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MANAGEMENT CHALLENGE

influencing consumer adoption of mobile contactless payment

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"whatever you do, I just want you to be happy"
(Malcolm Mitchell)

executive summary

This management challenge, borne out of a real life challenge facing a major UK mobile network operator (vodafone), investigates and identifies the key influencers that will increase the rate of adoption of mobile contactless payment by the early majority who represent 34% of the market ***(Rogers, 1995)*** and **potential revenues of ££591.3M** (based on 1.5% fees and 2010 spending figures) ***(UKCA, 2010)***.

Mobile contactless payment is a means to make payment at the point of sale (e.g. paying for goods in a shop) using a mobile phone held within 4cm of a suitable payment terminal. **It is an innovative service and a collision between two different worlds: banking and mobile**....

The management challenge starts with an introduction to the business problem, which is followed by a literature review of current thinking which developed hypotheses and a subsequent investigation. The results from the investigation were analysed to draw key conclusions and to generate actionable recommendations for the sponsoring mobile network operator.

The initial literature review of current industry papers identified two common themes:

1. consumers have a low perception of security for mobile payment, resulting in low levels of trust and unwillingness to use a mobile payment service.
2. mobile network operators and financial institutions need to collaborate in order to make mobile contactless payment a success.

Point two is regarded by most as the major hurdle. However, one source ***(Datamonitor, 2010)*** suggests that there is a problem with the mobile network operators and financial institutions working together stating:

> "***The problem is that the banks and mobile operators hate each other.***"

In order to identify the best means to influence consumer adoption and to identify methods to build the relationships between the mobile network operators and the financial institutions, the industry literature review was followed by an academic review of current thinking in terms of **technology adoption, trust** and **brand**.

The technology adoption literature revealed that there is an **innovation adoption lifecycle**, with **five stages of adopter types** of varying sizes (*innovators: 2.5%, early adopters: 13.5%, early majority: 34%, late majority: 34% and laggards: 16%*) ***(Rogers, 1995),*** each with different characteristics which need to be satisfied to positively influence their perceptions and adoption of innovative products (***Moore, 1998)***, including **perceived ease of use**, **perceived usefulness**, and **perceived trust**.

The branding literature corroborates the industry recommendation to collaborate by revealing that individual brands create product association, "*the unique place for products and services relative to the competition in the minds of the consumer*" ***(Yenicioglu, 2011)*** and that co-branding allows individual brands to leverage and benefit from one another's strengths, further building consumer trust ***(Blackett & Russell, 1999, Constantin & Lusch, 1995).***

The literature review resulted in **four hypotheses** regarding **the influence of adopter type, consumer perceptions, trust and co-branding**. These were mapped onto an investigation framework (figure 16) to visualise their connections and a **quantitative method of research** used to gather consumer perception by means of a **questionnaire** which resulted in 132 responses for analysis.

The research analysis **confirmed that the five adopter types have different characteristics**, with the early adopter type being more willing to adopt innovative technology, though surprisingly, they were found to be less trusting of their mobile network operator than the early majority.

The research also confirmed that **trust is a key influencer for adoption** and that **trust can be significantly increased by the use of technology**, in this case, the use of a PIN at the time of payment, which was seen to increase usage by 30%, which is significant in terms of revenue increase.

Similarly, **co-branding was also confirmed as key influencer** with respondents being 10% more willing to use a co-branded mobile contactless payment service, than one provided by their bank or mobile network operator individually, though the largest increase in willingness was seen between the mobile network operator and a co-branded service, suggesting that **the financial institutions have more to leverage in any co-branding deal than the mobile network operators**, who would need to countermeasure this strength in any co-branding deal agreed by the **mobile network operator stressing the importance of the security provided by their network and mobile devices**.

The overall recommendation is that **the sponsoring mobile network operator MUST collaborate and co-brand with a well trusted financial institution, using and effectively promoting their secure technology to broker a mutually beneficial co-branding deal and more importantly for both parties, to positively influence consumer trust and in turn increase the rate of adoption of a MCP service.**

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introduction

1

"Though no one can go back and make a brand new start, anyone can start from now and make a brand new ending."
Carl Bard

1 introduction

1.1 background and context

This management challenge looks at the key influences on the adoption of mobile contactless payment (**MCP**) with a particular focus on the 'Early Majority' category, who make up 34% of the total market, whose adoption are essential for revenue and growth ***(Rogers, 1995 & Moore, 1998)***. MCP is a method of making payment that replaces the use of a credit or debit card with a mobile device which incorporates appropriate technology (see appendix b, section 9.2 for information).

The first section sets the stage for the rest of the paper beginning with a brief history of the mobile and banking markets including an introduction to mobile commerce (**m-Commerce**). This is followed by the aims of the paper that will lead to research design, execution, analysis, conclusions and recommendations. The paper concludes with a personal reflection of the learning and experience gained whilst writing the management challenge. A glossary containing abbreviations and definitions is included in section 8.

1.2 mobile and banking markets

Banking in the UK was formally founded in the 17th century, when The Bank of England was created in 1694, primarily to raise money for the war with France. Many of the banking features consumers use today can be traced back to ancient times ***(British Banking History Society, 2010)***.

By comparison, mobile devices and mobile networks are very new. 1st generation (**1G**) networks became available in the late 80s; Vodafone made the UK's first mobile call at a few minutes past midnight on 01 January, 1985 ***(Vodafone, 2011)***.

The 90s saw the introduction of 2nd generation (**2G**) mobile networks. 2G introduced new features particularly the ability to send short text messages (**SMS**) between mobile devices. Towards the end of the 90s, 2G was enhanced with additional data features including Internet access and became **2.5G.** The first mobile payment trials were carried out in 1998 in Finland, allowing payment to be made for parking and at Coca Cola vending machines as shown in figure 1.

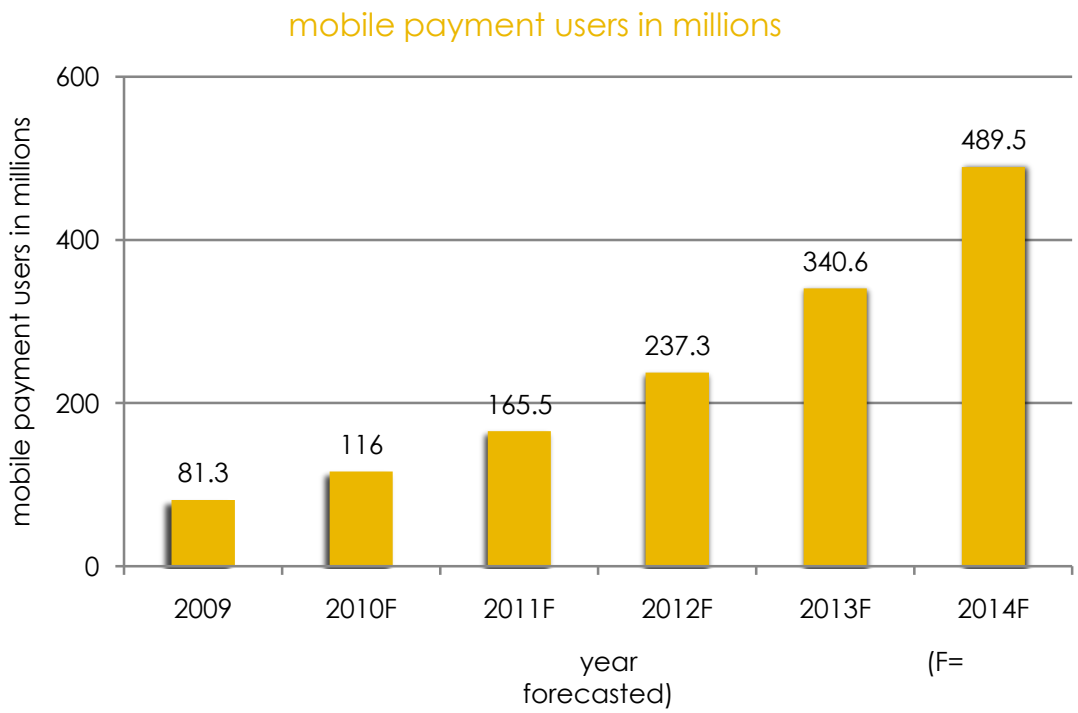
figure 1: MCP vending machine

Consumer needs for data services quickly increased and in the mid 2000s, 3rd Generation (**3G**) mobile networks were launched across most of Europe, providing higher data speeds to meet rising customer demand ***(Vodafone, 2011)***.

The number of consumers with mobile devices has increased rapidly. ***Wilcox (2009)*** forecasts that by 2014, there will be 5.6 billion mobile phone users worldwide and that this will be a primary driver for the MCP market.

Importantly, the churn of devices, (the number of devices that are replaced by consumers), is expected to grow to 88% annually in 2014 (from 63% in 2009), representing an expected 1.35 billion new devices, a 20% growth from 2009 (1.13 billion devices). This means that as near field communication (**NFC**) technology is embedded into devices, the number of MCP enabled devices will grow, supporting the MCP market, allowing consumers to potentially choose to adopt MCP services.

The forecast number of worldwide mobile payment users from 2009 to 2014 ***(Portio, 2010)*** is shown in figure 2. As can be seen from the graph, the numbers of users in 2009 (81.3M) is expected to double every two years and is expected to be 489.5M by 2014, representing a huge opportunity for players in the ecosystem who are able to launch a compelling MCP service.



source: ***Portio (2010)***

figure 2: mobile payment users worldwide forecast 2009 – 2014

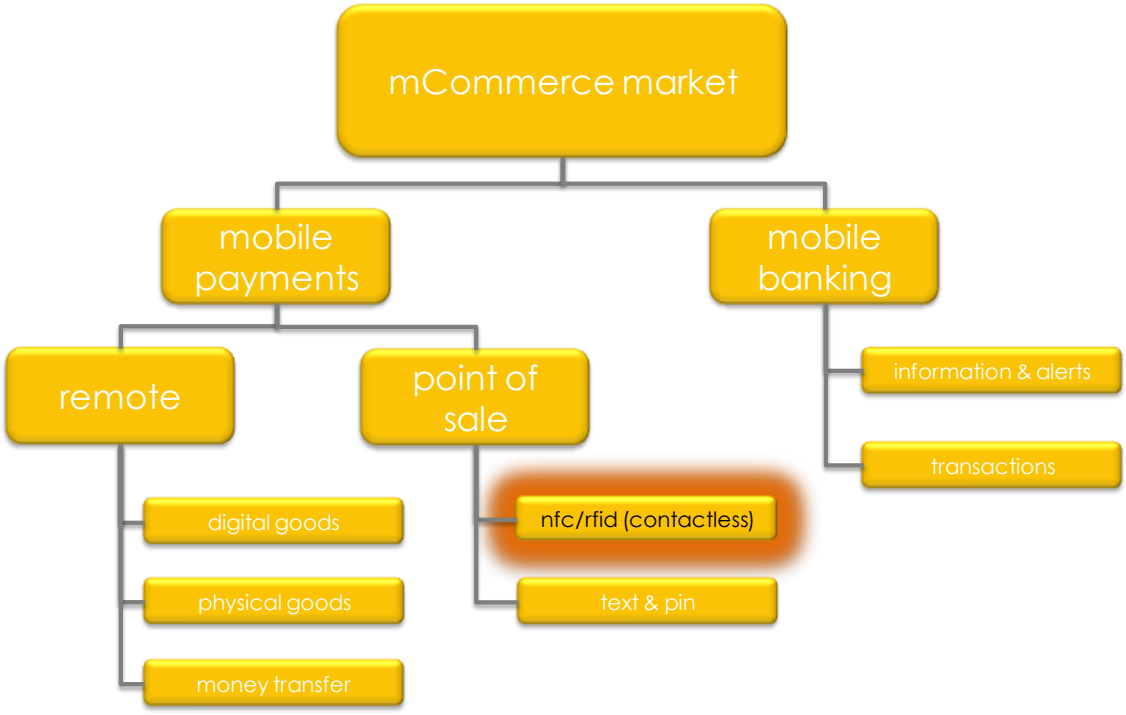
1.2.1 mobile commerce

Sadi, S, et al (2011) define m-Commerce as:

> *"The use of a wireless terminal, such as a cellular telephone, smart phone or Personal Digital Assistant (**PDA**), and a network to access information and conduct transactions that result in the transfer of value in exchange for information, services or goods."*

The overall m-Commerce market, highlighting MCP is shown in figure 3, (the focus of this management challenge). m-Commerce comprises of various stakeholders including Financial Institutions (**FIs**) (banks and credit

card companies), retail merchants, mobile network operators (**MNOs**), Handset Manufacturers (**HMs**), ticketing operators (e.g. transport and parking) and software and hardware manufacturers who provide equipment and software for m-commerce infrastructure and services ***(Wilcox, 2009)***.



source: ***Wilcox,, (2009), p31***

figure 3: m-commerce categories

1.2.2 mobile banking

Luo, X., et al (2010) define mobile banking (**m-Banking**) as:

> *"An innovative method for accessing banking services via a channel whereby the customer interacts with a bank via a mobile device (e.g., mobile phone or personal digital assistant)."*

m-Banking provides consumers with anytime-anywhere access to their bank account(s) via their mobile device providing access to information such as balances and statements. Some m-Banking services also allow consumers to additionally make transfers between accounts and payments to third parties ***(Barclays, 2011)***.

1.2.3 mobile payment

Wilcox, (2009) defines Mobile Payment (**m-Payment**) as:

> *"Payment for goods or services with a mobile device such as a phone, personal digital assistant or other such device."*

Mobile payment methods vary across regions. In Europe, the current main method of payment is to use premium rate SMS (**PRSMS**) whilst in the Far East and China, users are able to make payment using contactless methods. In both regions, it is also possible to make payment via a 'mobile web interface' (i.e. a Browser) on mobile handsets.

m-Payment can be further divided into two distinct categories (***Wilcox, 2009)***:

remote mobile payment: 'storefront' or merchant is remote to the consumer e.g. making payment for digital (music, video) or physical goods (books, DVD's) via a merchant with a mobile web interface.

point of sale (POS) mobile payment: 'storefront' or merchant is physical (e.g. a shop) and the user is located near to or at the storefront or merchant e.g. the payment is made similar to how consumers currently use their plastic debit/credit card.

1.2.4 mobile contactless payment (MCP)

NFC is a radio technology that allows devices to share and exchange data at a distance of less than 4 cm. This close proximity means data transmissions are secure and not easily intercepted by rogue devices and therefore provides the security required for MCP ***(NFC Forum, 2011)*** (see appendix b, section 9.2 for information).

Contactless payment technology is already embedded in many current debit/credit cards displaying the symbol shown in figure 4.

figure 4: contactless payment symbol

This management challenge specifically deals with the MCP point of sale (**POS**) aspect of m-Commerce; consumers paying for goods with their mobile device physically within a retailer or merchant's premises.

Wilcox, (2009) defines MCP as:

> *"A '**Wave & Pay**' transaction where [mobile] phones equipped with **NFC** technology are held close to a contactless reader in a store or at a purchase point. Purchases in this sub-segment usually replace cash and are often for lower value items such as refreshments, newspapers and magazines but also public transport tickets which are often higher value."*

figure 5: 'Wave & Pay'

A consumer using "**Wave & Pay**", holding their MCP mobile handset in close proximity to a suitably equipped electronic point of sale (**ePOS**) terminal to make a payment is shown in figure 5.

MCPs are made for small transaction values. Currently in the UK, FIs limit transactions to a maximum of £15 per use, four times a day, to limit fraudulent activity. These values are likely to increase when confidence in technology and security increase ***(Wilcox, 2009)***.

1.2.5 MCP services

MCP is very much in its infancy as a service. At the time of writing, very few fully operational offerings exist. In May 2011, The Guardian ***(King, 2011)*** reported that the MNO Orange was offering a service on Samsung devices (Orange Quick Tap) to allow their customers with a suitable device to pay for items in value of up to £15 at tills in 50,000 UK stores, including McDonalds, Eat, Boots, Wilkinson, Prêt A Manger and Subway and that there were 12.9M contactless cards, 11.4M of them Barclays debit cards and Barclaycard credit cards. However, since then, very little has been reported in the press despite suggestions that the number of contactless payments in Western Europe will dramatically increase from 18.3M in 2010 to 2961.4M in 2014 ***(Wilcox, 2009)*** assisted by the proliferation of NFC equipped handsets

Whilst announcements regarding MCP services have been made publically and trials initiated, the use of mobile devices to make contactless payments is far from the tipping point ***(Gladwell, 2000)***. Visa expect the major tipping point to be reached in the UK in 2012, which will coincide with the UK Olympics where Visa, one of the games main sponsors, will be installing thousands of new contactless terminals to enable payments to be made using contactless technology ***(Visa, 2011)***.

Multiple stakeholders are involved in the MCP ecosystem as shown in figure 6. Influencing consumers to adopt MCP is the ultimate goal for all parties involved, since it is their usage of a MCP service that will generate revenue.

Because of this, each stakeholder is closely linked and involved in order to roll out a MCP service. Each of the stakeholders are vying for a maximum share of the revenue which has resulted in competition rather than collaboration and as a result, a delay in launching a mutually beneficial solution ***(Wilcox, 2009, Kumar et al, 2010)*** in turn slowing down mass market adoption of MCP.

figure 6: mobile payment stakeholders

The main benefits of MCP are as follows ***(Deloitte 2008)*:**

reduced queuing time: contactless transactions are expected to be significantly faster than a Chip & PIN or cash transaction, thereby having the potential to reduce the queuing time for consumers.

convenience: contactless is seen as being a more convenient way of making low-value payments. Instead of fumbling for cash at vending machines or parking kiosks, consumers can just wave and go.

easier than carrying cash: one of the main perceived benefits is the simple ability to not have to carry change around. This is seen as both reducing the risk of losing money and the inconvenience of not having sufficient cash to pay for whatever consumers want to purchase.

integration with existing cards: there is no requirement to carry a new card. Contactless technology will be integrated with an existing debit/ credit card.

MCP also generates potential new business opportunities that add value to the consumer experience, identified and developed through the collection and analysis of customer insight data that can be collected from transactions ***(Garner, 2011, Payne, A & Frow, P, 2005)***.

1.3 the business problem

MCP is a natural technology progression, integrating traditional payment methods into a mobile device. The business problem facing MNOs is determining the best way to influence their customers to adopt and use MCP; it presents an obstacle for MNOs as it is an innovative, relatively unknown service, but mostly because MNOs are not associated with providing financial services, and in turn, lack the trust associated with banking services enjoyed by FIs ***(Garner, 2011)***.

Collaboration has been recommended is the best way forwards for the MCP ecosystem ***(Wilcox, 2009)***, however, a clear, sustainable, mutually beneficial model for MNOs and FIs to collaborate is yet to materialise.

1.4 focus of the management challenge

Industry experts suggest that one solution to expedite MCP service adoption is for MNOs to collaborate with FIs ***(Wilcox, 2009)***, leveraging the trust FIs have acquired through years of reputation building in the financial sector. As agreed with the management challenge sponsor (*a UK MNO*), the focus of the management challenge is as follows:

1. to investigate whether MNO co-branding and collaboration with a FI is an essential strategy ***(Wilcox, 2009)*** or if alternative strategies would provide a tangible benefit to all stakeholders by influencing adoption and usage of a MCP service by the mass majority of consumers.

2. to determine the key factors to influence adoption by the mass market majority (the early majority) who make up 34% of the total market ***(Rogers, 1995)***.

1.5 personal objectives

The author's personal development objectives for undertaking this research project are:

1. apply and consolidate learning from executive MBA studies to a real life business problem.

2. develop understanding and increase knowledge of consumer adopter types, trust and brand and their influence on launching new mobile services.

3. improve and develop analytical problem solving skills that can be applied in future careers, by working through a structured process of analysing a business problem, conducting formal research, resulting in well structured, critical arguments, conclusions and recommendations based on research findings and analysis of research data.

1.6 report structure and content

The management challenge report is split into sections as follows:

section 1 **(*review of current thinking*)** reviews academic literature on the current thinking of brand, reputation, trust and familiarity and also industry reports regarding mobile payment, to develop an understanding of the challenges of launching a mobile payment service.

section 2 **(*the investigation*)** uses the results from the literature review to create a framework as a point of reference for the fieldwork, defining the objectives of the investigation.

section 3 **(*the investigation design*)** explains the research design and methodology, justification and tools selected for data collection.

section 4 **(*findings & analysis*)** presents the findings and analysis extracted from the data.

section 5 **(*conclusions & recommendations*)** provides conclusions from the author's findings and their alignment with current thinking.

section 6 is a ***personal refection*** covering the learning's and experiences gained whilst executing the management challenge.

literature review 2

"Basic research is like shooting an arrow into the air and, where it lands, painting a target."
Homer Adkins

2 literature review

2.1 Introduction

The literature review provides a review of current industry and academic thinking relevant to MCP.

