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Determinants of customer acceptance of mobile payment systems

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Abstract

In the recent past, the introduction of mobile payment systems (MPS) has gained increasing attention from telecommunications and financial service firms. Cell phones are regarded as a suitable medium for supplementing or even replacing existing settlement procedures. However, to date end-customer use of MPS has not developed as extensively as many experts had expected. Although MPS have been poorly received so far, several empirical studies conclude that customers still have a strong interest in using them. Against this background the present investigation aims at exploring drivers of MPS acceptance among mobile communications customers. We present an overview of past research to derive a set of hypotheses regarding MPS and consumer characteristics, which should have significant direct or indirect impacts on a customer's intention to use an MPS. Using survey data from 347 residential cell phone users in Germany and the Partial Least Squares modeling approach, we find support for the hypotheses. In particular, breadth of MPS use situations, MPS risk assessment and MPS evaluations by social reference groups were important (indirect) determinants of behavioral intentions concerning future MPS adoption. Implications for technical and commercial MPS design practices likely to promote MPS acceptance and suggestions for future research are discussed.

Keywords: Adoption of innovative communications services; customer acceptance; mobile payment systems (MPS); MPS characteristics; MPS use intentions; partial least squares (PLS) approach; risk assessment.

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1. Introduction

Stimulated by the large number and fast growth of mobile communications network subscribers and the occurrence of mobile data communications services beyond voice calls, *mobile payment systems (MPS)* have received a significant amount of attention from both management scholars and practitioners in recent years. MPS are settlement solutions, which enable transactions of a monetary value between different parties by mobile devices and cellular or near-field radio technologies (Chen, 2008; Ondrus and Pigneur, 2007). Unlike other payment systems, MPS are not restricted to particular transaction situations. Rather MPS could support (1) *on-site purchases* of products or services at fixed or itinerant “real-world” points of sale [POS] (e.g., shop, vending machine) while payer and payee are both present at the same geographical location, (2) *remote/“off-site” purchases* of goods in print catalog- and fixed or mobile Internet-based mail order transactions while payers and payees are spatially separated, and (3) *transfers of (electronic) cash* between private individuals/peers without or with a connection to the sale/purchase of goods.

However, most of the rather numerous MPS introduced over the past few years have not thrived as quickly and extensively as many experts had expected (Kristoffersen et al., 2008, Mallat, 2007). Examples of MPS being reasonably successful in terms of transaction frequencies and volumes can be found primarily in Asia. In contrast, in the United States and Europe MPS so far have been barely used by mobile communications customers (Ondrus and Pigneur, 2007). In spite of the disappointing market track record of most MPS, several recent empirical investigations reveal that end-customers still express a strong interest in MPS (e.g., Chen, 2008; Choi et al. 2006). Therefore it can be argued that potential MPS providers, such as mobile network operators or financial service firms, need to gain a more differentiated understanding of factors which influence mobile phone customers’ willingness to use MPS (i.e., *MPS acceptance*). Unfortunately, there is a dearth of empirical research taking a fine-grained look at potential determinants of this behavioral intention. Therefore, the present study aims at contributing towards closing this gap. The exploration of drivers of MPS acceptance is important from the perspective of management *researchers* because it helps to shed additional light on customer adoption processes within the innovative mobile commerce realm. In addition, it is at least of the same importance

from a management *practitioner's* standpoint since it should be instrumental in better tapping commercial MPS potentials.

The remainder of the paper is organized as follows. Section 2 provides an overview of pertinent empirical work on MPS acceptance. Section 3 develops a set of hypotheses on potential major MPS acceptance drivers and some of their interrelations. Sections 4 and 5 report the methodology and the results of empirical tests of the hypotheses drawing on survey data gathered from 347 residential mobile phone users in Germany and on partial least squares (PLS) analysis. Section 6 discusses implications of our empirical findings for firms involved in the design and marketing of MPS and for future scholarly MPS acceptance research.

2. Previous empirical research

Our search of the English- and German-speaking literature revealed 20 publications containing primary empirical data, which capture the willingness of end-customers to use MPS and, in some cases, factors that significantly influence an individual's intention to use such systems. Table 1 provides an overview of these studies in terms of their methods, results, and limitations. Overall, much of the previous work is deficient in that it looked only at a few (or no) variables that could influence end-users' MPS acceptance. Notwithstanding this limitation, extant evidence suggests that the general notion of *Rogers* (2003) that an innovation's functional and economic (dis-) advantages compared to other established products or services shape the extent and speed of its diffusion is also instrumental in identifying drivers of end-users' MPS acceptance (Chen, 2008; Mallat, 2007; Pousttchi and Wiedemann, 2005). More specifically, the overall thrust of past empirical MPS research is that, irrespective of technical MPS implementation peculiarities, performance features (such as the option of paying anywhere at any time or the possibility of clearing balances without carrying cash, speed of payment process), payment situations (e.g., payments at "real" or at "virtual" POS) and individual investment requirements of MPS users (e.g., need to obtain a new MPS-enabled mobile device) as well as security concerns have to be considered as major determinants of MPS acceptance levels.