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Advanced Payments Report 2011





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Overview and perspectives

Over the last decade or so, a quiet but noticeable transformation has been taking place in the world of payments. The nature and extent of this transformation is not uniform across all geographies but for the first time, all markets – rich or poor, small or large, developed or developing – have the opportunity to participate in this transformation through innovative use of technology, fresh ideas and pragmatic yet creative business models.

Approaches to innovation differ. Markets with well developed banking infrastructures and high volumes of electronic payments are incorporating advances that make use of available payment infrastructure rather than starting things from scratch. The overriding objectives are to provide greater convenience and utility to end users, minimise transactions costs, and at the same time efficiently mitigate and manage payment risks.

Markets with poor or fragmented access to banking services or those with less robust payment infrastructures are creating entirely new methods using the wide reach and availability of mobile telephony and the vast array of inexpensive mobile handsets to provide financial services at affordable costs.

The last two decades have seen considerable upheaval in the field of electronic payments. The rise of the internet, the unprecedented success of the mobile phone in terms of consumer penetration, and the gradual and growing overlap between online and mobile communications have created entirely new and exciting possibilities for service providers. Sensing these opportunities, a plethora of start-ups with highly innovative propositions built around some unusual and insightful thinking have entered the payment industry. Some will succeed. Most are likely to end in disappointment.

The story of success in the field of payments lies in understanding that technology, while critically important,

is not the only ingredient in the payment mix. The value proposition must itself tap pools of “latent” or hidden demand, utilise highly intuitive user interfaces and offer clear value for money to both consumers and merchants. This may sound somewhat oversimplified but a quick review of the many technically brilliant internet payment systems that came about in the first flurry of the internet, only to disappear sometime later, illustrates the fact that the road to failure for payment providers is paved with good technologies.



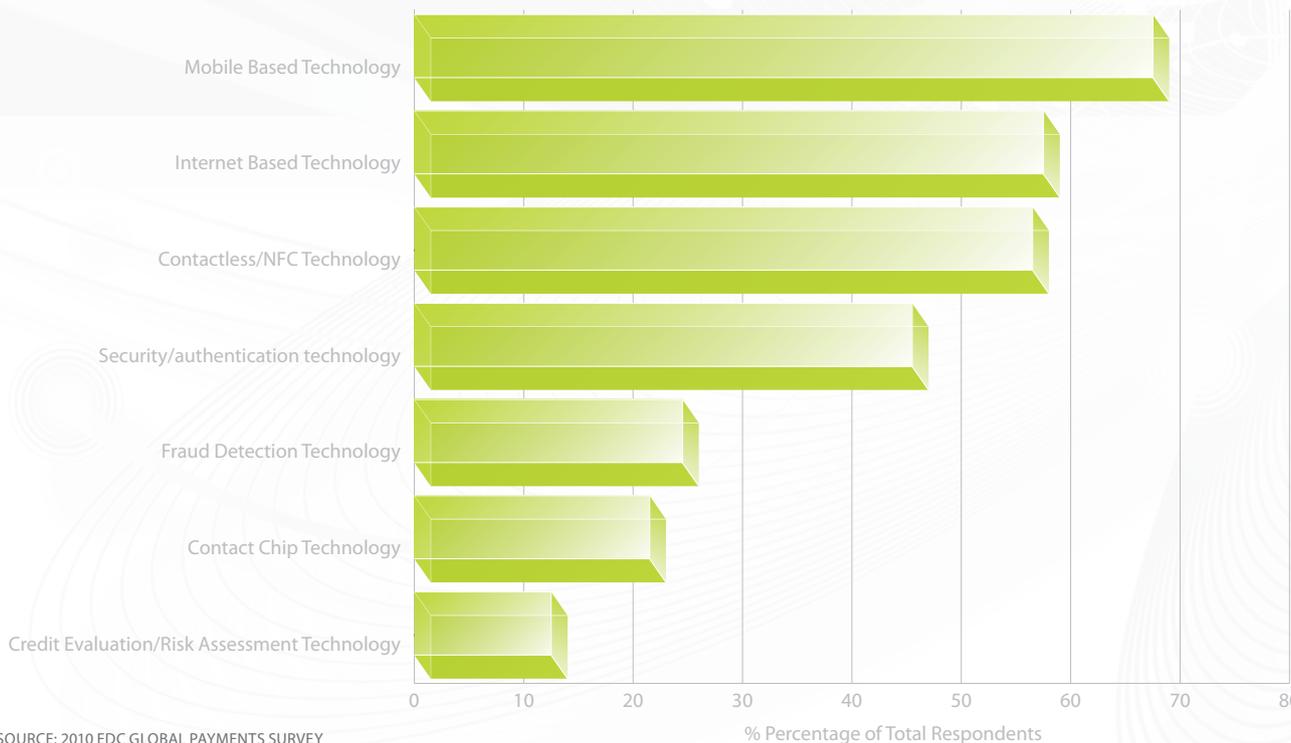
Advanced payments

There is no standard definition of advanced payments. For the purposes of this report, we have included three types of payment categories: *Online, contactless, and mobile payments*. This categorisation is made in the context of current debates, customer perceptions and our discussions with payment industry professionals undertaken in the course of preparing this report. There are other areas that could be reviewed as advanced payments in the context of specific markets but have not been included primarily to manage the scope of this report.

In the 2010 Global Payments Survey undertaken by EDC, technologies relating to the three advanced payments categories were clearly ranked higher than any other, indicating their importance.

The results of the EDC 2010 Global Payment Trends Survey are available separately from Edgar, Dunn & Company for review. This report discusses advanced payments and includes the results of the 2010 Advanced Payments Survey as described on the following pages.

WHICH 3 PAYMENT TECHNOLOGIES WILL EXPERIENCE THE GREATEST GROWTH IN IMPORTANCE IN YOUR COUNTRY OVER THE NEXT 5 YEARS?



SOURCE: 2010 EDC GLOBAL PAYMENTS SURVEY

Advanced payments survey

A stakeholder survey was undertaken online jointly by Edgar, Dunn & Company (EDC) and Payments Card & Mobile magazine (PCM) over November and December 2010 which focused primarily on advanced payments. The respondents included representatives from banks, central banks, mobile network operators (MNO's), technology providers, consultants, retailers and payment entrepreneurs. It is important to note that this is not a consumer survey. Respondents represented the payments industry directly or were in some way involved in providing or facilitating electronic payments.

A total of 655 responses were received. 51% of the respondents were executives or senior managers in their organisations and 43% described themselves as decision makers or decision influencers. The survey helps us to understand the voice and direction of the payments industry.

This year, the survey structure was considerably simplified and respondents were asked to rate the importance of key factors, issues, and growth drivers using a scale of 1 (least important) to 5 (most important). Results have been prepared using a weighted average (common scale) of responses to make them comparable as far as possible.

EDC has developed a market sizing model for estimating the available market size for key markets from across the globe. The model reviews over 30 markets individually leveraging market data such as population, mobile penetration and cards in force. Key payment assumptions are made about these markets to derive the potential size of advanced payment pools. Markets not reviewed individually are grouped together for the purposes of analysis resulting in a “bottom-up” estimation approach to market sizing.

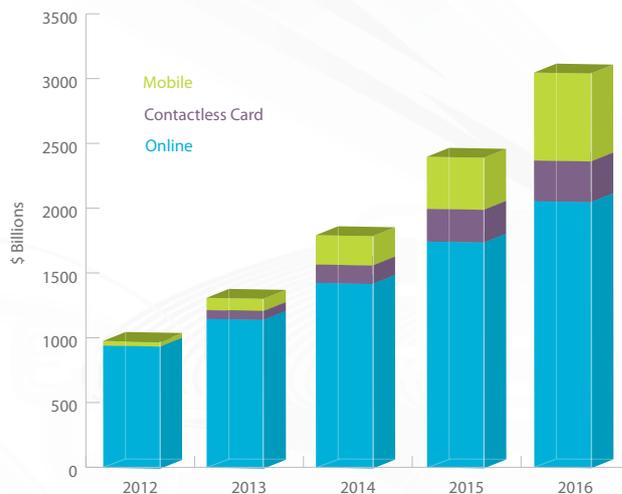
Forecasts relating to payments have been the subject of some criticism especially after the misplaced optimism of the dot-com era. Though internet payments did not experience the meteoric rise predicted in the early wide-eyed days of the internet, they are now considered mainstream and buying online is as much part of everyday life as shopping at retail stores. The market sizing model provides an indication of the total available payment volumes to 2016 and the relative significance of each market.

Market sizing

The market for online payments is already in the hundreds of billions of dollars and will continue to grow even as all forms of contactless and mobile payments begin to go mainstream. While markets are at different stages of development and maturity, the growth of new payment channels is already a global phenomenon. It is interesting to observe that in the future it will not only be the developed and richer markets that will show the way but developing regions as well where some remarkable innovations in payments are taking place.