In his "*Diffusion of Innovations*" work, ***Rogers (1995)*** defines innovation as:

> *"Any idea, practice or object that is perceived as new by an individual, and that the innovation need not be 'new' in terms of the time since discovery but must be something that the individual was previously unaware of or had not formed an opinion about".*

Patton et al (2004) stated:

> *"Trust is a catalyst for human cooperation and that people will trust and embrace e-commerce if they perceive sufficient security."*

The literature review sequence is shown in figure 7. This logical approach was used to gradually develop relevant understanding required for the management challenge, both for the author and the reader.

figure 7: literature review order

The literature review initially explored and reviewed banking and mobile payment literature, which identified key, common issues within the industry. This led to further exploration and investigation into appropriate academic and theoretical thinking with regards to **Innovation Adoption, Brand** and **Trust**, linking practice, theory and learning, leading to the development of hypotheses and the investigation design in section 3.

2.2 mobile contactless payment

As MCP is still in its infancy, little information and analysis is available regarding successful implementations. However, MCP as a replacement of a physical wallet is a concept that has been discussed for many years ***(Clark, 2010)***, so many industry reports exist.

figure 8: using MCP

Also, as MCP is primarily being developed using current mobile technologies, much of the industry analysis has been approached either from a technology perspective, which includes the NFC technology used for the close proximity payment (<4cm) and security required during the transaction and the safe processing and storage of transaction details, particularly the details of the customer ***(Garner, 2011, Wilcox, 2009, Clark, 2010)***.

A report by GfK ***(Garner, 2011)*** stated that:

> *"Trust and familiarity drive preference of mobile payment providers and financial brands add a layer of trust that mobile brands have yet to nurture in the financial world."*

MNOs are associated with providing a mobile network service, generally deemed to be reliable and secure upon which mobile devices, in particular smartphones are used, which allow the download and execution of applications including those that will support MCP. The MNO is not associated with financial services and as such, is expected to make strategic alliances with financial service providers. To that end, many of the reports suggest that the MNOs need to partner with FI brands that will create trust by the consumer as follows.

The GfK report ***(Garner, 2011)*** was based on research performed across different geographical markets and target groups regarding the appeal of close proximity mobile payment services. The research results stated that trust is the biggest driver of service preference as consumers were concerned about security and the theft of personal data, concluding that mobile device and MNO brands had significantly lower trust than FIs, but that this could be improved by partnering with a trusted FI. Similarly, ***Van Dinther, (2011)*** states that:

> *"Brand trust will be incredibly important especially for mobile handset and operating system brands."*

Therefore, trust in terms of security is one of the major factors. One suggested method of increasing and improving trust is collaboration between the major players (FIs, MNOs and handset manufacturers) ***(Peppiat, 2011)***.

Indeed, collaboration is a common theme amongst analyst recommendations. ***Wilcox (2009)*** recommends that MNOs and FIs collaborate in order to exploit opportunities available through using NFC and that all parties involved work together to formulate a business model that encourages development and use of MCP services.

Kumar et al, (2010) based their research on the mobile payment markets in Japan, South Korea and the US and found that the success of mobile payments in these countries has revived the interest in mobile payment worldwide. They state:

> *"The growing number of Bank-MNO partnerships is expected to make mobile wallets more capable of carrying out larger and secure transactions"*

suggesting that the partnerships will create further consumer adoption and trust, resulting in larger payments than the current £15 maximum per 'Wave & Pay' transaction.

Kumar et al, (2010) also confirm that due to their lack of expertise, MNOs are unlikely to take on a role as a credit card provider, due to complex business models and issues of security. They suggest that consumers are more likely to be doubtful of a MCP where a MNO provided such services due to their lack of appropriate with financial services, but that these issues must be overcome, stating security as being the "*biggest*

hurdle in the way of growth of mobile payments." In this scenario, security equates to trust and security and trust would need to be associated with a MCP service and the brand(s) involved.

However, ***Datamonitor (2010)*** suggest that there is a problem with the MNOs and FIs working together stating:

> *"The problem is that the banks and mobile operators hate each other."*

This is a strong statement, which ***Datamonitor (2010)*** justify in their analysis by arguing that the parties are disagreeing over the business model, in particular how revenue is generated and shared and who owns the consumer and that despite the huge opportunity, this is the main threat to a MCP ecosystem being fully rolled out, again supporting the argument that the MNOs and FIs must collaborate to make MCP a success.

In 2010, ***Clark (2010)***, suggested that MNOs and banks need to reach agreements on the way forward for MCP services and that by the close of 2010, in the UK, Turkey, Singapore and Taiwan, MNOs and banks would have workable strategies in place, with partners signed up and ready to release services in 2011, stating that those who did not, would risk being left behind. This prediction has partially come to fruition in the UK, with partnerships between Orange and Barclaycard ***(Guardian, 2011)***, and o2 and Visa ***(Marketing Magazine, 2011)*** being announced.

Clark (2010) also supports the suggestion that the stakeholders will need to create extremely high levels of trust in each other before sharing details regarding business models, especially in terms of revenue

generation and sharing, though that whist co-branding would allow the creation of business plans and provide useful consumer feedback, longer term, the tie up would make it difficult for either the banks or the MNO to transfer all of their customers to their service, as not all customers will use the same MNO and/or bank.

Clark (2010) suggests that FIs or MNOs need to create agreements with all stakeholders i.e. the FIs with all MNOs and/or the MNOs with all FIs or alternatively that either the MNO or a FI could create a MCP service themselves, either by the MNO additionally becoming a FI and likewise, a FI offering a MNO service. This goes against ***Kumar et al's (2010)*** argument that neither party has the skills required to provide additional FI or MNO services, but resolves ***Husson's (2009)*** argument that the MNOs and FIs disagree regarding revenue generation as sharing as this would no longer be an issue acting alone.

The strong message of the need to collaborate is supported by academic theory. Consumers have higher demands from the organisations that provide their services and if an organisation wishes to retain them, they must meet consumers needs. This becomes particularly challenging when an organisation tries to offer services with which it has little or no experience, such as a MNO offering financial services and vice-versa. Service dominant logic is based upon the notion that organisations, markets, and society are fundamentally concerned with exchange of service, particularly of knowledge and skills that results in benefits to all parties and involves two resources:

operand: resources which must be acted on to be beneficial, such as natural resources, goods, and other generally static matter .

operant: resources that act upon other resources to create benefit, such as a firm's competences and capabilities.

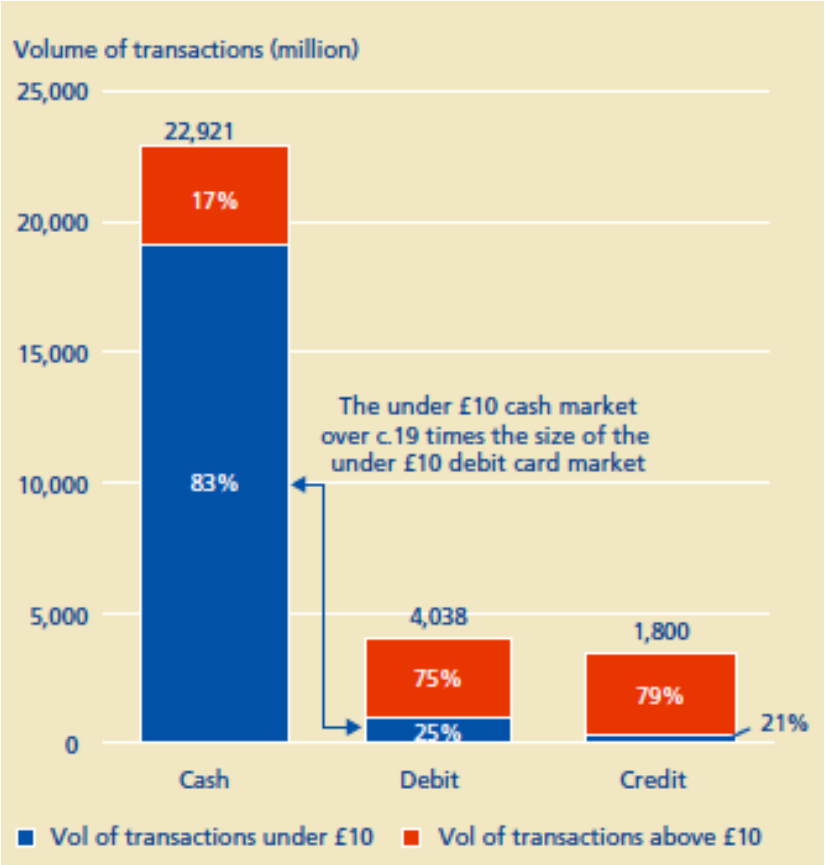
By operating in this way, value is co-created for all parties: consumers and society gain an enriched service offering and organisations gain and retain consumers resulting in revenue ***(Constantin & Lusch, 1995)***.

In the case of collaborating in a MCP service, both parties would be acting in both capacities i.e. in terms of banking expertise, the FI would be the operant and the MNO the operand and in terms of mobile network expertise, the MNO would be the operant and the FI the operand, thus in a collaborative MCP service, it would be a win-win for both parties.

Collaboration also creates networks; a vertical network is created which establishes partnerships between independently skilled organisations and an opportunity networks which is organised around consumer needs and opportunities, working together to develop the best solution of the consumer ***(Achrol, R & Kotler, P, 1999)***, again resulting in value add for all stakeholders.

2.3 banking

Cash, debit and credit card usage in the UK and how transactions are split above and under £10 is stated in a report by ***Deloitte (2008)*** which analyses consumer usage in 2005 as shown in figure 9. The author used the values to create table 1 which breaks the values down the show the actual monetary values for the UK market. It can be seen that cash represents the largest value, the majority of which are for transactions of less than £10.



source: ***Deloitte (2008)***

figure 9: UK transaction volumes

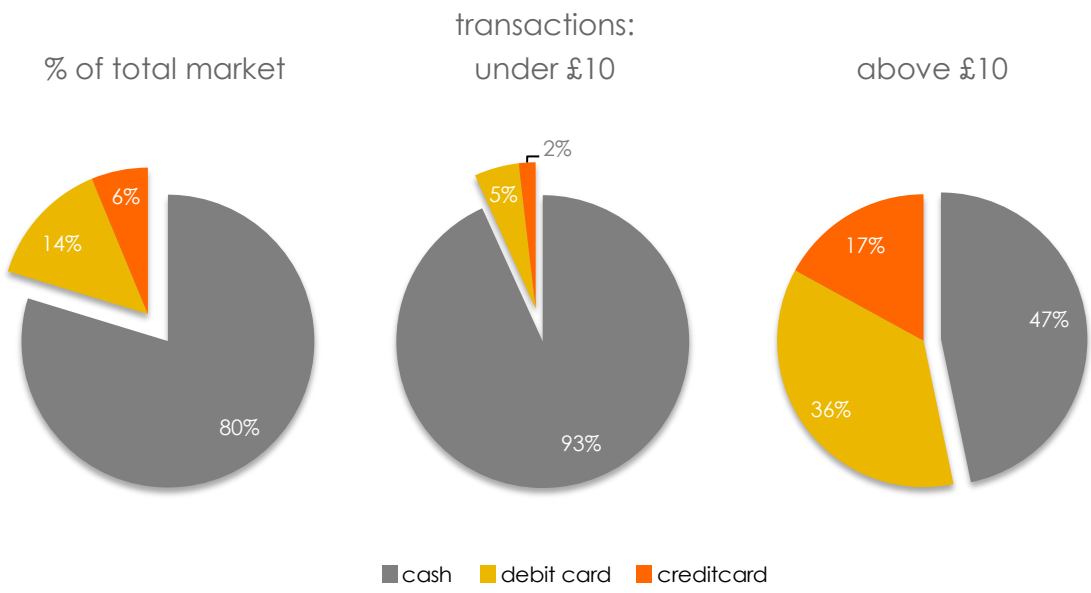
This is typical of current consumer behaviour in the UK, however, the future use of cash is forecast to reduce through the increased usage of and spend via contactless cards and MCP services ***(Portio, 2010)***, therefore making it crucial for a MNO to gain as much market share as possible.

	% of total UK market	value £M	less than £10		more than £10	
			%	value £M	%	value £M
cash	79.7	22944.8	66.2	19049.3	13.6	3901.7
debit card	14.0	4038.0	3.5	1009.5	10.5	3028.5
credit card	6.3	1800.0	1.3	378.0	4.9	1422.0
total	100.0	28782.8	71.0	20436.8	29.0	8352.2
1.5% fee		431.7		306.6		125.3

source: ***Deloitte (2008)***

table 1: UK transaction values

It can be seen from figure 9 and that consumer spending behaviour using credit cards and debit cards contrasts with cash usage almost inversely proportional, with the majority of spending being above £10.



source: ***Deloitte (2008)***

figure 10: UK transactions breakdown

Initially, it is likely that MCP would replace transactions above £10. If a MCP service provider took a small fee from each transaction e.g. 1.5% (which is the norm for the financial industry ***(Deloitte, 2008)***), the potential revenues from a MCP are attractive, as shown in table 1. Potential revenues from the above £10 market are £125.3M, increasing towards the total figure of £431.7M as the expected use of physical cash and/or cards is replaced by MCP ***(Portio, 2010)***.

Security is regularly cited in other academic work as one of the key risk factors perceived by consumers who are concerned about issues of privacy, theft, and fraudulent usage of MCP ***(Datamonitor, 2011, Dahlberg et al, 2003, Garner, 2011, Linck, 2006)***. This negative perception

must be removed or reduced in order to influence consumer adoption if the potential revenues are to be realised. Potential methods of reducing the perception of risks are discussed later in this section.

2.4 innovation adoption

This section provides a review of innovation adoption, starting with a description of innovation and review of the different innovator types ***(Rogers, 1995)***. This is then followed by a review of current thinking in terms of consumer perceptions, product knowledge and technology and their influence on consumer adoption of innovative technology products.

2.4.1 innovation

Innovation is generally associated with the creation of new or improvement of existing products ***(Trott, 2005)***. ***Moore (1998)*** states that in term of marketing, consumer attitudes towards technology innovations is significant when an innovation is discontinuous rather than continuous. He provides the following definitions:

> *"Continuous innovation refers to the normal upgrading of products that does not require us to change behaviour. Discontinuous innovation applies to anytime we are introduced to products that require us to change our current mode of behaviour or to modify other products and services we rely on."*

Dillon et al (2005) state:

> *"Technology innovation is the creation of a new product that increases the benefits and/or reduces the cost of that product and that radical innovation is disruptive technology that redefines of creates a new sector"*

MCP is certainly a disruptive technology, creating a new sector ***(Dillon et al, 2005)*** and also falls into ***Moore's (1998)*** definition of discontinuous, given that MCP would require a change in behaviour, albeit a modification in behaviour from combining traditional payment methods using cash or physical cards and a mobile device, which previously would most likely have been used for making calls, sending messages and browsing the internet.

Influencing consumer perceptions towards one where MCP is believed to provide a benefit will drive its adoption, which is the key question and basis of this management challenge; ***how*** to influence consumers to adopt MCP.

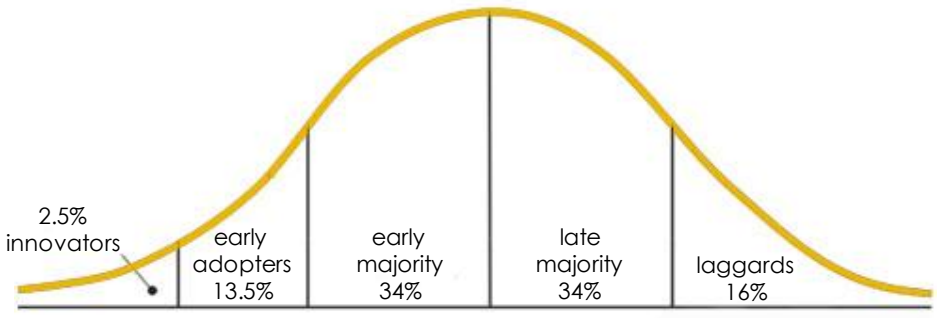
The remaining literature review sections expand on this key question by analysing additional academic and industry literature regarding characteristics which need to be considered in order to positively influence consumer adoption of technology.

2.4.2 the technology adoption lifecycle

Rogers (1995) is one of the leading academics in the area of disruptive technology innovation adoption who defines the rate of adoption of an innovation as:

> *"The **relative speed** with which an innovation is adopted by members of a social system", where a social system is "a set of interrelated units that are engaged in joint problem solving to accomplish a common goal"*

Relative speed is determined by the number of, or percentage of members of a social system who adopt an innovation over a specified time. This rate changes over time as the innovation diffuses through the social system, giving rise to the technology adoption life cycle curve as shown in figure 11.

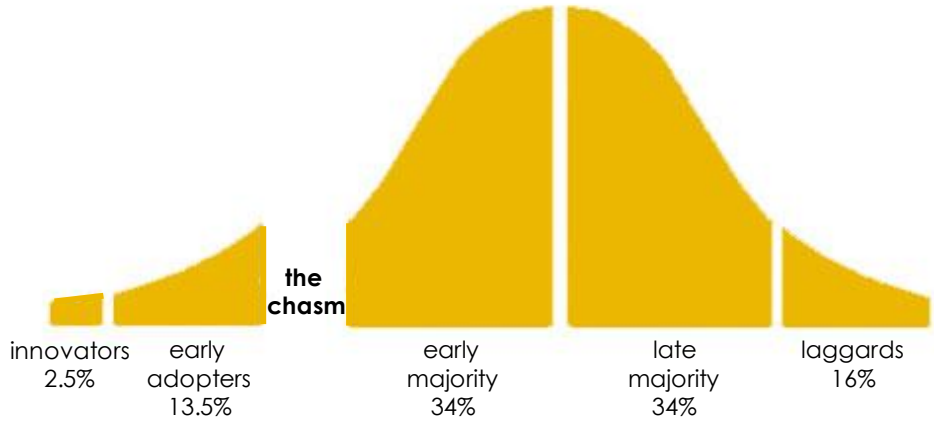


source: ***Rogers (1995)***

figure 11: technology adoption lifecycle

2.4.3 the 'chasm'

Moore (1998) argued this model was too simplistic and introduced the concept of "**gaps**" into the lifecycle adoption curve as shown in figure 12, which need to be crossed when transitioning between the lifecycle stages.



source: **Moore (1998)**

figure 12: technology adoption lifecycle showing "The Chasm"

Each stage or adopter group has their own behaviours and identifiers. ***Moore, (1998)*** defines the five groups within his Technology Adoption Lifecycle as shown in table 2.

The largest gap occurs between the "**Early Adopters**" and the "**Early Majority**" stages. ***Moore (1998)*** defines this gap as "**The Chasm**". The chasm occurs due to the differing needs between early adopters and the early majority. Early adopters:

> *"Want a radical discontinuity between the old ways and the new and are prepared to champion this cause against entrenched resistance. They are also prepared to bear with the inevitable bugs and glitches that accompany any innovation just coming to market."*

Conversely, the early majority:

> *"Are looking to minimize the discontinuity with the old ways and want evolution not revolution. They want technology to enhance, not over throw existing ways of doing things. They do not want to debug a product and want it to work properly."*

Thus, early adopter behaviour is not a useful reference to determine, predict or influence early majority behaviour and makes the transition for marketers challenging. This has important implications in terms of the research for this management challenge, which is focused on the Early Adopter, which makes up 34% of the adopter market.

hypothesis 1: early adopter and early majority needs are significantly different

adopter type	Definition
innovators	▪ pursue new technology aggressively, seeking new products before they have been marketed ▪ technology is central to their life (technologists) ▪ low numbers, but winning them over endorses the product in the marketplace
early adopters	▪ feel technology is important, but are non-technologists ▪ find it easy to imagine, understand and appreciate the benefits of new technology ▪ rely upon their own intuition and vision rather than rely upon references
early majority	▪ are able to relate to technology, yet driven by a sense of practicality ▪ are content to wait and see how others find new technologies before trying themselves ▪ rely upon well-established references before investigating ▪ represent approx. 1/3 of the whole adoption lifecycle and winning their business is key to profits & growth
late majority	▪ are less comfortable with their ability to handle technology ▪ wait until a technology becomes an established standard ▪ represent approx. 1/3 of the whole adoption lifecycle and winning their business is key to continued profits & growth during product maturity & decline
laggards	▪ do not want anything to do with technology for personal and economic reasons ▪ only 'buy' a technology product when it is buried deep within another product ▪ are generally regarded by marketers as not worth pursuing

source: ***(Moore, 1998)***

table 2: Moore's technology adoption lifecycle definitions

Crossing the chasm has always been a challenge for marketers and ***Rogers (1995)*** and ***Moore's (1998)*** theories and models have been extensively tested and extended numerous times since they were first published to best understand how to cross the chasm. The following sections analyse further literature regarding strategies to adopt in order to cross the chasm, looking at consumer perceptions and how these can be influenced through the acquisition of product knowledge at an appropriate level.

