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ACCEPTANCE OF PAYMENT SYSTEMS FROM THE PERSPECTIVE OF MERCHANTS

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To date, the problem of acceptance of payment systems and technology from the consumer's perspective has been intensively investigated. Dahlberg et al. [1, 2] indicated diminishing need for additional research on the acceptance of payment systems by consumers. On the contrary, evaluation of adoption of payment systems by other participants of the market in the e-commerce ecosystem, in particular merchants, is still missing. This paper attempts to fill the existing gap. The objective of this paper is to propose determinants that merchants use as guidance in accepting or not a payment system. The main factors influencing the acceptance of payment systems by merchants have been defined basing on the commercially available "eXpay" system [8], as well as the TAM and UTAUT models. On this basis, a new model containing intention constructs and moderators significant from the merchants' perspective has been proposed. In the paper, the components of the model and possibilities of its application in further research are discussed.

Keywords: payment systems, e-business, e-commerce, m-payments, technology acceptance models, intention to use technology, merchants, TAM, UTAUT

1. Introduction

Consumer behaviour determines the types of reactions related to the process of purchasing, using, and disposing of goods. These include not only physical actions, but also all the operations taking place in the psyche at the time of

purchase. Consumer behaviour is actually supposed to demonstrate actions aimed at satisfying the desires of individuals or organized groups representing common economic interests. Therefore, they are presented as a systematised cycle of reactions to various stimuli. Consumer behaviour is a concept that cannot be clearly defined, hence different definitions of that term can be found in the literature. For example, according to JC. Mowen [3], consumer behaviour is a field of science studying persons who make their purchases and all the processes involved, starting from the manner of acquiring specific goods, and ending with the possibilities of its consumption. G. Antonides and W. F. van Raaij [3], on the other hand, claim that consumer behaviour includes all mental and physical activities, related to the acquisition of goods, obtaining, application and consumption, as well as the in-house production of households, allowing the consumer to achieve goals and therefore leading to their satisfaction.

Technological advances and the possibilities brought by e-commerce, and subsequently m-commerce, have changed consumer behaviour, consumers' reactions, and the factors which impact purchase decisions.

2. Current state of knowledge – acceptance of e-payment and m-payment technologies

After ten years of research, a literature overview written by Dahlberg et al. [1] was published in the journal "Electronic Commerce Research and Applications". The overview reflected the accumulation of knowledge on mobile payment research, which had been conducted for several years independently in a few countries and across several continents. After analysing a significant part of the literature on this subject, the authors concluded that there was a need to develop guidelines for future research. Their main premise for drawing such conclusions was the fact that issue of mobile payments had not been fully explored by the academic community.

In fact, a significant number of publications focused mainly on: technology and its acceptance by consumers. Interestingly, over a number of years, consumers could experience many different ways of making mobile payments. A considerable part of the methods for making mobile payments failed to succeed before they even reached the intended recipients (end users). Due to the complexity of these phenomena, it became clear that the narrowed research on the acceptance of these solutions by consumers will only yield limited knowledge of mobile payments.

The current body of research on mobile payments, published after 2006, encourages one to conduct a new, critical literature review. In an paper "A critical review of mobile payment research" Tomi Dahlberg, Jie Guo and Jan Ondrus [2] identified once more the scope of the research to date, based on 188 papers

published over eight years (2007-2014) of which 87 were presented at the most important conferences or journals.

After a careful study of the material it turned out that researchers often "re-invent the wheel". Earlier research demonstrated that up to 2006, "security" and "trust" were important prerequisites for the adoption and use of mobile payments.

In the newer literature, the same results were presented as a significant contribution to development, and similar publications were appreciated again. The authors add that the confirmation of the earlier findings may be sometimes justified. However, the experience of this phenomenon permits to wonder why earlier research results were ignored.

Dahlberg et.al. [1] presented proposals of 22 questions for future researchers. Interestingly, their frequently quoted paper had limited impact on the type of research that was carried out already after its publication. Excessively examined issues still attracted scientists.

In 2008, Dahlberg [1] concluded that there was no need to undertake additional research on the adoption of mobile payments by consumers (using TAM and UTAUT models), especially that we still do not know much about the adoption of mobile payment by merchants. However, the adoption of mobile payment methods by consumers (based on the models presented above) still remained one of the most researched topics and provided a few new observations.

We can wonder, why do we see so much willingness of the researchers to conduct research on the acceptance of mobile payments by consumers? We can speculate that empirical data from consumers about their attitudes and intentions can be easier and more convenient to gather. Another reason may be the fact that journals are still willing to publish such studies, although their relative scientific contribution is clearly limited.