On a global basis, we expect the market size for advanced payments in 2016 to be \$3,128 billion increasing threefold from 2012 estimated market size of \$976 billion. It is important to mention here that this represents the potential market size in 2016 and assumes that some of the issues identified in this report are appropriately addressed by the stakeholders. But even if it takes longer to generate momentum, the future looks bright for advanced payments.

ADVANCED PAYMENTS – GLOBAL MARKET SIZE



SOURCE: EDC ADVANCED PAYMENTS MODEL CURRENCY UNITED STATES DOLLARS
ONLINE PAYMENTS

ONLINE PAYMENTS

Online payments currently dominate the advanced payments market. This trend is expected to continue but contactless card and mobile payments will become significant by 2016. The market size for online payments is expected to be \$2,068 billion representing two thirds of the advanced payments market by 2016. Online payments mainly consist of payments for online commerce. Pure person-to-person payments, whether domestic or cross border, represent a significantly smaller proportion of the total.

Market sizing

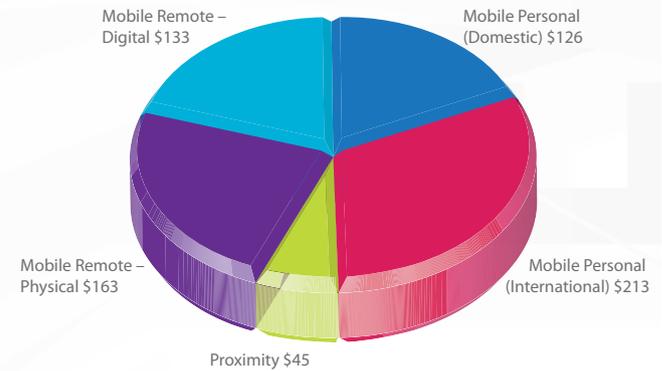
CONTACTLESS CARD PAYMENTS

The market size for contactless cards is estimated to be \$322 billion by 2016 which represents significant growth. Mobile and other form factors will account for a substantial volume of total contactless transactions but payment cards will play a major role in the contactless future in developed markets because of the widespread issuance and use of credit or debit cards which are not likely to decline in popularity. In developing markets, plastic cards issuance is expected to grow but mobile phones will become the access channel of choice for millions of consumers in Asia, Africa and Latin America.

MOBILE PAYMENTS

Mobile payments are at the cutting edge of innovation in electronic payments and stand to radically reshape the way we think about payments and financial services. The versatility of the mobile device and the continuous advances in technology which seem to be taking place at breakneck speed mean that the mobile device is capable of delivering all types of services which can effectively be combined to make the payment experience more diverse and useful. Mobile contactless or proximity technology allows fast tap-and-go payments but also enables customers to pick up virtual discount vouchers and entertainment content from what are called smart posters. It also enables mobile handsets to receive payments acting as mobile POS terminals. This versatility will ensure that the total market size for mobile payments will be considerable and we estimate it to be \$680 billion by 2016.

MOBILE PAYMENTS – GLOBAL MARKET SIZE (US\$B)



SOURCE: EDC ADVANCED PAYMENTS MODEL.
 NOTE: FOR DEFINITIONS OF PAYMENT CATEGORIES PLEASE SEE APPENDIX 1;
 FOR A DESCRIPTION OF THE MODEL PLEASE REFER TO APPENDIX 2.

Viewpoints

While not wishing to provide an all inclusive list, which would be too long, it is worthwhile to point out some of the overarching trends that we believe have important implications for the future of electronic payment systems.

1. CONVERGENCE – BUT NOT YET

Currently, internet payments are initiated primarily over a personal computer, whereas mobile payments are defined as those originated from handheld mobile devices. Internet payments have a head start in terms of volume of traffic. Mobile payments are currently at a nascent stage but the ubiquity of mobile devices in almost every region of the world, regardless of economic status, points to a time, not too far out in the future, when it will be difficult to distinguish between online and mobile payments. Wireless broadband is already becoming widely available in many markets and industry observers see fast and inexpensive anytime-anywhere mobile online connectivity as the obvious next step.

Thanks to this ever increasing availability of online connectivity, computers are becoming more mobile while mobile phones are getting “smarter.” Every new mobile phone model boasts increased information processing power, more storage memory, email and internet as standard, and other useful features such as high resolution cameras, live television, and a seemingly inexhaustible supply of games and applications.

Boundaries between online and mobile will eventually dissolve. Mobile devices will store or access vast amounts of personal and public data in secure formats, run productivity related software applications such as word processors and spreadsheets, and leverage high powered tiny microchips to undertake everyday computing tasks. The limiting problem of the small phone screen will be resolved; already a number of futuristic ideas are being considered such as screen projections, fold out screens, or simply plugging the phone into personal work screens in public places.

However, in the near future, the distinction between online and mobile will remain and online payments volumes will continue to be significant but mobile payment volumes will begin to gain momentum.

Viewpoints

2. DON'T UNDERESTIMATE THE SOCIAL NETWORKS

The phenomenal rise of social networking in the last few years demonstrates the importance of global communities and the value they bring to their members.

Facebook, MySpace, Twitter, LinkedIn have all become household names. These sites bring together communities with shared interests, experiences, and friendships from all across the world. LinkedIn provides business networking and skills sourcing while Facebook brings friends and families together. These two networks along with Twitter have gone from start-up to success on a global basis. There are others as well that have achieved success in their own specific markets or regions. Payment systems in the future will make it easier for members of social networking sites to make payments to each other and we are already seeing early stage innovations in this area.

Grasping the hype but not the real opportunities, some financial institutions have followed “me too” strategies to embrace new trends in social networking. These entities developed some form of presence on Facebook only because they felt the need to “be on Facebook” without having a clear vision or strategy linked to their overall organisational objectives. From our perspective, we believe that payment providers ignore these networking sites at their own peril but the key challenge here is to develop a long term and innovative approach for identifying and exploiting social networking and other similar opportunities.

3. DON'T WAIT FOR BUSINESS MODEL NIRVANA

Over the last few years there has been much debate over what type of business model should be adopted for mobile payments. This is a relevant question to ask. Without a clear idea of the options available providers cannot adequately plan for infrastructure investments or develop sustainable business propositions.

But beyond the need for ensuring common industry standards and interoperable technologies, it is unrealistic to expect widespread agreement on broad economic and business model issues. Common technology and transaction processing standards are essential to ensure that new forms of payments have the best possibility for reaching critical mass. Lack of common standards will result in multiple incompatible services that will cause inconvenience for consumers as well as merchants. In mobile contactless payments, for example, it took a great deal of time for stakeholders to reach a consensus of sorts on some of these issues even though not all are in agreement and many are investing in and promoting entirely new technologies.

Beyond common standards and interoperability, payment providers should develop their own approaches towards developing new solutions and successful business models.

A standard business model that is acceptable to all stakeholders is not likely to appear in the early stages of innovation. In such situations, innovators and market leaders have the opportunity to show the way forward at some risk to themselves. Many others will adopt a wait and see approach ready to jump in if things work out. Marketplace inertia followed by herd mentality can only be countered through visionary investments and creative products that fulfil customer needs.

Some payment providers are quickly realising that the best way to proceed in an uncertain world is to develop partnerships that combine different areas of expertise in order to design, develop and deploy compelling new payment services. Partnerships can take several forms. These could be joint initiatives / ventures that involve brand or infrastructure sharing, selective outsourcing of certain services or processes or commercial cooperation through complementary geographical deployments.

Viewpoints

4. BEWARE OF SECURE ROADBLOCKS

Perhaps the single most important requirement for the long-term success of a payment service is that it is safe and secure for end users. Security guarantees are important. In the United States and many other markets, credit cards are widely used for making online payments not only because they are highly secure but because they offer protection against potential misuse or fraud. The risk of fraud through someone stealing and misusing payment card information is forever present and fraudsters have evolved from operating as one-man bands to organised global criminal gangs.

However, thanks to advancements in security technologies and general consumer awareness there are many avenues available today to combat fraud. New payment products are often scrutinised for potential issues around security but are often held to impossibly high, exacting standards. No payment product can ever be completely secure and while tools and technologies are available to ensure bulletproof security today, tomorrow may bring an unexpected and lethal hacker attack. A new payment product should not be barred from being rolled out because there exist potential scenarios, however remote, for misuse and fraud.

As always, innovators must strike a balance between user experience and security risk. Decades ago, if the small plastic card with a magnetic stripe on its back, far from being bulletproof against fraud, had been dismissed due to the potential for fraud, we would not have the thriving card industry we have today.