2.4.4 consumer perception

Given that MCP is a technology based service, it is important to evaluate the importance of consumer perceptions' of technology, in particular in its use to build trust and positively influence adoption. Numerous studies have been conducted on the role of technology adoption, mainly based around ***Davis's (1989)*** technology acceptance model (**TAM**). The model proposes that perceived ease of use and perceived usefulness are the primary drivers for technology acceptance. ***Davis (1989)*** defines *perceived usefulness* as:

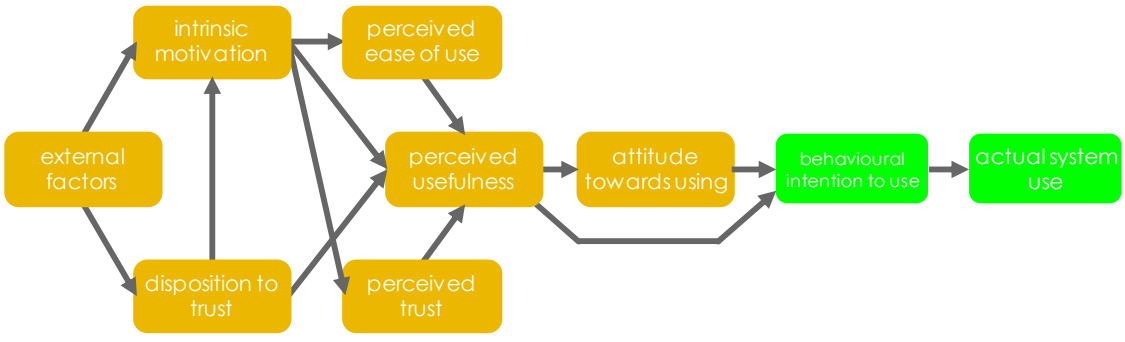
> *"The degree to which a person believes that using a particular system would enhance his or her performance"*

and perceived ease of use as:

> *"The degree to which a person believes that using a particular system would be free of effort."*

In terms of MCP, this means that consumers must perceive that MCP would make payment easier, safer and that it would require little or no effort.

Dahlberg et al (2003) conducted focus group interviews with regard to adoption of mobile payments to test the effectiveness of ***Davis's (1989)*** TAM. Their analysis suggested that whilst the TAM provides a good basis to explain the use of mobile payment solutions, a new construct, trust, should be included into the model to augment the present descriptors in explaining consumer adoption decisions in the mobile payment context. The enhanced model is shown in figure 13.



source: ***Dahlberg et al (2003)***

figure 13: enhanced technology acceptance model

Importantly, ***Dahlberg et al (2003)*** state that perceived trust indicates whether a person believes that a particular technology is secure and trustworthy or not impacting their perception of usefulness.

These perceptions are seen as key drivers in influencing technology adoption and the following sections review literature regarding how to positively influence these perceptions.

hypothesis 2: consumer perceptions of ease of use, usefulness and trust can positively influence adoption.

2.4.5 product knowledge

One way to cross the chasm is ensuring consumers realise a product's benefits by learning about and correctly using it. ***Gladwell (2000)*** states that mavens, connectors and salesmen play an important role in crossing the chasm as these are the types of consumers who can translate ideas from a highly technical world into language that others can understand. Definitions are as follows:

mavens are the types of consumer who glean and digest all the information they can about a product in order to create and provide a message.

the connectors are the social glue who spread this message via world-of-mouth. This may be actual face to face conversation, though in today's modern, connected world, it is more likely that messages spread via the internet, social networking sites or blog sites where they post product information and reviews.

the salesmen are the persuaders who turn the unconvinced into the convinced and resulting in product adoption.

Gladwell (2000) states that this word-of-mouth results in "*an epidemic*", closing the chasm, resulting in a "*tipping point for mass adoption*". This is the ultimate goal for any product launch and spreading the word regarding benefits and security of a MCP service will be one of the key influences of its success.

However, innovators who may be the first to try a new product may also be more likely to use it incorrectly due to overconfidence and be more likely to attribute poor product performance to the product rather than to themselves ***(Miller & Ross, 1975)***. In this case, inaccurate and damaging negative messages could be spread. In order to avoid this, care must be taken that products are clearly articulated to ensure that mavens, connectors and salesmen spread a clear message about a product to ensure consumers understand and use a product correctly, further spreading the word, driving adoption. A positive message will enhance consumer perceptions of trust, as discussed in the next section.

2.4.6 trust

It is well cited within the mobile payment ecosystem that trust will drive the preference of mobile payment providers ***(Garner, 2011, Van Dinther, 2011).*** The Oxford Dictionary defines trust as:

> *"The firm belief in the reliability, truth, ability or strength of someone or something."*

In the case of mobile contact payment, it is the trust a consumer places in an organisation to provide a reliable, secure service. ***Rademeyer, (2004)*** describes trust as:

> *"An intangible and rather obscure psychological construct that plays a key role in every human relationship."*

Nooteboom (1997) theorised that trust has two parts; psychological trust on the part of the person doing the trusting and the trustworthiness of the person or organization being trusted. Thus it depends on two parties; (1) the organisation who must build trust in (2) the consumer. ***Rademeyer, (2004)*** goes further stating:

> *"Trustworthiness supersedes brand as foundation on which reputation is built."*

This suggests that the organisation is responsible for building a reputation for trustworthiness in order for the consumer to trust it, potentially resulting in the adoption of an organisation's products and/or services. In the case of MCP, given the financial association, trust will be paramount. The question is how to create the trust?

A potential method of building and fostering trust could be through the use of a PIN ***(Datamonitor, 2010)***, as currently used with Chip & PIN cards where after inserting their card into an ePOS terminal, consumers must enter a PIN as shown in figure 14. By using this known method, the introduction of MCP could be seen as less disruptive by consumers and drive adoption. Additionally, consumers may perceive a higher sense of security using their mobile phone to enter the PIN, than the ePOS, with consumers regularly shielding PIN entry as also shown in figure 14.

figure 14: consumer using chip & PIN ePOS

hypothesis 3: trust can be positively influenced using technology to increase security e.g. using a PIN.

2.5 brand

Whereas the subject of MCP is in its infancy, brand as a subject is very well developed in terms of modern business and academic study. Its understanding has been well researched and documented by many academics. Indeed, running a search on Google scholar results in several billion links.

Many brand definitions exist and are ever evolving and academics change their definitions. In 1993, ***Achenbaum (1993)*** stated:

> *"[More specifically], what distinguishes a brand from its unbranded commodity counterpart and gives it equity is the sum total of consumer's perceptions and feelings about the product attributes and how they perform, about the brand name and what it stands for, and about the company associated with the brand."*

This is important in terms of MCP as consumers will have different perceptions about banking and mobile products brands and their associations.

Later, in 2000, ***Dall'Olmo Riley and de Chernatony (2000)*** suggested:

> *"The concept of the brand has evolved from a firm's products, to that of a relationship based on trust."*

Linking this to ***Achenbaum's (1993)*** statement, it is likely that along with different perceptions of product attributes between mobile and banking brands, consumers will have differing levels of trust between the brands. Therefore, it will be important for a MNO to create a brand association with banking services if they are to influence consumer trust and adoption.

This is positioning or consumer perception; the unique place for products and services relative to the competition in the minds of the consumer, based upon their knowledge of a brand, ***(Yenicioglu, 2011).*** This further supports the findings that a MNO would be challenged to influence consumers that they would be able to provide a financial solution, though equally a bank would be challenged influencing consumers that they could provide a mobile telephony service.

hypothesis 4: brand trust is essential to influence consumer adoption of MCP

2.6 co-branding

The need to persuade consumers that a bank could offer a mobile network or a MNO could offer banking services could be made simpler through collaborative co-branding. Indeed, much of the MCP literature recommends that MNOs and Banks collaborate in order to leverage the strengths of one another's brands. Co-branding has been defined as

> *"A form of co-operation between two or more brands with significant customer recognition, in which all of the participants' brand names are retained."* ***(Blackett & Russell, 1999)****, and*

> *"Creating a single and unique product."* ***(Leuthesser et al, 2003, & Washburn et al, 2000)***.

Co-branding is regularly used as a strategy for new product introduction and numerous successful examples exist. One familiar success is the 'Senseo' coffee machine, a co-branding between Philips and Douwe Egberts that created a new product category that provided Italian quality coffee without the complications of using an espresso machine.

figure 15: Philips Senseo machine

In the first four years, over 10 million machines were sold along with 4 billion pads ***(Phillips News Centre, 2005)*** and by 2008, the number of machines sold had reached over 20 million machines ***(Phillips News Centre, 2008)*** demonstrating the potential success of co-branding. The Philips and Douwe Egberts Senseo example is proof that combining competences and reputations of two organisations is a successful strategy for innovative new products ***(Faems et al. 2005, Kapferer, 2001, Knudsen, 2007, Park et al., 1996, Prince & Davies 2002)***.

Co-branding can be used to transfer positive associations from one brand to another and vice-versa ***(Washburn et al, 2000)***. This is important for the MCP scenario; A MNO that has a strong association with providing a quality, reliable mobile network service should only look to collaborate with a FI that is associated with providing a secure and trustworthy banking service and avoid associating themselves with a FI brand that is regarded negatively, to avoid damaging their own brand and reputation.

Blackett & Boad (1999) state that co-branding gives "*access to 'leading edge' technology*", particularly in the computer hardware, software and internet facilities, where the speed of advances in technology means that for some organisations, co-branding provides a practical solution to bind their products and services with other existing systems and technologies. ***Blackett and Boad (1999)***, quote Todd Bontemps, Trademark attorney with Cooley Godward, a law firm in Palo Alto, California with several clients who are involves in branding ventures:

> *"The current trend in much of the high-tech industry is to 'layer' one company's technology on to another's to achieve a more desirable end product. Many companies use co-branding as a way not only to identify and distinguish their respective technology, but also to market the attractiveness of their own technology by associating it and their related trademark with another company's brand."*

This is particularly relevant to MCP; MNOs are associated with providing a mobile network on which to use a mobile device and not to provide financial services. Conversely, FIs are associated with providing financial services and not mobile network services. Thus, taking Todd Bontemps's suggested theory, MNOs and FIs would be strongly advised to collaborate on rolling out a MCP service.

This is further supported by ***Simonin & Ruth (1998)*** and ***Baumgarth (2004)***, whose research concluded that brand alliance evaluation depends on how consumers felt about the individual brands prior to co-branding s well as the product(s) and brand-fit. Evidence was also provided that alliances have the ability to alter brand attitudes both positively and

negatively for the individual brands. ***Keller (2003)*** states that the most important requirement for a successful brand alliance is that there is "*a logical fit between the two brands.*" In terms of co-branding, ***Simonin & Ruth (1998)*** define product fit as the "*relatedness or the complementarily of the product categories in which the two constituent brands are active*."

In terms of MCP, this fit would not immediately look possible; a mobile network and a financial service are quite different. However, ***Park et al (1991)*** state that co-branding is not only evaluated on the similarity between the brands, but also relies on the extent to which the brands share other abstract meanings and benefits and that concept consistency reflects similarities in the brands. Thus, in terms of MCP, consumers would abstract the association between the differing product categories that are being brought together as a single related concept.

Park et al (1996) further concluded that in a co-development context, it is more important for a strong brand to look for complementary attributes than for an equally strong brand. ***Simonin & Ruth's (1998)*** investigation between product and brand fit, showed that the higher the product and brand fit, the more favourable the attitude was towards the co-branding.

Keller & Aaker (1992) and ***Aaker and Keller (1990)*** suggest that if brand images of the partners do not match, consumers might activate a causal search, wondering why their two brands are forming an alliance, resulting I undesirable judgements. Thus, in the case of MCP, it is suggested that both individual brands look for an equally string brand that has complementary features.

Geuens (2006) took the research of ***Simonin and Ruth (1998)*** and conducted three studies to investigate co-branding in advertising by manipulating product and brand fit. Brand image attitude (positive or neutral) and the type of advertisement processing (top down versus bottom up) were also taken into account. The results showed that either product or brand fit is sufficient to produce positive attitudes towards the core brand in case of a high image core brand but for core brands with a neutral image, an alliance with a brand possessing high product fit and/or a positive image instead of a similar image is necessary. Thus, it is important for brands to understand how consumers perceive their image, in order to decide with whom to make an alliance.

2.6.1 joint ventures

Joint ventures are defined as:

> *"Long-term, cooperative arrangements in which the blasé issues are secondary to the operational opportunities"*. **(Blackett & Boad, 1999)**

In many cases, the joint venture is established to enable two companies to enter new markets or launch new products to which both companies contribute ***(Blackett & Boad, 1999)***. Joint ventures that achieve success are based on complementary skills between the two organisations that allow the organisations to reduce exposure to completion and investment.

In the case of a MCP joint venture, the MNO would provide the mobile network infrastructure and systems expertise and the FI the financial infrastructure and systems expertise. Joint venture's are usually managed by teams seconded from all organisations involved in the joint venture and often include the creation of a new company with equal shares (50:50) or near equal (e.g. 51:49).

In joint ventures, the brands are leveraging their existing brand equity. ***Keller (2003, 2003b)*** defines brand leveraging as:

> *"Capitalising on pre-established brand equity and brand knowledge in consumer memory."*

In MCP, it is important that the partners have a strong brand image in their segment that is already well placed in the consumer's mind to further strengthen any alliance or joint venture and that the rationale for the joint venture or alliance is clearly communicated. ***Blackett & Boad, (1999)*** state:

> *"The key to successful co-branding: the creation of seamless logic that runs through the combined offer, the benefits of which can be readily understood by the consumer."*

Hypothesis 5: a co-branded MCP service will be more influential to customer adoption than an individual brand offering.

2.7 literature review summary

The literature started with a review of current mobile contactless and mobile payment markets. It quickly identified that the key concerns of consumers are trust of and familiarity with MCP and that the MNOs do not have the level of trust that the FIs have ***(Garner, 2011)***. Given that MCP is an innovative technology, it will most likely follow the innovation adoption lifecycle which consists of five adopter types (innovator, early adopter, early majority, late majority and laggards) each with different needs and characteristics which must to be catered for at the different stages ***(Rogers, 1995)***.

The most difficult progression along the lifecycle timeline was referred to as "the chasm", moving between the early adopter and early majority categories which represent 13.5% and 34% of the market respectively ***(Moore, 1998)***. The key influencer identified to cross the chasm is to build consumer trust which can be increased by positive perceptions of security, ease of use and usefulness ***(Dahlberg et al, 2003)*** especially where these perceptions are communicated by mavens, connectors and salesmen ***(Gladwell, 2000)*** who accelerate the rate of adoption towards the tipping point or mass adoption.

Additionally, much of the literature recommended that FIs and MNOs form collaborative partnerships whereby each could leverage one another's strengths to influence consumer trust and adoption ***(Clarke, 2010, Husson, 2009, Peppiat, 2011, Wilcox, 2009)***.

Trust was the key theme identified by the literature review. Five hypotheses were generated as summarised in table 3. The hypotheses were used to drive the investigation design on the next section.

1.	the technology adoption lifecycle consists of five stages, specific to types of adopter, each with their own types of requirements characteristics ***(Moore, 1998, Rogers, 1995)***.	**hypothesis 1:** early adopter and early majority needs are significantly different
2.	consumer perceptions are key drivers for technology adoption ***(Dahlberg et al, 2003)***	**hypothesis 2:** consumer perceptions / product knowledge of security, ease of use, usefulness and trust can positively influence trust and adoption
3.	brand and trust are key characteristics for customer adoption in financial services ***(Dall'Olmo Riley and de Chernatony 2000, Garner, 2011, Kumar et al, 2010, Patton et al, 2004, Van Dinther, 2011)***.	**hypothesis 3:** trust can be positively influenced using technology to increase security e.g. using a PIN **hypothesis 4:** brand trust is essential to influence consumer adoption of MCP
4.	co-branding is strongly recommended as a strategy to launch a new MCP service ***(Clarke, 2010, Husson, 2009, Peppiat, 2011, Wilcox, 2009)***.	**hypothesis 5:** a co-branded MCP service will be more influential to customer adoption than an individual brand offering

table 3: literature review summary

These hypotheses were used in the following section to guide and develop the investigation.

investigation

3

"Neither you, nor I, nor Einstein, nor the Supreme Court of the United States is brilliant enough to reach an intelligent decision on any problem without first getting the facts"
(Dale Carnegie)

3 investigation

This section describes the investigation methodology that was used to gather data to meet the research objectives of the management challenge, the investigation design and the investigation results and analysis.

3.1 objective of the investigation

The objective for the management challenge investigation is to identify the key differentiators from a MNO perspective, that will influence the adoption of MCP by the early majority, by testing the hypothesis identified in the literature review (refer to table 3).

Swaddling & Zobel, (1996) state:

> *"When conducted well, exploratory research provides a window into consumer perceptions, behaviours and needs. It enables companies to develop new products more consistently. This superior understanding of the consumer leads to effective decision-making and recognition of market opportunities, a distinct definition of the business in which your company competes, and a high probability of producing innovative new products that drive extraordinary profits."*

Based upon the hypotheses generated during the literature review, the research was split into five main areas shown in the conceptual investigation framework in figure 16.

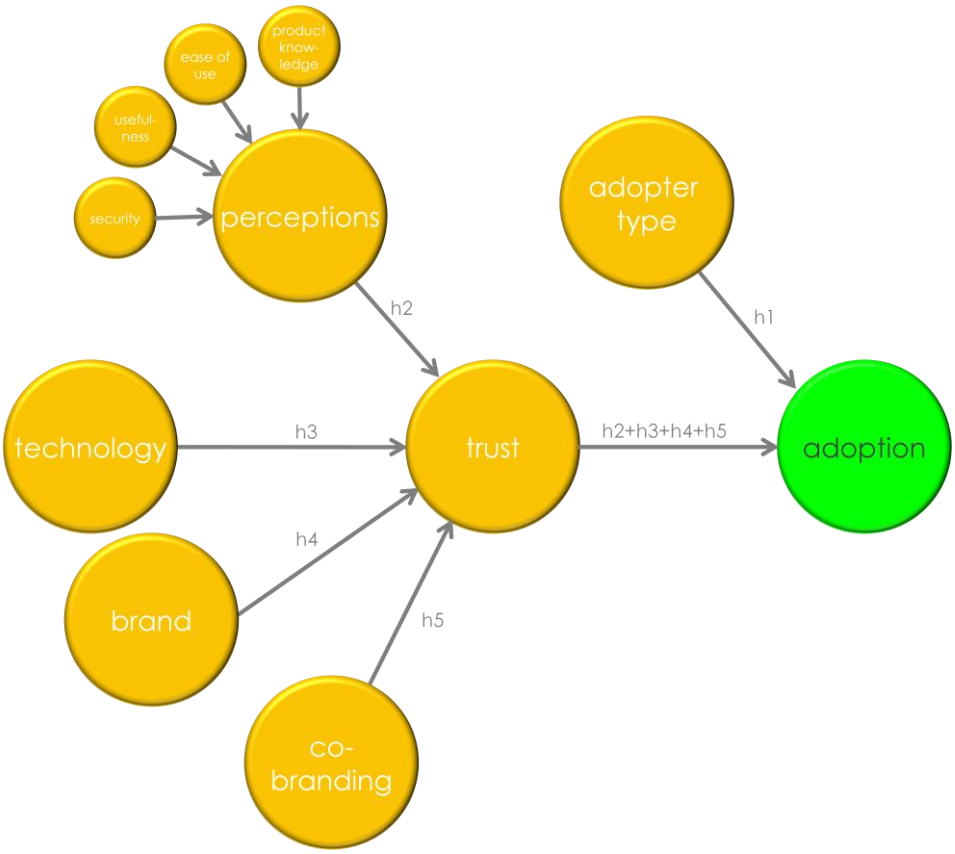


figure 16: conceptual investigation framework

The conceptual investigation framework in figure 16 shows how the hypotheses from the literature review are expected to influence adoption. Using ***Moore's (1998)*** definitions (refer to table 2) it is expected that due to their different needs, the early adopter and early majority will

have different influencers in terms of them adopting a MCP service. Trust, the key influencer identified in the literature review, is excepted to be affected and determined by customer perceptions in terms of security, ease of use, usefulness ***(Dahlberg et al, 2003)*** and previous product knowledge, gained though "*word of mouth*" ***(Gladwell, 2000)***, technology, brand and co-branded collaborations between banks and MNOs ***(Wilcox, 2009).***

The following sections describe the framework elements in more detail.

3.1.1 influence of adopter type

Rogers (1995) defined five types of adopter types: innovators, the early adopter, the early majority, the late majority and laggards. The investigation was used to identify which stage (or category) respondents belong to by questioning their attitudes towards new products and services. By cross referencing the categories with their associated responses, ***Rogers' (1995)*** theories and definitions of adopter characteristics as discussed in section 2.4.3 were tested and used to create recommendations (section 5).

By identifying respondents by their type, it allowed their responses to the questionnaire to be analysed to determine whether there are clear differences in their attitudes towards MCP. From ***Roger's (1995)*** theories (refer to section 2.4.2), it was expected that innovators would be far more likely to trust MCP with little need for influence, where as the early late majority would be less trusting.

3.1.2 influence of trust

The literature review identified trust as being one of the key requirements in the financial sector and would be a key driver for influencing the adoption of MCP ***(Garner, 2011, Van Dinther, 2011)***. Consumers will have potentially differing perceptions of trust towards their bank, credit-card company and MNO which in turn may influence their decision in adopting MCP from their bank, credit card, mobile network provider or a co-branded service. As identified in the literature review, trust is expected to be influenced as follows:

3.1.2.1 influence of perceptions on trust

Dahlberg et al (2003) stated that trust was an additional extension required to the original technology adoption model created by ***Davis (1989)*** and that technology adoption was influenced by consumer perceptions of trust, ease of use and usefulness. These perceptions would most likely be gained by early adopters researching a product and by early adopters gaining information from the early adopters, acting as salesmen for the product ***(Gladwell, 2000)***.

