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Adoption of M-Commerce: A Question of Values?

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Abstract

Mobile commerce is experiencing rapid growth. The underlying reasons for adoption of mobile services at the individual level are still unclear. The aim of this paper is to examine theoretical explanations for mobile adoption and to assess the significance of perceived values as an explanatory theory at the individual level. An understanding of consumers' perceived values can be useful for organisations since it has a deeper explanatory capability because it examines the intrinsic rationale in the decision making process. These can be more easily used for predictive purposes.

Keywords

Mobile Commerce, M-Commerce, Adoption, Value, Consumer Value, adoption behaviour

INTRODUCTION

Technological wireless developments such as 3G mobile phones (broadband), wireless application protocol (WAP), General Packet Radio Services (GPRS) and others have enabled new ways to communicate, entertain and transact using multimedia or text via computer networks (Clarke, 2001; Ho & Kwok, 2003). Commerce using an electronic interface is witnessing an unprecedented explosion of mobility, creating the domain of mobile commerce or m-commerce (Clarke, 2001; Ho & Kwok, 2003). It has been observed that e-commerce is positioning itself to take advantage of the growth of mobile devices as an attempt to achieve the massive adoption originally expected from personal computer based e-commerce (Anckar, 2002, Anckar & D'Incau, 2002; Clarke, 2001; Ropers, 2001; Lane, 1998). Academics and practitioners believe that wireless devices will lead to an accelerated growth in e-commerce since technical expertise and hardware costs are lower compared to PC-based e-commerce (Anckar, 2002; Anckar and D'Incau, 2002; Ropers, 2001). Mobile commerce is part of a ubiquitous computing revolution that will have significant implications for society (Lane, 1999).

"Mobile devices have been the fastest adopted consumer products of all time; in 2001 more mobile phones were shipped than automobiles and PCs" (Clarke, 2001, pp134). In fact in 2001 out of the 200 million wireless devices sold in the USA, 13.1 million were personal digital assistants (PDA) and the other 187 million were mobile phones (Strauss et al, 2003). Forecasts estimate that m-commerce worldwide will exceed \$200 billion by 2004 (Levy, 2000; Rockhold, 2000). This represents a great potential for organisations to develop mobile-specific business strategies (Clarke, 2001).

Although data shows that individuals are willing to adopt mobile devices there is a lack of theory explaining the reasons for this. In particular there is a lack of knowledge in relation to the importance of the individual's rationale for adoption, and intrinsic influential factors such as the consumers' attitude and values about electronic channels (Eastlick & Lotz, 1999; Amit & Zott, 2001; Han & Han, 2001; Venkatesh & Brown, 2001; Anckar, 2002). Since m-commerce is thought of as the next driver of e-commerce growth it is critical to understand what induces adoption. However, "the main reason value-adding elements in m-commerce, the consumers' actual reasons – the primary drivers for adopting m-commerce remain unclear" (Anckar, 2002, pp3).

The aim of this paper is to examine theoretical explanations for mobile commerce adoption and to assess the significance of consumer perceived values as an explanatory theory at the individual level. The paper firstly classifies the theoretical perspectives relevant to mobile commerce adoption and then explains the strengths and limitations of the approaches. These are examined in relation to the application domain and results in a model to assist businesses to effectively introduce products that will meet the most significant perceived values of its customers.

Mobile Commerce – Definition & Classification

The term mobile commerce or m-commerce has been widely used by academics and by practitioners, although so far there is not a unanimously accepted definition. In this paper the term m-commerce is used to describe the ability to send and receive communication and purchase goods/services anywhere, anytime through a wireless public (e.g. Internet) or private network enabled device like a mobile phone or a personal digital assistant -PDA (Balasubramanian et al., 2001; Clarke, 2001, and Peterson et al 2002, Han et al., 2002; Junglas, 2002).

It could be argued that the main difference between e-commerce and m-commerce is that m-commerce is associated with wireless technologies (Clarke, 2001; Ankar & D’Incau, 2002; Han et al., 2002; Turban et al. 2002). For example, Turban et al. (2002, p28) have defined m-commerce as “Conduct of e-commerce via wireless devices”. The basic definition of wireless is: The absence of a physical link between the sending and receiving devices (Balasubramanian et al., 2001). It is important to clarify the terminology since it is easy for the concept of m-commerce to be mistaken for its underlying technologies (applications and devices) (Balasubramanian et al 2001, Han et al., 2002). Three key characteristics of m-commerce are now explained: portability, ubiquity and addressability.