If the above reasons were to be justifiable, Dahlberg et al. [2] express concerns that the small progress made in recent years has created a gap between business practice and the academic world.

In their paper, Dahlberg et al. [2] conducted a renewed critical analysis of the research regarding mobile payments published over a period of eight years (2007-2014). The objective of their work was to compare the scope, methods and research topics, as well as other statistical factors, of mobile payment studies between two periods (1998-2006 and 2007-2014). They also investigated, which of the recommendations from the previous literature overview influenced the research on mobile payments. To improve quality of future research, they also provided an updated list of recommendations.

Since the publication of Dahlberg et.al [1], several works on mobile payments have been written. Recently, Dennehy and Sammon (2015) [4] reviewed 20 papers about mobile payments with the greatest citation frequency in Google Scholar. The authors seem to believe that mixing developed and developing markets can bring

about confusion in the progress of research on payments. They claim that in reality it is unlikely that payment services from developing countries' markets will penetrate developed economies with their advanced financial markets and sophisticated telecommunications and e-commerce infrastructures. Consequently, the authors prefer to avoid directing research towards both of these market types and focus exclusively on developed economies.

Although all three of the above-mentioned works [1, 2, 4] have their merits, there is still a need for an integrated overview of literature and available knowledge with additional presentation of recommendations for future research in developed countries.

To ensure consistency with the previous literature overview in Dahlberg et al. [1], the authors used the same method to search for and classify papers. This approach facilitated statistical comparisons between the two periods. The authors used the same frame and definitions of concepts as those presented in (Dahlberg et al. [1]).

Mobile payment service providers play a key role in the e-commerce ecosystem. However, the actions of other market entities (regulators, financial institutions, device manufacturers, sellers), as well as the impact of market factors (access to the internet, banking, merchants and consumer technologies, legislation, habits of using payment instruments) may influence service providers and other market participants. Therefore, according to the authors, these frameworks permit to examine different strategic scenarios and their capability of affecting participants' competitive position or the condition of the whole market.

Dahlberg et al. [1] found that many papers published in recent years ignored the findings and contributions of earlier works – or simply did not cite them – and achieved the same research results as those in the uncited papers.

The second remark refers to the quality of data. In the initial period of mobile payment research, empirical data were difficult to collect because the phenomenon was just emerging. There were only a few industry experts who could be interviewed. Mobile payments were a kind of "science fiction" for most consumers and merchants. Moreover, historical records did not exist in 2000, except for some advisory reports. Later, however, availability of experts, experiences and sources of knowledge increased significantly. Researchers are expected to use better qualitative data to validate their research and to compare technologies to other alternatives.

In the conclusion of [1], Dahlberg et al. strongly encourage researchers to collect data from the real world. For example, field research, experiments on actual services and experience related thereto, or data on the actual use of mobile payment services will, in their opinion, increase the significance and impact of research in this field. They say that after 15 years of research, it is worrying that we do not know much about the acceptance of mobile payments in the merchants'

community, the competition with other payment instruments and the impact of the changes in commercial, legal, regulatory, social and cultural environments.

Behaviour models, derived from different research lines, are used to investigate consumer behaviour. The three approaches most commonly used in empirical works, originating from the research on attitudes and information systems: Davis' technology acceptance model, Ajzen's theory of planned behaviour and the unified theory of acceptance and use of technology by Venkatesh et al. Barbara Szmigielska, Karol Wolski, Aleksandra Jaszczak, in their work [5], conducted a kind of synthesis of the usage of acceptance models in research.

The theory of planned behaviour and the technology acceptance model were created before the popularisation of the internet and only later were they adapted for the needs of network research. It turned out that the predictive power of these theories is so considerable that they are successful as models explaining the behaviour of internet users. In [5], the authors discuss examples of the application of these theories in the research on such forms of internet activity as using web pages, online shopping, e-learning and social networking sites.

The technology acceptance model (TAM), developed in the 1980's by F. Davis [6], is nowadays one of the most important theories explaining an individual's involvement in using new technologies. It is widely used for explaining the use of a broad spectrum of information technologies in various social contexts.

Davis, similarly to Ajzen [6], assumes that behaviour consisting of the use of information technologies is determined directly by the behavioural intention to use. Intention is explained by the attitude toward using a certain technological solution and its perceived usefulness for the user. Another important factor in this model is the perceived ease of use of a given technology, which has a direct impact on the perceived usefulness and an individual's attitudes to the use of technology.