It is expected that positive perceptions will positively influence consumer trust and in turn, their adoption of MCP, with the assumption that the FIs and MNOs have delivered effective communications in the first instance.

3.1.2.2 influence of technology on trust

Security was regularly cited as a key consumer concern during the literature review which needs close attention from MCP providers to ensure consumer adoption ***(Garner, 2011, Wilcox, 2009, Clark, 2010, Patton et al 2004)***. Consumers in the UK are already familiar with the use of a **PIN** (personal identification number) when making a payment with a card. Using a PIN increases consumer confidence in terms of their perception of security and it is expected that a consumer would be more likely to spend more when a payment is made in conjunction with entering a PIN ***(Wilcox, 2009)***.

3.1.2.3 influence of brand on trust

To support the measurement of the influence of co-branding, the investigation analyses consumer's behaviours, perceptions and relationships with their current FIs and MNOs. This was measured using questions regarding how consumers perceive their current FI(s) and MNO(s) products and services and their current levels of trust of their MNO(s) and FI(s). This identified weaknesses and strengths in current relationships that can be improved or leveraged by FIs and MNOs to influence technology adoption.

The concept of MCP was introduced to ensure that all respondents were aware of what value a MCP service intends to offer. By introducing the concept of MCP, it facilitated investigation into consumers' perceptions of a MCP service and whether they were previously aware of MCP or not. The results were used predict and to identify key consumer

influencers for adoption of MCP and to highlight areas of concerns that MCP providers would have to overcome to avoid consumer resistance.

3.1.2.4 influence of co-branding on trust

Throughout the MCP literature review, co-branding and collaboration was regularly recommended as the best approach to overcome the obstacles of launching a MCP service individually by a FI or MNO. The investigation will be used to measure consumer's perceptions of individually branded and co-branded products to investigate whether there is tangible evidence that co-branding would positively or negatively influence consumers' decisions to adopt a MCP service.

3.2 investigation design

3.2.1 investigation strategy

The management challenge sponsor requested that the investigation focused on how to best influence early majority adopters of a MCP service in the UK. Given a MCP service would complement or replace cash, credit or debit cards, and the high level requirement for an ideal respondent was as follows:

- he/she is aged 18 and older
- he/she is a UK resident
- he/she has at least one UK bank account with at least one debit card and/or UK credit card
- he/she has at least one mobile phone with an active UK MNO contract

The criteria immediately suggests that the potential number of eligible respondents is high. Indeed, the UK Office for National Statistics ***(OfNS, 2011)*** publishes UK people data in June of every year for the previous June. In 2010, they reported that 62.2 million residents lived in the UK.

The latest data regarding the number of personal bank accounts in the UK was available from an on-going study conducted by the Office of Fair Trading ***(OfT, 2008)***. The most recent report available from 2008, reported that there were approximately:

- 64 million bank accounts in the UK
- 54 million were estimated to be active

Note: This data represents the total number of accounts, rather than individuals with an account, i.e. an individual may have more than one account.

Regarding credit cards, the UK Card Association ***(UKCA, 2010)*** reported credit card statistics as follows:

- the number of adults with a credit or charge card was 31.2 million, representing 64% of the adult population.
- there were 165.3 million cards in issue – 55.6 million credit cards, 6.6 million charge cards, 84.3 million debit cards, 18.6 million ATM-only cards and 0.2 million stand-alone cheque guarantee cards.
- more than 60% of all debit cardholders had only one debit card while 3% had four or more.
- there were 44.9 million debit cardholders, accounting for 89% of the adult population.
- each personal cardholder has 1.95 credit or charge cards.

The statistics reveal that the potential population sample suitable for the survey is at least 89% of the UK adult population, given that 89% hold a debit card. 89% of the UK adult population equals 44.9 million people, which means the UK adult population is 50.5 million (44.9M/89 x 100). Thus if the questionnaire was distributed to the entire UK adult population, the likelihood of issuing questionnaires to unsuitable respondents is 11%, and even in this case, they would still be eligible to offer an opinion in terms of MCP service regardless of whether they have a bank account and/or contract with a MNO.

The report also states statistics regarding card usage as follows:

- the number of debit card payments is forecast to grow from 6.4 billion to 12.8 billion payments between 2010 and 2020, and spending to increase from £292 billion to £616 billion over the same period.
- there were 33.1 million regular users of debit cards, each making 190 payments on average during the year in the UK.
- 19.8 million credit or charge card holders used their cards regularly at least once a month, down from 20.2 million in 2009.

From this data, if consumers were to adopt MCP and use it instead of or as well as their credit/debit card(s), it can be seen that the potential market for MCP is growing and as such, it is important that a MCP service is marketed effectively to gain maximum number of adopters.

Taking the 2010 figure of £292 billion and splitting it across the adopter types as per ***Rogers (1995)*** ideal distribution for a population of 50.5M, an indication of the potential spend and revenue (based on a 1.5% fee per transaction) for each adopter type can be calculated as shown in table 4.

	innovator	early adopter	early majority	late majority	Laggard
Rogers' distribution (%)	2.5	13.5	34	34	16
Rogers' distribution as number of potential population (M)	1.26	6.82	17.2	17.2	8.1
potential value of debit card spend (£M)	7300.0	39420.0	99280.0	99280.0	46720.0
1.5% fee (£M)	109.5	591.3	1489.2	1489.2	700.8

source: UK Card Association ***(UKCA, 2010), Rogers (1995)***

table 4: indicative spend by adopter type

The average spend per user across all adopter types is as follows:

- £7300M/1.26M = £5782.18

Representing potential revenue from fees as:

- £5782.18 *1.5% =£86.73 per user

3.2.2 research methodology

Being a new, innovative service, MCP can be considered as a "***new field of research***", for which ***Hair et al (2007)*** recommends the use of a well-established old method of research. Given the size of the potential sample, it was decided that a self-completed questionnaire would be the most appropriate method for data collection.

3.3 questionnaire design

Newsted et al. (1998) state:

> *"Questionnaires can be generalised across the population and also provide an objective way of comparing responses over different groups and times."*

To ensure generalisation, the questionnaire was designed to be applicable to the whole UK population of potential MCP adopters as per the ideal respondent definition, in such a way that if could be targeted at specific groups e.g. early majority and at current and future dates to allow analysis of responses at different times e.g. before, during and after MCP launch and to measure the effects of any changes in marketing strategies. ***Rose et al (2009)*** state:

> *"A questionnaire is a 'non experimental fixed design' particularly useful for when the researcher wants to understand the situation as it exists and does not want to modify variables in the area of study."*

This is particularly relevant in the context of consumer perceptions and as such, the questionnaire was designed so as not to coerce or influence respondents to select particular answers regarding perceptions towards technology adoption, specifically perceptions of MCP, which was introduced in the second part of the questionnaire, allowing the questionnaire to be designed to ask non-MCP specific questions in the first half and MCP specific questions in the second half.

The questionnaire was designed using a mixed method ***(Saunders et al, 2007)*** to facilitate the collection of both quantitative and qualitative data, with the bias toward quantitative data collection using an interval scale ***(Spinks, 2011)*** (e.g. strongly disagree, disagree, neither agree or disagree, agree, strongly agree) and opt out options as appropriate (e.g. would not use, not applicable). Questions were based upon the four main areas from the literature review, with the hypotheses and framework in figure 16 used as the focus, to ensure that the analysis would answer the research objective; how to influence consumer adoption of MCP from a MNO perspective. The use of an interval scale meant that data analysis would be made simpler, converting responses into relevant tables and graphs in Microsoft Excel.

3.3.1 general questionnaire design

The questionnaire structure was designed to be self-completed, from the respondents' perspective (e.g. starting "*I would <question>*"), clear and short enough to encourage completion; the aim was for it to take less than 7 minutes from starting to submitting. During its design, the author ensured that the questionnaire was kept as simple as possible, was easy to read and understand, used simple language with no abbreviations, and used simple and consistent simple scales with a low number of options which were kept as consistent as possible in the same order.

As the questionnaire was to be self completed, the author included simple questions included to ask about how many mobile phones and bank accounts/credit card the respondent had **[Q3 & Q6]**, to help get their minds thinking about the services and 'feelings' (perceptions & beliefs) they have about the relevant services.

The data from these questions, whilst not specific to investigating the influence of co-branding, provided useful additional data for FIs and MNOs e.g. by providing an idea of potential number of credit/debit cards that could be replaced by a mobile device. Additionally, device manufacturer and model data was requested **[Q4]** to potentially indicate the need for mobile update/churn before MCP services can be adopted

A free text response box **[Q28]** was included to allow any respondents who wished to, to add any further comments they wanted to make about MCP, which whilst not necessarily part of the investigation objectives, could also provide additional valuable information about customer needs and perceptions to FIs and MNOs.

Demographic questions were asked regarding gender **[Q29]** and age **[Q30]** to help build a picture for the analysis section.

Respondents were introduced to the survey on the introduction page, to ensure they understood the reason for the survey request that it complied with the requirements of Henley Business School, that they were taking part voluntarily and that they were 18 years old or older. **[Q1]**. The author's email address was also included to allow respondents to contact him with any questions or queries.

An option was also provided for respondents to provide an email address if they wished to receive a summary of the management challenge results and findings **[Q33]**.

3.3.2 influence of adopter type

The initial section of the questionnaire was designed to determine which stage (or category) respondents belonged to and to prove or disprove the ***Rogers' (1995)*** innovations characteristics identified in section 2.4.3 as relevant were correctly selected.

Respondent adopter types were identified using questions to measure their attitudes towards brand loyalty and usage of new products **[Q2]**. The questions were copied from research created by TNS ***(TNS, 2010)*** a leading international market research company for the same purpose. Identifying the respondent category allowed the results to be cross-referenced with other question responses to identify characteristics per category type and the analysis used to provide recommendations as appropriate.

The literature review identified the likely innovation characteristics ***(Rogers, 1995)*** that would be expected to influence the adoption of MCP. Questions were included to measure respondents' perceptions and of the relative advantage of MCP over traditional methods of payment (cash, credit/debit cards), the compatibility with traditional

methods of payment, the complexity compared with traditional payment methods, the need of trialability before using a MCP service, and the importance of observability of others using a MCP service before adopting. The questions would allow analysis and cross-referenced with other responses, to generate appropriate recommendations.

3.3.3 influence of trust

The questionnaire was designed to measure current consumer perceptions of trust of MNOs **[Q5]** and FIs **[Q7]** and their likely adoption of MCP. The results from the two angles of questioning were used to prove or disprove the academic theories and used to provide recommendations as appropriate.

3.3.4 influence of perceptions

The MCP section was also designed to measure customer perceptions of a MCP service. The section started with a brief introduction to MCP, including a picture so consumers could visualise a MCP service followed by a question asking whether respondents were already aware of MCP **[Q10]** to allow cross-referencing with MCP service question responses to provide additional analysis of the influence of prior product knowledge ***(Gladwell, 2000)***. Questions were included to test the identified innovation characteristics ***(Rogers, 1995)*** and perceptions of trust and security **[Q11, Q12, Q13 & Q14]**.

3.3.5 influence of technology

To measure the influence of technology on MCP usage and adoption, questions were included to establish the amounts of money that users would spend with or without a PIN when making a payment using a service provided by their FI(s) **[Q17]**, their MNO **[Q20]** and a joint FI/ MNO provided service **[Q23]**.

figure 17: Chip & PIN

The use of a PIN for security is very familiar to card users in the UK, e.g. a PIN is required for cash withdrawal and also for payment at point of sale. Therefore, it was expected that trust would be improved and in turn increase the amount a user would spend with MCP when a PIN was used.

Measuring the potential influence of integrating a PIN mechanism would be useful to the MNOs and FIs designing a service requiring strong perceptions of trust and security.

3.3.6 influence of co-branding on adoption

In order to test the influence of co-branding on adoption of MCP, in the first half of the questionnaire, questions were designed to measure the importance of trust and security of FIs and MNO's brands individually. The concept of MCP was purposely not introduced in the first half, so as not to bias responses and was not introduced until just prior to the second half of the questionnaire.

The second half of the questionnaire asked respondents for their perceptions of co-branding, to allow analyses and measurement of the influence of co-branding to test hypothesis 5 **[Q23 & Q27]**, to provide information to the MNO as to the merits of considering a cobranded service.

A question was also included to measure whether respondents would trust their MNO or FI more or less to provide a MCP service to allow the MNO understand consumer preference and perceptions towards them **[Q23]**.

3.4 research design

3.4.1 quantitative data question design

The quantitative questions used a simple interval scale ***(Spinks, 2011)*** for question response options as follows:

- strongly disagree
- disagree
- neither agree or disagree
- agree
- strongly agree

Where appropriate, the options also included a 'would not use' option to measure whether consumers would actually use the service or not in a more fundamentally binary measurement.

3.4.2 questionnaire testing

The questionnaire was tested on 10 initial candidates, representing a broad range of ages and (from experience), adopter types to ensure that it was understood and would generate suitable results for analysis.

This initial testing was generally positive in terms of overall understanding and flow, though several respondents commented that it was not clear they had moved between banking and mobile network questions. The questionnaire was updated and re-reviewed by the test candidates, resulting in a clearer separation of questions for the distributed questionnaire.

3.4.3 questionnaire distribution

The questionnaire was distributed using SurveyMonkey ***(SurveyMonkey, 2011)***, an online survey creation tool. Respondents were invited to participate using direct email and placing links on Facebook and LinkedIn so as to cover as wide a range of the target population as possible.

3.4.4 questionnaire

The full questionnaire as distributed can be found in appendix a (section 9.1).

3.4.5 research limitations

Research would have ideally been best carried out on the total UK population as described in section 3.2.1. However, this was unrealistic in the given timeframe and budget constraints so the population was restricted to friends, colleagues and peers. Therefore, the data set was not necessarily fully representative of the UK population.

3.4.6 research results preparation

Prior to analysis, the questionnaire data was reviewed and cleaned to ensure that respondents:

- had provided an answer to all compulsory questions
- had agreed to the ethical questions
- were 18 years old or older
- lived in the UK

All responses that did not meet these criteria were removed from the dataset as follows:

- 1 respondent answered 'no' to the ethical questions
- 11 respondents were not from the UK
- 32 respondents did not fully complete the survey

The author checked whether there was a common cause for why respondents had not completed the survey, however it appeared quite random. This may have been due to respondents running out of time, or losing interest, though through subsequent discussions with respondents who had said they had tried to complete the survey, the author discovered survey monkey had also crashed or stopped responding whilst respondents were entering the data.

Removing the 44 ineligible responses from the original 176 left 132 usable responses for the author to base his analysis on. The remaining dataset was assumed to be representative of the UK population for the investigation analysis in the following section, which utilised the TNS scoring method ***(TNS, 2010)*** to breakdown the dataset further in order for it test for the dataset's representativeness of each adopter type.

findings & analysis

4

*"Intellectuals solve problems;
geniuses prevent them."*
Albert Einstein

4 findings and analysis

This section presents the investigation results, using it as evidence to support or dispute the hypotheses from the literature review (section 2). Where appropriate, data was aggregated to combine finer grained analysis e.g. strongly agree and agree responses. As per the management challenge guide, analysis was kept as parsimonious as far as possible, presenting clear and easily understood arguments ***(Spinks 2011)***. The section is presented in an order which made the analysis easiest to present and discuss, gradually building towards overall conclusions presented in section 5.

4.1 influence of demographics

Prior to analysing the main set of data, the demographic data was analysed. The results, shown in figure 18 revealed that the sample was biased towards the male population and largely between the ages of 30 and 49, most likely caused by the authors distribution of the questionnaire to friends, family and colleagues, who are generally of the same gender and age range.

Microsoft Excel was used to calculate the skew value. In probability theory and statistics, skewness is a measure of the asymmetry of the probability distribution of a real-valued random variable. The skewness value can be positive or negative, or even undefined. Qualitatively, a negative skew indicates that the tail on the left side of the probability density function is longer than the right side and the bulk of the values (possibly including the median) lie to the right of the mean. A positive

skew indicates that the tail on the right side is longer than the left side and the bulk of the values lie to the left of the mean. A zero value indicates that the values are relatively evenly distributed on both sides of the mean, typically but not necessarily implying a symmetric distribution ***(Wikipedia, 2012)***.

From figure 18 it can be seen that the data is non-symmetrical and the 'skew' values calculated in excel are both less than 0, verifying the skew, (or bias) towards the larger number of male respondents and higher ages of the sample.

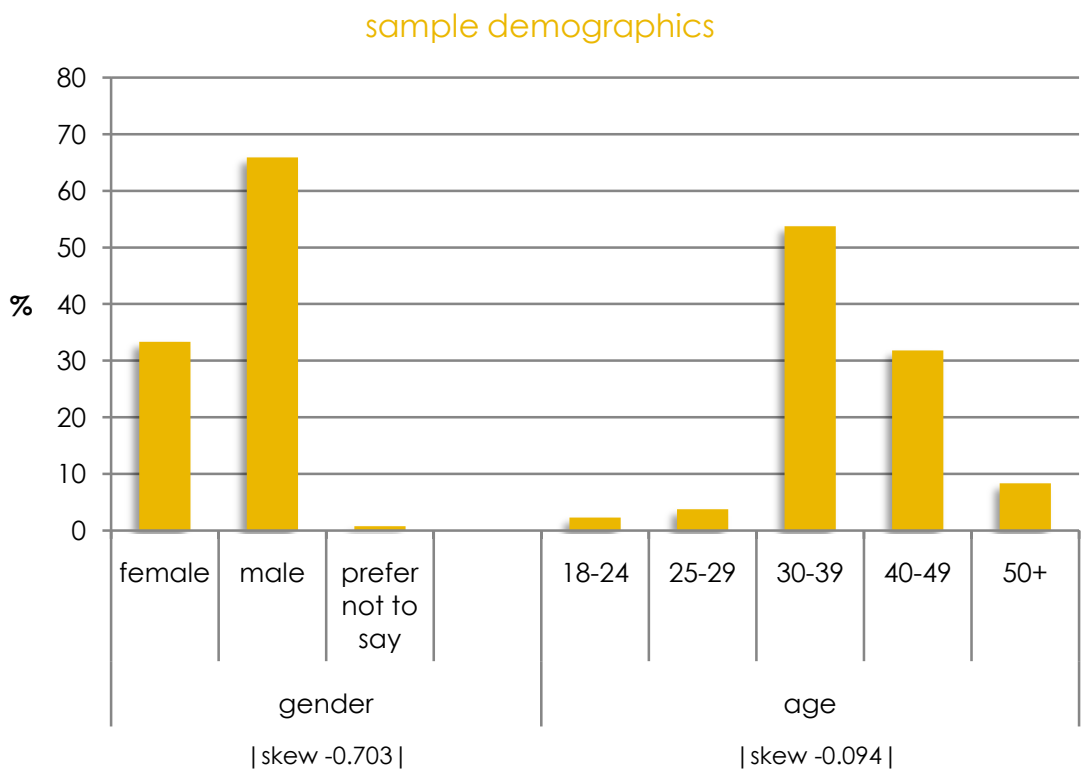


figure 18: demographic information for sample

Previous studies have been carried out regarding the adoption of technology. An investigation by ***Riquelme and Rios (2010)*** corroborated

a previous study by ***Amin et al (2006)*** that male, undergraduate students were slightly more inclined to see mobile phones as a practical device for banking purposes. However, gender had a moderated effect on social norms, perception of ease of use and usefulness but not risk, which was relevant for both groups and it is an aspect that needs to be addressed especially in the use of mobile phones in banking. Thus in terms of the analysis, the gender split could be ignored.

Previous research by ***Venkatesh et al (2012)*** into consumer acceptance and use of information technology (and therefore relevant to MCP), identified that older consumers tend to face more difficulty in processing new or complex information, thus affecting their learning of new technologies attributed to the decline in cognitive and memory capabilities associated with the aging process. They do not state what age is considered old, though if this was considered to be fifty years or older, it would only apply to 8.3% of the sample, a small number which could again largely be ignored for the analysis.

4.2 influence of adopter type

To allow analysis of the influence of adopter type on adoption and to also allow specific analysis of the early adopter type, the first stage of the analysis categorised respondents into their adopter type using their responses to the eight questions as per the TNS scoring and adopter type identification method ***(TNS 2010)***.