Security is of primary importance but if it comes at the expense of customer convenience and experience, it should be carefully reviewed. If adding yet another security module means making the customer go through additional steps to make a payment, it is quite possible that the security module is negatively affecting product usage.

Costs should also be considered. If a security enhancement costs more than the fraud losses it eliminates, there is a clearly no business case for such a measure. Quite often newer players manage the security problems more pragmatically than large financial institutions.

Viewpoints

5. DON'T REINVENT THE WHEEL

To be cost effective, new payment products should leverage existing infrastructure as much as practically possible. Most people today use bank accounts, payment cards, or selected specialist payment systems for their payment needs. Payment systems that attempt to substitute existing and highly familiar methods face an uphill task.

Successful online and mobile alternative payment systems have found ways to link up or integrate with banking platforms and products.

Existing payment systems have proven transaction processing, risk management and customer dispute resolution processes and procedures. Banks and other payment providers have invested over the years to ensure their internal systems interface and comply with industry standards and common operating rules and regulations.

That said, it does not follow that one should always work within the bounds of what is already available and agreed. Often new approaches require new systems and new platforms.

To manage initial outlays and optimise ongoing transaction processing costs, it is imperative to consider the economic viability of all the available options.

Another argument in favour of leveraging existing infrastructure elements is the added convenience for customers so that funds can be regularly accessed.

PayPal, for example, now offers a dynamic payment functionality which does not require pre-funding the account but charges a transaction directly to a linked payment card or bank account making it as easy for the customer to complete a payment.



Viewpoints

6. PILOT ENVY

Over the past few years there has been a deluge of trials and pilots of all shapes and sizes especially in the field of mobile payments. Pilots are very important and are critical for testing new value propositions. They provide valuable information that helps us understand customer motivations, fine tune product features, improve marketing tactics and identify potential technical, operational and customer service issues.

Well thought out, well funded and well-analysed pilot programmes are essential prerequisites of a product development programme.

That said, at least in the areas of emerging payments and especially in the context of banks, pilots can prove a double-edged sword. Often a sparsely funded and inadequately supervised pilot can kill a new product faster than anything else.

Regularly, pilot marketing has failed to generate customer awareness. The results of such programmes can be underwhelming leading the bank management to delay funding a product roll out or dismiss the proposition all together.

The “me-too” approach to strategy includes pilot programmes with some financial institutions undertaking their own or participating in joint pilot programmes simply because their competitors have embarked on one.

Many pilots rarely convert into commercial roll outs. The real hard work is in taking a successful pilot and commercialising it.

7. SHOW ME THE MONEY – THE IMPORTANCE OF EXECUTIVE COMMITMENT

Properly planned and executed pilot programmes facilitate positive fact based decision making. Where pilots and other studies validate or repudiate product hypotheses, concrete procedures should be in place to develop and execute the next steps relating to how a product proposition should be further improved.

How and where to roll it out and what should be the monitoring strategy to accommodate a course correction should there be need of one. Executive commitment is perhaps the most powerful driver for pushing out a new payment product at least in the case of large organisation. For small companies and start ups, executive commitment is a given and a key advantage.

Perhaps the most celebrated example of payment system innovation is M-PESA in Kenya, the mobile payment system from Safaricom, a Vodafone subsidiary. In only a few years, Safaricom has enabled M-PESA to be the payment system of choice for millions of Kenyans who have inadequate access to financial services but own or have access to a mobile phone.

While the product targeted an untapped customer need and Safaricom implemented a series of highly successful marketing programmes, perhaps a very important reason for its success, is the continuous commitment of time and resources from Safricom’s CEO and its senior management.

Online payments

Buying over the internet is now business as usual for most people at least in countries where internet broadband access is widely and cheaply available and where electronic payments are in a mature state of development.

In addition to large web retailers such as Amazon, most physical or brick-and-mortar merchants are active online with well designed and fully functioning websites. Supermarkets sell products over the internet promising to deliver direct to customers who cannot find the time to visit their stores.

Even in markets where internet access is in early stages of development, customers are increasingly becoming comfortable buying things online at least in urban areas and within certain demographics. Both consumers and merchants like the convenience of online commerce as it can be done from anywhere in the world.

Consumers combine the physical and virtual worlds by browsing in a shop but ordering online in order to find the most competitive price. They also browse and reserve items online which they pay for and pick up at a nearby merchant location. Already some early stage services are available where customers check the best price available in nearby stores through a combination of barcode scanning and location based services on their mobile phones.

Certain categories of goods and services are more popular online such as travel where customers can search for the best prices for flights, hotels, and holidays. In addition to travel, consumers comfortably buy other large value items online such as sound systems, television sets, white goods and even motorcycles and cars.

Credit, debit and charge cards continue to be the preferred option for making online purchases in many markets with mature payment systems. While there are other methods of payment for online purchases available in some markets, whether indirectly connected to payment cards and bank accounts or completely separate and stand alone, consumers

still use payments cards extensively over the internet. We expect this trend to continue for some time to come. Some of the reasons why payment cards are preferred include:

- Convenience and familiarity – consumers who use cards in stores prefer to use them for other channels as well so that all purchases appear on one statement
- Risk management – payment cards, especially credit cards, offer protection against fraud and also against unacceptable or substandard merchandise. Payment card companies have implemented tried and tested dispute resolution procedures that offer “buying comfort” to consumers
- Loyalty and rewards – loyalty schemes offer points that can be redeemed for free or discounted offers, provide cash back for purchases or use other incentives to successfully encourage consumers to prefer their cards for payment over other payment options
- Convenience for merchants – merchants who already accept payment cards can utilise their existing relationships, systems and operating processes for the online channel as well.

ONLINE PAYMENTS – KEY FEATURES



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

Online payments

The 2010 EDC/PCM Survey validated the trend showing preference for credit or debit cards for online purchases compared to other methods of payment. As indicated above, this is more relevant to mature markets.

The developing world offers a different situation where it is likely that mobile internet access will overtake fixed line broadband due to the sheer number of mobile phone subscribers which vastly outnumber the number of personal computer users.

Online banking has now become pervasive in developed markets across the globe. These markets have high levels of financial literacy and deep banking penetration. Most adults have regular bank accounts and banks are looking to provide more cost effective and convenient “self-service” channels that are available any time.

In a few such markets innovative payment systems have been introduced that leverage the existing banking interface for online payments. The most successful example perhaps is in the Netherlands where iDeal, an online payment service, allows consumers to pay for purchases at merchant websites directly from their bank accounts. All major Dutch banks participate in the service and 90% of all online merchants in the country accept iDeal.

When consumers select to pay with iDeal at the merchant website they are redirected to their online banking site where they can make the payment using the same authentication method they use for online banking transactions.

The service aims to offer similar experiences for online banking and online payments simplifying online commerce for customers. iDeal reported 69 million payment transactions in 2010 (2009: 45 million). Other examples of similar schemes are Secure Vault Payments (SVP) in the United States and Interac Online Payments in Canada.

Challenges

The 2010 EDC/PCM Survey confirmed what are generally identified as major and continuing issues facing online payments. Online payments still suffer from a negative perception problem of security – of being vulnerable to transaction fraud and theft of identity or payment information.

Payment experts we spoke to think that consumers prefer payment cards because of the risk protection implicit in payment card products. But still, even with this protection, there are segments of consumers who tend to hold back from using cards online because they are afraid of potential exposure to fraud. Some consumers either avoid online payments altogether or tend to use alternative payment methods such as online stored value accounts where they feel their exposure is limited to the amount available in the account.

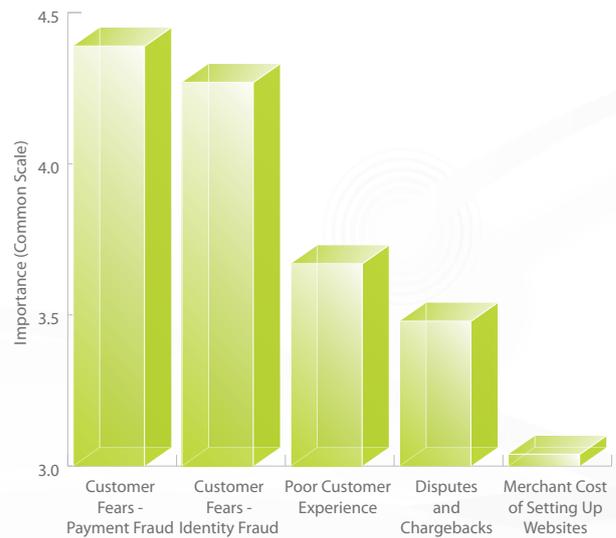
It is of course possible to offer a highly secure payment method that uses complex security algorithms, multi factor authentication procedures, and even special hardware – but successful payment systems have always been able to strike a balance between customer experience and security. If a payment method is very highly secure there is a possibility of dropped transactions. Such a system, while not reducing or eliminating fraud losses, will struggle to reach acceptance in the marketplace. Consumer experience management and online security considerations are interrelated and must be reviewed together in order to develop processes that are safe but also simple, intuitive and convenient.

