Mobile Commerce in Retail

A look at the opportunities provided by mobile commerce in the retail industry

July 2013
Foreword

The advent of mass market smartphones is making it possible to reimagine conventional bricks and mortar commerce. Working together, secure mobile and contactless connectivity can bring online style interactivity to the high street and the retail park.

Well designed mobile commerce services can create a rich and consistent consumer experience both online and in store, while forging a deeper relationship between merchants and their consumers. They can also cut retailers’ costs and open up new revenue streams for businesses large and small.

Ultimately, mobile commerce will evolve to support the entire consumer experience, which involves far more than a visit to a single store. Consumers are looking for versatile and wide ranging services that help them with research, travel directions, parking, vouchers, loyalty, dining, entertainment and many other aspects of an outing to a town centre or a destination retailer.

Taking a policy maker’s perspective, holistic mobile commerce services could help fuel economic growth, breathe new life into town centres and maintain social cohesion. With the assets and capabilities to enable a broad commerce proposition, mobile operators are well placed to deliver these benefits and generate significant new revenue streams.

This paper outlines both a compelling vision of how mobile commerce could transform retailing and the practical steps that mobile operators can take today. Crucially, it explores how operators can work with other operators, retailers, trade associations and policy makers to create the holistic proposition consumers are looking for.

Anne Bouverot
Director General, GSMA

Executive summary

Mobile commerce services can play a pivotal role in bolstering bricks and mortar stores and ensuring that high streets can survive and thrive. As well as boosting local economies, mobile commerce services could help policy makers create greater social cohesion and a richer environment for citizens.

However, most mobile commerce services to date have focused just on an individual retailer or the actual shopping/transactional experience. Such an approach is too narrow; consumers are much more likely to adopt holistic mobile commerce propositions that help them travel to and from the retailer and undertake many other activities during an outing to a town or destination retailer. Mobile commerce services should support the preparations, the outward journey, in store interactions, transactions, post transactions and return travel and set the stage for the next journey. That implies that a mobile commerce proposition needs to support a wide array of different services, potentially using a range of capabilities and technologies.

Furthermore, mobile operators, retailers, banks, commercial organisations and industry associations need to work together to define a consistent transactional journey, so that consumers and retail staff don’t have to adapt to multiple processes to make payments, redeem vouchers and accumulate loyalty points in merchant outlets.

That implies they should use standards wherever possible and work with appropriate organisations to identify where new standards are required. The provision of a core set of capabilities will stimulate innovation.
The role of mobile operators

To ensure long term focus, mobile operators need to begin by drawing up strategic plans supplemented by tactical plans for near term engagement with vertical industries. The GSMA believes the primary opportunities for mobile operators in the retail sector are:

1. Create an end-to-end secure business-to-business proposition for tier 1 retailers, either individually or as a framework developed with other mobile operators.
2. Work with other mobile operators to develop a framework infrastructure that tier 1, 2 and 3 retailers can use to provide mobile commerce services.
3. Provide a toolkit to enable retailers and service providers in other industry sectors to easily integrate payment, coupons and loyalty services into their applications.
4. Provide a flexible wallet application that consumers can use to access a wide range of services, encompassing retail, transport, entertainment and community and government services, supported by a mechanism that will enable consumers to download information and vouchers into the wallet.
5. Use the SIM card to authenticate consumers and increase the security and privacy of mobile commerce services.
6. Provide a web/mobile browser plug-in that will enable consumers to download information and vouchers into their wallet.

Mobile operators that pursue these opportunities could charge service providers for delivering targeted adverts into the wallet or the home page container. The operator could earn revenue for storing coupons and loyalty securely on the SIM card.

However, mobile operators should be flexible, accommodating the needs and strategies of other industries. Retailers may want their products represented solely in the wallet, solely in their retailer application, or in a flexible, integrated mix of the two, utilising different technologies.

In the short term, mobile operators and retailers should consider tactical mobile commerce deployments that support couponing and loyalty, but ensure that these services can be expanded to support the entire consumer journey. In time, mobile operators and their partners need to deliver services that are secure and support retailing (tiers 1, 2 and 3), tourism, the evening and night time economy, parking / transportation and community services in a synchronised and consistent delivery mechanism.
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1. Introduction

The objectives of the paper

This paper provides a vision as to how mobile operators can deliver value added services, content and resources to support retailers and town centres. It outlines how mobile operators, retailers and the related ecosystems can put all the necessary components in place to realise the full potential of mobile Near Field Communication (NFC) and related mobile commerce technologies and services. It also highlights the benefits of these services to each member of the value chain, including consumers.

The paper aims to show retailers and mobile operators how to combine mobile connectivity and NFC-based services to provide consumers on the high street with a compelling end-to-end experience encompassing transport, tourism, restaurants, parking and the night time economy, as well as shopping.

The paper is divided into four major sections:

Mobile commerce today

- Explores the development of mobile commerce to date.
- Outlines the current situation in retailing and town centres.
- Discusses the challenges faced by policy makers.
- Considers the barriers to broader adoption of mobile commerce by retailers.

Creating a compelling consumer journey

- Investigates different kinds of consumer experiences encompassing retail, tourism, parking, the evening and night time economy, community and local services and transportation.

The technical enablers

- Advocates the use of specific standards.
- Identifies areas where further standardisation is needed.

The opportunities for mobile operators

- Identifies the opportunities for the mobile industry in terms of both services and value.
- Makes recommendations for how mobile operators and their partners can overcome the existing barriers.
- Supports the development of requirements for the mobile wallet.

The paper draws on research and experience in several developed markets, including China, France, Italy, Germany, Singapore, South Korea, Spain, Taiwan, UK and USA. However, GSMA believes much of the analysis and most of the conclusions are applicable globally, notwithstanding the many variations in the structure of the retail, financial services and transportation sectors in different markets.

Primary audience

- Mobile operators.
- Retailers, restauranteurs, hoteliers, entertainment providers, parking providers and other merchants and their membership associations.

Secondary audience

- Payment service providers.
- Transport authorities.
- Local government.
- Loyalty solution service providers.
2. Mobile commerce today

Consumers are increasingly using their mobile devices to bridge the online and offline worlds. Shoppers are using smartphones to look up product information, run price comparisons and even make online purchases while window shopping on a high street or in a store. In many cases, consumers are using bricks and mortar retailers as showrooms to evaluate products that they then buy from online retailers.

In response, some bricks and mortar retailers are beginning to use mobile technologies and services to meld their online and physical properties into a distinctive consumer proposition that seeks to combine the strengths of e-commerce and traditional shopping. In many cases, these retailers are looking to use a combination of mobile and contactless technologies (NFC, QR codes and other innovative technologies) to enable:

- Engagement with their consumers in and out of store. For example, through the delivery of relevant and timely offers to consumers’ mobile phones.
- An interactive in store experience using NFC-enabled kiosks, posters, signage and other informational tools that can engage the consumer without distracting them from shopping.
- Straightforward payment, coupon redemption and accumulation of loyalty points at the point-of-sale.

The goal is to give consumers a richer experience, encouraging them to stay longer in a retailer’s physical store, become more engaged with the brand and ultimately spend more money.

Consumer demand for mobile commerce

Researchers have found that consumers are willing to engage with retailers through their mobile phones. For example, 60% of the UK and American smartphone owners surveyed by research firm Latitude\(^1\) said that they are spurred to shop or make a purchase at least once a week because they’ve received a mobile alert (e.g., an email, text message, notification, etc.) from a brand or retailer. Latitude found that these alerts work best when they are location based and related to a product or service the consumer has professed an interest in.

Even though the consumer may have some privacy concerns, according to the survey, people are willing to opt into such services if they feel they are receiving ‘something truly valuable in return’.

Latitude also found that 79% of shoppers are interested in the possibility of having digital content – product recommendations, demo videos, virtual ‘try on’ simulations, and so on – delivered to their mobile phones while shopping in a store. 80% of respondents said they’d be interested in a ‘mobile wallet’ – particularly if it meant they no longer needed to carry cash or credit cards.

At the same time, many consumers are looking for a better, simpler way to complete payments using their mobile phone. Nearly half (47%) of the people surveyed by Latitude cited smartphones’ small screen sizes as a deterrent, while 40% have worries about the security of their financial information. Mobile sites’ limited functionality (40%) and difficulty entering personal information (39%) also rank highly, suggesting that the design of the user interface is crucial. Latitude also found that shoppers are looking for a more comprehensive mobile payment platform.

Similarly, trials of mobile commerce services in France have demonstrated that:

- Consumers will only adopt a new mobile shopping solution if it is easy to use and offers a seamless experience across multiple channels.
- Given the weak economy, consumers are looking for solutions that make the most of their budget. A mobile commerce service that gives a significant reward to consumer loyalty and helps them to get the best possible deals, taking into account their shopping preferences, is likely to be successful.
- Consumers appreciate information about products and interactive shopping guides.