Portability

Portability refers to the mobility aspects of communication devices. The portability construct implies that there is not a fixed necessary physical location at the device or application level, i.e. an individual can take the device anywhere (Muller 1999, Balasubramanian et al., 2001; Turban et al., 2002; Junglas, 2002; Microsoft, 2003).

Ubiquity

The ubiquity construct comprises the two characteristics of reach and accessibility. The combination of these two characteristic mean that an individual can be contacted or make a contact at any time from anywhere, in other words make time and space irrelevant (Muller, 1999; Balasubramanian et al., 2001; Turban et al. 2002; Junglas, 2002; Lyytinen and Yoo, 2002).

Addressability

Blattberg and Deighton (1991, pp 6) have defined address as “Anything that locates the customer uniquely in time and space”. In most m-commerce definitions authors have used the word localization (see Muller, 1999; Junglas, 2002; Turban et al., 2002) to describe the characteristics of positioning services like Global Positioning System (GPS) that enable consumers and marketers to push (send) or receive information in context of where the consumer is located at that moment.

These three concepts help us to define the conceptual significance of mobile commerce independent of the hardware.

Theoretical Framework

In the following literature review relating to consumers’ adoption of new products/ technologies, a few different frameworks are identified: Rogers’ Diffusion of Innovation theory, Ajzen’s Theory of Planned Behaviour (TPB) and The Technology Adoption Model (Davis et al 1989) which derives from Ajzen’& Fishbein’s Theory of Reasoned Action (which TPB is based upon). Sheth’s (1991) theory of consumption values is also analysed, although this model hasn’t been directly applied to technology adoption, its unique perspective on consumption values can be a valuable insight to better understand m-commerce adoption drivers.

As technology evolves the Internet becomes ubiquitous (Watson et al 2002). Internet based services grow exponentially getting to be delivered in many different ways, using interfaces such as Mobile phones, PDAs even kitchen appliances e.g. LG Internet refrigerator. The more technology becomes part of every day life the understanding of the reasons underlying consumers’ adoption becomes paramount.

Consumers’ adoption of new technologies/services depends on several factors, for example the type of to be offered, how comfortable people feel using the technology, how user friendly is the service interface, socio-economics, motivation (benefits), culture, demographics and psychographics, time that the customer expects to use the service and past experience (Daghfouls et al., 1999; Sultan & Henrichs, 2000). With that many variables it is difficult to have one best theory to explain, as different theories will focus on different aspects of the adoption process.

Diffusion of Innovation Theory Diffusion models have been used by several scholars as the main framework for understanding adoption of consumer durable innovations over time (see Sultan and Henrichs, 2000; Mahajan et al., 1990; Feder and O’Mara, 1982; Jensen, 1982; Srivastava et al., 1985; Stoneman, 1981; Bass, 1980).

As a theoretical framework, diffusion of innovation theory concentrates on how consumers learn about an innovation. It draws on the communication channels and on the fact that people from the same social system will depend on media and interpersonal communication differently (Mahajan et al., 1990)

The main driving force underlying the contributions on diffusion theory was the new product growth model suggested by Bass (1969) and Rogers' (1962) model of adoption of innovations. According to Mahajan et al (1990) Bass' theoretical model have been used for predicting innovation diffusion in several markets and have been used by companies such as Eastman Kodak, RC, IBM, Sears and AT & T (Bass, 1986 in Mahajan et al., 1990). Bass' model assumes that potential adopters of an innovation are influenced mainly by two means of communication: mass media and word of mouth (Rogers,2003; Mahajan et al., 1990).

The development of diffusion theory started in 1957 to 1961 with the economists Griliches 1957 and Mansfield 1961 (Daghfous et al., 1999). The Marketing framework appeared through Bass (1969) and Rogers' (1962,) the Diffusion of innovation theory (Daghfous et al., 1999,2003).

Diffusion of innovation theory has been used mostly to establish marketing decision variables such as advertising, as well as communication variables existing in the basic model of diffusion already (Daghfous et al., 1999).

