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Heterogeneity in consumers' mobile shopping acceptance: A finite mixture partial least squares modelling approach for exploring and characterising different shopper segments

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ABSTRACT

This study investigates the phenomenon of mobile shopping (m-shopping), which, despite its growth in practice, is still underdeveloped as a field of research regarding the segmentation approach. The aims of this study are therefore twofold: (1) to propose an extended version of the technology acceptance model (TAM) to reflect a multidimensional framework of m-shopping acceptance, in which data heterogeneity regarding consumers' acceptance is expected; and (2) to apply an advanced segmentation approach for revealing different mobile shopper (m-shopper) types to highlight precise marketing activities and measures. For that purpose, the relationship between attitude, intention, and behaviour is elaborated with additional constructs (e.g. perceived enjoyment, vendor trust, social influences, and satisfaction) and analysed with a representative sample of 734 German m-shoppers. The study results not only confirm the relevance of all factors on an aggregate data basis, thus supporting the proposed multidimensional framework of acceptance, but they also indicate some (unobserved) heterogeneity in the path model structure using the finite mixtures partial least squares (FIMIX-PLS) technique. This finally reveals three important m-shopper segments: 'motivated m-shoppers', 'thoughtful utilitarian-oriented m-shoppers', and 'satisfied convenience-conscious m-shoppers'. Managerial implications are illustrated and provided with respect to these segments with the use of a complementary importance-performance matrix analysis (IMPA). Since focused research on m-shopper types is still limited, this study provides new insights into the acceptance and profile of m-shoppers.

1. Introduction and scope of research

With the rapid adoption and extended usages of advanced mobile devices, in which smartphones and tablets lead the way, consumers are sustainably changing their methods of communication and shopping activities (Wang et al., 2015; Fuentes and Svingstedt, 2017). As a consequence of changing consumption behaviour, mobile shopping (m-shopping) is nowadays regarded as a new on-the-go service frontier for searching, comparing, purchasing, sharing, and assessing products and services online from various vendors with hardly any restrictions regarding availability, location, and time (e.g. Ko et al., 2009; Holmes et al., 2014; Park et al., 2015; Yang et al., 2016; Groß, 2016; Fritz et al., 2017). The field of m-shopping applications is wide-ranging; however, in the present study the term m-shopping refers to mobile purchase (m-purchase) activities unless otherwise noted.

Although the lion's share of retail electronic sales still takes place on wired devices such as desktop computers or laptops, website browsing is increasingly flowing through smartphones and tablets alike, leading to increasing m-purchases around the world (Nielsen, 2016). In 2016, for example, the proportion of m-purchases in the USA was approximately 33.9% compared to 23.4% across Europe, while individual European countries already reached a higher rate, such as Great Britain (35.6%), Germany (34.0%), and Sweden (29.6%) (Centre for Retail Research, 2016). In contrast, the spending on mobile devices in South Korea (46.0%) and China (49.7%) corresponds to almost half of the local retail ecommerce sales (eMarketer, 2016).

In accordance with the growing popularity of both the industry and retail sectors around the world (Nielsen, 2016), academic research on m-shopping acceptance has paid much attention to investigating key factors of consumers' acceptance (see e.g. Groß, 2015a for literature

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review). In detail, the large body of current literature concentrates on the attitudinal viewpoint to investigate factors that might affect consumers' reactions and willingness to engage in m-shopping (e.g. Chen et al., this issue; Agrebi and Jallais, 2015; Gao et al., 2015; Yang, 2012; Lu and Su, 2009). In contrast, however, a considerably lower number of studies explore the m-shopping behaviour itself to a greater extent. This applies to both empirical studies (e.g. Holmes et al., 2014; Pantano and Priporas, 2016; Fuentes and Svingstedt, 2017) and works that use data tracking materials obtained from mobile device usage behaviour (Wang et al., 2015). Because an initial trial and a positive intention to adopt are important for realising attitudinal acceptance, a holistic view of m-shopping acceptance requires an additional behaviour-based viewpoint (Yang et al., 2016). This is interesting, because a combination of both attitude and behavioural aspects as part of a multidimensional acceptance framework is still under-researched for the m-shopping context (Groß, 2015b) and therefore requires more attention (study focus part I).

However, both attitudinal and behavioural viewpoints are affected on the one hand by studies pertaining to specific topics such as trust (e.g. Yang, 2016), shopping motives (e.g. Yang and Kim, 2012), and values of benefit (e.g. Kim et al., 2015), and on the other hand by those covering concepts such as smart shopper feelings (e.g. Park et al., 2015) and worth-of-mouth communications (e.g. San-Martín et al., 2015), to name only a few examples. Although such approaches extend the knowledge about m-shoppers to a certain extent, they do not fully address the issue of m-shopper profiling and segmentation, which is still rarely explored to date and requires much more attention (Groß, 2015a).

