

Mobile Payments: their effect on purchase behaviour

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Abstract

A handful of studies address the issue that the mode of payment affects perceptions of money and purchase behaviour. Most of this research is in the area of credit card payments and this research shows that when a credit card based payment is used, the volume, value and type of products purchased increase. It is not known if this is due to the 'credit' element or the 'cashless' element. The notion that the tangibility of cash influences perceptions of money is not novel, but it is untested. This discussion paper suggests that under conditions of cash, there is awareness (conscious/unconscious) that a possession of value transferred and this perception may well have a direct impact on people's purchase behaviour.

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Introduction

Advances in digital technology have facilitated payments by electronic transfer systems (ETS). Such systems use fixed connection points but increasingly ETS are now possible via mobile devices. ETS enable cashless payment modes and the growth of ETS has led to predictions of a 'cashless' society (q.v. Humphrey and Berger, 1990; Humphrey, Lawrence and Vessala, 1996; Olney, 1999; Klee, 2004; Garcia-Swartz, Daniel, Hahn and Layne-Farrar, 2007). In a cashless society, consumers can make payments over the Internet, payment at 'unmanned' vending machine, 'manned' point of sale (POS) using mobile phone device, personal digital assistant (PDA), smart cards and other electronic payment systems, including debit and credit cards. Though, existing card payments are suitable for all purchases their transaction costs are too high to be profitable in micropayment transactions (Zinman, 2005; Mallat, Rossi, and Tuunainen, 2004). The cost factor aside, there is increasing interest in the use of Mobile (ETS) payment particularly in the area of micropayment transactions (Menke and de Lussanet, 2006; Ondrus and Pigneur, 2006).

During the 1980s a stream of research emerged that focused on the impact of credit card use on consumers spending and purchase behaviour. These studies show that where credit cards are used, purchase spend per transaction is increased (Hirschman, 1979; Feinberg 1986; Prelec and Simester, 2001; Prelec and Loewenstein, 1998). At this stage however we do not know whether it is the credit factor or the absence of 'cash' that influences point of purchase behaviour. When a debit card is used, consumers access their accumulated funds (owned money) so it is not clear whether the increased spend is a function of the availability of credit or the absence of cash. If it is merely the absence of cash- then all forms of electronic transfer systems, including mobile payments could impact on purchase behaviour at point of purchase. This discussion paper presents a case for research into mode of payment effects on purchase behaviour and that the research should explore the relationship between the physicality of cash perceptions and purchase behaviour.

Mobile Payment

While cash and cheques are still prevalent, and indeed dominate, in some parts of the world, electronic payment mechanisms and especially, mobile payments are gaining consumer acceptance in many economies due to infrastructure support (Herzberg, 2003). In some countries, advanced smart payment systems are in operation. For instance, in Hong Kong, a contactless and rechargeable smart card allows consumers to pay their bus and train fares, buy snacks at vending machines and cafes, pay parking fees and also pay for access to sporting facilities (Yoon, 2001). For more than a decade, there have been several attempts to integrate 'smart card technology' into 'mobile devices' to enable mobile payments for business to consumer (B2C) payment transaction processing. In the era of third generation (3G) mobile network, mobile payment is eminent. Many of the European and Asian countries, including Korea, Singapore, and Japan have adopted this technology (Pousttchi, Sciessler, and Wiedemann, 2009). In Japan, it is possible to pay for a vending machine snack by simply dialing a number on one's mobile phone and having the amount charged to one's phone bill. In recent times, the mobile phone is increasingly used to purchase digital contents (e.g. ringtones, music or games) tickets, parking fees and transport fares in many developed nations just by flashing the mobile phone in front of the scanner at 'manned' and 'unmanned' point of sale (POS).

For the purpose of this paper, *mobile payment* is defined as a type of payment transaction processing in which the payer uses mobile communication techniques in conjunction with mobile devices for initiation, authorization and confirmation of an exchange of financial value in return for goods and services (Pousttchi, 2008; Flattraaker, 2008). Au and Kauffman (2008, p.141) suggest that mobile payment is a type of 'electronic payment transaction' in which at least the payer employs mobile telephony device for the realization of payment". Though cards have a degree of mobility they require technology external to the card to function, this is not the case with mobile wireless based systems. Two forms of mobile payments are available: the *mobile credit card* and *mobile wallet*. A *mobile wallet* is in essence a smart card application stored in a mobile device that functions in a similar manner to debit cards and has bank accounts and security authentication tools (Flattraaker, 2008). On the other hand, a *mobile credit card* (using the mobile handset) functions as a credit card and permits online purchasing (Dahlberg, Mallat, Ondrus and Zmijewska, 2006).