Rogers (1962) model of adoption of innovations, focused primarily on the individual as the adopter of the new product (Rogers, 2003; Daghfous et al. 1999). Several academics and practitioners such as Baumgarten (1975), Darden & Reynolds (1974), Green & Langeard (1975), Goldsmith and Hofacker (1991) have used his model to better understand the individual adoption process and the link between adoption behaviour and its strategic implication in new product development (Daghfous et al, 1999). This research field seeks to identify the different individuals, and groups of adopters the called Innovators (Daghfous et al, 1999). Even using Roger's different categories within the Innovator group i.e. early adopters, early majority, late majority and laggards the focus of research is still the "innovator", the consumer who learns "first hand" about the innovation, while the imitator behaviour is considered to be a copy as he/she learns about the innovation through WOM.

It is also important to stress that innovation, in the diffusion model, is represented by consumer durables or technology products like stereos system, television sets, refrigerators, and mobile phones (Norton & Bass, 1986). In consumer durables sector older technologies are constantly being replaced by newer ones. Therefore exists a body of the literature dealing with technological substitution (Norton & Bass, 1986). Within the marketing literature the majority of substitution models are based on market share. According to Norton & Bass most substitution theories know the size of its market and assume that there is demand for the newer version, while diffusion theories help marketers to forecast a potential market and it is essentially a first purchase model.

Theory of Reasoned Action

An alternative framework to study adoption of technology was done using Fishbein's and Ajzen's (1967) Theory of Reasoned Action (TRA). It claims that the intention to behave is affected directly by what the authors called attitudinal components (beliefs about the outcome of the behaviour and beliefs of the consequences of the behaviour), and the subjective norm component (level of importance or desire to please significant others and/ or society). One of the theory's main limitations was that it did not account how people perceived the control they have over the behaviour, either as internal control or external control (Brown, 1999). This led Ajzen (1988) to add a third dimension to TRA – Perceived behavioural control. The addition of this third dimension has resulted in the Theory of Planned Behaviour (TPB) (Chau & Hu 2001; Brown, 1999, Sheth et al 1999; Sideridis et al 1998, Ajzen 1991)

Theory of Planned Behaviour

As stated before, Ajzen's (1988) Theory of Planned Behaviour (TPB) is an extension of Theory of Reasoned Action (TRA) (Chau & Hu 2001; Sheth et al 1999; Sideridis et al 1998, Ajzen 1991). This theory has been widely used as the basic framework to understand the behaviour toward the attitude of adopt new technologies/ services (see Au & Enderwick 2000, Venkatesh & Davis, 2000; Venkatesh & Smith 2001; Han et.al. 2002)

The IS research community, not only have used TPB to understand adoption behaviour, but have also drawn from this theory to conceptualize a deconstructed belief composition for technology adoption (see Taylor & Todd in Venkatesh & Brown, 2001). Equally the Technology acceptance model, TAM derives from TRA (Davis et al., 1989; Chau and Hu, 2001)