There is also the cost of security to be considered: if a security enhancement costs \$10 million and reduces fraud losses by \$1 million, then clearly it is not economically viable.

Efficient dispute management is also considered a key challenge. Online buyers cannot always walk into a store to return an unsatisfactory item as the store may be a virtual store or located a great distance away.

Buying over the internet from an unknown seller involves an issue of trust that can impede growth in online payments.

ONLINE PAYMENTS – KEY CHALLENGES



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

Drivers of growth

Working to mitigate the negative perception around security and ensuring that consumers feel comfortable buying online were identified as important by stakeholders in the 2010 EDC Survey. Consumers should not feel exposed to potential risk when using the internet to make payments. Online fraud will never be eliminated even though security technology continues to evolve. Gangs of organised cybercriminals pose an ever present threat and require constant vigilance.

Another major driver for growth is the quality of the merchant website. This has to do with the customer experience: how the website works, how fast is it to search and select products, the amount of information both qualitative and quantitative that is available on the website about a certain product and the level of transparency about costs and related charges.

For example, a customer buying a dishwasher may want to review and understand the options available for specialised installations to confirm that there are no hidden or stealth charges contained somewhere in the voluminous small print. A website that does not provide the right level of information will result in fewer completed purchases online.

Stakeholders surveyed also attached importance to payment services linked to bank accounts as essential for driving online payments. Most respondents are likely to be familiar with the success of iDeal but to implement something similar in another market requires a level of cooperation that may not be forthcoming. In this context markets exhibit different behavior profiles.

In markets in Europe consumers and businesses readily provide their bank account details in order to receive payments while in others these are shared only with trusted parties.

ONLINE PAYMENTS – DRIVERS OF GROWTH



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

Contactless payments

In this section we have included all “form factors” of contactless payments, whether undertaken with a plastic card, a mobile device, or any other form such as a key chain or wristwatch. In terms of classification and formatting the discussion on mobile contactless payments can also be included as part of the next section on mobile payments.

Regardless of the form factor, contactless payments offer significant benefits to both consumers and merchants. For consumers, contactless payments offer enhanced convenience as they increase the speed with which payments are made. However, there will be a period of transition as the existing estates of contact based terminals are gradually migrated to the contactless environment.

Certain types of retail environments where the benefits of contactless are more immediate, such as quick service restaurants (QSR), mass public transport, fuel stations, car parks and highway toll points – where speed of customer “throughput” is of vital importance – are most suited to the new technology. The 2010 EDC/PCM Survey identifies the speed of payment as the top success factor for contactless payments.

Speed of payment does not simply mean transaction time but includes the time spent waiting to make a payment. If it takes ten minutes to reach the front of the line at a supermarket checkout, the fact that the contactless payment takes a few seconds (compared to several seconds for contact based payments) will not be of much relevance.

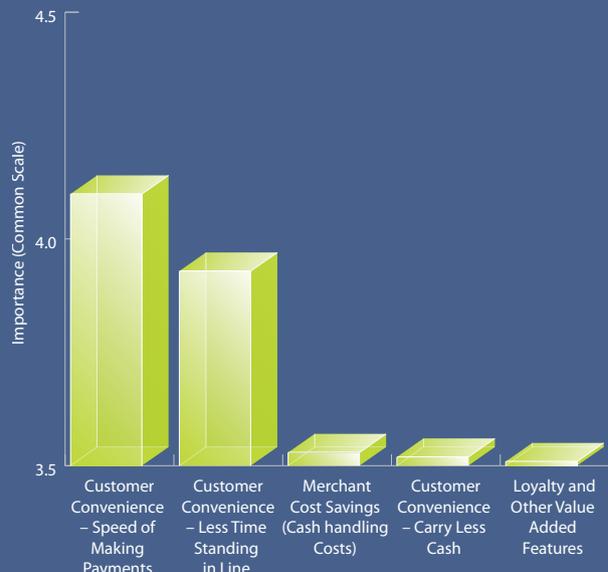
Contactless transactions offer a practical and viable alternative to cash. For convenience and security carrying less cash in our pockets will be a welcome advance. But from a pragmatic perspective, we know that cash will never be eliminated, not at least in the foreseeable future.

While faster throughput means increased sales,

merchants also benefit from contactless technology to the extent that it results in reducing cash handling costs which include cash insurance and losses from theft or pilferage which can be significant. But many merchants tend to see these costs as fixed costs and envisage only limited savings. Weighing these savings against the fees they pay for card acceptance, some merchants do not entirely agree with the economic viability of contactless technology from their perspective. However, most merchants that we spoke to understand that suitably deployed contactless technology has substantial benefits for all stakeholders and concur that in time contactless technology will replace all existing forms of in-store POS payments infrastructure at least in specific merchant sectors.

In other markets there may be rather different additional motivations for preferring contactless technologies. For example, in the days of bird flu and virus scares, contactless payments are seen as “cleaner” payments where the card remains in the possession of the cardholder and there is no other human contact.

CONTACTLESS PAYMENTS – KEY BENEFITS



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

CONTACTLESS CARD PAYMENTS

Payment cards are swiped or, in the case of smart cards, inserted in card reading slots on POS terminals. The card and the card reader must make contact for the card information to be safely and securely captured by the terminal. Contactless technology makes it much easier to make a payment without requiring a physical contact between the two.

The technology involved is not new – it is based on Radio Frequency Identification (RFID) that can be configured for the required distance making it equally relevant for toll stations on highways as for in-store terminals where it operates at very short distances.

Contactless cards incorporate a tiny antenna coiled around the body of the plastic. These cards can now be manufactured at very competitive prices and some card issuers plan to have contactless functionality on all new cards they issue.

CONTACTLESS MOBILE PAYMENTS

Mobile contactless payments, also known as mobile proximity payments are perhaps the most debated and most talked about innovation in mobile payments because of the technical, operational and business complexity involved. In some ways these payments are seen as the most promising as they represent an extension of the way we pay today. Instead of having a physical piece of plastic, sensitive information is digitally stored on the mobile device or on a server.

Near Field Communication (NFC) is the key technology that is generally accepted to be most suitable for proximity payments. It is a new, short-range wireless connectivity technology that evolved from a combination of existing contactless identification and interconnection technologies.

Products with built-in NFC will dramatically simplify the way consumer devices interact with one another, helping people speed connections, receive and share information and make fast and secure payments (adapted from NFC Forum). However, as discussed later in this section, alternative technologies exist and are being used in specific markets.

TO SIM OR NOT TO SIM

Sensitive personal information can be stored on the mobile phone in a place that is referred to as the Secure Element (SE). After years of debate, most people in the industry agree that the SIM should serve as the SE. It makes sense and it is highly secure. Above all it is convenient for the customer who only needs to take out the Subscriber Identity Module (SIM) from an old phone and insert it in a new one when upgrading handsets. Customers take their personal details along with other information such as list of contacts and other personalised content when they change phones.

While this may appear to be a sensible arrangement, not everyone agrees that it is the most pragmatic approach available. The MNO owns the SIM and can decide what should be stored on it and how. Some players, especially banks, fear that this arrangement will entitle the MNO's to act as "gatekeepers" to the payment information and charge fees for simply allowing access to the SIM.

We believe this fear, to a great extent, is unfounded. It will be in the interests of the MNO to ensure that the costs to store secure information on the SIM are not prohibitive and that other entities such as banks and retailers are encouraged to adopt the model because ultimately, without sufficient take-up of the model, there will not be sufficient returns for any stakeholder.



ECO-SYSTEM AND BUSINESS MODEL DEBATE

There are multiple parties involved in completing a mobile proximity payment. The users of the mobile payments are both consumers and merchants as in any other payment system. But the providers of mobile payment services are more numerous than those for regular payment card purchases.

