

## Mobile technology usage and B2B market performance under mandatory adoption

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### ABSTRACT

This paper investigates the relationship between mandatory adoption of mobile information technology and market performance in the business-to-business (B2B) setting. This study presents and tests the B2B technology satisfaction model (TSM), including perceived loss of control as the mandatory technology acceptance-specific variable. The results of this study reveal that integrating perceived loss of control with user satisfaction and the TAM (technology acceptance model) in a single model can better explain the B2B market performance model. The empirical results suggest that perceived loss of control has a negative effect on user satisfaction and perceived market performance is influenced by user satisfaction and perceived usefulness. Managerial implications of the study are discussed.

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### 1. Introduction

Interest in the use of mobile applications in the business environment is increasing (e.g. Leung & Antypas, 2001; Varshney, Mallow, Jain, & Ahluwalia, 2002; Varshney & Vetter, 2002). Leung and Antypas (2001) suggested that mobile commerce can enhance business efficiency by distributing information to the workforce remotely and by offering new channels for customer interaction. Varshney et al. (2002) further suggested that organizations capable of harnessing the power of mobile technologies to automate and streamline business processes may reap the benefits of improved productivity, lowered operational costs, increased customer satisfaction, and improved decision-making.

Previous research has addressed the effect of mobile technology acceptance at a conceptual level. The empirical relationship between mobile technology usage and market performance has not been addressed, especially in the business- to-business (B2B) environment. Technology acceptance may be mandated by an organization or nation (e.g. taxation) in industrial marketing. It is an important issue of industrial marketing to maximize the effect of mobile technology use on B2B market performance.

Previous researchers have found Information Technology (IT) to be positively linked to firm performance (Brynjolfsson & Hitt, 1996; Hammer & Mangurian, 1987; Narasimlan & Kim, 2001; Sanders,

2007). Sanders (2007) showed that supplier's use of IT has a positive and significant impact on supplier performance. Hammer and Mangurian (1987) suggest that IT improves firm performance indirectly by fostering inter-firm relationships. Our research may contribute to the B2B marketing literature by empirically validating the relationship between mobile IT usage and B2B market performance under mandatory adoption.

Our research can be related to the sales force management literatures. Recent industrial marketing research has shown that IT adoption can lead to sales force performance (Avlonitis & Panagopoulos, 2005; Robinson, Marshall, & Stamps, 2005). Our research can contribute to the sales force management literature by suggesting the managerial implications for linking sales force IT usage with B2B market performance when the new IT adoption is mandated in the sales force setting.

What is the appropriate marketing variable to evaluate successful mandatory technology adoption? What is the unique variable specific to mandatory technology adoption? What should B2B marketing managers do in order to link mobile technology use to market performance? We attempt to answer these research questions.

B2B markets have fewer partners, closer buyer-seller relationships, better technology and better information exchange than business-to-consumer (B2C) markets (Hutt & Spech, 1998). Not surprisingly, the technology acceptance model (TAM) has been applied in the industrial marketing literature by several researchers (e.g. Avlonitis & Panagopoulos, 2005; Robinson et al., 2005; Schillewaert, Ahearne, Frambach, & Moenaert, 2005). However, these studies focused on volitional technology acceptance, thus generally fail to consider the unique

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features of mandatory technology users (i.e., low relative control in interaction with the forms of technology provided by the organization). In addition, the actual usage or intention to use commonly included in the volitional (traditional) TAM as the acceptance variable does not imply the successful acceptance in the mandatory setting. In the voluntary technology acceptance setting, the increase of IT usage or intention to use IT implies the acceptance of new IT. In the mandatory setting, however, the actual usage or intention to use does not have any meaning in evaluating new IT acceptance. Considering the trend toward IT adoption in most marketing departments, it is not the important issue whether the users accept IT, or not. The critical point is whether the users are satisfied using the newly adopted IT and whether user satisfaction affects market performance, or not. Successful adoption should be evaluated not in terms of 'actual usage' but in terms of 'user satisfaction' under mandatory adoption. Considering that mandatory technology adoption is more common in the B2B environment compared to B2C environment, it is necessary to search for an additional construct that is specific to mandatory technology adoption and to suggest the new mandatory technology satisfaction model.

Traditional TAM cannot address this issue. We suggest TSM (Technology Satisfaction Model) as the mandatory technology adoption model in order to explain the relationship between mandatory technology usage and B2B market performance.

The first purpose of this paper is to investigate the determinants of 'satisfaction' under mandatory adoption of mobile IT. When use of IT is mandated, as is often the case when introducing new B2B transaction systems, satisfaction has been suggested as a more appropriate measure of IT success than IT usage (Adams, Nelson, & Todd, 1992; Chau, 1996; DeLone & McLean, 1992; Melone, 1990). In accordance with these studies, we propose TSM, replacing actual usage/intention to use with 'user satisfaction'.