The five possible responses for each question were given a score between 1 and 5. A low score was applied for an answer, which indicated the respondent was an innovator and a high score for a

laggard. Some questions were worded in a negative style e.g. **Q2d**, so care was taken to invert the scoring as appropriate. Scores were applied to each response as shown in table 5:

	Q2a: I think of myself as a brand loyal customer	Q2b: If I like a brand I rarely switch from it just to try something new	Q2c: I would rather stick with a brand I usually buy than try something I am not very sure of	Q2d: When I see, discover or hear about a new product or service, I am reluctant to give it a try	Q2e: In general I am among the first to try new products and services when they appear on the market	Q2f: I rarely buy products and services when I am uncertain how they will perform	Q2g: I enjoy taking chances when trying new products and services	Q2h: I do not like to try new products or services before other people do
strongly agree	1	1	1	5	5	5	1	5
agree	2	2	2	4	4	4	2	4
neither agree or disagree	3	3	3	3	3	3	3	3
disagree	4	4	4	2	2	2	4	2
strongly disagree	5	5	5	1	1	1	5	1

table 5: questions to determine adopter type

Each respondent's score was averaged across the eight questions **Q2a** to **Q2h**. The minimum score could be 1 and the maximum score could

be 5 resulting in the adopter type range being 0.8. Using these values, respondents were categorised as shown in table 6:

	innovator	early adopter	early majority	late majority	laggard
score	>1<=1.8	>1.8<=2.6	>2.6<=3.4	>3.4<=4.2	>4.2

table 6: ranges used to determine respondent's adopter type

The results are shown in table 7 and figure 19. The table includes values from Rogers' ideal distribution as shown in figure 11 (section 2.4.2) of the literature review. It can be seen that there is a skew when comparing the distribution of the sample adopter types to Rogers' distribution as shown in figure 19 with a very low number of innovators and laggards with the vast majority of respondents being identified as early adopters and early majority. The percentage difference per adopter type is shown in the '% delta' column in table 7. The largest difference occurs in the laggard adopter types, where only 0.8% of respondents fell into the category after scoring compared to the 16% expected by Roger's. Though this is a large error, (most likely due to the questionnaire being distributed 'online' to the author's contacts and via Facebook and LinkedIn, who are all most likely to be early stages adopter types) it can be ignored as the analysis will focus on the early majority type, which is far less skewed.

	number of respondents from sample	% of sample	Roger's ideal % distribution	% delta between sample & Rogers ideal
innovator	3	2.3	2.5	-10.0
early adopter	39	29.5	13.5	54.3
early majority	65	49.2	34.0	31.0
late majority	24	18.2	34.0	-87.0
laggard	1	0.8	16.0	-2012.0
total	132			

table 7: sample adopter types compared against Rogers' ideal distribution

The ability to group adopters by their type allowed subsequent question responses to be analysed by specific adopter groups. This identified differences in responses by adopter type and whether the responses could be aligned with ***Moore's (1998)*** definitions as shown in table 2 (section 2.4.2) within the literature review.

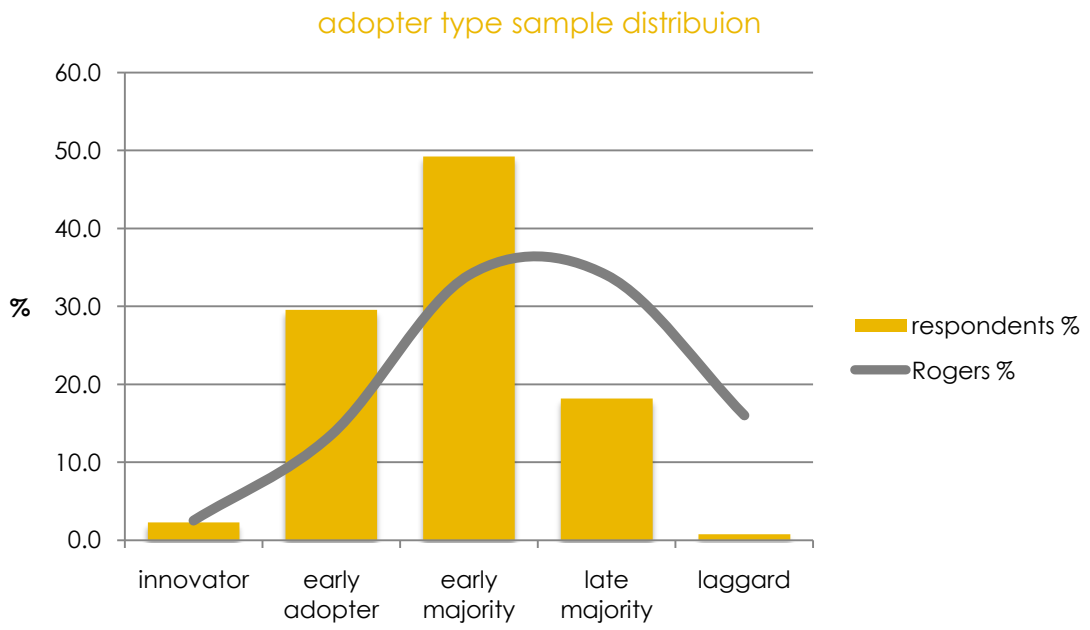


figure 19: sample adopter types vs. Roger's ideal distribution

hypothesis 1: early adopter and early majority needs are significantly different

To test hypothesis 1, the respondent data was grouped into adopter types and analysed for whether respondents would or would not spend money using MCP provided by their bank, with a pin **[Q18]** and without a pin **[Q19]** to prove whether a significant difference between the early adopters and the early majority as per ***Moore's (1998)*** chasm concept existed. The results for the early adopter, the early majority and the late majority adopter types were extracted to allow them to be compared as shown in table 8 and figure 20.

	%	without PIN	with PIN	usage mean $\bar{x}$
early adopter	would not use	4.2	4.2	4.2
	would use	95.8	95.8	95.8
early majority	would not use	33.8	12.3	23.1
	would use	66.2	87.7	77.0
late majority	would not use	20.5	4.0	12.3
	would use	79.5	96.0	87.8

table 8: adopter type analysis

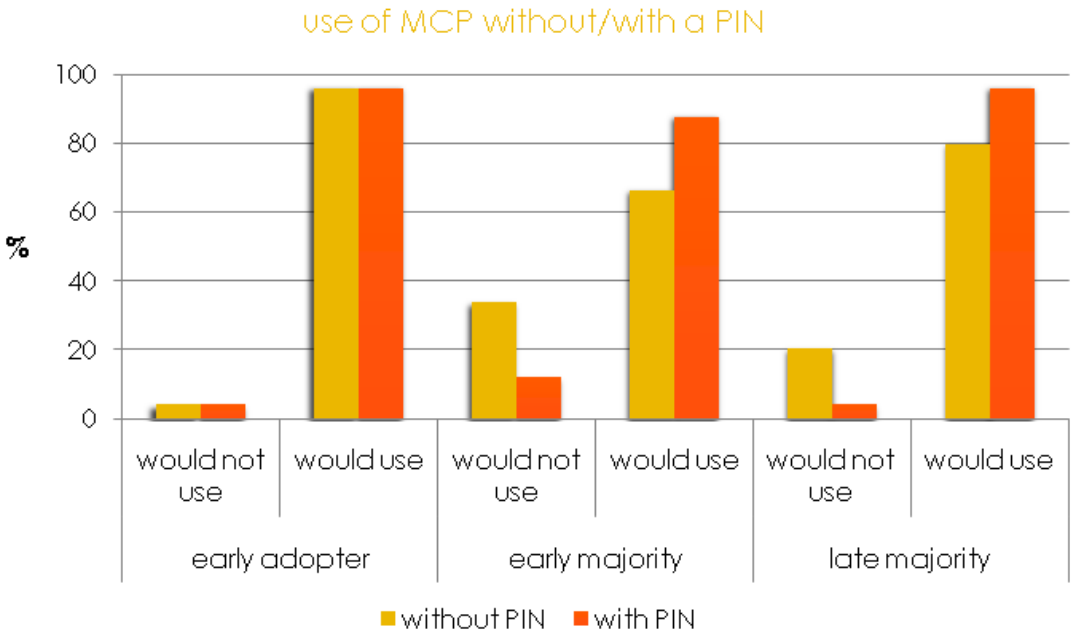


figure 20: adopter type analysis

From figure 20, it can be seen that the early adopter group are willing to use MCP provided by their bank, whether or not they have to use a PIN, with only 4.2% saying that they would not use MCP.

The results also identified that the early majority types exhibit a contrasting behaviour to the early adopter type, with 33.5% of respondents stating they would not use MCP without a PIN, a difference of 29.3 points, confirming that there is indeed, a significantly different behaviour between the early adopter and early majority adopter types. It is also worth noting that the shapes of the early majority and late majority data are very similar to each other, indicating that their behaviours are similar.

By calculating the means, whilst only a simple inferential statistic, it showed that consumers would trust and be willing to use MCP. It also further highlighted the differences between the groups in terms of usage and trust. It can be seen that the early adopters are most likely to use the service ($\bar{x}$ = 95.8%), though surprisingly the late majority are shown to be more likely to use the service ($\bar{x}$ = 87.8%) than the early majority ($\bar{x}$ = 77.0%). This may be due to the description of MCP provided in the questionnaire, making the late majority more comfortable with the technology altering their perception (refer to table 2 and appendix a, section 9.1).

Having proven that the early adopters are willing to adopt the service and that the early majority adopters, the focus of the management challenge, have differing behaviours, the remainder of the analysis focused on the responses from the early majority group in order to determine the best outcomes from a MNO perspective.

4.3 influence of trust

To determine the influence of trust on MCP adoption, respondents were asked about their perceptions of trust towards their banks **[Q5]** and MNO **[Q7]**. The results are shown in table 9 and figure 21.

hypothesis 4: brand trust is essential to influence consumer adoption of MCP

%		agree	agree average	agree spread	disagree	disagree average	disagree spread
Bank	early adopter	87.5	83.7	6.0	4.2	5.1	2.0
	early majority	81.5			6.2		
	late majority	82.1			5.1		
MNO	early adopter	58.3	65.9	13.5	16.7	9.8	11.5
	early majority	67.7			7.7		
	late majority	71.8			5.1		

table 9: influence of bank and MNO trust

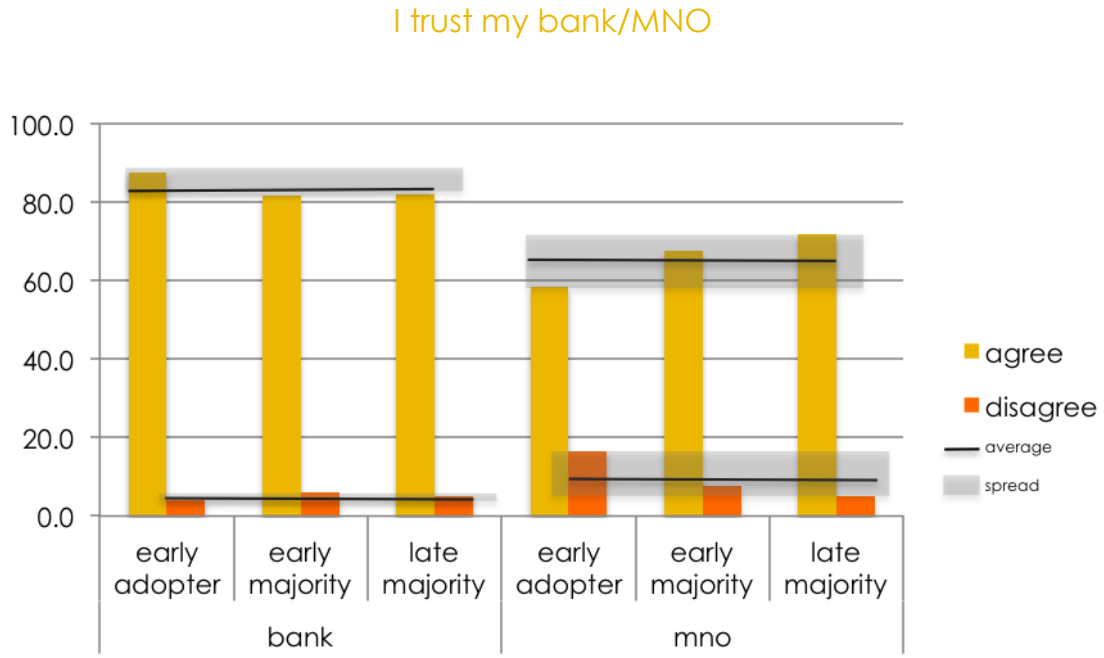


figure 21: influence of banks and MNOs trust

The average (mean) markers shown in figure 21 clearly show that respondents have a lower perception of trust towards their MNO than their banks with a difference of 17.8 points between the number of respondents who agreed that they trust their bank and those who trust their MNO. This result was expected and much of the literature corroborates this, including ***Garner's (2011)*** report that stated:

> *"Even after the dark cloud of the recent financial crisis, banks (in this case, high street banks) still seem to evoke a high degree of trust."*

Further information was revealed in table 9 and figure 21 that consumer trust in banks is less dependent upon adopter type than it is for a MNO,

suggesting that consumers in general trust their banks independent of their adopter type, whereas for the MNO, the adopter type makes a significant difference, with a lower number of early adopters trusting the MNO. A potential explanation for this could be that banks have been established and operational for a longer time, with consumers needs being met; banking is far simpler in general terms than mobile, where consumer needs and expectations between the adopter types most likely differ more.

The results are at odds with what would be expected as shown in figure 21, indicating that early adopters are less trusting of their MNO than the early majority and late majority. A potential explanation for this is that the early adopter may follow the technology industry closer than other adopter types have had their perceptions of trust negatively influenced. An example of this is roaming charges, which whilst recently changed through legislation, the MNOs have been proven to be overcharging consumers whilst abroad ***(The Telegraph, 2012)***. In both cases, the early majority take a middle ground as expected.

4.3.1 trust: what this means for the MNO

The main outcomes of the analysis of trust are that the general population have more trust in their banks than they do of their MNO. It was also verified that consumers perceive MCP as riskier than traditional forms of payment. Thus, to influence adoption by the early majority and in general, the MNO needs to increase consumer's perception of trust. Potential means to increase trust are discussed in the following sections.

4.4 influence of perceptions

hypothesis 2: consumer perceptions /product knowledge of security, ease of use, usefulness and trust can positively influence trust and adoption

To determine the influence of trust on MCP adoption, respondents were initially asked whether they were already aware of MCP prior to answering the questionnaire **[Q10]** and about their perceptions of MCP in terms of security (trust) **[Q12a, Q12b, Q12c, Q14c & Q14d]**, ease of use **[Q11a, Q11b & Q11c]** and usefulness **[Q11d, Q12d & Q12e]**. The data was categorised into adopter type and the results for the early adopter and early majority types are presented and analysed below.

4.4.1 prior knowledge

Results are shown in table 10 and figure 22 for the number of early adopter and early majority respondents who were already aware of MCP, prior to answering the questionnaire.

%	early adopter	early majority
yes	**83.3**	**81.5**
no	**16.7**	**18.5**

table 10: prior knowledge of mobile contctless payment

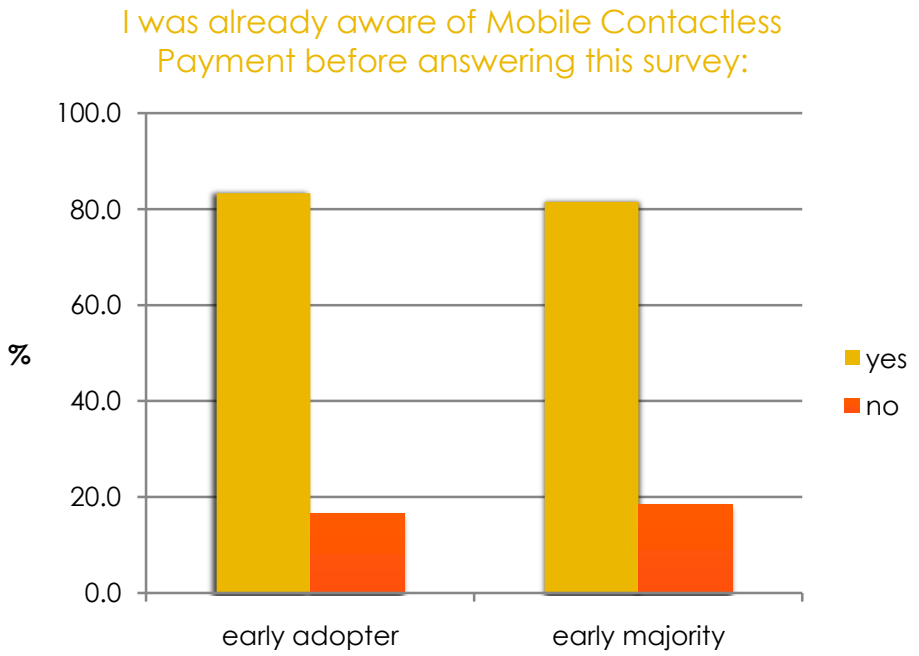


figure 22: prior knowledge of MCP

As can be seen, the vast majority of the early adopter and early majority respondents were already aware of MCP, suggesting that the service is already widely communicated. However, care should be taken as this may not necessarily mean that consumers understand the service. From her research, ***Moorman (1999)*** inferred that:

"Typically people assume that they know more than they do"

Additionally, just because a consumer knows about a product, it doesn't mean they have a positive perception. The following sections provide data and analysis regarding relevant consumer perceptions.

4.4.2 perceptions of security (trust)

As identified in section 2.1 of the literature review, consumers are more likely to trust and embrace e-commerce if they perceive sufficient security ***(Patton et al, 2004)***. Results for early adopter and early majority respondents' perceptions towards the security of MCP in order to identify its influence on trust are shown in table 11 and figure 23.

	MCP sounds secure		I would feel safe using a MCP service		MCP sounds more secure than using cash		MCP sounds more secure than using a credit/debit card		using a MCP service would feel riskier than using a debit/credit card	
%	Ea	em	ea	em	ea	em	ea	em	ea	Em
agree	**45.8**	**41.5**	**41.7**	**35.4**	**33.3**	**18.5**	**12.5**	**3.1**	**45.8**	**47.7**
disagree	**20.8**	**30.8**	**29.2**	**23.1**	**50.0**	**47.7**	**54.2**	**58.5**	**37.5**	**29.2**
would not use	**4.2**	**3.1**	**4.2**	**3.1**	**4.2**	**3.1**	**4.2**	**1.5**	**4.2**	**0.0**

key | ea: early adopter em: early majority

table 11: security perceptions of MCP

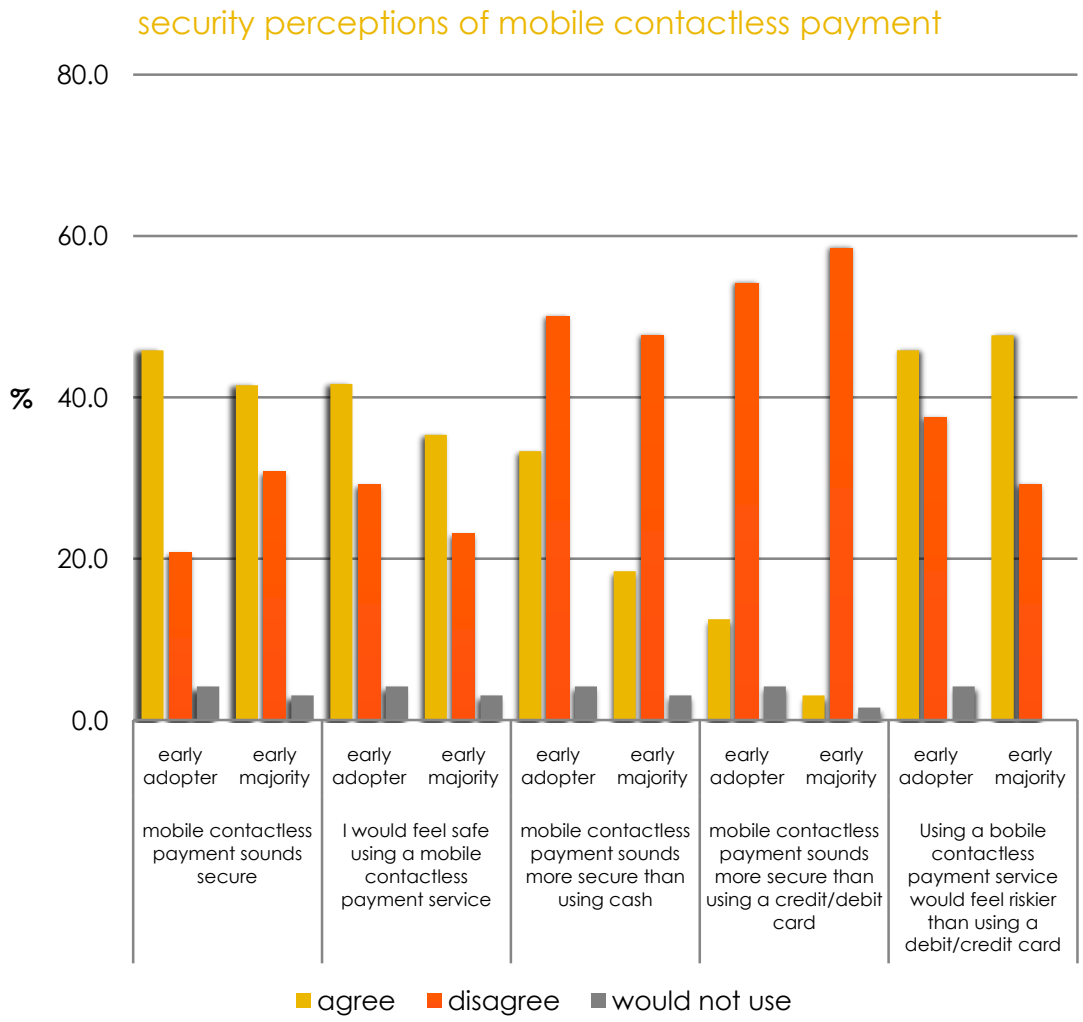


figure 23: security perceptions of MCP

It can be seen that both the early adopters and the early majority have similar perceptions of how MCP security and would feel safe using MCP.