What mobile operators are doing

To support the development and deployment of a range of mobile commerce services, mobile operators around the world are rolling out SIM-based NFC services. NFC is a contactless radio technology that can securely transmit data between two devices within a few centimetres of each other. Mobile phones are increasingly being equipped with NFC capabilities, enabling an array of compelling new digital services.

For example, a retailer could use the mobile network to send a consumer a voucher, which could then be redeemed using NFC at the checkout whilst making a payment. In each case, the universal integrated circuit card (the UICC, commonly referred to as a SIM card) inside a mobile handset can be used to secure the service. To be successful, an NFC-enabled solution, or one based on an alternative technology, such as QR codes and barcodes, needs to complement existing payment methods and be aligned with the existing check out procedures or enable better, deeper interaction with the retailer or brand.

In the past 12 months, SIM-based NFC has gained significant momentum. More than 20 mobile operators in 14 countries have rolled out SIM-based NFC services and many more launches are in the pipeline. Between April 2012 and January 2013, 110 million SIM-based NFC handsets were sold worldwide, according to Strategy Analytics. The research firm predicts that almost 1.5 billion SIM-based handsets will be sold between 2010 and 2016, supporting transactions of more than $50 billion globally over the same period. Further, the deployment of NFC ready point-of-sales terminals worldwide is set to expand dramatically, growing from 6.7 million in 2012 to 44.6 million in 2017, according to Berg Insight.

The GSMA is working with the mobile industry, along with regulators and service providers in other sectors, to develop the sophisticated ecosystems needed to support the global rollout of SIM-based NFC services. Successful launches of SIM-based NFC require collaboration and common practice between the mobile industry and other sectors, such as retail and transport, to ensure that the services put in place are fully interoperable, thereby paving the way for future growth. In November 2011, the GSMA published a new set of industry specifications, designed to accelerate the adoption of a range of SIM-based NFC services. These specifications, which define common handset application programming interfaces (APIs) to support SIM-based NFC services, are designed to drive economies of scale by creating a common framework for implementation and product interoperability. The GSMA will continue to update these specifications as the services develop.

As they seek to harness the potential of NFC, individual mobile operators are also engaging with the relevant actors in their markets, including local and national governments, transportation bodies, banks, retailers and other stakeholders (figure 1). In some markets, mobile operators are forming examples to provide retailers and brands with a common mobile marketing platform. These joint ventures include Weve in the UK, Isis™ in the US, WyWallet in Sweden, EnStream in Canada, the Grand Alliance in South Korea and a joint venture between New Zealand’s mobile operators and the country’s bank owned payments processor.

![Figure 1: Mobile Commerce – mobile operator status. Source: GSMA](image)

2. Source: Strategy Analytics, approximately 110 million SIM-based NFC handsets were sold worldwide.
Most existing mobile operator led commerce services are
wallet and payment focused with some couponing and loyalty.
Examples include SK planet’s Smart Wallet and KT’s MoCa
wallet platform in South Korea, and Isis™ mobile commerce
joint venture in the US.

SK planet’s Smart Wallet
SK planet, SK Telecom’s internet services arm, launched its
Smart Wallet 4 in June 2010 in South Korea to help it build an
e-commerce platform and supporting ecosystem. The wallet
supports transport tickets, entrance/movie tickets, loyalty
programmes, coupons and stored value cards, but not full
payments yet. The wallet can be used both online and at the
point-of-sale.

By April 2013, the Smart Wallet had 9 million subscribers
and 2.5 million active users per month. The wallet has been
most successful with people in their twenties. SK planet says
that 220 service providers support the wallet and it can be
used in 80,000 locations across Korea.

KT’s MoCa
In search of new business opportunities, Korean mobile
operator KT decided to build a wallet platform that could
support retailers’ and banks’ services and payment solutions
both online and at point of sale. It launched its first mobile
wallet in November 2011.

Rebranded MoCa 5 in December 2012, the wallet had 2 million
subscribers by April 2013. KT says the service appeals to Koreans
because they can store their membership (loyalty) cards in
the wallet rather than having to carry multiple plastic cards.
Moreover, MoCa enables a consumer to easily sign up for a new
membership card through a simple one click process in which
they agree to share their personal data with the relevant service
provider. Once they click, a new membership card is created
and stored in the MoCa wallet.

Isis™
A joint venture (JV) between AT&T, Verizon Wireless and
T-Mobile USA, Isis™ 6 is piloting a suite of mobile commerce
services, including contactless (NFC-based) payments, loyalty
services and vouchers, for banks and merchants in Austin,
Texas, and Salt Lake City.

Although Isis™ aims to earn revenues from merchants and
banks, its brand is also designed to be consumer facing in
the same way that Visa and MasterCard are well known
to consumers.

The leading Internet players
Most of the leading Internet players are building mobile
commerce solutions and services that are designed to connect
retailers and consumers. Google, Apple, Facebook, Amazon
and PayPal (part of eBay) are all developing mobile commerce
propositions. They are typically using their online reach to
profile consumers and then sell the appropriate target audience
to advertisers and marketers. Google, in particular, has a
particularly comprehensive strategy, exemplified by its nascent
Google Now service, which proactively makes suggestions to
consumers’ smartphones based on their location and their
search history.

In many cases, mobile operators will need to work with the
leading Internet players to ensure their mobile commerce
offerings are compatible. For example, a consumer with a
voucher stored in a third party wallet should, ideally, be
able to redeem that voucher while making a payment with
a mobile operator wallet.

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4 SK planet’s Smart Wallet: http://www.skplanet.com/eng/service/commerce.aspx#smartwallet
5 MoCa application on Google Play: https://play.google.com/store/apps/details?id=com.kt.ollehmywallet
6 Isis™ web site: https://www.paywithisis.com
3. The scale and diversity of retail

The retail sector is extraordinarily diverse. Different retailers have different challenges and different needs. For the purposes of this paper, we are using the industry’s segmentation:

- A tier 1 retailer has annual sales exceeding US $1billion.
- Tier 2 retailers have annual sales between US $100million and US $1billion.
- Tier 3 has annual sales below US $100million.

The retail sector typically accounts for a large part of a developed economy. In the UK, for example, the retail sector turned over 20% of the UK’s GDP in 2012 (£313billion). In the UK, tier 1 retailers account for approximately 50% of the £148billion turned over by non food retailers each year. The UK retail sector employed 3 million people in 2010 – 10.5% of total employment.

Moreover, retail is interlinked with three other key sectors of the economy – tourism, the night time economy (such as restaurants, entertainment and bars) and parking. Tourism in the UK generated sales of £115.4billion in 2012 and the night time economy a further £66billion. Moreover, drivers in the UK spent £1.32billion on parking in 2012.

Beyond their economic contribution, retailers, particularly those in town centres, also play an important role in providing social cohesion. They facilitate social interaction between local residents, increasing their sense of well being, and help build trust within a community. To help attract consumers to high streets, mobile commerce services will need to be able to support multiple retailers in one geographic location.

However, the weak economic climate, combined with competition from Internet based retailers and out of town destination centres, means that large numbers of bricks and mortar retailers in town centres in many developed markets are closing down, leaving high streets with boarded up outlets and less appeal for consumers.

Figure 2: Retail revenue USD$Billion. Source: Eurostat and national statistics organisations
Challenges for policy makers

As physical shops play an important role in creating social cohesion, many policy makers are keen to support tier 2 and tier 3 retailers in town centres. This has a dramatic effect on the local real estate and property values. They are increasingly looking to Information Communication Technology (ICT) to help shore up the viability of town centres and address a number of significant challenges:

- As services and shopping move online, citizens are having less personal interaction, affecting their sense of wellbeing.
- Local government and local services need to find effective ways to communicate and transact with citizens who no longer visit town centres regularly. Conversing on the phone with local government services costs the taxpayer significant amounts of money.

Success factors for a town

The success of a town as a retail destination depends on multiple factors, including the availability of car parking, the quality of public transport, the size of its catchment area, the level of tourism and crime (figure 3). Many of these factors are, of course, interlinked. A high level of crime may deter tourists, while poor public transport will increase demand for car parking. For local shoppers, the availability and cost of car parking, particularly if they plan to buy heavy or bulky items, can be the crucial factor in determining whether they visit the town and how long they stay.

Moreover, the retail sector needs to be supported by tourist attractions, evening venues, such as restaurants and bars, and local community services, such as libraries and cultural events. To build a high level of footfall, the town needs to be able to cater for a range of different visitors looking for different experiences. For example, cultural and heritage sites, restaurants and entertainment will be the primary draw cards for tourists, while shopping is often a secondary consideration (figure 3).