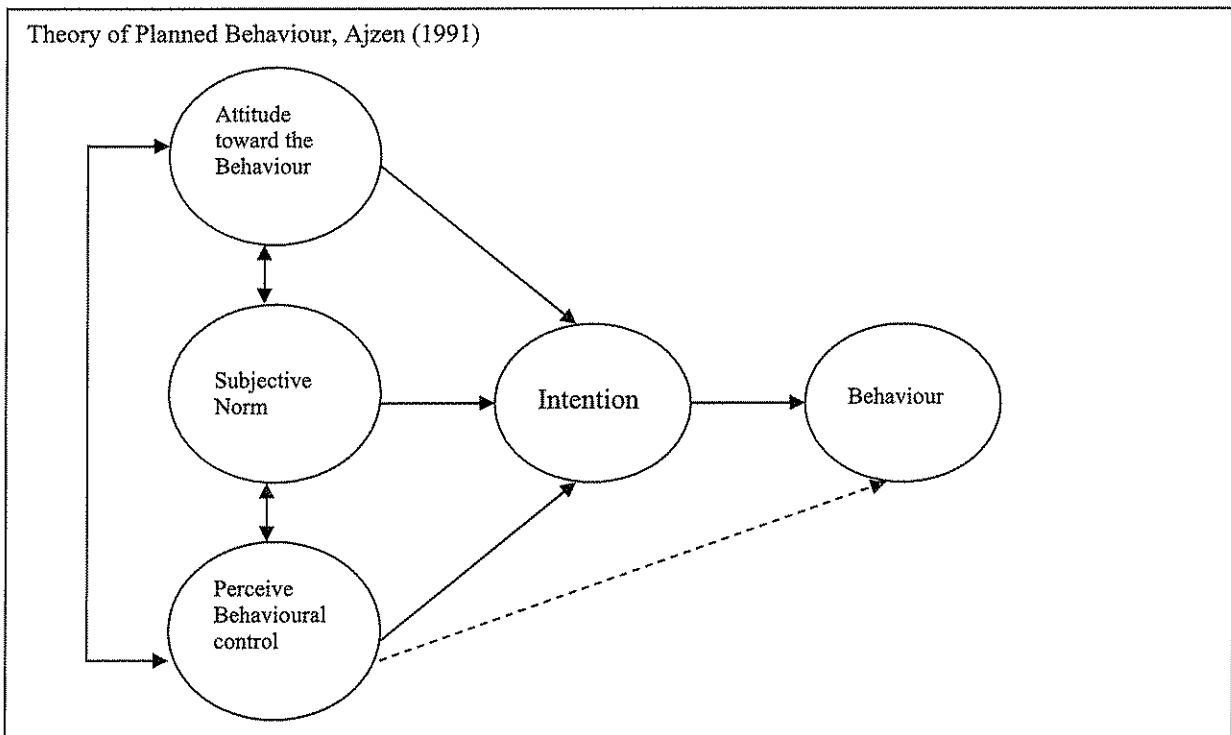


Figure 1: Ajzen's Theory of Planned Behaviour

Ajzen's (1991) theory is applied as a way to understand the adoption process from the cognitive behaviour perspective. As illustrated on figure 1 the intended behaviour (adoption) is the key central variable and it is affected by three different components, attitudinal, subjective norm and perceived behavioural control. The attitudinal component refers to internal beliefs that a certain individual has towards the behaviour and its outcome. The subjective norm relates to external influences, i.e. the desire to please people or groups considered influential e.g. family or close friends and how important is the behaviour in the individual social context. The perceived behaviour control component looks at uncontrolled external circumstances, e.g. a sudden snowstorm may have a direct impact on the decision of going out shopping that day. While the attitudinal dimension encompasses beliefs, the subjective norm and perceived behavioural control refer to outcomes from attitudinal beliefs. In using the TPB to study adoption researchers are trying to understand the behaviour toward adoption, not the attitude toward the product/service/technology per se (Sheth et al., 1999).

One may say that the utilization of TPB to study adoption aims to identify the psychological and social cultural factors that influence an individual adoption. Therefore, TPB studies the behaviour toward adoption. However when applied to the study of the adoption behaviour, TPB tend to focus on Rogers' model concentrating on the innovator linking TPB with the diffusion model. As an attempt to identify a new model, Daghfous et al., (1999) presented a cross-cultural study focusing on the individual personal values. In their study the authors have used human values to explain "innovativeness". They argued that in the marketing literature the advantage of values is that it exceeds geographical and social-cultural limitations. Nevertheless their study was still an attempt to identify specific drivers within the "innovators" group.

The Conceptualisation of Values

The concept of values is placed at the centre of multiple social sciences disciplines. Anthropology, economics, education, history, marketing, political science, psychology, sociology etc, all have values as a key variable on its literature (Rokeach, 1973). Nevertheless the concept of value has been employed in two different connotations: Values as an individual core belief, for example, when said that person values are x and as a perceived direct or indirect benefits of a product/service (Rokeach, 1973).

In the marketing literature, values concept has been widely used to elucidate consumer behaviour including adoption of new products. Despite that fact few on values was found in the IS literature and the fact that researchers in the field have clearly highlighted the importance of identifying intrinsic influential factors in the adoption behaviour such as values in particularly in the adoption of mobile commerce (Anckar & D'Incau, 2001; Anckar, 2002; Han et al., 2002).

Personal values, Perceived Values and Consumption (Product) Values

As previously discussed, Daghfous et al. (1999) used the concept of “personal values” drawing from sociology and psychology to explain adoption of new products. Daghfous et al., (1999) and Kamakura and Novak (1992) have used Rokeach (1973, p5) definition of values: “A value is an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence”.