Payment Form influences Purchase Behaviour

When 'owned money' is used to pay for something via a card or a mobile system, does the absence of cash affect purchase behavior? Electronic payment systems lack 'transparency' and this transparency factor has had limited attention. An emergent view is that ETS create a mental 'decoupling' and that the *pain of paying* (the emotion consumer experience in parting with money) is decreased (Loewenstein and Prelec, 1992; Soman, 2001; Zellermayer, 1996) Soman (2001) suggests that payments by cash and cheques are both memorable and painful and that electronic transfers are less so. As the electronic payment mode is low in both salience and vividness, this causes an underestimate of past spending, and an increased propensity to spend more in the current transaction. He concludes that, the use of cash renders the experience of parting with money vividly and thus highly salient and thus more 'painful'. There is research (though not in the context of purchasing behaviour) that supports the notion that the physicality of notes and coins affect perceptions, judgments and behaviors (q.v. Bruner and Goodman, 1947; Lea, 1981; Furnham, 1983; Leiser and Izak, 1987; Brysbaert and d'Ydewalle 1989; Burgoyne, Routh, and Ellis, 1999). Loewenstein, Prelec, Soman and Zellermayer suggest that cash attenuates the pain of paying however their research did not explain why. One possible explanation is that the tangibility of cash alters perceptions at the point of purchase in that the physicality of cash heightens the value of the 'thing' transferred'. This decoupling puts the experience at a distance and so value accounting is diminished. This 'value' in the physicality of money has a historical basis.

Perceptions of Cash

The literature relating to the concept of money is vast and complex. According to Snelders, Lea, Webley and Hussein (1992) money is a typical polymorphous concept, i.e. a concept whose definition and boundaries cannot be specified precisely. An outcome of this is that discussion and research is found in numerous disciplines and across numerous perspectives. Underlying the concept of money is the notion that it is a medium of exchange, measure of account, and means of storing and transporting abstract value (Keynes, 1930; Grierson, 1977; Hicks, 1989; Hoover, 1996). As a medium of exchange, it is considered superior to barter in terms of reducing transaction cost. Barter requires an improbable coincidence of wants or events and balancing value. Overcoming this without money requires some system of in-kind "credit" or "gift exchange", restricting trade to those who know one another. Money based

transactions differ from barter in that the burden of trust is removed from the participants in the actual transaction and placed on a third party, the issuer of money of the transferable token. In this sense, coins and notes embodied a store of value within a conveniently portable medium of exchange and acceptable means of payments (Ingham, 2004).

The use of token based monetary has been a facet of societies for millenniums so that psychological attachment to this form of money is understandable. That this may well have impact on how 'token' based money is perceived is also understandable. How the 'value' of a currency of a society is agreed, is a central issue. The value accorded to the token and/or what it represents is a social construction. According to Weber (1947, 1978) the means of storing and transporting this abstract value consists in the social organisation of the monetary system. It is only by social agreement that a 'token' is able to embody the value agreed and by doing so removes the need to anchor the value of the token to the time and space of any actual transaction.

The system of commodity money in many instances evolved into a system of representative (fiat) money. This occurred because banks would issue a paper receipt to their depositors, indicating that the receipt was redeemable for whatever precious goods were being stored (usually gold or silver money). In this system, paper currency and non-precious coinage had very little intrinsic value, but achieved significant market value by a promise to redeem it for a given weight of precious metal, such as silver. The British Pound was a unit of money backed by a pound (based on the weight of wheat) of sterling silver. For most of the 19th and 20th centuries many currencies were based on representative money through use of the gold standard. In the case of commodity money, trust was placed in the inherent value of the metal or other commodity which constituted the form of payment. In the case of receipt, trust was extended from the commodity to the social organization that held the commodity (bullion) and issued the receipts. Representative paper money made possible the practice of fractional reserve banking, in which bankers would print receipts in excess of the amount of actual precious metal on deposit. The shift to representative money required a psychological willingness on the part of the individual to accept a symbol in place of a physical object and a social willingness on the part of the collective to evolve organizations and systems of account that could gain and hold the public trust.

Until the 20th Century this promise to redeem the 'representative' money for a thing of tangible value i.e., a given weight of precious metal, such as silver suggests that the representative money (the token) was 'tangibly' linked to something of accepted value giving the token itself an inherent value. There is some evidence, apart from 'hoarding behaviour', that the physicality of money influences our perceptions. For example, Bruner and Goodman (1947) found that children tend to overestimate the size of coins relative to other, physically similar, stimuli. The conceptual basis of this research is that that people may perceive money differently based on actual size, shape and colour (Saugstad and Schioldborg, 1966). That they do so may be a function of an inappropriate choice of anchor, or the inadequate level of adjustment. Behavioural economists such as Tyszka and Przybyszewski (2006) link this to the *money illusion* concept (Raghubir and Srivastava, 2006; Mishra, Mishra, and Nayakankuppam (2006). The nature of the illusion is that people have the tendency to use the nominal value of money as an anchor when evaluating the value of goods, and that they neglect the real value of money (Fisher, 1928).