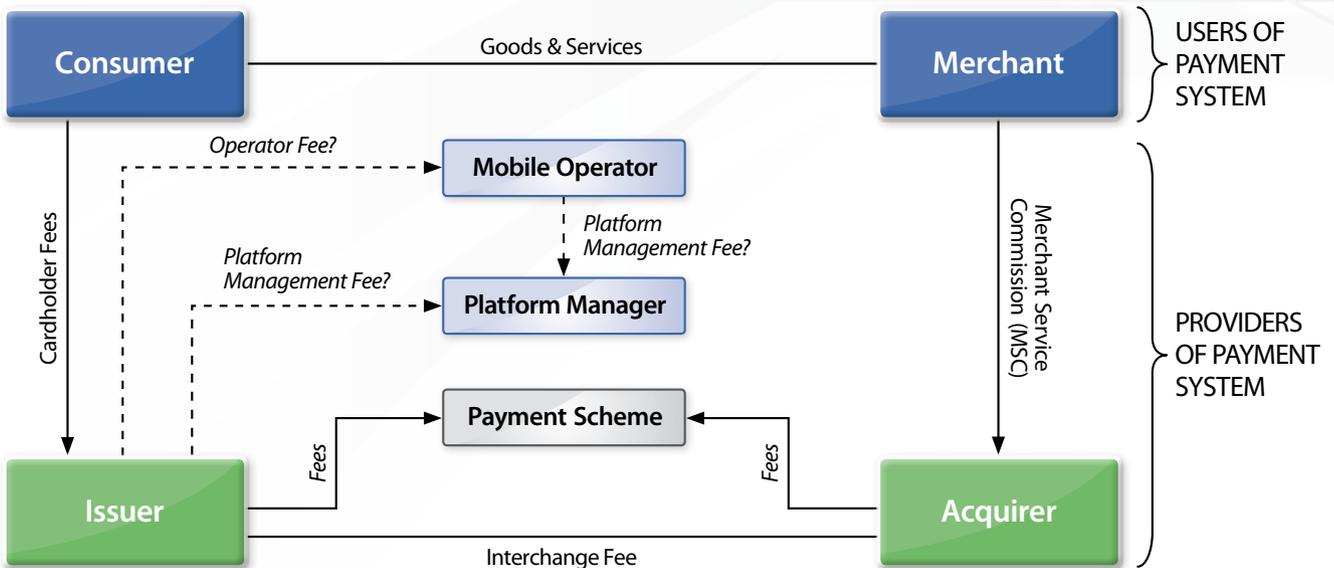
They include the card issuer, the merchant acquirer, the card scheme, the MNO and possibly a platform manager also known as a trusted third party often (TTP) responsible for the operational and security infrastructure.

The following diagram illustrates the parties involved and the transaction flow:

As indicated above, banks and other entities who use the SIM to store their payment or loyalty applications will need to pay fees to the MNO for the privilege. The key question is what those fees or charges will be. This constitutes one of the basic issues in an emerging industry where an element of cooperation is required in order to create a competitive and commercially viable marketplace: “Who pays what to whom?” is a question that has not been universally answered. In fact, it may never be. Additional fees that are relevant in a mobile proximity eco-system are identified with a question mark in the illustration above. Other fees are the same as for regular card based payments.

Before such a commercially viable eco-system can emerge and reach equilibrium, we expect visionary banks, MNO’s and other payment providers to develop partnerships and alliances and develop and roll out contactless services within their respective markets or regions of influence, jointly investing in infrastructure while individually developing competitive products and services.

MOBILE PROXIMITY PAYMENTS – PAYMENT ECO-SYSTEM



SOURCE: EDGAR, DUNN & COMPANY

The infrastructure problem

The real obstacle in the path of mobile proximity payments is not a universally accepted business model but a lack of enabling infrastructure. It is difficult to keep count of how many times the phrase “chicken and egg” has been used at conferences and industry journals to describe the dilemma faced in commercialising mobile proximity payments. For mobile NFC payments two things are necessary:

- **NFC enabled mobile phones:** Mobile phones with inbuilt NFC technology have not yet become widely and commercially available. Without these phones, NFC payments cannot take place. The industry has been dragging its feet for quite some time now but a recent flurry of announcements and other industry official and unofficial news indicate that we may see NFC enabled handsets become commercially available in several markets in 2011 or early 2012. Of course, if past record is anything to go by, there may be further delays but over the next two years, some form of NFC activity will emerge in some, if not all major markets of the world.
- **Contactless Terminals:** Any form of contactless activity requires contactless terminals. A customer can tap or wave or bring their mobile phone close to the contactless payment pad on the terminal to initiate a contactless transaction. Existing terminals will require to be updated to new contactless capabilities or enhanced with contactless pads in order to facilitate contactless transactions. It is a telling indictment on the slow progress in this area that after years of deliberation, contactless terminal roll-outs have been disappointingly slow.

To achieve critical mass, both NFC enabled mobile phones and contactless terminals must be widely available so that consumers are able to make, and merchants are able to accept, payments on an industry wide basis.

BRIDGING TECHNOLOGIES

SIM is not the only candidate to serve as the secure element, other possibilities include the phone memory, stickers or tags that can be placed inside or outside the cover of a mobile device, or micro SD (Secure Digital) cards that can work with most mobile phone models and can also be migrated – taken off the old and re-attached to the new – when a handset is upgraded. These “bridging” technologies may offer an interim stage towards widespread NFC deployment.

Much to the annoyance of proponents of NFC, sceptics abound who do not believe NFC will take off precisely because it faces such daunting infrastructure problems.

There are companies offering alternative technologies ranging from barcodes to data over voice approaches. For some of these alternative systems, special but simple merchant terminals are required but some would also work in the phone to phone payments environment (one phone acting as the recipient).

Form factors

The beauty of contactless technology lies in its versatility. Key chains, wrist watches, and even chips implanted underneath the skin have all proved to be perfectly plausible and pragmatic (if somewhat painful!) ways to pay. As is already available in some markets, personal computers will incorporate built-in contactless readers which will enable consumers to make contactless purchases online in exactly the same manner as at POS terminals in a shop.

CHALLENGES

This promising payments domain is not without some formidable challenges including the ones described below.

These terminals are necessary for contactless payments for all form factors. Terminals need to be in place or at least there must be a clear commitment from acquirers and merchants to roll out these devices before issuers can offer contactless form factors to their customers.

Respondents also identified lack of merchant demand for the technology as a potential problem but as indicated above, in some cases this is partly the result of strategic “posturing” where a merchant is reluctant to pay for the necessary infrastructure, pay for payment acceptance or recognise the potential savings in cash handling costs.



Previous surveys have consistently identified the chicken-and-egg problem of lack of terminals as well as lack of NFC enabled mobile devices. The 2010 EDC/PCM Survey puts more emphasis on the problem of lack of contactless POS terminals.

Drivers of growth

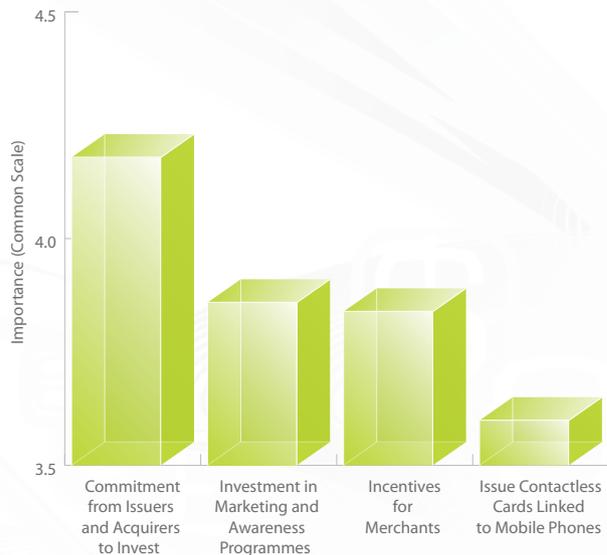
Interestingly, the 2010 EDC/PCM Survey highlighted stakeholder commitment as the most important prerequisite for generating growth in contactless payments.

This is a key point that surfaces in other areas of the survey and was often alluded to by our payment industry contacts in recent discussions. It indicates that people involved in the payments industry feel that the time is right to commit to proper payment programmes, invest in the necessary infrastructure and commit to raising user awareness to the many benefits the technology offers.

Over the last few years there has been a spate of pilots and trials all across the globe most of which have validated and re-validated the results that contactless technology is robust, secure and beneficial to consumers and merchants.

It is time to follow these up with actual programme implementations to unlock the full potential the technology has to offer. Also identified in the survey is an additional factor which often gets overlooked. While many industry players believe that there are significant benefits for merchants in contactless payments, merchants should also be offered incentives to invest in contactless infrastructure.

CONTACTLESS PAYMENTS – DRIVERS OF GROWTH



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

Mobile payments

Mobile contactless or proximity payments are covered in the previous section. This section covers mobile remote payments and mobile money transfers.

Unlike POS payments, where the payer is physically present, remote payments cover all types of payments where it is not necessary for the payer to be physically present at the merchant location.

PAYMENT TYPES

Mobile remote payments are initiated using a mobile device. These can be of several types:

“REGULAR” PAYMENTS

- Payments to merchants for the purchase of goods and services. Transaction fees are payable by the merchant to the payment services provider – the extent of which greatly depends on the underlying payment instrument used.

