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# "Cashless" transactions: perceptions of money in mobile payments

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**Abstract**

A limited number of 'cashless transaction' studies addressed the issue that the mode of payment affects perceptions of money and purchase behaviour, the majority of the research is in the area of the credit card payment mode. Credit card based research has shown that when a credit card based payment is used, the volume, value and type of products purchased increase. Whether this is due to the credit element or to the 'cashless or mobile' element of the transaction is not known. 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 perception of money and their spending behaviour.

**Keywords:** *Cashless transactions, mobile payments, money, debit cards, credit cards*.

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## 1. Introduction

Some observers (q.v. Humphrey and Berger, 1990; Humphrey et al., 1996; Olney, 1999; Klee, 2004; Garcia-Swartz et al., 2006) suggest that the increased use of cashless payment system, (i.e. money or scrip which is exchanged only electronically via computer networks) has led to predictions of a 'cashless' society. 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. Governments and commercial entities provide strong encouragement and support for cashless transactions. Although there are benefits such as cost saving and efficient use of resources, social commentators and environmental activists have expressed concerns that it would increase overall consumption, increase personal debt levels, reduce savings and that the resultant 'over-consumption' will have an adverse impact on the society and environment (Nocera, 1994; Libow, 1955; Taylor and Tilford, 2000; Zavestoski, 2002; MacDonald et al., 2006).

There is limited evidence that these commentators may be correct. During the 1980s a stream of research emerged that focused on the impact of credit card use on consumers spending and purchase behaviour. All of 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). An issue not resolved is whether it is the credit factor or the absence of 'cash' and or mobility factors 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.

## 2. Background: Mobile Payments

While cash and cheques are still prevalent in some parts of the world, electronic payment mechanisms and especially, mobile payments are gaining consumer acceptance in many economies due to the high penetration of mobile phone

technology (Herzberg, 2003). In some countries, more 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 et al., 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, pp.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 (Flatraaker, 2008). On the other hand, a mobile credit card (using the mobile handset) functions as a credit card and permits online purchasing (Dahlberg et al., 2006).

An issue not resolved is 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. Both modes lack 'transparency' and this transparency factor has had limited attention. Loewenstein and Prelec (1992) and Soman (2001) suggest that the use of a card creates a mental

'decoupling' whereby the pain of paying is decreased (Zellermayer 1996). Soman (2001) suggests that the tangibility of cash creates an increased awareness of the actual transaction cost. 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 behaviours (q.v. Bruner and Goodman, 1947; Lea, 1981; Furnham, 1983; Leiser and Izak, 1987; Brysbaert and d'Ydewalle 1989; Burgoyne et al., 1999). Loewenstein and Prelec (1992) and Soman (2001) and Zellermayer (1996) 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 of puts the experience at a distance and so value accounting is diminished. This 'value' in the physicality of money has a historical basis.

## 3. Background: Perceptions of Cash

The literature relating to the concept of money is vast and complex. According to Snelders et al. (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- usually in the form of a 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 millennium, it is natural that people would develop psychological attachment to this form of money and this may well have impact on their perception of actual money. How the 'value' of a currency of a society is agreed, is therefore a central issue. The value accorded to the token and/or what it represents is a social construction. According to Weber (1947) the

means of storing and transporting this abstract value consists in the social organisation of the monetary system. It is only by these means that money is able to embody the abstraction value by lifting any material object or commodity attached to it but also out of any anchorage in the particular 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 nineteenth and twentieth 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 'hording 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 et al., 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. 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 labelled, 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). More recent studies on attitudes towards transition from a national currency to the euro in many European countries show that opposition to the common euro currency does not come from the perceived economic personal benefits, but originates from emotional feelings towards national currency (Burgoyne et al., 1999).

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; Raghubir 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 fungiblity (commodities that can be traded or substituted for an equal amount of a like commodity). According to the normative principle of fungiblity- 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).

## 4. Conclusions 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 hording 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 could be stored and passed from hand to hand- it circulated" (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 a mobile 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 with mobile device such as mobile phone a consumer only has to 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 with a mobile phone.

Given the strong support for mobile payment is 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 mobile payment use. This means that it is advisable to carry out empirical research into how people perceive 'cash' and to ascertain if it is the use of mobile payments that encourages consumers to spend more (via increased purchase and/or increase cost per items). 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 (Bohannan, 1955; Zelizer, 1994; Fleming et al., 1997; Singh, 2000; Demosthenous et al., 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.

Managerially, the discussion topic is relevant in formulating new guidelines to safeguard consumers' interest under a cashless environment. The findings will direct the actions of community, environment groups, government and business decisions. For example, if the use of mobile payments increases volume and overall amount spent per purchase then community and environmental groups may lobby government and commercial organisations such as banks to develop awareness and educational programs. If the use of mobile payment, increases amount spent, this has implications for budgeting/saving so best practices techniques need to be developed and consumers apprised. If no differences are found then concerns of social commentators and environmental activists will be allayed and governments could meet minimal resistance. They therefore, expedite the support of mobile payments. Brand/product managers may see a benefit in the first instance and initiate more specific investigation into product category/form and pricing effects.

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