Almost twice as many early adopter respondents versus early majority respondents perceive MCP as being more secure than cash, which

potentially means that more early adopter users would use MCP. This is as expected. However, the early majority would need more convincing.

Surprisingly, both the early adopters and early majority types appeared untrusting of MCP as a replacement for physical cards with almost the whole group of both respondents disagreeing with the statement that MCP sounds more secure than using a credit card.

4.4.2.1 perceptions of security (trust): what this means for the MNO

It can be seen that the early majority marginally agree more than disagree that MCP sounds secure and that they would feel safe using it. However when asked to compare with current methods of payment (cash/card), there is a much larger contrast, with almost three times as many respondents disagreeing that MCP sounded more secure than using cash (47.7% disagreeing versus 18.5% agreeing) and almost 20 times more disagreeing that it sounded more secure than using credit/debit card (58.5% disagreeing versus 3.1% agreeing). This was further confirmed by almost 50% more respondents agreeing that using MCP would feel riskier than using cash or credit/debit card (47.7% agreeing versus 29.2% disagreeing).

If early majority consumers perceive MCP as insecure, they will in turn, be untrusting of the service and be less likely to use it in preference to using

their cards. It will be essential for the mobile network to create a perception of security potentially through the use of technology (e.g. a PIN), which is analysed in section 4.5.

4.4.3 perceptions of ease of use

The results for early adopter and early majority respondents' perceptions towards the ease of use of MCP are shown in table 12 and figure 24.

	I find the concept of MCP easy to understand		I expect MCP would be easy to set up		MCP sounds easy to use	
	early adopter	early majority	early adopter	early majority	early adopter	early majority
agree	95.8	92.3	87.5	80.0	95.8	95.4
disagree	4.2	4.6	4.2	4.6	4.2	0.0
would not use	0.0	0.0	0.0	0.0	0.0	0.0

table 12: ease of use perceptions of MCP

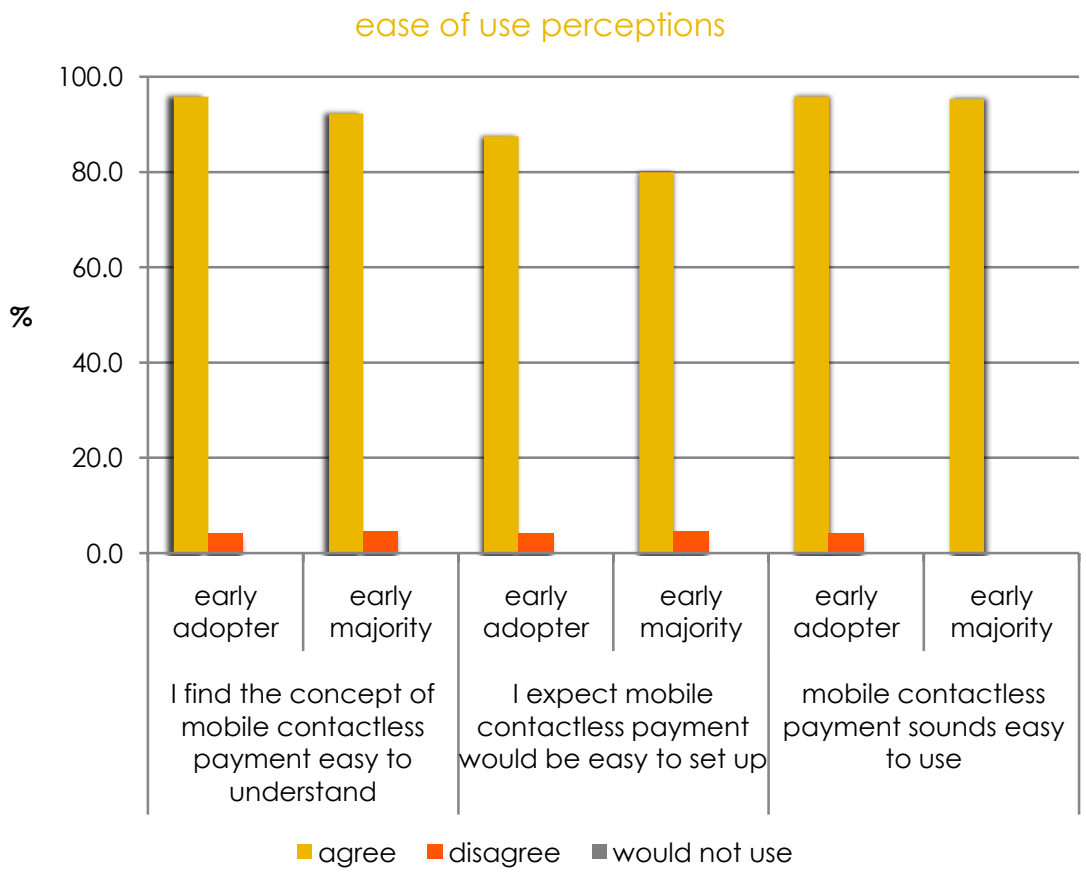


figure 24: ease of use perceptions of mobile contactless payment

It can be seen from table 12 and figure 24, the vast majority of early adopter and early majority type consumers perceive that MCP is easy to understand, and expect it to be easy to set up and use.

4.4.3.1 perceptions of ease of use: what this means for the MNO

The high number of respondents who agreed that a MCP service would be easy to understand, use and set up is positive for the MNO, which means that they do not need to create specific messaging regarding its ease of use.

4.4.4 perceptions of usefulness

The results for early adopter and early majority respondents perceptions towards the usefulness of MCP are shown in table 13 and figure 25.

	MCP would be more convenient than using traditional cash and/or credit/debit card		I would prefer to use MCP rather than cash		I would prefer to use MCP rather than my credit/debit card	
	early adopter	early majority	early adopter	early majority	early adopter	early majority
agree	66.7	60.0	66.7	35.4	37.5	26.2
disagree	12.5	15.4	20.8	26.2	29.2	41.5
would not use	0.0	0.0	4.2	4.6	4.2	3.1

table 13: perceptions of usefullness of MCP

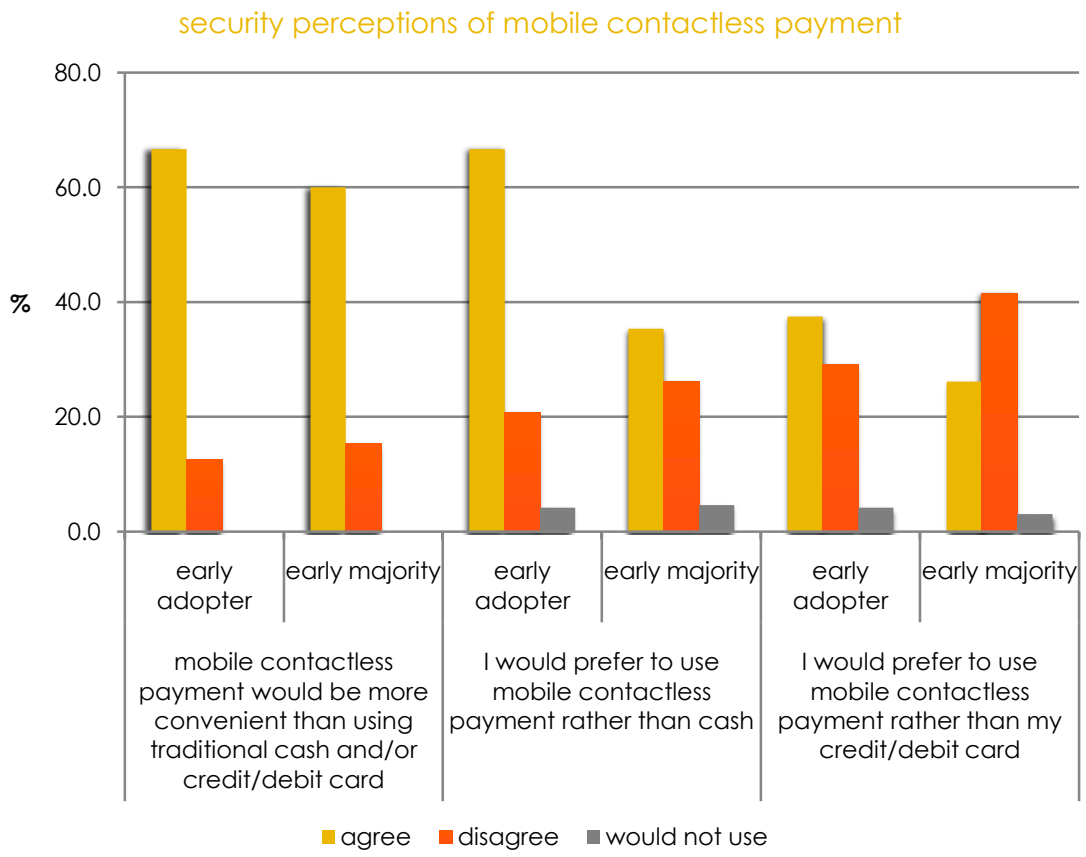


figure 25: perceptions of usefulness of mobile contactless payment

It can be seen from table 13 and figure 25 that the vast majority of early adopters and early majority types perceive that MCP would be more convenient than using cash or their credit/debit card. However, regarding preference of use, it can be seen that a much lower percentage would prefer to use MCP than their credit/debit card. This aligns with the low consumer perceptions of trust and security findings as presented in sections 4.3 and 4.4.2, further confirming that security is a key concern of consumers.

4.4.4.1 perceptions of usefulness: what this means for the MNO

The strong perception of usefulness is a positive finding for the MNO, as this confirms that consumers would find MCP useful, though in order for them to use and adopt it in place of cash and/or their credit/debit cards, they would need to be convinced that the service is secure.

4.4.5 perceptions: what this means for the MNO

The perceptions analysis section confirmed that consumers would most likely use MCP, but only if they did not perceive security as a threat, resulting in untrustworthiness and non-usage.

The following section analyses one method of positively influencing low perceptions of security by increasing trust through the use of technology.

4.5 influence of technology

To determine the influence of using technology to increase trust of a MCP service and drive adoption, respondents were asked how much they would spend using MCP, with and without a PIN, for MCP provided by their bank and MNO **[Q18, Q19, Q21, & Q22]**. The results for the early adopter type are shown in table 14 and figure 26.

hypothesis 4: trust can be positively influenced using technology to increase security e.g. using a PIN

%	Bank		MNO	
	without pin	with pin	without pin	with pin
would not use	33.9	12.3	41.5	26.1
would use	66.2	87.7	58.5	73.9
% increase usage with PIN		32.6		26.3

table 14: influence of technology (PIN)

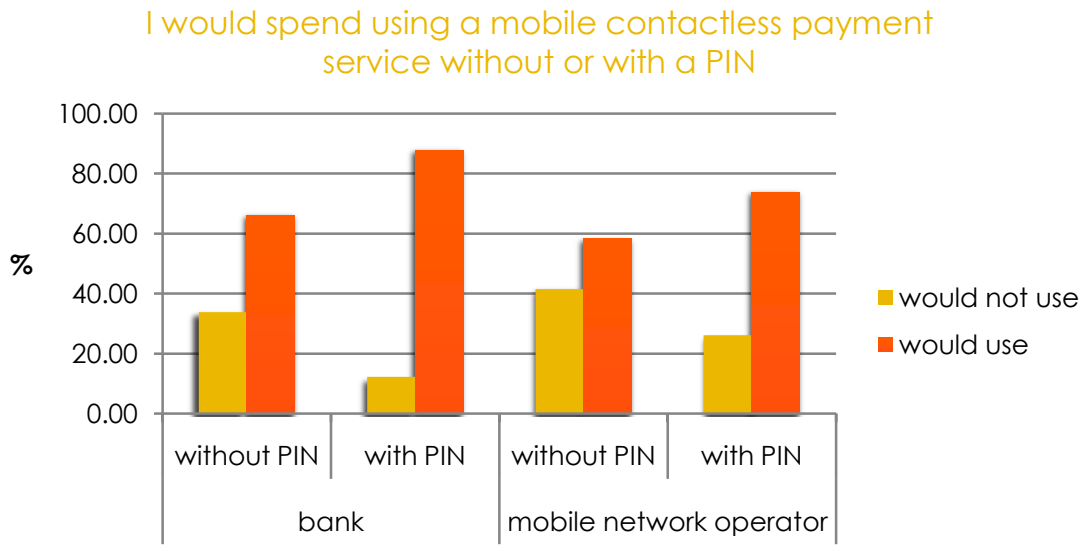


figure 26: influence of technology (PIN)

It can be seen in figure 26 that the early majority are more willing to spend using MCP if they enter a PIN. With a PIN, 32.6% of respondents

would be more willing to use a service provided by their bank and 26.3% would be more willing to use a service with a PIN provided by their MNO.

The increase in willingness to use was expected; security is regularly cited in other academic work as one the key risk factors perceived by consumers ***(Datamonitor, 2011, Dahlberg et al., 2003, Garner, 2011, Linck, 2006)***. However, the author was unable to find any previous research that had been carried out with the intention to identify the increase in use when using a PIN so this research is a valuable indication to a MNO of the value that technology has to play in influencing consumers' willingness to use and adopt a MCP service.

4.5.1 technology: what this means for the MNO

The use of PIN technology clearly provides a significant increase in influencing the usage and adoption of MCP, resulting in a 26.3% increase by the early majority sample. Whilst the increase for the MNO is less than for the bank, it is still a significant increase through the introduction of relatively simple technology, which is also familiar with current users of Chip & PIN card, reducing the need for adopters to become used to additional new technology.

The MNO would need to ensure that the PIN functionality is kept simple and easy to use, to ensure that is keeps consumer perception of ease of use positive. This aligns with recommendations from a previous study by ***Linck, et al (2006)*** who stated:

"Mobile Payment Service Providers [need] to prevent security concerns through appropriate design and communication of the payment procedures and to convince customers of the security of their Mobile Payment procedures by meeting their concerns in informative advertising."

4.6 brand

hypothesis 5: a co-branded MCP service will be more influential to customer adoption than an individual brand offering

To determine the influence of brand and co-branding on MCP adoption, respondents were asked questions about their individual bank and MNO; whether they would trust their individual bank to provide a mobile network service **[Q5]** or their MNO to provide banking **[Q7]**, to measure consumer association of the type of service offered by a bank or MNO. The expectation was for the bank to prove more favourable given its association with already providing a banking service.

Responses were aggregated for strongly agree/agree, and strongly disagree/disagree for the early majority adopter type. The results are shown in table 15 and figure 27.

%	bank	MNO	% difference
agree	61.5	44.6	37.9
disagree	18.5	30.8	99.9

table 15: influence of brand association

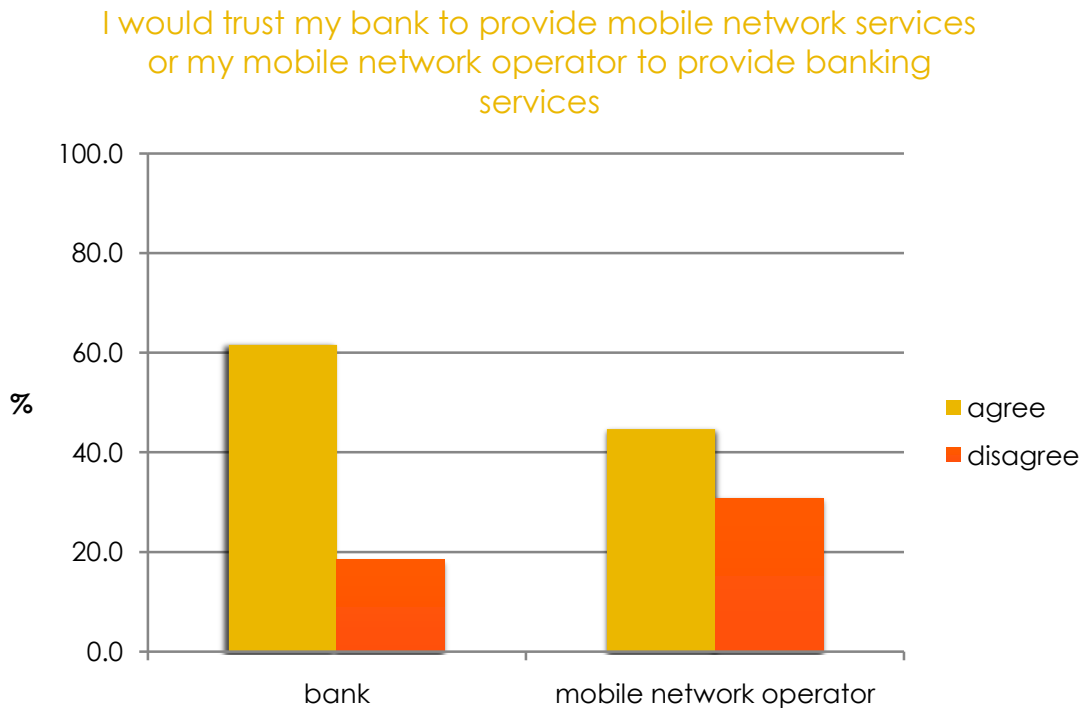


figure 27: influence of brand association

It can be seen from figure 27 that the early majority would trust their banks to provide mobile network services more than they would trust their MNO to provide banking services. The results are in line with trust

analysis (section 4.3) where the early majority trusted their banks more than their MNO. This result was also expected as per the literature review; ***Garner (2011)*** states:

> *"Consumers still trust banks to process payments and reliably manage their personal finances. With this in mind, it is no surprise that consumers trust and prefer FIs most with processing their payments on mobile phones, which seems a natural progression."*

4.6.1 brand: what this means for the MNO

It is evident (and expected) that banks' brand strength is stronger in the banking space. To influence consumer adoption of a MCP service, unless they co-branded, a mobile network would need to identify the key qualities of why the banks have earned the reputation, in particular in terms of security which would most likely be very challenging.

4.7 influence of co-branding

To determine the influence of co-branding on MCP adoption, respondents were asked a similar set of questions to what was previously asked in terms of trust (section 4.3) and spend (section 4.5), without and with a PIN. The results are shown in table 16 and figure 28.

%	bank		MNO		co-branded	
	without PIN	with PIN	without PIN	with PIN	without PIN	with PIN
would not use	33.8	12.3	41.5	26.2	33.8	10.8
would use	66.2	87.7	58.5	73.8	66.2	89.2
% increase with PIN		32.6		26.3		34.9

table 16: influence of co-branding

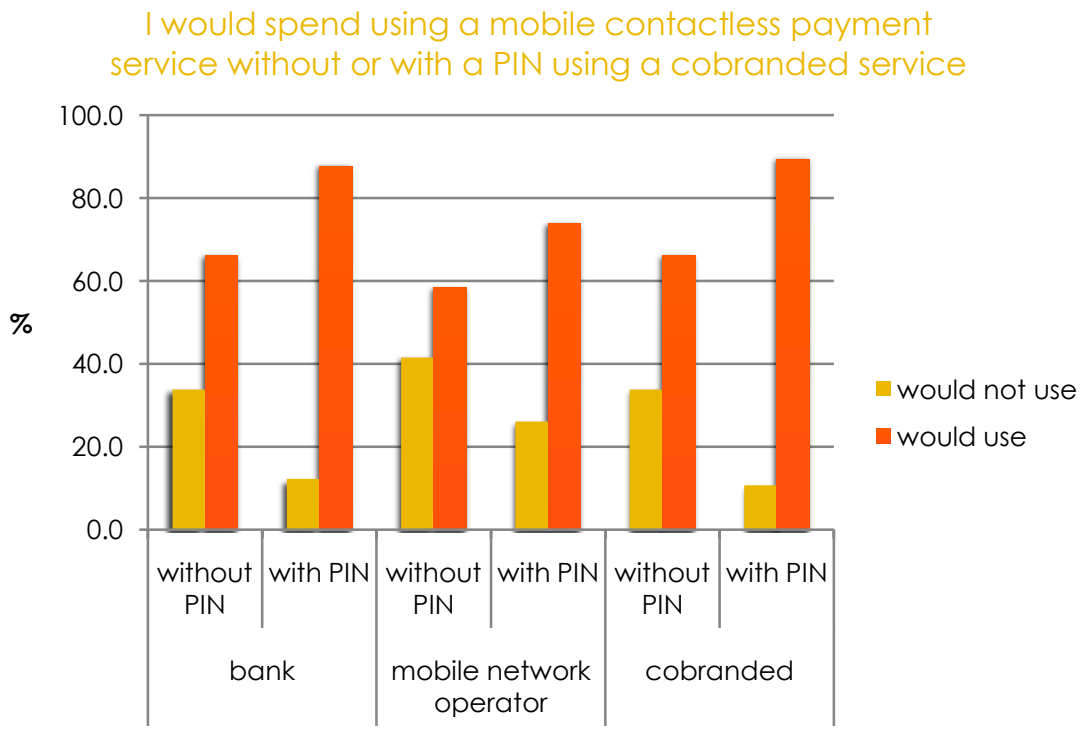


figure 28: influence of co-branding

From the results, it can be seen that the use of a PIN increases the usage of MCP in line with previous findings (section 4.5). The increase in usage with a PIN and the overall number of users was largest in the co-branded responses, increasing usage by 34.9% to 89.2%, verifying hypothesis 5 that a co-branded MCP service is more influential to customer adoption than an individual brand offering.