V. Venkatesh and his co-workers revised and combined the constructs of eight models, which – according to their research – best explained the behaviours related to using information technologies [7]. In this way, the unified theory of acceptance and use of technology (UTAUT) was created. It aims at clarifying the intention of using information technology and behaviours resulting from this intention. According to the authors, this is a concept that allows for assessing the probability of the successful use of the new technology and helps understand the factors that determine its acceptance.

Four factors that directly affect the intention of use and, as a result, also the behaviour, play a key role in the UTAUT theory. These factors are: performance expectancy, effort expectancy, social influence, and facilitating conditions. Additionally, it is assumed that some variables might occur, which moderate the influence of these factors on the intentions of using technology and on the

behaviour. These are: sex, age, experience and voluntary use. The relationships between the constructs in the model are shown in figure 1 [5].

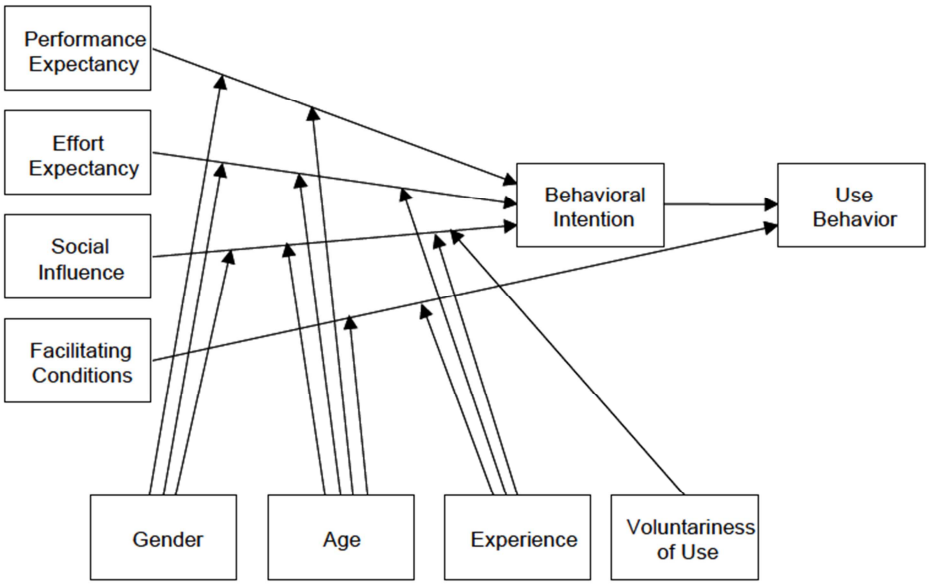

Figure 1. Unified theory of acceptance and use of technology [5]

3. Adaptation of payment systems by merchants

Using mobile payments is often one of many options for merchants. In the current state of knowledge about the acceptance of mobile payments there is a lack of research conducted on merchants. This is probably due to the difficulties experienced by researchers in collecting empirical data. It is easier to access statistical data on end-users than the data obtained from commercial entities that share information with researchers reluctantly or do not share it at all. The scope of knowledge on the technology acceptance in the ecosystem of mobile payments and in the entire e-commerce is limited only to the research on consumers and thus does not give a full image of e-commerce market situation. The aim of this paper is to initiate filling the gaps in the knowledge of this field. Preferences and technical capabilities of the entities accepting payment instruments (merchants) are among the key factors determining the acceptance of online payments, including mobile payments, but it can be noted that past researches are being omitted. If merchants are not able to adopt mobile payments, it might be a dead-end street for m-commerce and consumers. Mobile payments that enable making a payment with one touch are worth mentioning in this line of research [8]. Exploring these new

methods of e-payments and m-payments and their impact on mobile channel acceptance, one can make a significant cognitive contribution to the understanding of the ecosystem of payments from the perspective of merchant of both stationary and mobile payments. The aim of this paper is to explore the determinants that are used by merchants when deciding upon the acceptance of payment systems and building a new model that best explains the choices and preferences of merchants. To provide a comprehensive analysis, extensive research was conducted on the existing literature. The main factors influencing the acceptance of payment systems were identified basing on the commercially available payment system (eXpay [8]). Elements from the UTAUT theory, which are useful for new model, were selected and extended with predicates relevant to the context of the research on the acceptance of payments by merchants (Figure 2).

