solutions that encourage both dual use and electronic work-life segmentation is likely to gain appeal amongst a group of segmentors. For instance, "containerized" phones have emerged on the market that are able to separate work and privately held content at the hardware level (Harris et al. 2012). Ayyagari and Grover (2011) suggest that training employees with respect to effective time management strategies and encouraging employees to keep parts of their work day exclusively to themselves can reduce effects on WtLC. Organizations may also use financial incentives. For instance, Kim (2008) found that a company's willingness to fund mobile IT is a decisive factor in technology adoption. Since such funding is likely to favor integration of work and life, organizations might want to consider financially incentivizing segmentation behavior. Irrespective of the approach, organizations have to understand that work-life integration should not be confused with organizational commitment.

Limitations and Outlook

Our data collection is subject to some shortcomings that limit the generalizability of our results. First, due to selection bias, our dataset might not be considered representative (Boxill, Chambers, and Wint 1997). For instance, our demographic details show that respondents are rather young, mostly between the age of 25 and 34. Second, the number of participants was rather small ($n=125$), though the study fulfills the threshold as set forth by Barclay, Higgins, and Thompson (1995), who suggested that a sample size for PLS-SEM should exceed ten times the maximum number of arrowheads (4 in our study) pointing toward a latent variable. Third, kurtosis values below -1 indicate that the data distribution of some indicators for organizational encouragement for dual use of mobile IT is too flat, i.e., the distribution deviates substantially from normal. Although this is not a prerequisite for PLS-SEM, non-normality may distort the results of our analysis. Fourth, with regards to our research model, we did not classify the effects on work overload and WtLC into particular outcomes for mobile IT use, including flexibility, productivity, presenteeism, and job autonomy (Ahuja et al. 2007; Ayyagari and Grover 2011; Yun et al. 2012). We recognize that such detailing would further increase the depth of our results. Fifth, our study solely focused on the impacts of work life on private life, not the opposite direction. While prior research has looked at organizational effects by investigating the non-work related use of company provided IT, it is still inconclusive about its outcomes (Schalow et al. 2013). Finally, our study only analyzed a subset of possible strategies for dual use encouragement. Future studies could take into account strategies that explicitly enable segmentation of work and life, such as formulated by Volkswagen, Daimler, and beyond.

As shown in this study, the phenomenon of IT consumerization opens up new research avenues with both individuals and organizations as possible units of analysis. As the technological developments of work IT become increasingly intertwined with an individual's private life, IS research should aim to understand their dual uses. Thus, we encourage researchers to investigate responsible ways that improve their use for employees (Stahl et al. 2014).

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