The underlying concept of Values in the “Values and Lifestyle System”-VALS theory and the “List of Values”-LOV theory is drawn from the connotation of value as an individual core belief i.e. “Personal Values” (see Novak & MacVoy 1990; Kahle & Kennedy 1989; Kamakura & Mazzon, 1991; Kamakura & Novak, 1992; Kahle, Beatty & Homer, 1986).

On the other hand the meaning of “Perceived Value” is drawn from definitions elaborated around the “value-for-money” concept. Valerie Zeithaml’s (1988) definition, in particular, seems to be one of the most accepted (see Woodruff, 1997, Sweeney et al., 1999; Ankar & D’Incau, 2002). She depicts value as: “The consumers’ overall assessment of the utility of a product based on their perception of what is received and what is given” (Zeithaml, 1988, pp14). It is important to emphasize that although not only the product and service qualities identified during the purchase were acknowledged in the Zeithaml (1988) definition of value but also possible losses in the long run.

The concept of perceived values can be called product values as it refers to what consumers’ value in terms of product characteristics/benefits. This concept has been considered an important source of competitive advantage for manufactures and retailers (Sheth et al., 1991, Woodruff, 1999; Forester, 1999; Sweeney & Soutar, 2001)

Sheth, Newman and Gross (1991a, 1991b) conceptualized a model to help comprehend how consumers make decisions in the marketplace. They based their model on the principle that the choices consumers make are based on their perceived values in relation to what the authors called “market choice” (see fig below), and that the perceived values contribute distinctively to specific choices. Because their model looks to understand what are the product values that attract consumers it can be viewed as a way to understand the attitude towards the product, making this a proactive way to understand to m-commerce adoption. In their theory, Sheth et al., (1991a, p16) explained market choice behaviour as a multidimensional model. Three dimensions were identified

- Consumers’ choice to purchase or not purchase a product (or service)
- Consumers’ choice of one type of product over the other
- Consumers’ choice among brands

They have classified five categories of perceived values. Functional values are the associated with the utility level of the product (or service) compared to its alternatives. Social values could be compared with the subjective norm dimension on the TPB, as it is associated with willingness to please and social acceptance. Emotional values are those choices made based upon feelings and aesthetics. A common example would be choice of sports products. Epistemic values can be used to describe the early adopters in the sense that it relates to the novelty or knowledge searching behaviour words such as cool and hot are often associates with this value. Finally the conditional value, as it is implied refers to set of circumstances depending on the situation (E.g. Christmas, Wedding etc.). Socio-economical and physical aspects are included in this value. These five values were conceptualised based on a diversity of disciplines including social psychology, clinical psychology, sociology, economics and experimental psychology (Sheth et al 1991a).

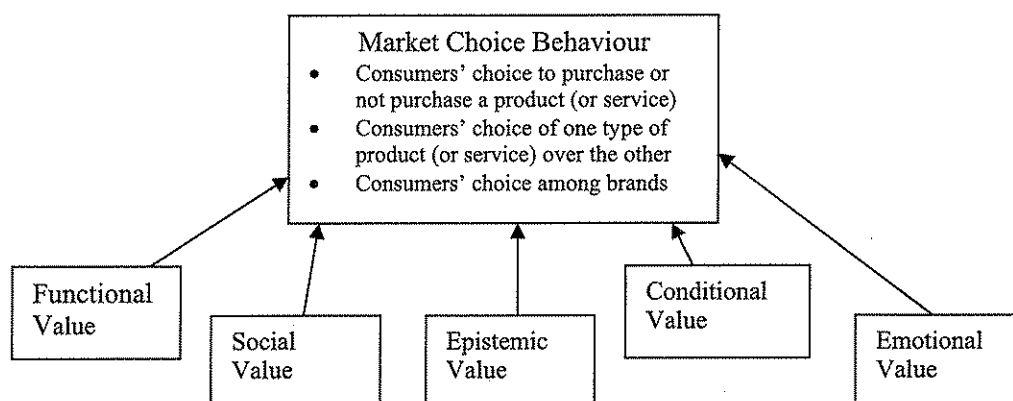


Figure 2: Theory of Consumption values (Sheth et al.)

Although this theory has not been used to explain adoption, its unique conceptualization of product values would add the multidisciplinary approach towards the understanding the attitude (adoption) toward the product. The limitation of this theory to understand adoption is that it cannot be used to understand organisation adoption, as it does not allow address influential factors that affect purchase couples or group adoption. Another limitation is that this model cannot be used to understand adoption in cases where the buyer is not the user. Nevertheless Sheth's et al. model, (1991) "provides the best foundation for extending value construct as it was validated through an intensive investigation of the variety of fields in which value has been discussed" (Sweeney & Soutar 2001 p205).