BILL PAYMENTS

- Payments that relate primarily to the payment of household bills such as water or power or other items of regular consumption. In many markets bill presentment is done over the mobile phone: consumer receives a utility bill through a smart application or SMS message. The customer reviews the bill and validates it. Upon confirmation the utility company or any other biller collects the payment through a regular direct debit for which the consumer has already provided a mandate or authorisation.

MOBILE MONEY TRANSFERS

- Mobile Person-to-Person Payments (P2P) or Mobile Money Transfers (MMT) refer to the exchange of funds between individuals for various purposes such as sending money to dependants for their upkeep or sharing joint expenses. These can be domestic or cross-border / cross-currency. Cross border P2P payments are also generally referred to as international remittances.

Developing a mobile remote payment eco-system

Mobile remote payments give consumers the flexibility of making payments on the go to practically anyone regardless of their location. The speed, efficiency and cost of payment depends on the underlying payment instrument selected for the purpose – whether a credit or debit card, mobile phone bill (mainly using premium sms) or a specific wallet based payment system.

The Mobey Forum issued a paper in 2010 which proposed the idea of developing an eco-system that would use the mobile phone number as the primary identifier to facilitate a mobile remote payment / mobile money transfer transaction.

The paper proposes a framework which ensures all types of underlying payment instruments to be used – whether payment cards, bank accounts or mobile wallets to “pay anyone” – whether payment is made to a merchant or to another person. It supports the need to have common standards and interoperability across markets.

The eco-system discusses centralised or distributed options leveraging a highly secure common infrastructure (CI) – a database that maintains the primary link between a person’s mobile phone number and their payment instrument. An entity is required to manage the database called the common infrastructure manager (CIM). A sender needs to know only the receivers phone number in order to send a payment – which uses the payment instruments that have been registered by the two parties to the transaction.



Challenges

The 2010 EDC/PCM Survey identifies the problem of lack of cooperation across banks and MNO’s as a major issue. Survey respondents see this as a challenge of critical importance facing the mobile payments industry.

Mobile proximity eco-systems are complex and require inter-industry cooperation to make them work. The various constituent elements within the proximity eco-systems relate to banks, MNO’s, handset manufacturers and technology providers. The overall mechanism will not work if its individual components are unable to coordinate and collaborate to complete and support a payment transaction. Mobile remote payment systems, on the other hand, are relatively less complex to develop in the sense that they can be managed by single players, partners in a joint venture or a group of intra-industry players such as banks.

Part of the problem of lack of cooperation stems from differences in perspective. Stakeholders with roots in the telecommunications industry have a different perspective on fees related to mobile payment transactions than those whose core business has always been payments.

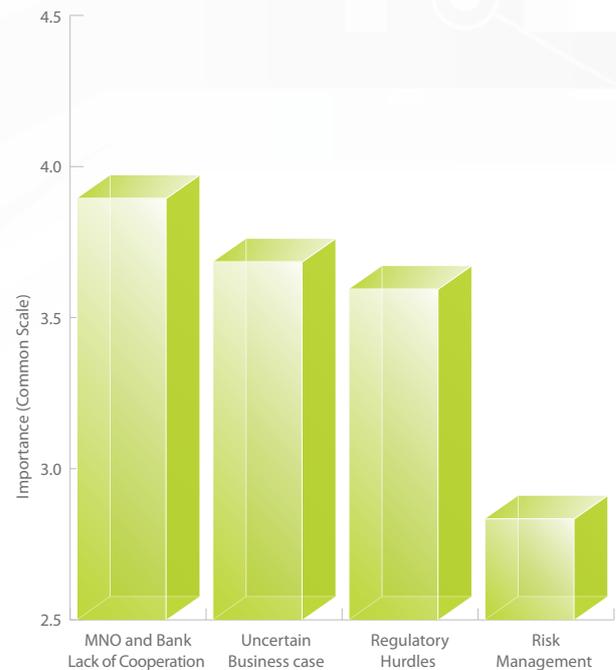
From our discussions with payment industry contacts, financial services professionals see banks as the primary providers of payments with mobile as simply another “channel” similar to the internet. Industry professionals with experience in the mobile telecommunications industry consider mobile payments as a “value added service” that must generate an independent and standalone stream of revenue and see banks and other providers in a secondary role.

They want to evaluate a business case for mobile payments on their own merit and not based on indirect benefits such as churn reduction or cost savings resulting from improvements in customer loyalty. While such views are not universal, they are expressed and observed by a number of people close to the industry.

The survey also identified the uncertainty that continues to be felt across industry stakeholders. A major driver of this issue is the lack of a framework or a standard practice for revenue sharing across a diverse set of stakeholders. The key message here for all stakeholders is that in the early stages of a payment system where some form of cooperation is required, premium pricing strategies by one set of stakeholders will not work. What will work are pricing policies based on reasonable rates of return and in line with the relative contributions of each player.

Regulatory hurdles are also potential roadblocks for mobile payments but these vary from market to market. Again, the key challenge here is to develop a balanced approach that protects consumers, monitors and mitigates risks and provides stability and transparency. At the same time, we must acknowledge that nascent industries require new ideas and dynamic new entrants who should not be prevented from participating by the burden of over-regulation or the uncertainty of under-regulation.

MOBILE PAYMENTS – KEY CHALLENGES



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

Drivers of growth

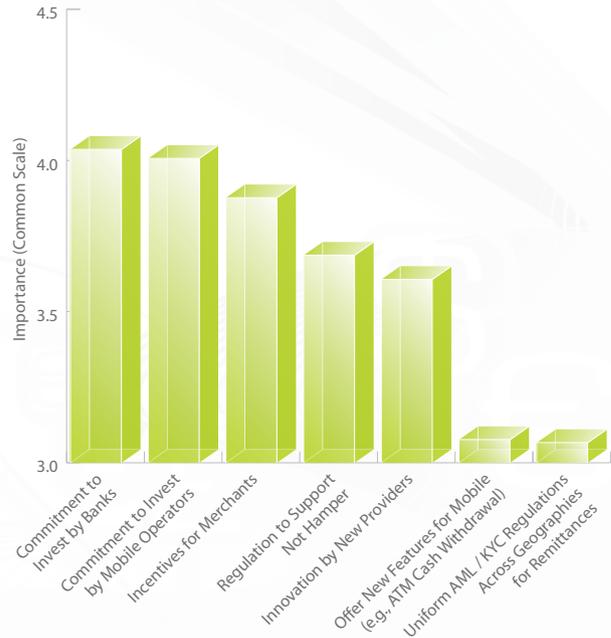
In line with the survey results on contactless payments, it is not surprising to see that responses relating to the need for commitment and investment come out at the top throughout the survey.

This message was reinforced in our discussions with payment professionals over the last few months. New technologies relating to advanced payments – whether online, contactless or mobile – are now reliably proven. Adequate risk management processes exist that can successfully limit, if not entirely eliminate the losses suffered from fraudsters. What is now required is a commitment to invest in mobile payment programmes and value propositions that can generate robust and sustainable returns for payment system providers.

Validating the results in the previous section on contactless payments, merchant incentives are also identified as crucial if mobile payments are to succeed in the future. This exhibits an appreciation of the fact that in payment systems “both” users are important – the consumer and the merchant. Quite often in our need to understand the demand and behaviour profiles of the former, payment system providers overlook the needs of the latter.

Survey respondents understand the difficulties in achieving uniformity across diverse geographies in terms of KYC regulations but acknowledge that regulation should be framed with a view to encourage and support mobile payments. In this sense both over-regulated as well as under-regulated payment environments can be equally frustrating to negotiate for new players and for those with innovative products and services to offer.

MOBILE PAYMENTS – DRIVERS OF GROWTH



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

Appendices



Appendix 1 – Payments overview

There is no universal definition of what is included in “advanced payments” but for the purposes of this document, we have included online, contactless and mobile as the three core constituents of advanced payments. These are also referred to as emerging payments. This is not entirely accurate as some, such as internet payments, are now mainstream and cannot be classified as emerging anymore. All three continue to benefit from advances in technology, new ideas and improvements in processing efficiencies.