Figure 3: Factors influencing the success of a town. Source: GSMA
A town’s local government needs to find ways to enable each aspect of town life to positively influence the other aspects, so that they feed off each other. A strong cultural, sporting or entertainment proposition, for example, will benefit the town’s retail sector and vice versa. Local authorities are increasingly recognising that ICT could help to create this kind of virtuous circle, enabling their town to prosper.

In the report, *100 Ways to Help the High Street*¹, the UK’s Association of Town and City Management, suggests that local authorities create loyalty programmes that span car parking, public transport, sporting and cultural events.

The report notes that these programmes can be used to collect data, which can then be used to communicate with consumers and inform them about other relevant events.

The mobile phone could be an ideal medium to support this kind of local loyalty programme, as well as loyalty cards run by merchants.

Figure 4 shows that when mobile operators consider solutions for retail, there needs to be alignment and thought for the wider consumer journey. When a citizen visits a town (even if they visit regularly) they do more than just retailing; in fact 64%¹⁰ of people visiting towns do so not just to retail, they are in towns for social activity/ evening entertainment, tourism, and therefore need solutions which cross multiple vertical sectors which include transportation and parking.

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¹ Source: www.100ways.org.uk  
¹⁰ Source: Association of Town and City Management. www.atcm.org
Understanding how consumers make decisions

Before they decide where to shop, consumers will naturally take multiple factors into account, including the time it will take to get to the stores they want to visit, the availability and cost of parking, whether there are attractive places to eat and, in some cases, the preferences of their friends and family (figure 5). The consumer may also be looking to combine shopping with a trip to the cinema, a business meeting or just a walk in the park with their children.

To date, most mobile commerce services have focused just on the actual shopping / transactional experience. But consumers are much more likely to adopt versatile mobile commerce propositions that will help them travel to and from the retailer and undertake many other activities during that outing. That implies that a mobile commerce proposition needs to support a wide array of different services, potentially using a range of capabilities and technologies (figure 5).

Ideally, an individual should be able to easily use their mobile phone to plan their entire trip, make further decisions during the visit and complete specific tasks, such as making a payment in store or booking a ticket. Similarly, mobile operators and their partners need to consider how they can remove friction from the entire end-to-end consumer experience, rather than just the actual shopping process.

As most people continue to drive to shops, easy access to car parking is a particularly crucial element of many consumer journeys – 25% of all travel time is used to find a parking space and 50% of all congestion is caused by traffic looking for parking, according to parking specialist APT Skidata. Parking is, therefore, a key service enabler for retail.

Figure 5: Making decisions based on destination. Source: GSMA

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<tr>
<th>PRE-JOURNEY</th>
<th>JOURNEY / ON LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOW DO I GO?</td>
<td>WHAT DO I CONSIDER?</td>
</tr>
<tr>
<td>🚗</td>
<td>Shopping (type of) Eating Drinks Cinema Heritage For kids Green space Health &amp; fitness Attractions Meeting place Pleasure / business Staying over</td>
</tr>
</tbody>
</table>

Source: www.aptcontrols.co.uk/apt-skidata
Ideally, mobile operators and their partners need to deliver services that incorporate the following elements in a synchronised and consistent delivery mechanism.

- Retailing (tiers 1, 2 and 3).
- Tourism.
- The evening and night time economy.
- Parking / transportation.
- Community services.

In each of these sectors, consumers often need location based (i.e. local) information and the ability to complete transactions – capabilities that could be delivered by a mobile commerce solution.

**The retailer’s perspective**

Tier 1 retailers, which are often destinations in their own right, and tier 2 and tier 3 retailers, typically located on a high street with other stores, have different requirements.

For example, a tier 1 retailer may provide free car parking next to the store, so transport may not be a key consideration for consumers, whereas a tier 2 or tier 3 retailer may be looking for solutions that make it easier for people to visit a specific high street. However, as most individual consumers shop with tier 1, tier 2 and tier 3 retailers, effective mobile commerce solutions will have to address the requirements of the entire retail sector.

Regardless of their size, retailers are looking for solutions and tools that will help them:

- Bring more consumers and potential consumers into stores.
- Sell more products and services.
- Optimise their business processes.

To support the wide range of value added mobile commerce services that consumers are looking for, bricks and mortar retailers need a strong business case: The costs of supporting a comprehensive proposition could be significant as the retailer and its partners will need to overcome a number of challenges.

![Figure 6: Proposition elements for consideration. Source: GSMA](image-url)
These challenges fall into several categories:

**Technology deployment**

- Mobile services need to integrate into the retailer’s existing online and point-of-sale (PoS) systems and solutions. In most cases, the primary focus is to process payment. Loyalty services have been layered in over time, leaving more complex consumer service interactions divorced from the checkout experience as opposed to being an integral part of it.

- Secure NFC-based mobile commerce solutions require a complex technical infrastructure. They require the deployment of contactless PoS terminals and integration with the retailer’s existing IT infrastructure. In some cases, retailers will already have an advanced digital strategy and have already invested in the related technology. A new NFC solution has to minimise the costs and the risks of the integration into this existing framework. Industry standards are absolutely essential here, driving cross ecosystem standards that support interoperability.

- Retailer response to new shopping behaviours driven by immediate access to information using the mobile device is leading to increased focus on joined up multi-channel experience. Maintaining and leveraging a detailed understanding of a shoppers needs across channels is key to ensure the retailer can reinforce brand values and reduce store walkouts.

- Services need to be secure and underpinned by robust identity management solutions to protect consumers, banks, payment schemes and retailers. Whereas open NFC services, based on NFC tag reading mode or the use of QR codes, are relatively easy to develop and deploy, the deployment of secure NFC infrastructure is more complex.

- More standards and more collaboration is needed to increase economies of scale and reduce costs. For example, there isn’t yet a widely adopted standard for mobile wallets to support digital coupons and loyalty programmes.

**Education**

- Retailers will need to educate their store staff to help consumers use mobile commerce services, such as NFC-enabled information kiosks, which will need to work in a consistent way – training store staff on multiple different transactional processes is not commercially viable.

- Consumers will also need to be educated so that they trust that transactions and related activities are both secure and private. Again, consumers will need to receive a consistent message from all operators and service providers.

- Retailers and mobile operators should use consistent icons to help consumers identify mobile commerce services.

**Business model**

- Retailers are looking for a mobile commerce proposition that is consistent across multiple mobile operators and across both transactional and non transactional services. If mobile operators haven’t formed a JV or created a common framework, retailers may need to adapt their mobile commerce proposition to work with each operator.

- Retailers are seeking ‘plug-in services’ whereby they can adopt a set of tools which integrate payment, couponing and loyalty, into their application and can transfer data between their application and the mobile operator’s wallet.

- Retailers are more interested in promoting their own, in house developed application than the wallet based on a mobile operator solution which they feel is imposed on them.

- Retailers want to ensure they have full access to consumer data generated by mobile commerce services and are reluctant to become dependent on mobile operators. They are looking for guarantees that they will be totally autonomous in the management of the relationship with their consumers. In most cases retailers do not want to share the transaction level data at all as this is perceived as encroachment by mobile operators in an area traditionally owned and controlled by them.

- A minority of consumers are equipped with NFC-enabled smartphones today, while the costs of setting up a mobile NFC solution are high. In this context, some retailers are not convinced that they will make a substantial return on investment on NFC-enabled solutions.
To date, these challenges have prevented mobile commerce from achieving significant scale in most markets. The next section will consider how to overcome these challenges.

4. Creating a compelling consumer journey

Taking a holistic view

As discussed in the previous section a mobile commerce proposition will support tier 1, tier 2 and tier 3 retailing, transportation, tourism, the evening and night time economy and community services. To deliver such a proposition, mobile operators need to work with each other and other stakeholders to define representative consumer journeys and the related transactional etiquette. In other words they need to build a common vision, which will translate into a broad mobile commerce proposition that will deliver a consistent mobile commerce experience.

There are six key phases (figure 7) in the consumer journey:

- Planning – the process of gathering information.
- Outward travel – the process of getting to the destination.
- In store – the experience in store or on the high street.
- Transacting – the exchange of value.
- Post transaction – the opportunity to up sell and cross sell.
- Return travel – the return trip.

Figure 7: The consumer journey. Source: GSMA
Within that journey, the consumer may interact with retailers and other service providers in several different ways using a combination of a web browser and different applications. These applications could include a mobile wallet and/or a broader mobile commerce ‘container’ offered by a mobile operator, which could reside on the home screen of the handset (figure 8). Potential interactions include:

- At home, through a social network accessed via a Wi-Fi or mobile connection.
- In the street, by tapping an interactive NFC tag which could open a link in a web browser or prompt a specific application to open.
- In the street or in store, through location based services delivered via an alert into the wallet/container/mobile application or via SMS or MMS.
- In store, by tapping an interactive NFC tag, which could open a link in a web browser or prompt a specific application or the mobile wallet/container to open using a Wi-Fi or a cellular connection.
- At PoS, using a mobile wallet/container or a mobile application via NFC, Wi-Fi or a cellular connection.