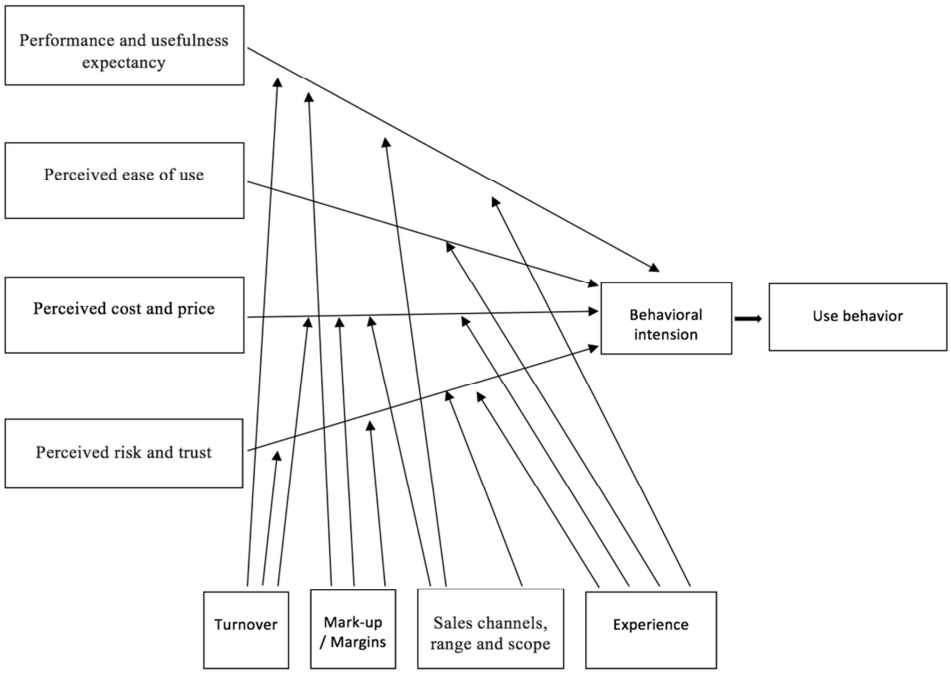

Figure 2. The model of the acceptance of payment systems by merchants

Expected performance and usefulness

This variable determines the belief of the merchant that the use of a particular e-payment system would help him or her to achieve benefits. The strength of the dependency between the expected performance and intention may vary depending on the generated turnover, the mark-up/margins applied by the merchant, sales channels, scope and range, and technical experience of the merchant.

The perceived ease of use and expected effort

It is defined as the level of difficulty of implementing and then deploying a given payment system. It plays an important role only in the initial period losing its importance in the course of a long-term and uninterrupted application of a given technology and system. In this case, the experiences of a merchant are moderators of the relationship between the expected effort and the determinant of the intention of use, while the generated turnover, mark-up, other sales channels, scope and range do not seem to be related.

Perceived cost and price

The price construct is proposed, because the cost and price determine the decision in the area of technology acceptance. Perception of the service cost is positive if the benefits of the technology outweigh the expected expenditures. Then the cost of the service shows a positive influence on intentions. The perception of the cost of the service is affected by all of the mentioned moderators.

Perceived risk and confidence

This factor involves perceived risk of co-operating with a supplier of a particular e-payment system and confidence in it, which is based on reputation. Xin et al. [9] proved that confidence in the e-payment system, its reputation, and the issue of transaction insurance is an important determinant in decision making. Perception of risk and confidence is influenced by all the moderators.

Moderators

The turnover scale of an e-commerce entrepreneur has significant impact on the perceived cost and price construct, but also on the expected performance and usefulness of the payment system, as well as perceived risk and confidence in supplier. A moderator seems to have no connection with the perceived ease of use and expected effort. Like the merchant, the turnover scale, the mark-up applied to an assortment in each industry can influence the construct of the perceived cost and price and other ones, except the perceived ease of use.

Sales channels, scope and range

Merchants can conduct operations and sales in a multi-channel mode. Omnichannel is a new approach to the multi-channel mode, which aims to provide a consistent shopping experience for the consumer, regardless of a channel or channels the consumer use to interact with the seller. The scope can be seen as a serviced territorial sales area, and the range covers the industry and assortment involved in e-commerce.

Experience

The technological experience of a person being the e-shop owner or a person holding the position of an IT expert can be a significant moderator for all constructs.

5. Conclusions

Testing the proposed model basing on empirical data derived from interviews and surveys, and the use of statistical methods will permit to provide a new input to the knowledge of e-payment acceptance by merchants.

Due to better understood choices made by merchants, we will learn more about the structure of the entire e-commerce ecosystem, including what is of greatest importance and what the impact of particular moderators on the model constructs is, along with the behaviour of merchants and, finally, the decisions made by them. The proposed model will permit to set research hypotheses and verify them in the area of payment system acceptance by merchants. The next step in the future research is to gather empirical data from more in-depth interviews and statistical testing of the model on real data.

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