One explanation for this illusion is Tajfel's accentuation theory (1959). This theory claims that people, apart from using information about physical features of objects or psychological features of persons, also use category information to form their evaluation. Where objects are

consistently categorized or labeled, the information about the objects and that contained in the category itself guides the processes of making judgments. As a result, the perceived differences between objects belonging to different categories increase, and the differences between objects within the category decrease. This means that objects in the same category are seen as homogenous and the differences across the categories as larger than in reality. Burgoyne *et al.*, (1999) demonstrated that tangible currency has a specific emotional meaning in that people tend to develop an emotional attachment to and often a dependence on a certain mode of payment. Related to this is the work of (Lea, 1981; Furnham, 1983; Leiser, Izak, 1987; Brysbaert and d'Ydewalle, 1981). Lea (1981) found that pre-decimal British coins were remembered as larger than the identical coins under their decimal form. Furnham (1983) found a similar effect for an obsolete design of pound note. Research along the same lines has been carried out in other countries by Leiser and Izak (1987) and Brysbaert and d'Ydewalle (1989).

From a purely cognitive perspective, the form of money or its appearance should make no difference to money users. A growing body of literature demonstrates that the normative principle of descriptive invariance (which holds that preferences should not vary when the same objective stimuli are represented differently) is commonly violated in the domain of money (e.g., Gourville, 1998; Raghuram and Srivastava, 2002; Shafir, Diamond, and Tversky, 1997; Shefrin and Thaler, 1988). Shefrin and Thaler (1988) argues that the money in one mental account is not a perfect substitute for money in another account. This is because people tend to categorise income and expenditure into different mental accounts and treat money differently depending on how it is labelled, thereby, violating the normative principle of fungibility (commodities that can be traded or substituted for an equal amount of a like commodity). According to the normative principle of fungibility- at the point of purchase, a mental accounting is opened and decision to purchase is based on evaluation of perceived benefit and cost of purchases rather than the payment form used (Prelec and Lowenstein, 1998).

Conclusion and Future Research

Although not a widely discussed phenomenon, philosophers and economic psychologists recognise that it is common for individuals to regard money as 'substance'. That people place a material value on cash is evident in hoarding behaviour and in numismatics. In addition, the commodity theory of money sees money as a 'good' linked to a precious metal (or alternate physical objects) or its convertible paper symbol i.e. "*Money is essentially material and tangible; it can be stored and passed from hand to hand.*" (Ingham 2004). The underlying assumption is that the tangibility of notes and coins creates awareness (conscious/unconscious) that something of value is being exchanged. This is in part, intensified by the consumers' ability to process transactional information using perceptual senses such as sight and touch and translates into an immediate experience of the amount spent. Under and ETS payment condition, consumers may not, at that specific point, be mentally (or emotionally) 'tuned in' to the actual amount of money being spent. When paying via and ETS (fixed or mobile) the consumer only has to swipe a card or in the case of the mobile device flash the device in front of scanner. From this perspective, it is plausible that at the transaction point, the consumer is more aware of the price of the good if they pay with a cheque or cash than via an ETS.

Given the strong support for ETS it would seem sensible to assume that ultimately, this form of money transfer will prevail. Even so, it is prudent to understand the potential social and

environmental impact of ETS based payments. The credit card based research, though limited shows that where such cards are used volume and value per transaction increases. Whether or not the use of debit/smart cards along with mobile payments has the same outcome needs to be ascertained. Such research will need to control for factors such as cultural values and norms, age and experiences. Studies show that money perceptions and use vary across different social and cultural contexts (Bohannon, 1955; Zelizer, 1994; Fleming, Taipa, Pasikala and Easting, 1997; Singh, 2000; Demosthenous, Robertson, Cabraal and Singh, 2006); age and experience (Pahl, 1999; Singh and Ryan, 1999; Simester and Prelec, 2001) and money management skills (Swartz-Garcia et al., 2007). In addition the purchase context needs to be considered as the use of mobile payments when paying for infrequently purchased, expensive goods as opposed to frequent, routine, inexpensive items.

Though *decoupling* and *pain of payment* have been proposed there is no substantial empirical evidence supporting this thesis. We propose that this linkage should be ascertained. Such research should necessarily capture perceptions of money as a tangible entity and so a phenomenological approach to data collection is desirable. The identified perceptions should be matched to behaviour. Given that the physicality of token money affects the behaviour is the key thesis then observation of actual behaviour under various payment modes is preferred. This can be managed through naturalistic field based experiments and/or scenario (or role play) laboratory experiments where the purchase behaviour can be observed and recorded. Research shows that *gender* (Yamauch and Templer, 1982; Furnham, 1984; Pahl, 1999; Singh and Ryan, 1999), *age* (Furnham, 1984; Prelec and Simester, 2001) and *education* (Furnham, 1984; Pahl, 1999)) affect money perception and use so it is necessary to identify and control for these factors. The use of the experimental mode does compromise the generalisability of the findings but it does improve internal validity and the use of standardised procedures support replication.

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