Multiple ways to interact

Across the different phases of the journey, the consumer may interact with retailers and other service providers in several different ways using a combination of web or mobile browsers, applications and a mobile wallet. In some cases, the wallet may be a broader mobile commerce ‘container’, which could reside on the home screen of the handset and offer search and discovery services, as well as support for payments, loyalty and couponing (figure 8). Potential interactions include:

- Via a mobile or web browser accessed via a Wi-Fi or mobile connection.
- Via an NFC tag which could open a link in a web browser, prompt a specific application to open or add information to the mobile wallet.
- Via an NFC-enabled point-of-sale (PoS), using a mobile wallet/container or a mobile application.
The next section outlines three different consumer journeys. The first covers a consumer’s interaction with a tier 1 retailer. The second explores a shopping trip to a high street, followed by a meal and a trip to the theatre and the third focuses on a consumer’s experience of mobile enabled loyalty and vouchers. For each consumer journey, we consider the opportunities it presents for mobile operators.

Note that each of these consumer journeys is a forward looking hypothesis; each is designed to show what is possible using a combination of mobile connectivity and NFC, rather than what is actually taking place today.

**A consumer journey for a tier 1 retailer**

In this section, the example given is how a leading tier 1 clothes retailer could use a combination of mobile and NFC connectivity to provide a consumer with a compelling user journey. It shows how a tier 1 retailer can use timely personalised offers to both upsell and attract new consumers, drawing on existing consumers’ social network.

The sections in italics highlight how a mobile operator could enable a tier 1 retailer to deliver the kind of experience outlined in the user journey on previous page.

**Planning**

- A clothes retailer’s consumer relationship management (CRM) system flags that Mary Robinson hasn’t bought a winter coat recently. Its transaction records show that Mary tends to update her wardrobe on a regular basis, so she may be considering purchasing a new coat.
- The retailer’s CRM system shows that Mary lives five miles from its store in the centre of New York City.
- The retailer sends Mary’s mobile wallet a message offering her early access to the store’s January 2014 sale – she will be able to enter at 9am – 30 minutes before the general public are allowed in. The message says she can also invite a friend via her Facebook account.

The fashion retailer’s CRM system sends a request to a mobile operator JV to authenticate Mary’s identity and her location via her SIM card. The JV passes the request to Mary’s mobile operator, which simultaneously checks that Mary has opted in to receive messages from the clothes retailer. Once the checks are complete, the retailer’s CRM system uses the operator’s network to send the promotional message to Mary’s wallet (which was supplied by her mobile operator).
As an additional enticement, the message also invites Mary to select a personalised voucher using a link to its web page. There is a selection of three – the first provides a 10% discount on new coats (not those in the sale). The second voucher is for a free cooked breakfast for her and a friend in the store’s café (the CRM system shows that Mary has purchased cooked breakfasts in the store before). The third voucher is for a free scarf with any coat purchased.

Before choosing the voucher, the web page invites Mary to browse through the coats in the store.

Mary clicks on the link to the coats. The retailer’s web application displays the coats in stock in the store in her size. She selects two for a closer look. The store’s web application shows her what the coats look like on a digital mannequin of her measurements. Mary selects the coat she prefers and clicks to reserve it in her size. The website takes her back to the page where she can select her personalised voucher.

Mary isn’t sure she will buy the coat, so she clicks on the breakfast voucher, which is sent to the mobile wallet on her handset. Mary then clicks on the Facebook link to invite her best friend, Heather Taylor, to the store’s sale preview.

When Mary selects the voucher, a browser plug-in sends it to Mary’s wallet. The wallet recognises the voucher and stores it in the appropriate section.

After Heather accepts Mary’s Facebook invite, the retailer’s CRM system asks the mobile operator JV to verify Heather’s identity and location. The JV passes the request to Heather’s mobile operator, which sends a message to Heather’s wallet to ask if she would like to receive location-based messages from the fashion retailer. Once the checks are complete, the wallet on Heather’s handset (supplied by her mobile operator) opens up the retailer’s web application and automatically fills in Heather’s personal details. It also registers the voucher.

The day before the sale, Mary’s and Heather’s mobile operators make the vouchers visible on the home pages of their wallets.

The retailer’s application adds the sale to Heather’s and Mary’s calendars.

Outward travel

On the day before the sale, Mary’s wallet receives a message from the retailer’s store reminding her to come to the sale preview. If she clicks on a link in the message, a navigation application opens up, showing her how to drive via Heather’s house and how long it will take in the current traffic conditions. It also shows her the location of a reserved area in the car park next to the retailer’s store.

Having received a second request from the retailer’s CRM system via the operator JV, Mary’s mobile operator again authenticates her identity and her location via her SIM card. It simultaneously checks that Mary is still opted in to receive messages from the clothes retailer. Once the checks are complete, the retailer’s CRM system uses the operator’s network to send Mary’s wallet the reminder message.

Mary picks up Heather en-route. When she pulls into the store car park, Mary taps her NFC phone against a reader, which opens a barrier enabling her to drive into the reserved (VIP) area next to the store. As Mary gets out of the car, her phone calls up a map of the store showing her where the coat she has reserved is located.

When Mary taps her NFC phone against the reader to enter the car park, an applet on her SIM card authenticates her identity prompting the barrier to open. It also triggers the retail application on her phone to open up and download a map over the mobile operator’s network showing Mary where the coats are.
Heather’s wallet receives a message from the fashion retailer welcoming her and inviting her to click on a link showing a map of the store. Following a request from the retailer’s CRM system via the operator JV, Heather’s mobile operator authenticates her identity and her location via her SIM card. It simultaneously checks that Heather is still opted in to receive messages from the clothes retailer. Once the checks are complete, the retailer’s CRM system uses the operator’s network to send Heather’s wallet the welcome message.

To enter the store, which is closed to the general public, Mary taps her NFC phone against the entry reader, which authenticates her identity and opens the door. Heather does the same. The security guard observes their entry and greets them by name (their names flash up on the screen of his handset).

When Mary and Heather tap their NFC phones against the reader to enter the store, applets on their SIM cards authenticate their identity prompting the door to open. The wallet on Heather’s phone triggers the retailer’s web application to open.

In store

As they enter the store, Mary’s mobile phone automatically connects to the store’s Wi-Fi network. Then the retailer’s application sends an alert. Mary opens the message and the application gives her a personalised selection of the items in the sale available in Mary’s size.

Mary’s mobile operator has an agreement with the retailer to use the SIM card in consumers’ phones to authenticate them on the store’s Wi-Fi network.

While Heather explores the store, Mary makes her way to the coats section where an assistant has the garment she chose online waiting in her size. She tries it on, but decides she doesn’t like the texture. In the changing room, Mary taps her handset against an NFC tag on the garment. The store’s web application shows her the sizes and colours that are in stock, the material and where it was manufactured. It also asks her if she would like to buy the coat. Mary clicks no, so the store’s web application then directs her to the other coat she looked at closely online.

Mary tries this coat on and then taps the NFC tag on the garment with her phone indicating she intends to buy. The application then shows her a matching hat and scarf, in the sale, that go well with the coat. It also indicates where they are in the store. Mary calls Heather and they look at the hat and scarf together. Mary decides she likes them.

When Mary taps her handset against the NFC tags, the retailer’s application use the mobile network to download relevant information for Mary. Mary uses the mobile network to call Heather.

Transacting

The two women head to a till and Mary pays for the coat, the hat and scarf by tapping her NFC phone against a PoS and entering her PIN code. Mary is awarded 1,000 loyalty points and receives a message reminding her about the free breakfast in the café.

When Mary taps her NFC phone against the PoS to buy the clothes, her SIM card, combined with the PIN code, authenticate her identity. The wallet registers the transaction, records an electronic receipt and the retailer’s CRM system registers the loyalty points. The CRM system uses the mobile network to update the application on Mary’s phone, which then alerts her to the free breakfast in the café. The wallet also updates Mary’s budget.

Heather found a shirt she likes in the sale. She taps on an NFC reader on the shelf to add it to the shopping cart in the retail application. When she gets to the checkout, she taps her NFC phone against a self service PoS terminal which registers the shirt in her shopping cart. Her wallet asks if she would like to use the 10% voucher and shows her what the final sum will be. She taps her phone against the terminal again to confirm and enters her PIN code. Heather receives 500 loyalty points and a message asking her to confirm that she is a UK size 10 to help with future purchases.

When Heather taps her NFC phone against the PoS reader to pay for the shirt, her SIM card, combined with the PIN code, authenticate her identity. The wallet recognises the transaction and ask her if she would like to apply the 10% voucher. Again, the wallet records an electronic receipt and uses the cellular network to notify the retailer’s CRM system of the loyalty points. The CRM system uses the mobile network to update the application on Mary’s phone, which then asks her to confirm her shirt size.
Post transaction

- The retailer’s web application on Mary’s phone thanks her for introducing Heather to the store and rewards her with another 2,000 loyalty points.