Satisfaction has been used as an outcome measure in marketing research focused on buyer-seller relationships (Anderson & Narus, 1990; Ganesan, 1994; Janda, Murray, & Burton, 2002; Sanzo, Santos, Vázquez, & Álvarez, 2003). Gómez, McLaughlin, and Wittink (2004) investigated the empirical relationship between customer satisfaction and retail sales performance. However, the linkage between satisfaction and B2B market performance in the context of mandatory IT adoption has not been investigated.

We bridge this gap in industrial marketing literatures by proposing and validating an integrated model that explains how mandatory mobile IT adoption affects user satisfaction and B2B market performance. To the best of our knowledge, our research is the first attempt to examine the mandatory mobile technology adoption – B2B market performance relationship by posing the 'satisfaction' variable as the key linkage between marketing and information systems literatures.

## 2. Theoretical background and hypotheses

This section provides background discussion on the concepts to be empirically tested in the study. We first discuss the elements of TAM, and develop hypotheses in accordance with mandatory mobile technology adoption. We then introduce perceived loss of control as a mandatory technology acceptance -specific construct, and develop concurrent hypotheses. Fig. 1 presents our model of mandatory technology acceptance.

### 2.1. Technology Acceptance Model (TAM) and user satisfaction

The starting point of our research model is to review the Technology Acceptance Model (TAM). TAM is theoretically derived from Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA), and attempts to explain individual technology acceptance decisions across a wide range of technologies, user populations, and context (Davis, Bagozzi, & Warshaw, 1989). TRA posits that behavior is logically processed in the following order: belief-attitude-intention-behavior

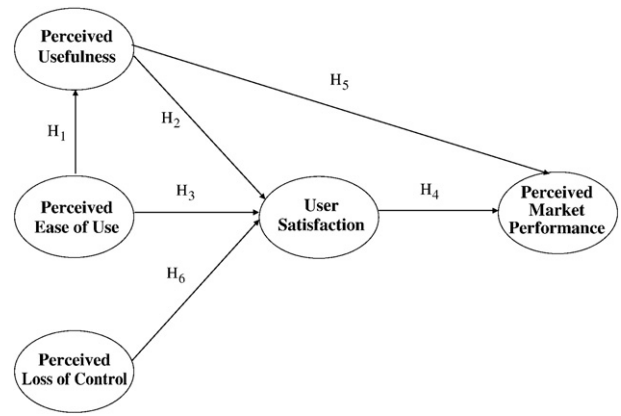


Fig. 1. Proposed model and hypotheses.

(Fishbein & Ajzen, 1975). TRA assumes volitional behaviors in the uptake of new technology, and as such, other researchers generally accepted the model, as a predictor of future behavior within the constraints defined by the authors (Adamson & Shine, 2003).

In TAM, system usage behavior is determined by the intention to use a particular system, which in turn is determined by two related beliefs: perceived usefulness and perceived ease of use. Perceived usefulness is defined as the extent to which a person believes that using a particular system *will enhance* his or her job performance, while perceived ease of use is defined as the extent at which a person believes that using a particular system *will be* free of effort (Davis, 1989). However, in this study, perceived usefulness and perceived ease of use are assessed ex post (mandatory usage). Therefore, the words "will enhance" and "will be" in Davis's (1989) definition are replaced by "has enhanced" and "has been."

Empirical support for the robustness of TAM as a predictor of intended system usage has been given by a number of researchers (e.g. Adams et al., 1992; Igarria, Ivarri, & Maragahh, 1995; Mathieson, 1991). Traditional TAM was focused on volitional acceptance, so our research model was revised by adding a new construct (see Section 2.3) specific to the mandatory technology acceptance context and by replacing actual usage/intention to use with 'user satisfaction' relevant to the success variable in mandatory technology acceptance.

Perceived usefulness is influenced by perceived ease of use because, the easier the system is to use, the more useful it is (Davis et al., 1989; Igarria & Guimaraes, 1995). This finding has also been validated in Internet technology use (e.g. Gefen & Straub, 2003; Moon & Kim, 2001). Based on these arguments, we propose the following hypothesis:

**Hypothesis 1.** Perceived ease of use has a positive effect on perceived usefulness.

The concept of user satisfaction has been widely used by researchers (DeLone & McLean, 1992; Klenke, 1992; Melone, 1990) as a surrogate of information system success. User satisfaction is a subjective evaluation of the various outcomes of information system use evaluated on a pleasant-unpleasant continuum (Seddon, 1997). It is an important construct in practice, and it is particularly important when information technology usage may be mandatory (Adams et al., 1992; Chau, 1996; DeLone & McLean, 1992; Melone, 1990). Chau (1996) observes that when software development innovations are adopted, the adoption decision is often made at an organizational level and use by developers is mandated. He notes that the software developer's enjoyment in using the innovation (i.e., satisfaction with the innovation) is a critical importance to productivity.

Information system usage, which is regarded as an important success indicator of information systems in volitional TAM, may not be an appropriate success indicator when information system usage is

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