Introduction
Consumer adoption of Smart Phones is growing internationally at a phenomenal rate. Over 300,000 mobile applications (Apps.) have been developed since 2007, and these Apps have been downloaded over 10.9 billion times. In an international context, the mobile payments market is expected to quadruple by 2014, to US$630 billion in value worldwide. It is predicted that the range and extent of products and services available through Smart Phones will increase exponentially over the coming months and years, as more and more commercial entities realise the potential of Smart Phone based M-Commerce. Thus, the M-Commerce channel is expected to achieve in the next three to four years, what the E-Commerce channel has achieved in the last fifteen years.

While Smart Phones present significant M-Commerce opportunities for all organisations, the M-Commerce channel is entirely contingent on consumers’ willingness to not only use these devices to engage in transactional tasks such as bookings, ticketing and accessing information on products and services, but rather to actually make an M-Payment using the Smart Phone, and as such complete the M-Commerce transactional loop. Thus, M-Payments are a critical enabler of the true commercial value of the Smart Phone.

Location Based Smart Mobile Media Services (SMMS)
Location Based Services (LBS), more widely known today as Smart Mobile Media Services (SMMS), transform the consumers personal Smart Phone into a multi-channel shopping device, while also serving as a direct location, task and context specific marketing tool for retailers. The development of Smart Mobile Media Services has resulted in a substantial increase in consumer’s mobile web interaction with retailers via their personal Smart Phones, especially in conjunction with M-Couponing.

Smart Mobile Media Services (SMMS) can be considered as push or pull-based models and these two models have different implications for businesses engaging in M-Commerce.

Pull-Based SMMS
Using the pull-based Smart Mobile Media Services model, consumers request information from a service based on their location, task and/or preferences. This type of location based Smart Mobile Media Service is defined as “on demand”, as the consumer requests (pulls) specific information and/or services to their Smart Phone, such as location of the nearest ATM or coffee shop. Promotional material, such as discount coupons and offers, for nearby services may also be pulled to the Smart Phone by the consumer.

In pull-model Smart Mobile Media Services, consumers exercise full control over the interaction: the decision to initiate contact with the retailer is volitional, and the consumer only has to provide information if they chose to complete the transaction.

Push-Based SMMS
Using the push-based Smart Mobile Media Services model, consumers’ are open to, and accepting of, unsolicited location based marketing and promotional activities, pushed to their Smart Phones by retailers in their relative proximity. Under the push-based Smart Mobile Media Services model, consumers exercise less control over their interaction with the retailer as push based Smart Mobile Media Services...
are automatically sent to a consumer’s Smart Phone based on the consumer’s location, and their defined preferences/subscriptions.

The Four Stage Model of SMMS Evolution

While many studies have reported on consumer’s use of their phones for SMS, MMS, and Internet access, very little is truly known about consumers’ perceptions of using Smart Phones for purchasing products and services, and paying for them through their Smart Phones. It is generally accepted that there are four stages of growth in the provision of Smart Mobile Media Services (SMMS) to consumers via a Smart Phone. The Four Stage Model of SMMS Evolution identifies these stages as:

- **Stage 1:** Receive/retrieve information on events, activities, facilities, and services, etc.;
- **Stage 2:** Facilitate transactional tasks such as reservations, ticketing;
- **Stage 3:** Engage in push/pull based Smart Mobile Media Service activities; and,
- **Stage 4:** Make an M-Payment.

Growth forecasts for Mobile Commerce are positive. According to The Yankee Group [1], mobile transactions are expected to exceed $1 trillion by 2015. Forrester predicts Mobile Commerce sales will reach $10 billion in 2012, an increase from the predicted $6 billion this year [2].

Smart Phone applications have already been adopted by retailers in various sectors in Ireland and the UK including:

- the food service sector (e.g. KFC, Starbucks, Subway, McDonalds),
- the retail grocery sector (e.g. Tesco, SuperQuinn, WalMart, Carrefour),
- the banking sector (e.g. NatWest, Ulster Bank, Barclays),
- the hotel sector (e.g. Premier Inn, Fota Island Resort, Gleneagle),
- the IT sector (e.g. Microsoft, Google, Apple),
- the tourism sector (e.g. Dublin Tourism, Trail Kilkenny, Tourism Ireland),
- the retail clothing and footwear sector (e.g. Market Green Shopping Centre Midleton Cork; Letterkenny Shopping Centre; Galway Shopping Centre).