4.7.1 co-branding: what this means for the MNO

More importantly, 89.2% represents a very large share of the potential population and is therefore useful to both parties. This is useful for the MNO, as this is a case for co-branding, though the MNO would need to be wary in case the bank had carried out similar research. The banks change due to co-branding from 87.7% to 89.2% is minimal and so for them, co-branding and its investment would be less attractive.

If the banks were to raise this point during any co-branding contract discussions, the MNO must counter argue by stating that the mobile network is extremely secure, and that the MNO can provide mobile network expertise, which is important given that only 61.5% of respondents thought their bank could provide a MNO services (section 4.6).

conclusions & recommendations

5

"A man should look for what is, and not for what he thinks should be."
Albert Einstein

5 conclusions and recommendations

The intention of the research was to meet the objectives created from the hypotheses identified in the literature review (summarised in table 3) in order to provide recommendations to the sponsoring MNO as to how they could best influence the adoption of a MCP service by the early majority consumer type.

This section draws conclusions from the results and analysis (section 4), relates them to key findings from the literature review (section 2) and provides recommendations for the sponsoring MNO with regards to how they can best influence early majority adoption of a mobile contactless service.

5.1 adopter type and trust

hypothesis 1: early adopter and early majority needs are significantly different

hypothesis 4: brand trust is essential to influence consumer adoption of MCP

The analysis verified ***Rogers' (1995)*** theory that the five adopter types have differing needs and behaviours, though in an unexpected way; whereas consumer trust of their bank was very similar across the adopter types, the author was surprised to observe the unexpected behaviour that that the early adopter type were less trusting of their MNO. This is something that a MNO would need to be aware of, as it would most likely be their expectation that they would not need to target the early adopter as aggressively as the early majority.

Indeed, even though the early adopter category represents 13.5%, a smaller percentage of the expected distribution than the early majority's 34% ***(Rogers 1995)***, this number is still significant when considering the indicative early adopter spend and revenues based on 2010 figures ***(UKCA, 2010)*** (section 3.2.1) where early adopter spend was calculated to be £39.4Bn, from which typical fees of 1.5% could generate potential revenues of £591.3M. This significant value leads to the first recommendation as follows:

recommendation 1: to maximise their potential revenue from transaction fees, MNOs must consider the different needs of the five adopter types ***(Rogers, 1995)*** and in particular, target the early adopter type in a manner that will increase their perception of trust of their MNO to match or better their perception of trust of their bank. A potential method is discussed in section 5.2.

5.2 trust & technology

The research confirmed the expected adopter type behaviour with and without a PIN, due to their willingness to try new services ***(Rogers, 1995)***. The early adopter type are just as likely to spend using MCP whether a PIN is used/isn't used.

hypothesis 3: trust can be positively influenced using technology to increase security e.g. using a PIN.

The early majority type displayed their expected behaviour in terms of being more cautious and less willing to spend using MCP provided by a MNO without a PIN. This also confirms previous conclusions that consumers prefer and trust their FIs to process payments using their mobile phones ***(Garner, 2011)***.

By using a PIN, the early majority were seen to be positively influenced and were much more willing to spend using MCP; the results in section 4.5 showed that 26.3% of early majority types would be more willing to use the service with a PIN. When converting this to numbers, an increase of 26.3% potentially represents the following extra early majority type consumers using a mobile contactless service:

- UK adult population: 62 million
- UK adults with a debit card : 89% = (62M x 89%) = 55.18M
- 26.3% of early adopters (34%) = 55.18M x 26.3% 34% = **4.93M users**
- 4.95M users potential fee revenue = 4.93M x £86.73 = **£427.58M**

Mobile networks are already built upon security, offering end to end encryption and additionally, modern mobile platforms used on mobile devices provide substantially better security than traditional desktop operating systems ***(Trend Micro, 2012)***. These security features are not widely known by consumers and as such, this is a key message that the MNO could use to create a consumer perception that not only is MCP secure, especially when used with a PIN, but that that the MNO understands and provides mobile security better than banks. This aspect is further discussed in section 5.3.

The use of technology also eliminates other security concerns of contactless payment using physical cards. Many potential users are concerned that fraudsters can obtain their card details by getting into close enough proximity of their cards e.g. by placing a reader near to a handbag ***(Channel 4, 2012)***. Through his own experience of working with Visa, the author knows that this threat has already been removed by simply prompting the user to confirm any contactless activity prior to any contactless activity.

recommendation 2: MNOs MUST promote the additional security provided by their networks and the devices they provide in order to positively influence consumer perceptions of security and trust.

5.3 perceptions

The analysis showed that consumers have a positive perception of MCP in terms of ease of use, understanding and usefulness, but are unlikely to use it in preference to cash or credit/debit cards, most likely due to their security perceptions resulting in less trust.

hypothesis 2: consumer perceptions / product knowledge of security, ease of use, usefulness and trust can positively influence trust and adoption

recommendation 3: MNOs MUST communicate the convenience of MCP, but bias communication towards the security their network and mobile devices provide.

5.4 brand & co-branding

Brand strength of the banks proved to be the most favourable versus the MNO. As hypothesised, MCP will rely upon collaboration and MNOs must create strategic relationships with trusted financial brands.

hypothesis 5: a co-branded MCP service will be more influential to customer adoption than an individual brand offering

Adoption of a MCP service relies upon the brand strength of the FI, MNO and handset manufacturer, in that order. The research results showed that very few customers would choose to move from their bank to another, from one MNO to another, or from one handset manufacturer to another (unless for reasons to move to a smartphone handset to allow MCP) and that they had made their choice based upon other factors.

5.4.1 co-branding

The research confirmed the suggested theory that co-branding increases the attractiveness of their technology to consumers ***(Blackett & Boad, 1999).*** However, the literature review suggested that there is a problem with the MNO and FI's working together (*"they hate each other"*) ***Datamonitor (2010)*** and that consumers tend to prefer FIs to mobile brands ***(Garner, 2011)***, suggesting that a FI could try to agree a higher percentage of any revenues than a MNO in any collaboration.

The literature review also suggested that co-branding can be used to transfer positive associations from one brand to another and vice-versa ***(Washburn et al, 2000)***, "*capitalising on pre-established brand equity and brand knowledge in consumer memory*" ***Keller (2003, 2003b)*** and that co-branding gives "*access to 'leading edge' technology*" ***(Blackett & Boad' ,1999)***.

The MNO should pursue this approach as leverage in any co-branding agreements with a FI, stating that they can increase security perceptions through the communication of and use of their technology which provides increased security, whilst gaining valuable FI associations of offering banking.

recommendation 4: rather than operate a service individually, MNOs should collaborate with one or more financial institutions with high brand strengths, using the security of their network and devices to leverage a beneficial commercial outcome in terms of revenue share.

5.5 further research

The author recommends that further research be carried on with regards to the preferred method of using a PIN either by entering on the mobile device or via the traditional POS keypad, to determine which is more influential on adoption.

Additionally, in lieu of the lack of NFC equipped devices, the author recommends that the MNO pilots and tests the use of an NFC accessory to allow a mobile device to make a payment. This will not only provide valuable feedback, it will also begin to drive the behaviour of using a mobile device to make payment towards being normal, potentially increasing the rate of adoption. Please see appendix c (section 9.3).

5.6 summary

The objective of this management challenge was to identify the most effective means of influencing consumer adoption of MCP. The initial literature review identified that trust was a key influencer and that security was perceived as a major risk by consumers which resulted in a lack of trust, particularly of the MNOs with whom consumers did not associate the provision of financial services.

With that in mind, the author designed and executed an investigation by means of questionnaire to confirm the trends and expected perceptions from the literature and additional research into how security and in turn trust could be increased. The research and analysis confirmed that **adopter type does have an influence on adoption** (section 3.1.1), **though not as much as trust, which revealed a higher level of influence on the likely adoption of a MCP service** (section 3.1.2). Whilst 60% of the early majority agreed that they would find MCP convenient, only 35.4% agreed they would prefer to use it rather than cash and only 26.2% agreed they would prefer to use it than credit/debit cards, supporting the expectation that consumers perceive MCP security as a risk resulting in lowered trust.

The perception of risk can be reduced through the use of known PIN technology (section 3.1.2.2), which showed that 29.3% more of the early majority type would use the service to spend money, representing a potential **additional £427.58M in revenues**, a significant number. This is a

key strength for the MNO who should effectively promote this using normal advertising methods (e.g. in papers, magazines, TV) but more importantly ensuring a fully understood, positive message is spread by mavens, salesmen and connectors ***(Gladwell, 2000)***.

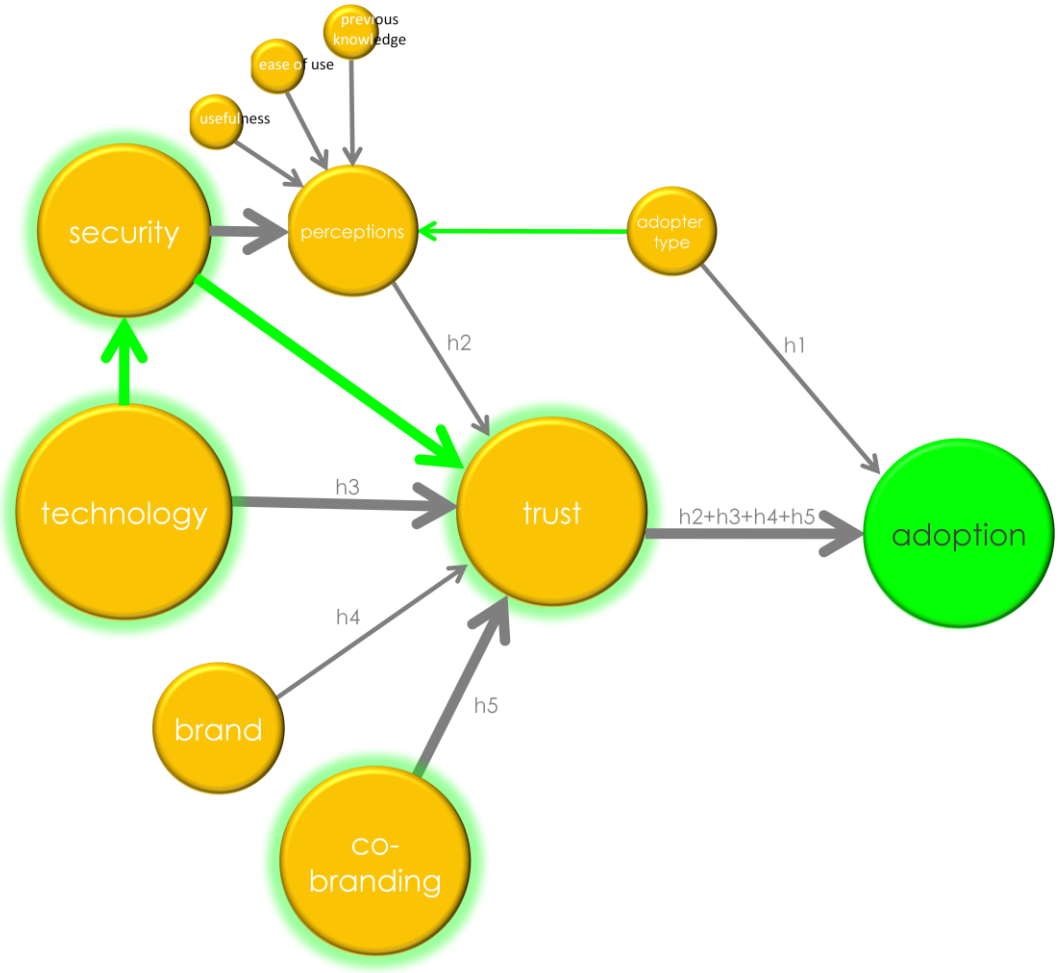
The research also confirmed that as expected from the literature review, that **a co-branded service would result in increased consumer trust** (section 3.1.2.4), though that it would be more beneficial to the MNO who would gain the consumer trust and familiarity of the FIs already providing financial services. The FIs would know this and so it would be important for the MNO to leverage the security of their network and devices in order to agree to a collaborative deal with a FI where they get an equal share of revenue from the potential, substantial fees.

Additionally, the research revealed that currently, consumers are unlikely to use MCP as a replacement for their credit/debit cards (section 4.4.2). By implementing the recommendations presented here, their perceptions of trust will be increase and in turn, the likelihood of consumers substituting their credit/debit cards with MCP.

overall recommendation:

The sponsoring MNO MUST collaborate and co-brand with a well trusted financial institution and promote and use their secure technology to broker a mutually beneficial co-branding deal and more importantly for both parties, to positively influence consumer trust and in turn increase the rate of adoption of a MCP service.

Finally, figure 29 shows a graphical representation of the findings, based on the investigation framework, where the diameter of the elements and connection widths have been increased dependent upon their influence on adoption. Additional connections have also been added where direct relationships between elements were discovered by the investigation. As concluded, trust has a far greater impact than adopter type. With technology, security and co-branding being the key influencers of trust.



key | diameter shows influence *(larger = more influential)* → *new connection*

figure 29: updated conceptual investigation framework

personal reflection

6

"Always be yourself, express yourself, have faith in yourself, do not go out and look for a successful personality and duplicate it."

Bruce Lee

6 personal reflection

6.1 evaluation of findings and fit with current literature

The overall findings of the management aligned with the majority of the current academic and industry thinking. In the case of ***Rogers (1995)*** and ***Moore's (1998)*** adoption lifecycle, when the adopter types were separated and analysed individually, different behaviours were indeed seen, particularly with regard to trust, where the early adopters responded that they would be much more willing to use MCP, though only when the service was being offered by their bank. If it was offered by their MNO, they were far less trusting which was unexpected. The early majority were less trusting of MCP whether provided by their bank or MNO, which was expected.

Industry literature regularly cited that consumer trust of MCP, due to perceptions of (low) security, was low, particularly towards MNOs who were not associated with providing financial services. This was corroborated by the research findings where consumers responded more positively to the question regarding whether they would trust their bank/credit card company to provide an MCP service versus their MNO. This concept was expanded through the research activity, where the use of technology was tested for its influence on security through the use of a PIN. As expected, consumers were more prepared to spend using MCP when used with a PIN.

Much of the industry literature recommended that banks and MNOs should collaborate and provide a co-branded MCP service. Academic literature supported this through brand, trust, service dominant logic and network theories which allow organisations to share knowledge and skills and offer their consumers far more value. In the case of MCP, this means that MNOs would gain the financial expertise of the banks and the banks would gain mobile network technology and security expertise from the MNO. Whilst co-branding is more beneficial for the MNOs in terms of increased numbers of consumers willing to use MCP, the findings identified that there was a significant increase in the number of respondents who would be willing to use co-branded MCP over a service offered individually by the bank or MNO.

6.2 relevance of findings with original management problem

The findings answered the original research questions for the sponsoring MNO; how to influence adoption and whether co-branding was a suitable option. A method suggested by the author to use a PIN to influence adoption by the early majority by building trust through improved security was confirmed as a positive influencer by the research and analysis, proving that the early majority are more likely to use MCP with a PIN.

Similarly the question of whether to co-brand was answered by the findings which identified that early majority would be more willing to use a co-branded MCP service than one offered individually by a bank or MNO.

6.3 value of the research and understanding of MCP

The research confirmed the benefits of co-branding and was a powerful message to the sponsoring MNO, further strengthening the argument that banks and MNOs should collaborate and co-brand in order for MCP to reach a tipping point be adopted by the vast majority of consumers.

6.4 limitations of the research

The low number of respondents who were mainly friends and colleagues of the author, meant to the data was not truly representative of the UK population, though it was believed that the TNS scoring method used to identify adopter types was still accurate to allow split the respondents by adopter type allowing their behaviours to be analysed.

6.5 increase in knowledge

The management challenge has increased the author's knowledge in terms of the absolute need for consumer trust if they are to be influenced to adopt MCP, that trust is positively influenced through the use simple technology, a PIN, which is also a current behaviour of consumers and that value can be added through the creation of collaborative co-branding, though where care needs to be taken to identify mutual benefits so as not to allow one party to unfairly gain from the partnership.

6.6 personal influences

Through initial informal discussions with family, friends, work and MBA colleagues, the author discovered that whilst his personal level of interest and knowledge was high, awareness of MCP was low for others. After the author explained the MCP concept, many of those he spoke to had concerns regarding security, given the financial involvement.

These initial personal findings helped the author find a direction for the management challenge and indeed, the findings of a larger audience confirmed that the majority of consumers have concerns regarding security.

However, it is likely that the findings were influenced by the author's philosophical stance which was one where he believes MCP will happen, though that for it to happen soon, will rely upon all of the ecosystem stakeholders joining and working together to provide a co-branded service. Even though the author took care not to add any bias in the questionnaire, his positive expectations may have come through when describing MCP, he only stated the benefits not security concerns possibly biasing opinions. He will take care in future not to repeat this.

6.7 how else the management challenge could have been approached

Instead of directly investigating MCP, the author could have investigated from a purely technology adoption lens. If he had done this, the author expects the outcomes may not have been quite so strong in terms of the added trust created by co-branding, given that MCP combines mobile technology and banks, which relies upon consumer perceptions of trust and security.

6.8 research process experience

The author's decision to use a questionnaire was right as it provided a far wider audience and likelihood of capturing respondents from each of the five adopter types ***(Rogers, 1995)***. However, in reality, the sample wasn't large enough to provide highly reliable analysis, though it was still usable enough to draw useful indications for conclusions and recommendations. In future, the author will pay for the services of a professional research company to distribute to a wider and larger representative population.

Had the author allowed more time, he would liked to have used his first questionnaire to narrow down the focus of his research to allow more specific questions around the impact of technology on trust and security. Having carried out a second more focussed survey, he would have also identified respondents for interview who represented each of the adopter types and who had answered with both expected (average)

and outlier responses. Interviews would have allowed a deeper investigation into people's opinions and provided a chance for the author to really probe and ask *why*, which the questionnaire didn't allow. Face to face interviews would certainly be a useful second future stage and he will use this method in future.

6.9 personal experience

The author agreed to voluntary redundancy from his previous role in September 2011. This had a significant impact on how he conducted the management challenge whilst he searched for a new job and then again during the first few months of 2012 after starting his new job.

As can be seen in the dates against the various versions of his management challenge which were saved with updated version numbers and dates each time he made changes, there was a large 'gap' of no updates between December 2011 and April 2012, which aligned with the author starting a new job, moving to London and having less time to spend on the management challenge.

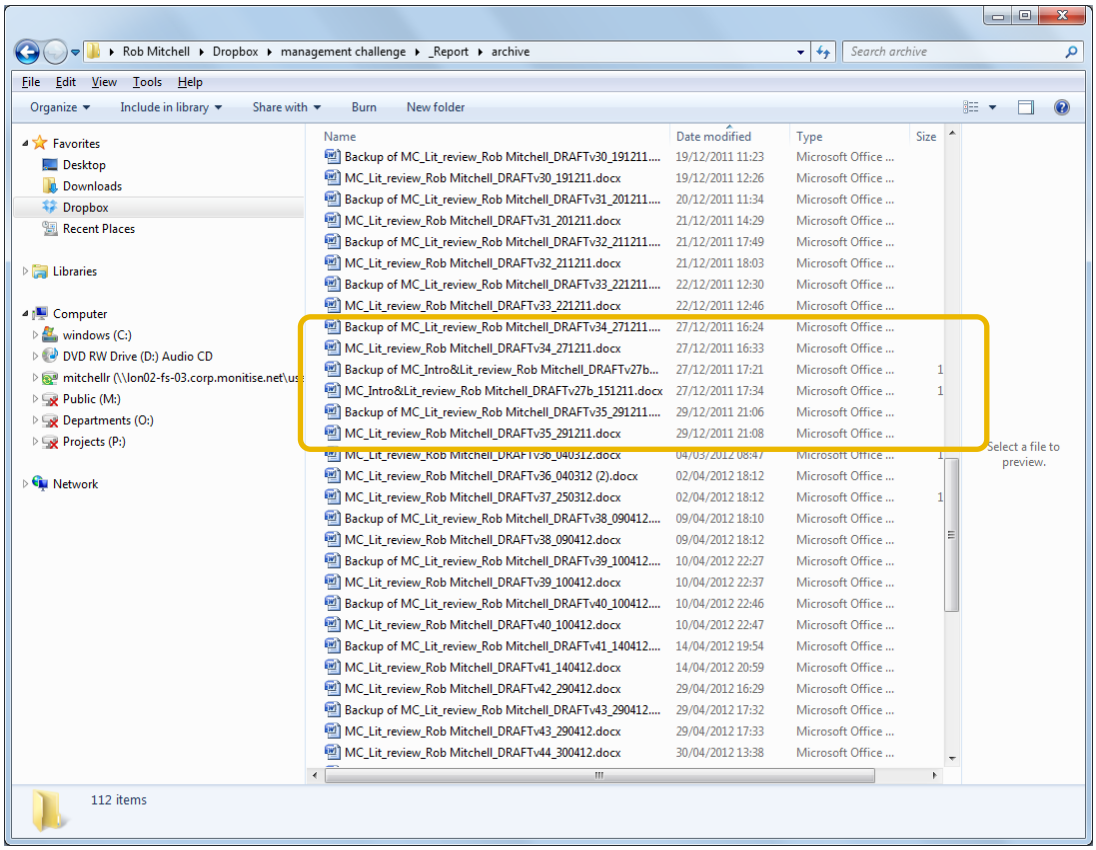


figure 30: screenshot of file updates 2011-2012

6.10 lessons learned

The most valuable lesson the author learned from the research project was that an initial literature review is very important to validate initial research topic thinking. However, the next time the author carries out research work, he will try to avoid becoming overwhelmed by the amount of literature that is available, which increases exponentially when following the various references from within documents. Next time, he will set a firm date by when he would stop literature research and begin the actual research survey and use a simpler questionnaire earlier on.