ADVANCED PAYMENTS IN THIS REPORT

These are described below:

- **Online or Internet payments:** Payments or money transfers undertaken over the internet such as buying a book from a virtual bookstore, paying bills or simply making a payment to another individual or entity. These are made using payment cards, directly from bank accounts or with alternative payment products as such as online wallets.
- **Contactless payments:** These can be categorised according to the following “form factors”:
 - o **Payment cards:** Payments made at retail and other point-of-sale locations using contactless cards that use radio technology to initiate a payment transaction.
 - o **Mobile handsets:** More commonly referred to as “*mobile proximity payments*” using Near Field Communication (NFC). There is general consensus on NFC technology for mobile proximity payments but there continue to be differences in how it will be implemented. Several “bridging” or alternative technologies for mobile proximity payments are also available such as barcodes or data over voice channel.
 - o **Other:** Contactless technology can be implemented in all types of consumer accessories including wrist watches or items that people wear and, as some early enthusiasts have demonstrated, it can even be embedded under a person’s skin.
- **Mobile payments:** Mobile payments encompass two core payment types:
 - o (a) mobile proximity payments at a POS terminal as described above
 - o (b) mobile remote payments: Physical presence at a POS is not required. A remote transaction can take place with the payer being practically anywhere in the world:
- **Mobile remote (physical)** – these are similar to online payments but initiated on a mobile device and cover transactions such as buying a book from a virtual bookstore
- **Mobile remote (digital)** – payments for digital goods such as mobile apps, entertainment or other content
- **Mobile personal (domestic)** – Remote payments between individuals are also called mobile personal payments or mobile money transfers within a country or common area such as Single Euro Payment Area (SEPA)
- **Mobile personal (international)** – cross border mobile personal payments or money transfers.

Payment purpose

Payments can be viewed from a number of angles in order to understand and analyse customer behaviour by segment and by channel. A commonly used categorisation of payments is by purpose.

This is discussed below:

- **Pay for retail goods and services**

These are *Consumer-to-Business* payments (but often referred to as Business-to-Consumer or B2C payments). These are more commonly known simply as online purchases where goods or services are ordered and paid for from a formal seller such as a physical or online store. Merchant transaction fees or the fees the seller has to pay to their payment provider depend greatly on the underlying payment instrument used, risk factors as assessed by the provider and other payment terms and conditions.

- **Pay salaries or send credits**

These are *Business-to-Consumer* payments and cover such as things as salary credits, rebates, incentives and other credits.

- **Pay for business expenses and inputs**

Businesses pay for business expenses or for purchasing raw materials or other inputs to other entities – these payments are more commonly referred to *business-to-business (B2B)* payments.

- **Pay for low value items**

Low value payments can be expensive to process for certain payment instruments. Examples include payments for newspapers, at parking meters, and automated kiosks. These payments are also sometimes referred to as *micropayments*. Also included are payments for digital downloads of small apps or entertainment / other digital goods. Definitions of a micropayment vary.

- **Pay bills**

Bill Payments are B2C payments except that they relate primarily to the payment of household utility bills for things such as electricity or other items of regular consumption.

- **Send money to others**

These are also simply referred to as *personal payments* or *money transfers* or *person-to-person payments (P2P)* and consist of exchange of domestic funds between individuals for purposes such as sending money to dependants for their upkeep or for sharing joint expenses. When funds are sent across borders usually in different currencies, such transactions are called cross-border payments – more commonly called *international remittances*.

Payment instruments

Each payment type indicated above is supported by one or more of the following payments instruments and their underlying technology and systems infrastructure.

These instruments are briefly described below:

• Payment from Bank Accounts

Most banks offer payments to be made to businesses or individuals through their online banking services. These payments are processed and completed over automated clearing house (ACH) networks.

- o Credit: Sending a payment – the sender or payer indicates the account details to which the payment is to be credited
- o Standing Order: Sending a payment of a fixed amount on a regular basis by sender or payer instructing their bank.

Advanced Payments Context: Electronic payments from bank accounts are used for all types of remote B2C payments and money transfers but generally not used for POS payments. This is because these payments are not guaranteed and can take up to 3 days in some markets. Initiatives to link mobile phone numbers to bank accounts have been undertaken or are under consideration in some markets. Systems that complete a payment immediately or on the same day are already in place in certain markets.

- o Direct Debit: is an instruction initiated by the payee or beneficiary to their bank to collect from the account of the payer. The instruction is accompanied with valid payer authorisation. Direct debit are beneficiary originated.

• Payment by Debit or Credit Cards

Advanced Payments Context: A key advantage of payment cards – whether debit, credit or charge – is that most can be used for all types of online and mobile B2C and also B2B payments as well as contactless POS payments. P2P payments are rarely undertaken with payment cards but there are initiatives underway to make this payment widely if not universally available. For online payments cards are already used extensively and based on existing infrastructure, cards can be used for both proximity and remote mobile payments.

Payment card details are supplied securely (often encrypted) to the seller. This information could be stored in a secure format locally or on a remote server. The card details can also be manually entered for every purchase.

• Payments Using Alternative Payment Instruments

There are a number of different systems that have been rolled out that help consumers make payments to merchants or to each other. These range from wallet based systems that use a prefunded or prepaid account to one time anonymous vouchers which need to be purchased beforehand.

PayPal is the best known example of a wallet based system that was initially used extensively for eBay transactions but is used for all types of payment transactions and across multiple markets. PayPal also offers a system by which every transaction is individually funded from a linked payment card or bank account.

• Payment on the phone bill

Advanced Payments Context: Wallets serve online and mobile channels. Some payment providers already offer that. Also, the market will increasingly see the “payment conduit” functionality being developed and deployed for wallet based payment systems where each transaction is funded individually from a bank account or payment card. This makes it easier for the consumer to make payments without the need to monitor the wallet account to see if they have enough funds to cover their planned purchases.

For mobile, billing to a mobile phone bill has been used for selected items such as purchases relating to digital downloads of online content. Premium / reverse sms messaging has been used for these types of payments.

Appendix 2 – EDC – Advanced Payments Model

The EDC Advanced Payments Model is an MS Excel based model that allows the estimation of the different types of advanced payments for multiple markets. It is built into two core sets of input modules: (a) base case assumptions (b) what-if analysis.

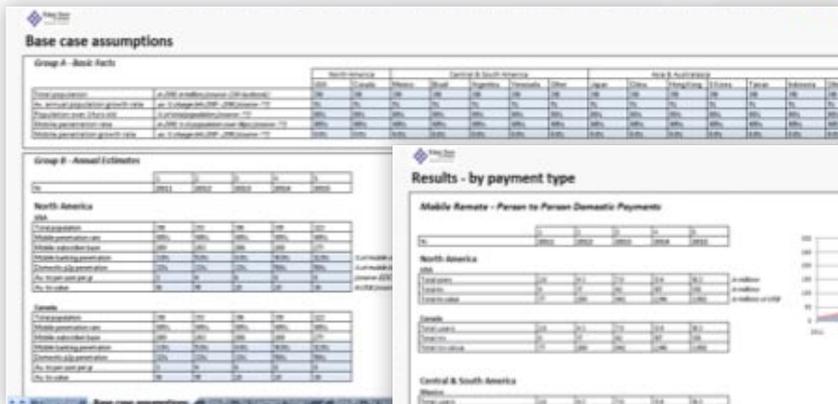
2 TYPES OF BASE CASE ASSUMPTIONS:

- Basic facts per country
- Annual estimates per country

ONE OF TWO BASE CASE RESULTS VIEWS:

- Results broken down per region and per country
- Graphs provide regional total view
- Second results view is by region

BASE CASE ASSUMPTIONS SCREEN SHOT



RESULTS – BY PAYMENT TYPE SCREEN SHOT

Appendix 3 – Advanced Payments Survey Results

SECTION I – ONLINE PAYMENTS

1. How important are the following FEATURES for online payments?



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

3. How important are the following proposals to increase online payment volumes?



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

2. How significant are the following ISSUES for online payments?

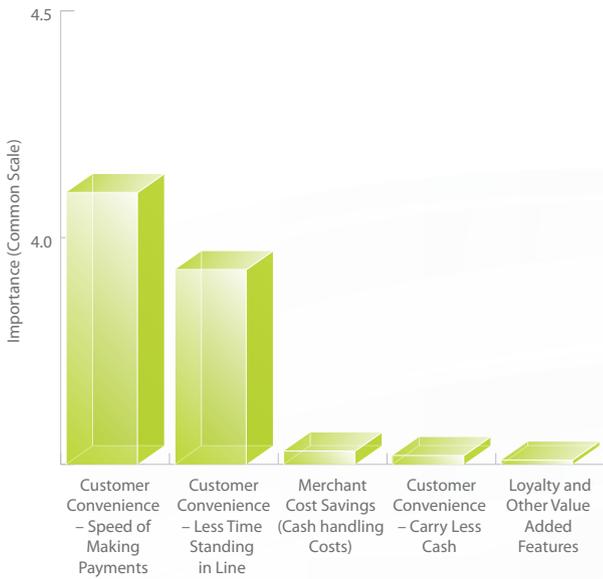


SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

Survey Results

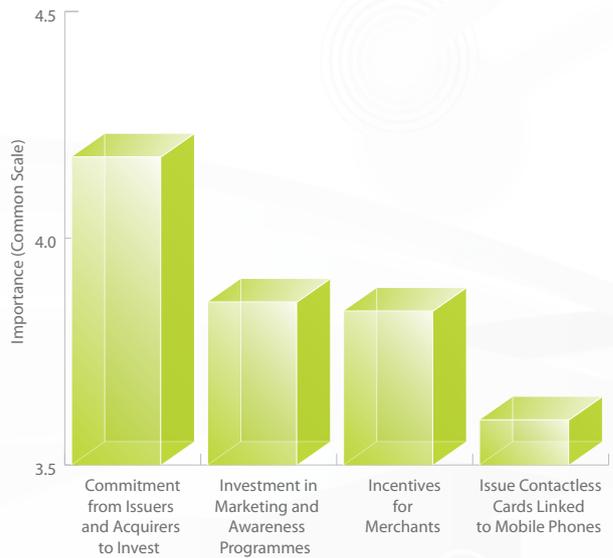
SECTION II – CONTACTLESS PAYMENTS (CARDS + MOBILE)