  The retailer’s CRM system uses the mobile network to update the retailer’s application on Mary’s phone, with the message of thanks and the loyalty points. The application also adds the loyalty points into the wallet.

- Mary and Heather head over to the café and choose a cooked breakfast. Mary pays by tapping her NFC phone against the PoS terminal, which asks if she would like to apply the breakfast voucher. She confirms and taps her phone again to complete the transaction.

  When Mary taps her NFC phone against the PoS her SIM card authenticates her identity. The wallet registers the transaction, applies the voucher and records an electronic receipt.

- While she eats, Mary checks the digital record in her wallet application and it shows both transactions, together with the remaining balance in her current account. It also flags that she has used 10% of her clothes budget for 2014.

- On the way out of the store, Mary taps her NFC handset against an exit tag. Her phone receives a message inviting her and Heather to an exclusive drinks reception in February to view the store’s spring collection. Mary checks with Heather and she clicks a button to accept the invite, which then stores the appointment in both their calendars.

  When Mary taps her NFC handset against an exit tag on the way out, the store application is updated over the mobile network, prompting it to send Mary an alert, inviting her and Heather to the drinks reception. When Mary accepts the invite, the mobile network updates the retailer’s CRM system, which then uses the mobile network to add the appointment to their calendars.

Return travel

- When they reach the car park, Mary’s phone displays how long it will take to drive to her office and how long it will take to drive home, via Heather’s house in the current traffic conditions.

  Mary’s mobile network registers that she has reached the car park and sends her wallet a message with the real time journey information.
A consumer journey to a high street

In this section, we give an example of how a consumer could use a combination of mobile and NFC services to plan and enrich a shopping trip to the high street, followed by a trip to the theatre. It shows how local authority, independent retailers, the restaurants and entertainment venues can work together to draw consumers into town and spend money. It also highlights how a versatile mobile wallet could work with a range of applications to give consumers timely offers and access to services.

The sections in italics highlight how a mobile operator could enable retailers and entertainment providers to deliver the kind of experience outlined in the user journey above.

Planning

- Tom Berry, who lives in a small Yorkshire village, plans to take his teenage daughter, Tracey, on a surprise shopping and theatre trip to city of York for her birthday. He looks at the web site of one of her favourite shoe shops and sees a 10% discount voucher valid for the coming weekend. A button invites him to download a digital version of the voucher into his mobile wallet and add shoes to the shopping list in the wallet. He clicks on the link and his phone alerts to let him know that the voucher is now in his wallet. An incoming message invites him to click a link to receive regular news and offers from the shoe shop. Tom decides to pass.

Tom’s mobile operator supplied his mobile wallet. It also asked him to download a plug-in for his browser (developed by a joint venture between the mobile operators), which enables web applications/web sites to send vouchers and other information to his wallet. When Tom clicks on the link, the plug-in directs the request to his mobile operator, which then delivers the NFC-enabled voucher to his wallet over its network. The operator’s mobile commerce system simultaneously asks the store’s CRM system whether it would like to add Tom to its database. The CRM system confirms and the operator sends Tom’s wallet a message asking whether he would like to receive messages from the shoe store. As Tom doesn’t respond, the operator doesn’t send his details to the retailer’s CRM system.

- Next, Tom checks out the web site of a new theatre in York and finds two tickets for an edgy production he thinks his daughter will enjoy. It is at 8pm on Saturday. He buys them using his mobile wallet, which asks him to enter a PIN code to confirm the transaction.

- He also clicks on the option to have NFC-enabled versions of the tickets sent to his mobile wallet. Again, his phone alerts him when the tickets arrive, along with a message inviting him to click on a link to receive regular information from the theatre. This time he clicks on the link, prompting an icon for the theatre’s web application to appear on his phone.
When Tom clicks on the link to buy the tickets via his wallet, the mobile operator uses the SIM card and the PIN code to authenticate his identity and then delivers an electronic receipt to his wallet. When Tom clicks on the NFC tickets option, the plug-in directs the request to his mobile operator, which then delivers the tickets to his wallet over its network. The operator’s mobile commerce system simultaneously asks the theatre’s CRM system whether it would like to add Tom to its database. The CRM system confirms and the operator sends Tom’s wallet a message asking whether he would like to receive messages from the theatre. When Tom confirms, the operator authenticates his identity and location and passes his details on to the theatre’s CRM system.

Finally, Tom opens the York city application, which is already installed on his phone, to see if he has any relevant offers, vouchers or town centre information. He finds a message about two appealing new dishes at the Thai restaurant he and his daughter like. Tom clicks on the link to take him into the restaurant’s web application and books a table for 6.30pm on Saturday. The application recognises him and asks if he would like the same table as his last visit. He clicks yes and his phone alerts him as the booking is added to the itinerary built into his wallet.

Having registered the theatre and restaurant bookings, the city application automatically displays the different travel options from his house to the city centre. When he chooses the drive option, the application offers the pre booking service. As Tom decides to book a parking bay for him near the theatre at a 50% premium to the cost of normal parking. As it is a special occasion, Tom clicks ‘yes’ and chooses a 3pm to 10pm time slot. Tom enters a PIN code in his wallet to verify the transaction and he clicks on a link to request an NFC-enabled receipt, which then arrives in his wallet.

An alert from city application arrives saying that Tom now has enough local loyalty points to qualify for a reward. When he clicks on the link, Tom can choose from a 20% voucher for participating retailers, two free tickets for the next performance by the council sponsored orchestra or free travel on local buses for a week. He chooses the 20% voucher, which then arrives in his wallet.

The city application uses the mobile network to send him the alert, followed by the NFC-enabled voucher, which is recognised and stored in his wallet.

Outward travel

On Saturday, Tom and Tracey begin the 30 minute drive into York. Tom’s wallet alerts him to an accident on the main road into the city. As Tom’s phone is docked in his car, the vehicle’s audio system reads out the message. Tracey turns on the car’s navigation system and asks it to find a different route into York.

Tom’s wallet uses information from the mobile network to detect that he has begun his journey into York. It then checks the city application, which flags the accident, prompting the wallet to alert Tom with a message.

When they get to the car park, Tom taps his phone on an NFC reader to open the barrier.

When Tom taps his NFC phone against the reader to enter the car park, an applet on his SIM card authenticates his identity and his car park receipt, prompting the barrier to open.

As he gets out of the car, Tom checks his wallet. Its home page is displaying the shoe shop voucher, the local loyalty voucher and the restaurant and theatre bookings, plus an alert from the city application that the city walls (a major tourist attraction) are now open to the public again after renovation work. He also checks his shopping list – it contains the shoes, plus a reminder to buy milk and bread.

Using location data from the mobile network, the wallet automatically pulls up relevant information, vouchers, bookings and tickets. Tom has pre configured the shopping list in his wallet to remind him to buy basic groceries if his transaction record shows he hasn’t bought any in the past five days.
In store

- Tom tells Tracey he plans to treat her to a new pair of shoes and he suggests they head to the shop he looked at online. When they get to the store, Tom and Tracey tap an NFC tag to check in. The shop’s web application opens on Tracey’s phone and asks her if she is still a size 4 in shoes. She clicks ‘yes.’ Tom’s wallet alerts him to ask if he would like to use his voucher on this visit. He clicks ‘yes’.

When Tracey taps her NFC phone against the check in tag, an applet on her SIM card authenticates her identity and Tracey’s wallet triggers the retailer’s web application to open. When she confirms her shoe size, the retailer’s CRM system is updated via the mobile network. When Tom taps his NFC phone against the check in tag, Tom’s wallet registers he is in the shoe store, but doesn’t use its web application. It then pulls up the voucher and sends an alert.

- On the shelves, Tracey finds two pairs of shoes she would like to try on. She taps her phone against the NFC tag on each shoe and a shop assistant soon arrives with size 4 samples.

When Tracey taps her NFC phone against the tags on the sample shoes, an applet on her SIM card authenticates her identity and the retailer’s web application uses the mobile network to send an alert to the staff on duty in the stock room. The alert shows them which shoes Tracey wants to try on and which size. The information is also registered by the store’s CRM system.

Transaction

- Tracey chooses a pair of shoes and they head to the till to pay. When Tom taps his phone on the PoS terminal, the preconfigured voucher is automatically applied. He taps his phone again to confirm the transaction and then keys in his PIN code and an electronic receipt arrives in his wallet. The York city applications alerts Tom, suggesting he uses the town’s new free gift wrapping service, located next to the tourist office.

