

Chapter 15

Knowledge Worker Productivity: The Effects of Distraction and Task Complexity in Mobile Computing Environments

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ABSTRACT

Mobile wireless computing is changing the way in which people work, allowing work to occur in a broad range of environments on tasks that previously required fixed location-based, networked computing environments. Along with this greater work flexibility, it is also likely that these mobile work environments contain various types of distractions that could potentially affect the task performance of knowledge workers. Drawing on distraction-conflict theory, this research proposes a model of knowledge worker task performance within the context of a mobile wireless work environment. To test this model, a controlled laboratory experiment was conducted that contrasted task complexity and distraction levels on the task performance of individuals within a mobile wireless environment. Results indicate that regardless of task complexity, productivity losses will occur under both lower and higher levels of distraction. The implications of these results for future research and for the deployment of mobile technologies within organizations are discussed.

DOI: 10.4018/978-1-60960-577-3.ch015

1. INTRODUCTION

Mobile wireless computing is quickly growing in scope and popularity, and holds the promise of being the next major paradigm in personal computing (e.g., Barnes, 200; Ladd et al., 2010). Given that mobile wireless computing does not limit the personal movement of individuals, this anytime, anyplace computing will provide both benefits and challenges (Malladi & Agrawal, 2002; Philips, 2002). The ability to communicate anytime/anyplace offers new levels of flexibility and convenience (Looney, Jessup, & Valacich, 2004), opening up numerous possibilities within the realm of work. Tasks that have been traditionally undertaken in a fixed setting, such as an office, can now be performed virtually anywhere (Gorlenko & Merrick, 2003), liberating knowledge workers from their cubicle prisons ("Our Nomadic Future," 2008). Similarly, many types of field work can now benefit from any time/any place information accessibility and communications capabilities (Gorlenko & Merrick, 2003; Philips, 2002). It is believed that mobile wireless computing will "foster increased on-the-job productivity and promote the freedom to travel while working or playing" (Philips, 2002, p. 68).

Sherry and Salvador (2001) note, however, that the potential for disruptions to work and concentration can overshadow the productivity and efficiency benefits that mobile work appeared to offer. Additionally, the "always on" capabilities of many mobile devices have the potential to disrupt the work-life balance for many knowledge workers (Cousins and Varshney, 2009). As more organizations are moving toward a mobile workforce, understanding the potential undesirable effects of mobile computing is becoming a particularly vital area of research. In fact, International Data Corporation (IDC) (2010) reported that the US mobile workforce is expected to exceed 119.7 million workers, or 75.5% of the US workforce, by 2013 and will exceed a billion worldwide by year's end. A review of current literature on

mobile wireless computing however reveals that little is known about how mobile wireless technologies can be systematically integrated into organizational activities and how this will impact day-to-day processes and overall productivity (Ladd et al., 2010).

Prior research on mobile wireless computing can be classified into three general categories. The first category, which has been the focus of several studies, deals with the acceptance of these new technologies (e.g., Abraham, 2001; Lu, Liu, Yu, & Yao, 2003; Okoli, Ives, Jessup, & Valacich, 2002; Sarker & Wells, 2003; Wakefield & Whitten, 2006). For example, Okoli *et al.* (2002) describe the challenges that are associated with deploying mobile wireless computing technologies within the realm of professional conferences. Second, the technical design aspects of the technology have been examined (e.g., Andersson, 2008; Boncella, 2002; Dekleva, Shim, Varshney & Knoerzer, 2007; Lee & Shin, 2005; Shim, Varshney, Dekleva, & Knoerzer, 2002; Viehland & Hughes, 2002). For example, Boncella (2002) provided an overview of how a secure channel can be established in a wireless environment. Third, the implications of mobile commerce or m-commerce have been studied extensively (e.g., Balasubramanian, Peterson, & Jarvenpaa, 2002; Jarvenpaa, Lang, Takeda, & Tuunainen, 2003; Lee, 2005; Ngai & Gunasekaran, 2005; Stafford & Gillenson, 2003; Urbaczewski, Valacich, & Jessup, 2003). For instance, Jarvenpaa and colleagues (2003) reported that mobile technologies provide not only greater freedoms and connectedness, but also manage the pressure between the two.

In addition to these relatively more established areas, a new stream of research is emerging which focuses on the examination of mobile wireless computing within organizational settings. However, only a few studies were found to investigate such phenomenon (e.g., Beulen & Streng, 2002; Gebauer, Shaw & Gribbins, 2010; Shen & Jones, 2003). For example, Beulen and Streng (2002) reported a field experiment that tested the hypothesis

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