The application of Sheth's model would help to provide the understanding of the intrinsic influential factors, i.e. values, about electronic channels, in particularly m-commerce (Eastlick & Lotz, 1999; Amit & Zott, 2001; Han & Han, 2001; Venkatesh & Brown, 2001; Ankar, 2002) the Theory of Consumption Values can identify the main value-adding elements in m-commerce, the primary drivers for adopting m-commerce.

	<i>Theory Abstract</i>	<i>Strengths</i>	<i>Limitations</i>	<i>Main References</i>
<i>Diffusion of Innovation Theory</i>	Concentrates on how consumers learn about an innovation. It draws on the communication channels and on the fact that people from the same social system will depend on media and interpersonal communication differently	It has been the main framework used to study consumers' adoption of innovation over time. Empirically validated	Focus primarily on the communication issues and product life cycle. Does not proactively help to understand option behaviour	Rogers (1962) Bass (1969) Rogers (1995, 2003)
<i>Theory of Reasoning Action</i>	TRA states that intention to adopt is affected directly by attitudinal components (beliefs about the outcome of the behaviour and beliefs of the consequences of the behaviour), and the subjective norm component (level of importance or desire to please significant others and/ or society).	Cognitive model Work at the individual and organisation level	Studies the attitude towards adoption behaviour Limitation in dealing with behaviours which people don't have or don't perceive to have complete control	Fishbein & Ajzen, (1973) Ajzen & Fishbein, (1980)
<i>Theory of Planned Behaviour</i>	TPB is an extension of TRA. It adds a third dimension The Perceived behaviour control component that looks at uncontrolled external circumstances.	Gives an understanding of the adoption process from the cognitive behaviour perspective	Studies the attitude towards adoption behaviour not attitude towards the product	Ajzen, (1991, 1988, 1985)
<i>Technology Adoption Model</i>	TAM can be described as an adaptation of TRA customised to technology acceptance. The intention to adopt is affected by two beliefs: Perceived usefulness and the perceived ease of use the new technology	Model customised for the study of user acceptance of information systems/technology.	Same as TRA Draw upon studying attitude toward behaviour not attitude toward the product	Davis, (1986) Davis et al., (1989)
<i>Theory of Consumption Values</i>	The choices consumers make are based on their perceived values in relation "market choice" and that the perceived values contribute distinctively to specific choices.	Studies attitude toward the product/service/ technology Business proactive identify adoption drivers Marketers can develop /promote products accordingly to its perceived consumption values The 5 values provide a simple and broad framework	Haven't been used towards technology adoption Don't address influential factors that affect purchase decision involving 2 or more individuals e.g. couples or organizations	Sheth et al., (1991)

Table 1: A Comparison of Adoption Theories

A summary of the strengths and limitations associated with the theoretical perspectives on adoption of technology are presented in table 1.

CONCLUSION

A consumer perceived values perspective has a number of implications for mobile services companies. Many organisations analyse consumer behaviour when developing a product and the associated marketing strategy. This has a number of limitations since analysing the attitude towards adoption does not provide the underlying

reasons and rationales for consumer decision making towards the product. A consumer values perspective has a deeper explanatory ability because it examines the underlying rationale in the decision making process. This can more easily be used for predictive purposes. For example, a main driver for teenagers using mobile phones is the relatively low cost for text messaging, however the motivator for use is the intrinsic social aspect of the service which caters and builds upon an existing community of use.

The community of use shapes perceived consumer values towards a service. A particular profession may put heavy emphasis on certain types of business services and so the individual within the profession places a high value on those services also. The facility to pay for parking via a mobile phone has a functional value attached to it since it maybe perceived as being more convenient and efficient as a method of payment. This may apply mainly to inner city workers where parking is problematic and a daily activity.

Product and service developers need to examine these deeper factors to come to a sophisticated understanding of their adoption related decisions. Previous theoretical explanations for technology adoption are low in terms of predictive capabilities. This paper suggests that the consumer perceived values approach has significant potential not only in explaining adoption decisions on an individual level but also across communities of use or practice. These communities exist in the business world as well as society in general.

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