When Tom taps his NFC phone against the PoS to buy the shoes, his wallet automatically applies his preconfigured voucher and then uses his SIM card, combined with the PIN code, to authenticate his identity and complete the transaction. It generates an electronic receipt. As the transaction happened in York, Tom’s wallet activated the York city application. It then alerts him about the gift wrapping service. Tom has configured his wallet to share some information with the city application.

Post transaction

- The store application on Tracey’s phone sends her an alert asking her whether she has bought the shoes. She clicks ‘yes’. It rewards her with 200 loyalty points, wishes her a happy birthday, and then doubles the reward to 400 points.

The store’s CRM system registers that a new consumer (Tom) has just bought the shoes Tracey tried on. It uses the mobile network to send Tracey an alert and when she confirms the transaction, it updates her account with the loyalty points and sends Tracey another alert to notify her.

- Next, they take a stroll around the city walls. During the walk, Tom’s phone sends an alert – it is a message from the city application telling him his favourite bike store in York is organising a ride next Sunday. The message suggests he drops into the store for more details. The application simultaneously displays a map with the store’s location (200 yards away) and notifies him that the local loyalty voucher is valid for that store. The application then alerts him that the tourist office is giving free guided bike tours every Wednesday. He clicks on the message, which opens a link to a page with more details. He then clicks on a button to add a bike tour on Wednesday evening to the itinerary in his wallet.
Matching Tom’s location (using information from the mobile network) with his interests (using information from his wallet), the city application downloads the message from the bike store and alerts him. (Tom has configured his wallet to show his preferences with selected applications). When Tom opens the message, the application downloads a map over the mobile network showing him where the store is with respect to his current location. It also alerts him to the fact that his local loyalty voucher is valid in the store. As Tom opened the message about the bike shop, the application assumes he likes cycling, triggering the alert about the free guided tour. The tourist office web page includes a plug-in that enables the visitor to book a slot on the tour and add it to the itinerary in their wallet.

In store

- When they reach the bike shop, Tom chats to the shop assistants about the ride and decides he would like to do it. The assistant taps his NFC phone against Tom’s NFC phone to invite him on the ride. When Tom confirms, the trip is added to the itinerary in his wallet.

Being a small business, the bike shop doesn’t yet have a web application and it hasn’t yet installed many NFC tags. However, its shop assistants have NFC-enabled smartphones, which can be configured to transfer information to consumers’ NFC phones when they are tapped together. In this case, the assistant uses NFC to transfer an invite onto Tom’s phone. When Tom accepts the invite, the wallet adds it to his itinerary.

Transaction

- As the weather forecast isn’t good, Tom chooses some mudguards for his bike. When he comes to pay, he taps his NFC phone on the bike shop’s PoS terminal. His wallet asks if he would like to use the 20% voucher. As it is a small value transaction, Tom clicks ‘no’. After he enters his PIN, the transaction goes through and he receives an electronic receipt.

When Tom taps his NFC phone against the PoS to buy the mudguards, his wallet asks him if he would like to apply the voucher. The wallet uses his SIM card, combined with the PIN code, to authenticate his identity and complete the transaction. It generates an electronic receipt.

In store

- At 6.15pm, Tom’s wallet sends an alert to remind him about the restaurant booking. When they get to the Thai restaurant, Tom taps his phone against the NFC tag to check in. The restaurant’s web application opens on his handset and shows an electronic menu with the dishes Tom has ordered before highlighted in bold. A waiter shows them to their chosen table and invites them to click on the menu on Tom’s phone to order their food and drinks.

When Tom taps his NFC phone against the check in tag, an applet on his SIM card authenticates his identity and Tom’s wallet triggers the restaurant’s web application to open. When Tom has chosen the dishes, the web application uses the mobile network to send his selection to the kitchen and the restaurant’s CRM system.

Transaction

- At the end of the meal, Tom taps his phone against the waiter’s mobile PoS terminal. The bill appears in the web application on his phone. Tom checks it and presses pay. His wallet appears, he keys in his PIN code into the PoS terminal and an electronic receipt appears, together with another 100 loyalty points from York City Council.

When Tom taps his NFC phone against the waiter’s PoS, the web application uses the mobile network to download the bill from the restaurant’s CRM system. The wallet uses Tom’s SIM card, combined with the PIN code, to authenticate his identity and complete the transaction. It registers that the restaurant is part of the local loyalty scheme and uses the mobile network to notify the city council’s web servers of the transaction. The web servers respond by sending the loyalty points to Tom’s wallet and to his city application.

When they get to the theatre, Tom again checks in using NFC. The theatre web application asks if he would like to pre order some interval drinks, which he can select from a menu. This he does. He uses his wallet to pay. As the transaction is less than £20; he doesn’t need to enter a PIN code. An electronic receipt arrives in his wallet.
When Tom taps his NFC phone against the check in tag, an applet on his SIM card authenticates his identity and Tom's wallet triggers the theatre’s web application to open. When Tom clicks on the link to buy the drinks using his wallet, the mobile operator again uses the SIM card to authenticate his identity and then delivers an NFC-enabled receipt to his wallet. The web application uses the mobile network to notify the bar of Tom's drinks selection and assigns an ID code to the order.

Post transaction

- Five minutes before the play is due to start, the wallet pulls up the tickets and alerts Tom. He shows his phone to the attendant, which points them to their seats. Tom and Tracey switch off their phones. At the interval, Tom and Tracey head to the bar and switch on their phones. They tap the NFC tag and the bartender brings them the drinks they ordered earlier. Tom then gets an alert from the city application that his parking ticket will expire in the next 30 minutes. It also notifies him that he has accumulated enough York loyalty points to extend his parking for an additional two hours at no additional charge – Tom selects the confirm option. They head back into the auditorium and again switch off their phones.

The itinerary in the wallet registers that the play is about to start and displays the tickets on its home screen and sends an alert. When Tom taps his NFC phone against the bar tag, an applet on his SIM card authenticates his identity. The tag registers Tom's arrival and a screen on the other side of the bar alerts the staff to the ID number of his drink's order. The city application uses location information from the mobile network to see that Tom is still in York. It then uses the mobile network to send him an alert about the parking.

Return travel

- At the end of the play, Tom and Tracey switch on their phones and head back to the car park. Tom taps his phone against an NFC reader to open the barrier and a message arrives in his wallet from York City Council thanking him for the visit and advising him of night time road works on the route home. Tracey uses the in car navigation system to find an alternative route back their village.

When Tom taps his NFC handset against an exit reader on the way out, an applet on his SIM card authenticates his identity and the wallet uses the mobile network to notify the city council’s web servers of his departure. The web servers respond by using the mobile network to send the wallet and the city application a message alerting Tom to the road works.
A consumer experience of mobile enabled vouchers and loyalty

In this section, we give an example of how the timely delivery of coupons and loyalty can influence buying decisions. It highlights how a combination of mobile connectivity and NFC can be used to entice a consumer into a store and then persuade them to complete a transaction.

The sections in italics highlight the role of the mobile operator in delivering the kind of experience outlined in the user journey above.

Planning

- While Pierre is browsing on his PC for a new camera, he sees a 10% discount voucher on electronics on the web site of a department store in the centre of Paris. He clicks on the button to download the voucher into his mobile wallet. His phone alerts him that the voucher has arrived and invites him to download the department store’s application in exchange for 100 loyalty points. This he does.

Pierre’s mobile operator supplied his mobile wallet. It also asked him to download a plug-in for his browser (developed by a JV between the mobile operators), which enables web applications / web sites to send vouchers and other information to his wallet. When Pierre clicks on the link, the plug-in directs the request to his mobile operator, which then delivers the voucher to his wallet over its network. This is a live request from the mobile operator to the loyalty service of the retailer, issuing a unique voucher for Pierre. The plug-in also prompts the delivery of the invite to download the department store application.

- When Pierre opens the department store application, it asks him to register by entering his personal details. He clicks on the auto fill option, authorising his mobile wallet to authenticate him on the application. The wallet automatically fills in the form with Pierre’s address, mobile number, age and interests, before asking Pierre to confirm, which he does. The application signals that he now has 100 loyalty points and displays the most popular electronic products with men of his demographic profile.

Pierre’s SIM card securely stores his personal data, such as his address, gender, date of birth, interests and national insurance number. When he authorises the wallet to authenticate him on the retail application, it identifies the appropriate data on the SIM card and supplies it to the department store application. Behind the scenes, the wallet also sends an authentication message to the department store’s application confirming the authenticity of the data, so the retailer can be confident that Pierre has supplied accurate information.
Outward travel

- Pierre decides to head into Paris to get some hands-on time with a newly released camera he is interested in. As he reaches the main shopping street, his phone sends another alert. It is an alert from his mobile wallet to say he has received a voucher from the department store, entitling him to triple loyalty points on any purchases made today. He decides to head for the store.