The author found the management challenge very cyclic, often not making much progress. Notwithstanding his career change, this was most likely down to poor time management where he spent too much time reading. The author wanted to know everything about MCP and related academic theories and concepts. In hindsight, he should have balanced the need to carry out a literature review against executing an academic exercise, which is the purpose of the management challenge.

6.11 achievement of personal development objectives.

The personal objectives the author set were as follows:

1. apply and consolidate learning from his executive MBA studies to a real life business problem.
2. develop his understanding and increase his knowledge of consumer adopter types, trust and brand and their influence on launching new mobile services.
3. improve and develop his analytical problem solving skills that he will be able to apply to future careers.

The management challenge provided a means for the author to largely meet his personal objectives. MCP is indeed a real life problem, one which his current and previous employers are all facing, so the additional industry knowledge gained and the identification of potential methods to influence consumer adoption of MCP. This was the first large scale research task that the author has executed and as such, was a learning process for him. However, he believes that through the support of his personal tutor, the management challenge study guides and his research investigation, that his future research projects will be significantly better.

Overall, whilst finding it extremely challenging, the author enjoyed the management challenge experience and is looking forward to continuing to use his knew knowledge in his current and future career.

7 references

7 references

7.1 academic references

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glossary 8

8 glossary

abbreviation	meaning	Definition
1G	1st generation mobile network	1st generation (1G) networks were available in the late 80s; and providing simple features such as phone calls.
2G	2nd Generation mobile network	Launched in the early 1990s, 2nd generation (2G) mobile networks, 2G introduced new features primarily the ability to send short text messages (SMS) between devices.
2.5G	Enhanced 2nd Generation mobile network (GPRS)	Launched in the late 1990s, providing enhanced 2G features e.g. additional data features including Internet access.
3G	3rd Generation mobile network	Launched in the In the mid 2000s, 3rd Generation (3G) mobile networks provide increased data speeds and functionality.
ePOS	Electronic Point of Sale (terminal)	A payment terminal which facilitates payment by electronic means e.g. a plastic debit/credit card, or contactless means e.g. card or mobile device.
FI	Financial Institution	A provider of financial services e.g. banking, credit card.
FSP	Financial Services Provider	
MH	Handset Manufacturer	

JV	Joint Venture	A long-term, cooperative arrangement between 2 or more organisations.
m-Banking	Mobile Banking	'an innovative method for accessing banking services via a channel whereby the customer interacts with a bank via a mobile device (e.g., mobile phone or personal digital assistant).'
m-Commerce	Mobile Commerce	'The use of a wireless terminal, such as a cellular telephone, smart phone or Personal Digital Assistant (PDA), and a network to access information and conduct transactions that result in the transfer of value in exchange for information, services or goods' (***Sadi, S, et al 2011***).
MCP	Mobile contactless payment	"A 'Wave & Pay' transaction where [mobile] phones equipped with NFC technology are held close to a contactless reader in a store or at a purchase point. Purchases in this sub-segment usually replace cash and are often for lower value items such as refreshments, newspapers and magazines but also public transport tickets which are often higher value."(***Wilcox, 2009)***)
MNO	Mobile network operator e.g. Vodafone, o2, Orange	Provider of mobile network and services.

	mobile wallet	A service that stores and allows the use of monetary value
	mobile web interface	A browser on a mobile device.
MP	Mobile Payment	Payment for goods or services with a mobile device such as a phone, Personal Digital Assistant (**PDA**) or other such device.
m-Payment	Mobile Payment	
NFC	Near Field Communication	A close proximity (4 cm) two-way radio protocol.
PDA	Personal Digital Assistant (PDA)	Small handheld device.
PIN	Personal Identification Number	A secret code known by the user and entered at time of payment.
POS	Point of Sale	The location where a payment is made e.g. at a payment terminal in a shop.
SMS	Short Messaging Service – 'Text messaging'	A means of communications with or between mobile devices with short textual messages.
PRSMS	premium rate SMS	An SMS which is charged at a higher rate, normally for enhanced services e.g. to retrieve information
SP	Service provider	A provider of services e.g. a mobile network operator, a financial institution or other 3rd party.

TAM	Technology Acceptance Model	A model used to predict the acceptability of innovative technology products, determined by two main factors: perceived usefulness and perceived ease of use (***Davis, 1989***).

appendices 9

9 appendices

9.1 appendix a: questionnaire

The questionnaire as distributed is shown below:

Thanks for agreeing to respond to my survey. This survey will collect data that is relevant for my MBA dissertation which is focussed on the adoption of technology products and services. Data from the responses will be used to prove or disprove theoretical concepts regarding technology adoption.

The investigation complies with the requirements of the School of Management Research Ethics Committee and the first section will ask you to confirm you are willing to take part in the survey and confirm you are over 18 years of age. As part of this agreement, once data from the survey has been analysed and the report is complete, all data will be deleted.

After analysis, the results will be made available. If you wish to receive a copy, please supply an email address at the end of the survey.

The Survey will take approx. 7 minutes to complete.

		yes	no
Q1a	I am taking part in this survey voluntarily		

		yes	no
Q1b	I understand that this survey is being used to collect data for an MBA dissertation to prove or disprove technology adoption concepts		

		yes	no
Q1c	I accept that this investigation complies with the requirements of the School of Management Research Ethics Committee		

		yes	no
Q1d	I am aged 18+		

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q2a	I think of myself as a brand loyal customer						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q2b	If I like a brand I rarely switch from it just to try something new						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q2c	I would rather stick with a brand I usually buy than try something I am not very sure of						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q2d	When I see, discover or hear about a new product or service, I am reluctant to give it a try						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q2d	In general I am among the first to try new products and services when they appear on the market						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q2f	I rarely buy products and services when I am uncertain how they will perform						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q2g	I enjoy taking chances when trying new products and services						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q2h	I do not like to try new products or services before other people do						

		none	1	2	3	4+
Q3	How many active Mobile Network Provider subscriptions do you have? (Include personal & business)					

Q4	4. What mobile handset(s) do you have? (Manufacturer & Model):	

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q5a	I trust my Mobile Network Provider						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q5b	My Mobile Network Provider provides a secure service						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q5c	I would trust my Mobile Network Provider to provide banking/credit card services						

		none	1	2	3	4+
Q6a	number of bank account(s)1					

		none	1	2	3	4+
Q6b	number of debit card(s)none					

		none	1	2	3	4+
Q6c	number of credit card(s)none					

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q7a	I trust my bank						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q7b	My bank provides a secure service						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q7c	I trust my credit card company						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q7d	My credit card company provides a secure service						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	N/A
Q7e	I would trust my bank/credit card company to provide a Mobile Service						

		aware, but don't know where I can use it	never	once a week	twice a week	three times a week or more
Q8	I make contactless payments using my debit/credit card(s):					

		never	monthly or less	weekly or less	daily or less	more than once a day	seven times a week or more
Q9a	I use my mobile phone to access my bank account						

		never	monthly or less	weekly or less	daily or less	more than once a day	seven times a week or more
Q9b	I use my mobile phone to pay for items online (e.g. eBay)						

		never	monthly or less	weekly or less	daily or less	more than once a day	seven times a week or more
Q9c	I buy online digital content (e.g. music, video)						

Mobile Contactless Payment is a way of paying for goods using a mobile phone as an alternative to paying with a credit/debit card. Payment is made automatically by simply holding a suitable mobile phone near to a payment terminal similar to those used for normal chip and PIN payment, as shown below left. (The distance needs to be less than 4 cm between the mobile phone and the payment terminal). This technology is already embedded into many credit/debit cards that display the symbol shown below right.

The next section will ask questions regarding your perception of Mobile Contactless Payment.

		yes	no
Q10	I was already aware of mobile contactless payment before answering this survey:		

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree
Q11a	I find the concept of mobile contactless payment easy to understand					

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree
Q11b	I expect mobile contactless payment would be easy to set up					

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree
Q11c	Mobile Contactless payment sounds easy to use					

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree
Q11d	mobile contactless payment would be more convenient than using traditional cash and/or credit/debit card					

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q12a	mobile contactless payment sounds secure						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q12b	mobile contactless payment sounds more secure than using cash						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q12c	mobile contactless payment sounds more secure than using a credit/debit card						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q12d	I would prefer to use mobile contactless payment rather than cash						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q12e	I would prefer to use mobile contactless payment rather than my credit/debit card						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q12f	mobile contactless payment sounds very similar to my past experiences of using a credit/debit card						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q13a	I would need to try a mobile contactless payment service before signing up to it						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q13b	I would sign up to a mobile contactless payment service without trying it first						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q13c	I would find out more about mobile contactless payment before trying it or signing up to it						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q13d	I would wait until mobile contactless payment service is used by others before signing up for it						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q14a	I would wait until mobile contactless payment service is used by others before signing up for it would not use						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q14b	I would find it more convenient to use a Mobile Contactless Service than my credit/debit card						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q14c	I would feel safe using a mobile contactless payment service						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q14d	Using a Mobile contactless payment Service would feel riskier than using a debit/credit card						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q14e	I would rather carry just my mobile phone rather than both my wallet and mobile phone						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q15a	I would trust my bank(s)/credit card company(s) to provide a mobile contactless payment service						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q15b	I would trust my Mobile Network Provider to provide a mobile contactless payment service						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q15c	I would trust my Bank/Credit card company more than my Mobile Network Provider to provide a mobile contactless payment service.						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q15d	I would trust a mobile phone to be secure enough for a mobile contactless payment service						

Q16	I would use mobile contactless payment at the following types of merchants:	tick
	bar/restaurant	
	coffee shop	
	DIY store	
	high street shop	
	petrol station	
	supermarket	
	train station	
	anywhere	
	would not use	
	other(s) (please specify)	

		instead of cash	instead of credit/debit card	as well as cash	as well as credit/debit card	as well as credit card & cash	would not use
Q17	I would use a mobile contactless payment service provided by my bank(s)/credit card company(s)						

		up to £15	up to £30	up to £50	up to £100	£100 +	would not use
Q18	If I did not have to enter a PIN, I would use mobile contactless payment that is provided by my bank(s)/credit card company(s) to spend						

		up to £15	up to £30	up to £50	up to £100	£100 +	would not use
Q19	If I entered a PIN, I would use mobile contactless payment that is provided by my bank(s)/credit card company(s) to spend:						

		instead of cash	instead of credit/debit card	as well as cash	as well as credit/debit card	as well as credit card & cash	would not use
Q20	I would use a mobile contactless payment service provided by my Mobile Network Provider						

		up to £15	up to £30	up to £50	up to £100	£100 +	would not use
Q21	If I did not have to enter a PIN, I would use mobile contactless payment provided by my Mobile Network Provider to spend:						

		up to £15	up to £30	up to £50	up to £100	£100 +	would not use
Q22	If I entered a PIN, I would use mobile contactless payment that is provided by my Mobile Network Provider to spend:						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q23	I would trust a mobile contactless payment service provided jointly by my bank/credit card company and my Mobile Network Provider more than if they provided a service individually:						

		instead of cash	instead of credit/debit card	as well as cash	as well as credit/debit card	as well as credit card & cash	would not use
Q24	I would use a mobile contactless payment service provided jointly by my bank/credit card company and my Mobile Services Provider:						

		up to £15	up to £30	up to £50	up to £100	£100 +	would not use
Q25	If I did not have to enter a PIN, I would use mobile contactless payment that is provided jointly by my bank/credit card company and my Mobile Services Provider to spend:						

		up to £15	up to £30	up to £50	up to £100	£100 +	would not use
Q26	If I entered a PIN, I would use mobile contactless payment that is provided jointly by my bank/credit card company and my Mobile Services Provider to spend:						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q27a	I would change my bank/credit card company to access a Mobile Contactless Service						

		strongly agree	agree	neither agree or disagree	disagree	strongly disagree	would not use
Q27b	I would change my Mobile Network Provider to access a Mobile Contactless Service						

Q28	Please add any further comments you would like to make regarding mobile contactless payment.	

		male	female	prefer not to say
Q29	What is your gender?			

		18-24	25-29	30-39	40-49	50 or older
Q30	Which category below includes your age?					

		yes	no
Q31	Do you live in the UK?		

Q32	If Yes, please provide your Postal City or Postcode. If No, please provide your country:	

Q33	Thanks for taking the time to answer this questionnaire. If you would like to receive a summary of the results, please add your email address below. Rob.	

9.2 appendix b: NFC faqs

This FAQ was developed by the Smart Card Alliance to answer questions about Near Field Communication (NFC) technology and NFC-enabled applications. ***(Smart Card Alliance, 2012)***.

1. What is NFC?

NFC technology is a standards-based wireless communication technology that allows data to be exchanged between devices that are a few centimeters apart.

NFC operates at 13.56 MHz and transfers data at up to 424 Kbits/second. NFC is distinguished by its intuitive interface and its ability to enable largely proprietary wireless networking platforms to interoperate in a seamless manner.

2. What are the primary uses of NFC?

The primary uses of NFC are to:

- Connect electronic devices, such as wireless components in a home office system or a headset with a mobile phone
- Access digital content, using a wireless device such as a mobile phone to read a "smart" poster embedded with an RF tag
- Make contactless transactions, including those for payment, access and ticketing

3. What are applications that use NFC?

NFC can be used for a wide variety of mobile applications, including:

- Making payments with a wave or a touch anywhere contactless card point-of-sale (POS) readers have been deployed
- Reading information and "picking up" special offers, coupons and discounts from smart posters or smart billboards
- Storing tickets for transportation, parking access or events
- Storing personal information that will allow secure building access

4. What are the benefits of NFC?

The NFC Forum provides the following comprehensive list of benefits of NFC on its website:

- Intuitive: NFC interactions require no more than a simple touch.
- Versatile: NFC is ideally suited to the broadest range of industries, environments, and uses.
- Open and standards-based: The underlying layers of NFC technology follow universally implemented ISO, ECMA, and ETSI standards.
- Technology-enabling: NFC facilitates fast and simple setup of wireless technologies, such as Bluetooth, Wi-Fi.
- Inherently secure: NFC transmissions are short range (from a touch to a few centimeters).
- Interoperable: NFC works with existing contactless card technologies.
- Security-ready: NFC has built-in capabilities to support secure applications.

5. How does NFC technology work for mobile contactless payments?

An NFC-enabled phone is provisioned with a payment application and payment account information (i.e., credit or debit card) issued by the consumer's financial institution. The application and payment account information are encrypted and stored in a secure area in the phone. The

phone uses NFC technology to communicate with the merchant's contactless payment-capable POS system, similar to the contactless payment cards and devices in use today. The payment and settlement processes are the same processes used when the consumer pays with a traditional contactless or magnetic stripe credit or debit payment card.

NFC mobile contactless payments can be made at both attended POS locations (such as stores) and unattended locations (such as vending machines) that use the existing merchant payments infrastructure. To pay, the consumer simply brings the phone to within a few inches of a contactless payment-capable POS system and the transaction occurs. The process is the same as that used by the contactless credit and debit cards currently being deployed globally.

6. Are NFC applications secure?

Each NFC-enabled application has its own requirements for security. For example, payment account information and payment transactions must be highly secure, while retail offers may require little to no security.

NFC-enabled credit and debit payment applications are secure. Personal information, including financial information such as an account number and expiration date, is stored in a secured area in the NFC phone, commonly called the "secure element."

7. What is the secure element?

While not all NFC applications require security, those that involve financial transactions or certain mobile marketing applications (e.g., coupons and loyalty) require a "secure element" within the phone to

securely store applications and/or credentials (e.g., financial account numbers) and provide for secure execution of applications.

The secure element (secure memory and execution environment) is a dynamic environment in which application code and application data can be securely stored and administered and in which secure execution of applications occur. The element resides in highly secure crypto chips (usually a smart card chip). The element provides delimited memory for each application and other functions that can encrypt, decrypt, and sign the data packet.

The secure element could be implemented either by a separate secure smart card chip (currently implemented in most of the NFC-enabled mobile phone pilots), in the SIM/UICC (which is used by GSM mobile phone operators to authenticate subscribers on their networks and maintain personalized subscriber information and applications), or in an SD card that can be inserted in the mobile phone. The secure element implementation approach will be selected by the mobile operator implementing the service and/or by the payment service provider (for SD card implementations).

8. How is NFC different from or related to radio frequency identification (RFID)?

NFC and RFID are both wireless technologies, but NFC is used at a shorter range and is used for secure applications, including payment. RFID, on the other hand, has a longer range, supports minimal security, and is used for very simple applications, such as tracking pallets or animals.

9. How does NFC relate to EMV payment technology and contactless technology?

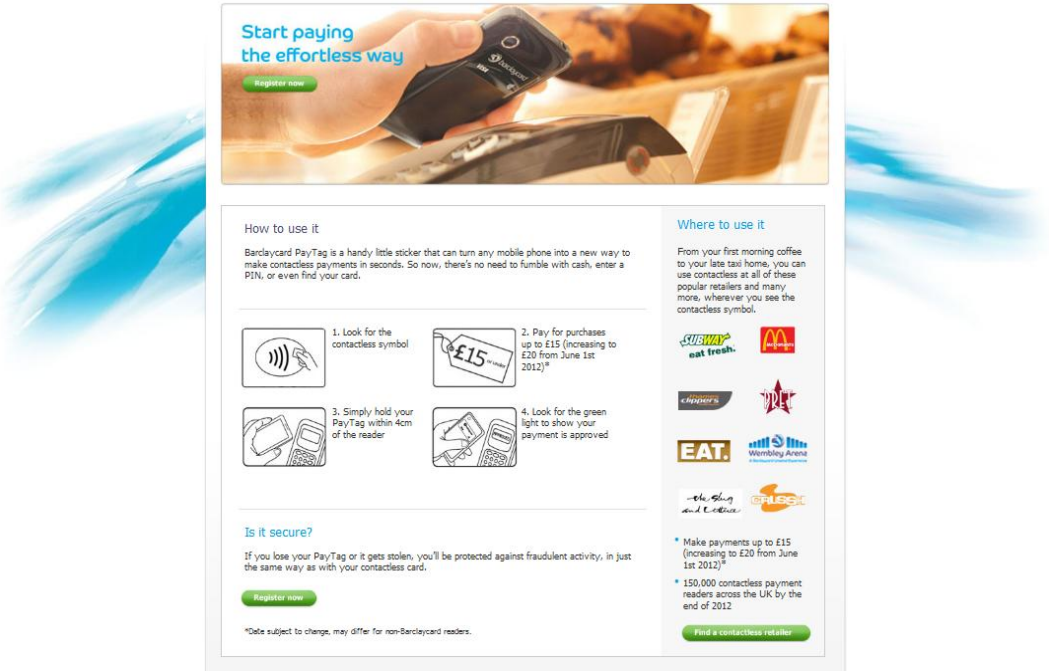
NFC mobile contactless payment transactions between a mobile phone and a POS terminal use the standard ISO/IEC 14443 communication protocol currently used by EMV and U.S. contactless credit and debit cards. This means that consumers can use their NFC-enabled mobile phones for payment at the existing installed base of contactless credit and debit terminals that are based on this standard.

10. What phones will have NFC?

Near Field Communications World maintains a list of mobile phones with NFC, as well as what is expected to come soon. It can be found at: http://www.nearfieldcommunicationsworld.com/nfc-phones-list/

9.3 appendix c: Barclaycard PayTag

Whilst writing this management challenge, similar to the author's suggestion in section 5.5 that the MNO piloted and tested the use of an NFC add-on, Barclaycard launched a 'stick on NFC card' with the intention to get consumers to stick the sticker to their mobile phone and start using their contactless technology. Below are images of the Barclaycard website and the sticker on mobile devices.



the end

(see you in Magoo's)