4. How important are the following FEATURES for contactless payments?



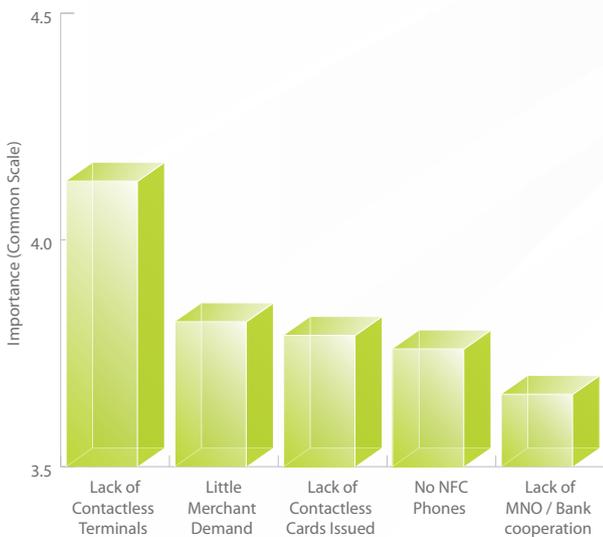
SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

6. How important are the following proposals to further ACCELERATE the growth of contactless payments?



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

5. How significant are the following ISSUES for contactless payments?

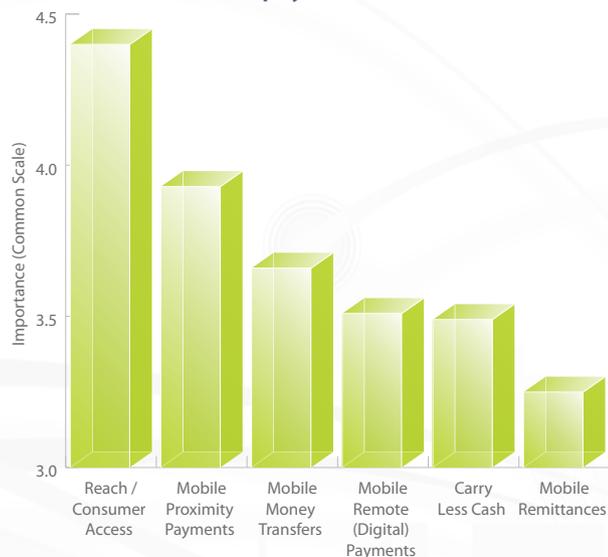


SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

Survey Results

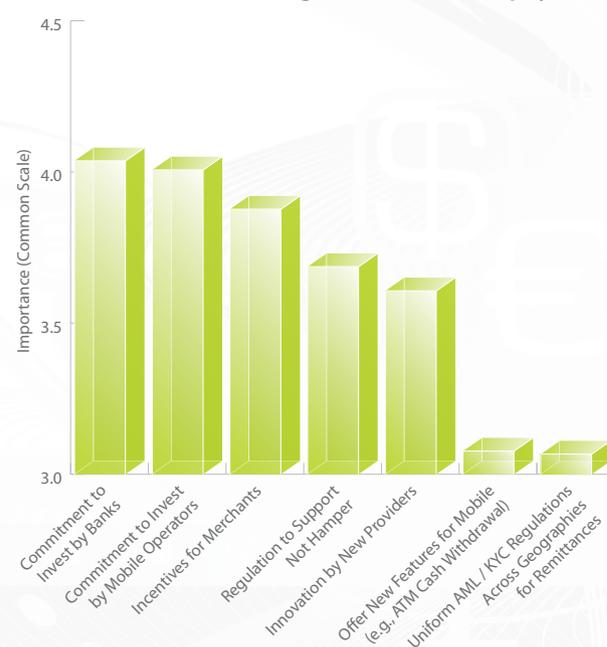
SECTION III – MOBILE PAYMENTS

7. How important are the following FEATURES for mobile payments?



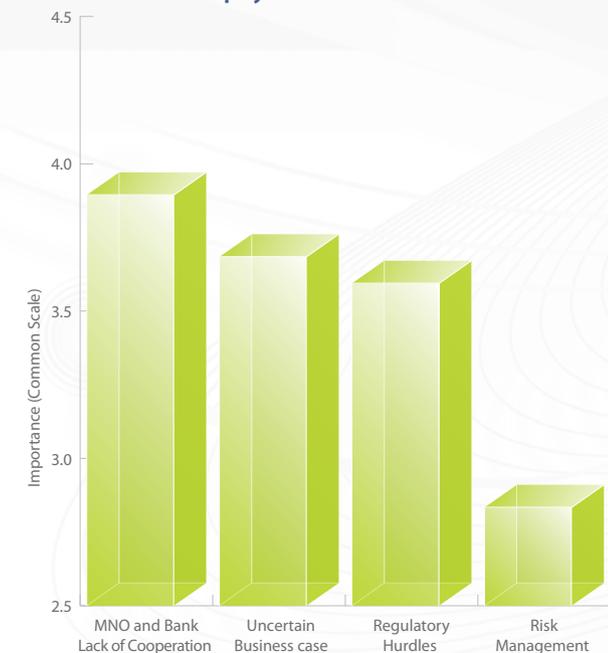
SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

9. How important are the following proposals to further ACCELERATE the growth of mobile payments?



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

8. How significant are the following ISSUES for mobile payments?

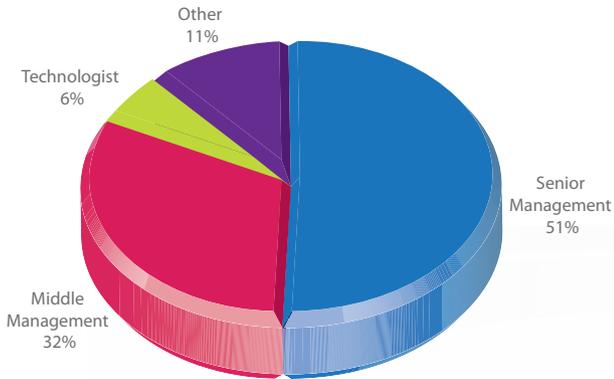


SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

Survey Results

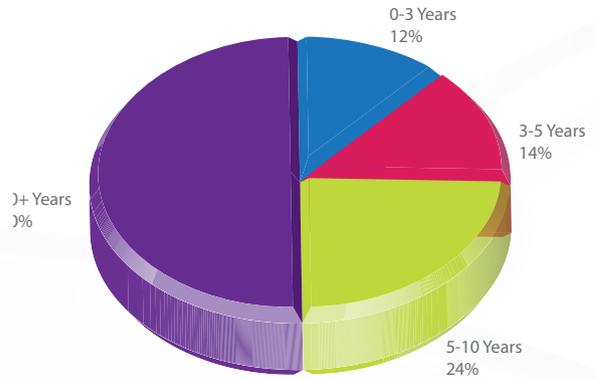
SECTION VI – ABOUT YOU

16. Position



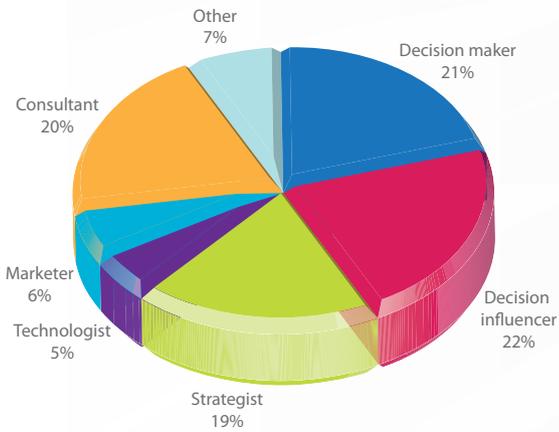
SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

17. Tenure in company or current industry



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

18. Role played in the company related to Mobile Payments



SOURCE: 2010 EDC/PCM ADVANCED PAYMENTS SURVEY

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Payments
CARDS&MOBILE

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