The department store has used an application programming interface (API) provided by Pierre’s mobile operator to request that his wallet download a voucher from the store’s CRM system when Pierre’s handset comes within half a mile of the store. As Pierre has downloaded the department store application, the wallet knows he is interested in such offers and alerts him to the voucher’s arrival.

In store

- As Pierre enters the store, he taps his phone on the welcome tag and his wallet alerts him to the two vouchers – the 10% discount and the triple loyalty points – and then opens the store application, which points him in the direction of the electronics department. He follows the directions and asks one of the store staff to show him the camera he is thinking of buying. Pierre takes a few test shots with the camera and decides it is right for him, but he knows he can get it slightly cheaper online, even after the 10% discount.

When Pierre taps his NFC phone against the check in tag, an applet on his SIM card authenticates his identity. Now aware of his exact location, the wallet alerts Pierre to the two vouchers and then opens the department store application on his behalf.

Undecided, Pierre taps the NFC tag on the poster about the new camera and the department store’s application tells him his triple points voucher means he will receive 900 loyalty points if he buys the camera today – that is equivalent to £9 off his next purchase. That tips the balance – Pierre takes the camera over to the check out.

When Pierre taps his NFC phone against the poster, an applet on his SIM card authenticates his identity. The poster tap also alerts the department store application to his interest in the camera, which then calculates that buying it will entitle him to 900 loyalty points from the store CRM system.

Transaction

- After the shop assistant has scanned the camera, Pierre taps his phone against the NFC tag at the PoS. His wallet asks him if he wants to redeem his two vouchers – the 10% discount and the triple loyalty points. He confirms he does and again taps his phone on the PoS, which now shows the new balance. Pierre enters his PIN and taps his phone again to complete the transaction. His wallet displays a digital receipt, which shows that he has redeemed the vouchers, and invites him to re-open the department store application. Pierre clicks on the link – the application opens and shows him he now has 1,000 loyalty points and which lenses are compatible with his new purchase.

When Pierre taps his NFC phone against the PoS to buy the camera, his wallet asks him if he would like to apply the vouchers. After he confirms, the wallet uses his SIM card, combined with the PIN code, to authenticate his identity and complete the transaction. The wallet notifies the department store application of the transaction, which then uses the mobile network to download the loyalty points and lens information from the store CRM system. The wallet generates an electronic receipt with the link to the department store application.

Summary

The consumer journeys outlined in this section highlight the pivotal role mobile operators can play in persuading customers to visit a store, by enriching the experience in store and in providing useful information after the customer has left the store. In each case, operators can use their capabilities to provide a suite of valuable services to retailers and their customers (figure 9). These capabilities could also be applied in other vertical sectors.
Figure 9: Operator aggregated service offering in retail. Source: GSMA
5. The key technical enablers

Delivering the kind of consumer experiences outlined in the previous section will depend on the widespread use of technical standards in key areas, such as digital coupons and loyalty programmes, to allow straightforward redemption and accumulation at the PoS. The widespread use of standards will also provide consumers with a consistent and increasingly familiar experience that will increase their comfort level with this new way of interacting with retailers and brands. Ideally, the mobile commerce ecosystem will use the same standards, protocols and processes on all devices and operating systems. Moreover, a standardised approach will help generate economies of scale and strengthen the business case for the deployment of contactless PoS terminals in transactional locations. To help create a common roadmap, communication toolkit and technical process, the GSMA is engaged in several cross industry initiatives to decipher the consumer journey at the PoS, identify missing pieces and deliver consistency to retailers and consumers alike.

The point of interaction (PoI)

It is particularly important that contactless interactions provide users with a consistent experience. Ideally, payments should be completed, coupons redeemed and loyalty points accumulated using a standardised process that consumers and store staff can become familiar with. There are typically several key elements involved in a PoI – the PoS terminal, the handset, the SIM card, the voucher, the loyalty programme, the payment network and the back end system. To create a consistent consumer experience, the suppliers of each element need to work together and create application programming interfaces (APIs) that will enable the data to be exchanged in a standardised way (figure 10).

Figure 10: Operator consistency of ‘technology and interaction’. Source: GSMA
The GSMA contributes to the cross industry NFC Delivery Steering Board (NFC-SB)\(^\text{12}\), which is developing a model etiquette (figure 11) for the use of NFC at the PoS and other points of contact (e.g. ticketing) that support and encourage the use of multiple payment methods and applications.

The NFC-SB approach is designed to pave the way for the widespread deployment of an NFC infrastructure that can support multiple applications, encourage new service propositions and generate new revenue.

![Figure 11: NFC-SB PoI ‘Etiquette’. Source: NFC Steering Board](image)

The NFC-SB has also identified the key steps in the consumer journey at the PoI (figure 12). Each of these steps needs to be optimised to ensure the overall interaction is quick, straightforward and convenient, while ensuring that transaction costs, including interchange fees, are kept to a minimum.

![Figure 12. Key steps at the point of interaction. Source: NFC Steering Board](image)

\(^\text{12}\) Other members of the NFC-SB include: ITSO, HSBC, World Pay, Visa, Mastercard, WEVE, O2, Aimia, British Retail Consortium, UK Cards Association, Boots, CapitalOne, Spar, Lloyds TSB, Marks & Spencer, RBS, McDonalds, TescoBank, Vodafone and WTSmith
The GSMA advocates that communication between the PoS terminal and the applications on the SIM card are governed by standard NFC and GlobalPlatform protocols. The PoS terminal will also need an interface (which should be standard across all operators) that enables it to communicate with the SIM card. If this interface isn’t standardised, retailers will have to implement different interfaces for different operators’ SIM cards, creating greater complexity and higher costs.

To support the development of a standardised PoI, the GSMA has published the NFC Mobile Wallet-PoS Proposal – a technical proposal document for an interoperable interface between the in-store PoS terminal and a mobile wallet. The goal is to create an open specification that is implemented across the industry. To that end, the GSMA has sought feedback from retailers, loyalty and couponing scheme operators, and third party developers or suppliers of related hardware and software. The specifications are now under development.

Digital coupon standardisation

Rather than creating their own standards, mobile operators and the broader ecosystem need to support the existing digital couponing standards, which have a global footprint and are recognised and likely to be adopted by merchants and fast moving consumer goods (FMCG) brands. The GS1 Group, an international not-for-profit association with member organisations in more than 100 countries, recently completed new digital couponing standards (figure 13).

These standards are likely to be widely adopted – the GS1 Group, which also sets the standards for barcodes, has widespread support among retailers and their suppliers around the world.

Trusted service manager

The GSMA is advocating the use of the GlobalPlatform protocols to ensure interoperability between a retailer’s trusted service manager (TSM) and a mobile operator’s platforms for managing SIM cards over the air (OTA). The GSMA paper, NFC Mobile Network Operator – Service Provider Interface, sets out business process implementation guidelines designed to facilitate consistent deployment and management of NFC-based services.

Figure 13: Digital coupon management process. Source: GS1

On going work

The GSMA Mobile Commerce programme is:

- Analysing the consumer journey across different sectors to identify the technical enablers required for each element. For example, the GSMA is developing a standardised approach for the use of the SIM for the redemption of vouchers and the accumulation of loyalty points at the PoS.
- Interviewing a selection of mobile wallets providers to understand their services and consumer adoption, and provide an overview of what is available in the market place.
- Sharing knowledge and experience across countries and help individual mobile operators and their partners benefit from economies of scale.

6. The opportunities for mobile operators

The consumer journeys outlined earlier in this paper demonstrate the multiple ways in which mobile connectivity and NFC can be combined to create a compelling mobile commerce proposition. Mobile operators can play a number of roles in enabling these services (figure 14).

The GSMA believes the primary opportunities for mobile operators in the retail sector are to:

6.1. Create a secure business-to-business proposition for tier 1 retailers, either individually or as a framework developed with other mobile operators.

6.2. Work with other mobile operators to develop a framework infrastructure that tier 1, 2 and 3 retailers can use to provide mobile commerce services.

6.3. Provide a toolkit to enable retailers and service providers in other industry sectors to easily integrate payment, coupons and loyalty services into their applications.

6.4. Provide a flexible core wallet application that consumers can use to access a wide range of services, encompassing retail, transport, entertainment and community and government services supported by a mechanism that will enable consumers to download information and vouchers into their wallet.

6.5. Use the SIM card to authenticate consumers and increase the security of mobile commerce services.

Figure 14: New business opportunities breakdown. Source: GSMA
6.1. A business-to-business proposition for tier 1 retailers

The GSMA believes that mobile operators could provide tier 1 retailers with an end-to-end mobile commerce proposition, encompassing NFC and non-NFC elements. They could deliver this either individually or by collaborating with other mobile operators.

However, the first option – a single operator managed service offering – will require the development of a complex value chain involving significant costs (figure 15). In this case, the mobile operator will have to work directly with a large number of third parties, such as application developers, loyalty programmes and digital signage providers, as well as retailers.