The few available studies on m-shopper segmentation use shopping motives (Jih and Lee, 2003) or are based on situational factors (Banerjee and Dholakia, 2013) as well as barriers and drivers (San-Martín et al., 2013) of m-shopping acceptance. Since these few studies employ clustering methods such as k-means or latent class approaches, a priori knowledge of the cluster structure is implied (observed heterogeneity). However, none of the available m-shopping studies try to gain deeper insight into the data heterogeneity that derives from the postulated research model and is therefore a priori unknown (unobserved heterogeneity). This is a typical situation in new research settings where theory is not well developed and where, moreover, knowledge about the existence of consumers' group differences is still limited (Rigdon et al., 2011). As m-shopping is still in its infancy and it is difficult to reach m-shoppers, more research is required (study focus part II); this suggests the great new value of customer insight, not least because 'mobile vendors need to know the results of the first mobile shopping experiences to design their strategies and think about entering in the mobile selling business' (San-Martín et al., 2015, p. 2).

The purpose of this study is to explore both highlighted under-researched aspects (study focus part I and II) by addressing the following aims: (1) to develop a multidimensional framework of m-shopping, in which data heterogeneity regarding consumers' acceptance is expected; and (2) to apply a segmentation approach for revealing different m-shopper types to highlight precise marketing activities and measures.

Thus, the present study not only contributes to the growing body of m-shopping literature (i.e. to the understanding of it being an independent channel for purchasing items and/or services on-the-go) by elaborating the Technology Acceptance Model (TAM) into a multidimensional understanding of acceptance, but it also respects the potential data heterogeneity within the model-based framework for a consumer segmentation approach. To the best of the author's knowledge, no similar study has been conducted on m-shopping to date, and this work may therefore offer new insights into the acceptance and profile of m-shoppers. In addition, it may have managerial implications and provide suggestions regarding the ways in which m-shopping services can be better tailored to match the unique needs of their users.

To realise the aim of the research, the rest of the paper is organised as follows. The next section provides the research model for measuring m-shopping acceptance and postulates its corresponding hypotheses. The third section discusses the research methodology with respect to the data sample, measures, and the method selected for data analysis. Thereafter, the fourth section presents the empirical study results, and the last section concludes with a comprehensive discussion, providing important theoretical and marginal implications as well as limitations.

2. Conceptual framework and hypotheses

2.1. Modified TAM as theoretical foundation

The underlying theoretical framework for this research is grounded in the Technology Acceptance Model (TAM) by Davis et al. (1989), which is presently one of the best proven models for measuring acceptance (Zhang et al., 2012). It can be used to investigate the m-shopping context, where an attitudinal viewpoint to explain consumer willingness to m-shop dominates current research (e.g. Ko et al., 2009; San-Martín et al., 2013; Wong et al., 2015; Agrebi and Jallais, 2015).

The TAM postulates a well-proven cause-and-effect relationship, in which two beliefs about an information technology system, perceived usefulness (PU) and perceived ease of use (PEOU), first form a person's attitude (ATT) towards using the system. In turn, the person's ATT then influences behavioural intention (BI), which eventually determines usage behaviour (USE). Because the TAM is often criticised due to its parsimony and lack of falsifiability, a context-related modification is required. Accordingly, the underling model and hypotheses investigated in this research are presented in Fig. 1 and can be regarded as an extension of Groß (2015b).

2.2. Causal relationship between attitude, intention, and behaviour as basis for a multidimensional approach

At the core of Fishbein and Ajzen's (1975) Theory of Reasoned Action, the TAM hypothesises a causal relationship between ATT, BI, and USE for determining technology acceptance (Davis et al., 1989). In this context, *ATT* characterises a person's evaluation of a certain behaviour, and it is assumed that a favourable evaluation will form an intention to use the information technology system (e.g. m-shopping),

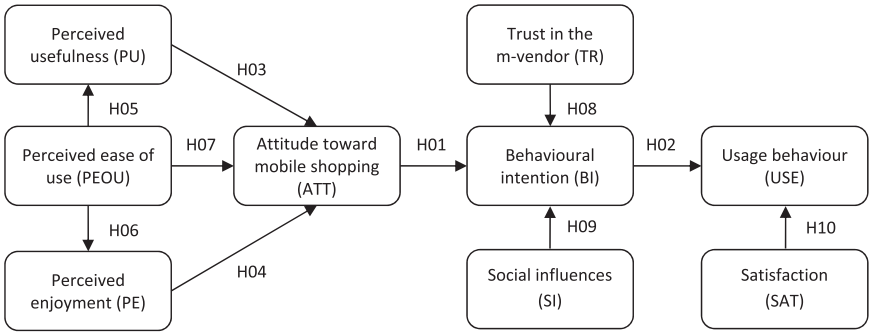

Fig. 1. Theoretical framework.