The second option – a joint operator managed service offering – could use a framework architecture to generate economies of scale, and reduce costs and complexity. The use of a common framework architecture across operators would remove the need for a direct relationship between each specialist supplier and individual operators.

An application developer, for example, would then be able to create an application that is compatible with the framework, knowing it will work across multiple mobile networks. This means that individual mobile operators will share many of the costs with other operators and their suppliers will gain economies of scale (figure 15).

Mobile operators could take a similar approach to serve tier 1 players in other sectors, such as entertainment and hospitality.

Note, a joint managed service offering could be run by a dedicated joint venture, co-owned by the mobile operators in a specific market. The joint venture could have its own board and senior management team charged with providing services to both operators and retailers. This arm’s length approach may allow for faster deployment than a process that relies on staff from individual mobile operators working together on specific projects. However, a dedicated joint venture may have to adopt a lowest common denominator approach to ensure it serves all of its owners equally. Moreover, such collaborations may be closely scrutinised by regulators and some joint ventures may be subject to merger control.

Figure 15: Value chain analysis on option 1. Source GSMA
6.2. A framework infrastructure for tier 1, 2 and 3 retailers

Working together, mobile operators could develop a framework infrastructure that would represent an end-to-end proposition for tier 1, 2 and 3 retailers, which could also be applied to other sectors, such as entertainment, transport and parking. The framework should support NFC and non-NFC elements, taking into account the complete consumer journey and how it fits with broader town centre experiences.

As part of this framework, mobile operators could provide a mobile wallet and/or a home page application (a mobile commerce container) that supports an array of generic services, such as loyalty, offers and coupons across retail, tourism, transportation and parking. This core, generic offering could be supplemented by some operator specific value added services, such as exclusive offers and payment services (for more on this, see the section on a flexible wallet proposition on page 35).

This broader framework would need to be supported by consistent industry wide messaging to educate both consumers and staff working in many different merchants.

Ideally, the industry would also create a consistent iconology that will help consumers identify where they can use their devices to interact with posters, signs and terminals: the use of a consistent icon, such as the GSMA NFC or the EMVCo Contactless Indicator, could also help give consumers confidence in NFC services.

Mobile operators could also develop a shared knowledge framework that would enable service providers to make vouchers, loyalty programmes, offers and information available to consumers on different mobile networks using different wallets/containers. This framework could be underpinned by partnerships between multiple operators, associations, loyalty providers and FMCG brands that enable the value chain to share data and personalise the consumer journey. For example, consumers could be sent offers, coupons and relevant information based on their location, buying patterns and brand preferences.

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Source: www.gsma.com/mobilenfc/news-information-resources/nfc-contactless-marks
6.3. A toolkit that enables third party applications to work with the SIM card and the mobile wallet

There are essentially three ways in which a mobile operator can enable retail application developers to harness its assets to support their mobile commerce services. These approaches can be thought of as an application led model, a wallet led model and a flexible hybrid model.

- Application led model:
  In this case, the mobile operator provides a toolkit to enable developers to integrate core functions (authentication, payment, couponing, loyalty), secured by the SIM card (the UICC), within the retailer’s own application.

  This approach creates an open platform that enables third parties to use mobile network and NFC capabilities, and the SIM card to secure transactions. However, it also requires consumers to navigate into many applications from different retailers and is independent of the mobile operator’s wallet.

- Wallet led model:
  In this case, operators provide a set of requirements whereby the retailer integrates the core functions (authentication, payment, couponing, loyalty) fully into the mobile operator’s wallet. However, many retailers will want to have their own application and maintain a direct link with their consumers.

- Flexible hybrid model:
  In this case, the mobile operator provides an open API platform, supported by an SDK, that enables the retailer to use the SIM card to support authentication, coupons, loyalty and payments. The consumer can then access these core services either through the mobile operator wallet, a home page container or through the retailer’s application. This is a flexible approach that should appeal to most retailers and loyalty providers and enable support for both coupons supplied by brands and retailers. The toolkit could also enable other wallets to interact and exchange data with the mobile operator’s wallet, so a customer could, for example, redeem a coupon stored in a second wallet, while completing a transaction with their primary wallet.

The role of APIs

The availability of open, standardised APIs makes it easier for the developers of retail applications to use the secure element in the SIM card to support services such as payment, couponing and loyalty. These APIs should enable the retailer to easily manage the lifecycle of an applet running on the SIM card. It should be straightforward to install and register the applet, and then delete it, if and when it is no longer needed. Application developers will also need access to APIs to enable each interaction with the SIM card and to enable the retailer to source usage statistics.

Monetisation opportunities

In each case, the mobile operator could charge service providers for delivering targeted adverts into the wallet or the home page container. The operator could also earn a commission on coupon redemption or loyalty points usage and a reward when a consumer downloads an application via a link in the wallet or the container. Moreover, the operator could earn revenue for storing coupons and loyalty points securely on the SIM card.
6.4. A flexible wallet application

Ideally, the wallet will be flexible enough to support the entire consumer journey, encompassing retail, tourism, parking, evening and night time dining and entertainment, community services, health, fitness and other aspects of daily life.

As well as supporting generic services, such as coupons and loyalty programmes, the wallet could have some kind of location based services section that enables consumers to access and book local amenities, such as parking or bike hire. This section would enable consumers to browse the same services no matter which mobile operator they use, supporting community services (open source), parking, local information, independent retailers and transportation.

The wallet could also enable the user to create their own ‘pages’ by tapping links on web pages and applications to add vouchers, activities, products and services to their itinerary and shopping lists. This approach would enable consumers to create their own town and retail experiences. Third party applications could also deliver small quantities of information, such as offers, into the wallet and allow linking from the wallet to the application and vice versa (figure 17). Ideally, consumers will also be able to add products or events into the wallet’s built in shopping list or itinerary by tapping posters with an NFC-enabled handset. The wallet could also search the web for offers on the products captured on the consumer’s shopping list.

![Figure 17: Flexible Wallet 'Shopping List'. Source: GSMA](image-url)
Furthermore, the wallet could have an area to support operator specific value added services, such as exclusive offers and content, which will enable the mobile operator to have their own distinctive mobile commerce proposition. The mobile operator could also create a mechanism that enables the transfer of data from a web site or mobile commerce site to the mobile wallet or home page container. This would enable the retailer to create a stronger link between its online presence and its bricks and mortar outlets.

6.5. Consumer authentication

The success of mobile commerce will depend on maintaining the trust of both merchants and consumers. That will require mobile operators and their partners to ensure all interactions/touch points are secure and are underpinned by robust authentication processes.

A mobile operator could use the SIM card to authenticate consumers at different levels of security. For example, some service providers may, subject to the consumer’s agreement, want to be able to check an identity card or passport number, depending on the task the individual is trying to complete (figure 18). Mobile operators will need to develop business models to underpin such authentication services.

![Image: SIM rented – identity / security. Source: GSMA](image-url)
7. Next steps

In this section, we summarise the steps mobile operators can take in the near term to support the rollout of mobile commerce services.

**Within the mobile industry, mobile operators could:**

- Begin by developing a compelling and secure mobile commerce proposition for both consumers and retailers.
- Regularly review specifications and guidelines to adapt to the way in which consumers are using mobile commerce services.
- Collaborate with other mobile operators in their market to create a core set of services and common approach that will provide consistency for consumers and retailers.
- Work with the GSMA to benefit from the work already undertaken in other markets and benefit from economies of scale.

**Beyond the mobile industry, mobile operators could:**

- Build relationships with forward thinking retailers to hone a broad mobile commerce proposition that can ultimately support the entire consumer journey.
- Engage with retail associations and local authorities to develop a mobile commerce proposition tailored to the needs of high streets that will support local and national economic growth.
- Leverage government led initiatives to support digital services.
- Work with banks to provide consumers with a wide selection of mobile payment services.
- Support standards for digital couponing.
- Work with loyalty providers (1st and 3rd party) to support PoS accumulation and redemption of loyalty points.
- Work with industry associations, retailers, banks and other mobile operators to define a consistent transactional journey for consumers and retail staff.
- Provide educational materials to retail staff and consumers on that transactional journey.

The GSMA is working with the mobile industry over the next 9-12 months to:

- Define technical specifications for the mobile industry to support the implementation of loyalty, couponing, parking, community services within mobile commerce.
- Develop best practice business references for adoption which will support the mobile operators in the required collaborative approach for these services.
- Work with regional teams in Latin America, North America, Middle East, Asia and Europe to understand the needs and requirements from the mobile operators and to support them in the best practice implementation.
- Host GSMA led events in these regions to encourage collaboration between local mobile operators and ecosystem providers in the mobile commerce market.

Although this paper is primarily concerned with the retail sector, many of the recommendations it contains will also be applicable to other vertical sectors.

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