However, in the context of Smart Mobile Media Services (SMMS) most of these Apps are predominantly pertaining to **Stage One of the Four Stage Model of SMMS Evolution**. Thus, there is significant scope for businesses to further develop their Smart Phone Apps, before they realise the true commercial potential of Smart Mobile Media Services for their organisation. Yet this requires significant strategic thinking and business model innovation, with respect to an organisation’s Mobile Commerce business strategy. First and foremost however, organisations’ need to understand consumers’ perceptions of Mobile Commerce and location based Smart Mobile Media Services, and particularly, consumers willingness to make an M-Payment.

Thus, the focus of this first White Paper in the *Smart Mobile Media Services (SMMS)* White Paper Series is to provide an understanding and conceptualisation of consumer perceptions of using Smart Phone transactional services and making M-Payments.

Focus of the Study

Mobile Phone usage in Ireland is one of the largest in Europe per head of population (Figure 1). According to ComReg’s quarterly report (December 2011), Ireland has a 121% mobile phone penetration. In 2010, 1 out of every 2 mobile phones sold in Ireland were Smart Phones (Vodafone Ireland, 2010). This trend has continued in 2011, as Vodafone Ireland reported that 54% of mobile phones sold in the first 5 months of 2011, were Smart Phones and Telefonica O2 Ireland reported a 39% increase in Smart Phone usage in Q1 2011. Thus, for the purpose of this study, the Smart Mobile Media Services Research Group conducted a nationwide online survey of Irish Smart Phone users.

Analysis of the Study

An analysis of the survey results found, that using their Smart Phone, Irish consumers are:

- actively engaged in receiving/retrieving information on events, activities, facilities, and services (Stage 1 of the Four Stage Model of SMMS Evolution);

“**It is generally accepted that there are four stages of growth in the provision of Smart Mobile Media Services (SMMS) to consumers via a Smart Phone.**”
Mobile Commerce: Consumer Perceptions of Smart Mobile Media Services (SMMS) and M-Payments

- strongly willing to engage in transactional tasks such as reservations, ticketing, etc. (Stage 2 of the Four Stage Model of SMMS Evolution);
- strongly willing to interact with pull-based Smart Mobile Media Services, but reluctant to interact with push-based Smart Mobile Media Services (Stage 3 of the Four Stage Model of SMMS Evolution); and,
- strongly willing to make an M-Payment if certain perceived risks are addressed (Stage 4 of the Four Stage Model of SMMS Evolution).

Thus, the issues of greatest concern for organisations relate to consumers' willingness to interact with push and pull based Smart Mobile Media Services Models and consumers' willingness to make an M-Payment.

Push and Pull Based Smart Mobile Media Services Models

Consumers are more willing to purchase products and services that they proactively search for, and pull to, their personal Smart Phones from a trusted retailer. The study shows that consumers are currently engaging in pull-based SMMS, and are strongly willing to engage in these activities to a much greater extent. However, the vast majority of consumers are not currently engaged in push-based SMMS.

The study reveals that consumers engaged in M-Commerce, appear to be very concerned with how retailers communicate their commitment to E-Commerce legislation, pertaining to the online sale of goods and services in Ireland. The study indicates, that a disconnect exists between consumers' perceptions of E-Commerce and M-Commerce, as there is a perceived notion that E-Commerce legislation does not apply to M-Commerce, when in fact the same legislation applies. Therefore, retailers need to proactively increase consumers' awareness of their rights when engaging in M-Commerce, and ensure that the transactional process of purchasing goods and services is as transparent in the M-Commerce environment as it is in the E-Commerce environment.

Under these conditions, the study shows that significant numbers of consumers would be willing to substantially engage, in push-based SMMS, in the future, once trust has been established with the retailer in an M-Commerce environment.

Improving consumers' perceptions of the security and privacy controls employed by retailers is also a critical element in increasing consumer’s Willingness to make an M-Payment. Thus, retailers need to employ the latest technologies to protect the privacy and data of consumers, and once again, to actively communicate to consumers that all M-Commerce transactions are protected by E-Commerce legislation.

The study also reveals that consumers are most willing to make an M-Payment:
- to avoid queuing to pay for a product/service;
- to avail of special offers not available elsewhere (e.g. early booking of concert/cinema tickets); and,
- to avail of a discount for paying for purchases using an M-Payment.

Thus, interpreting these findings, it is clear that convenience plays a key role in determining consumers’ willingness to make an M-Payment. Furthermore, this study has implications for organisations seeking to migrate to an M-Payment environment, as it is clear that organisations should incorporate their M-Payment strategy with their marketing, promotional and pricing activities.

“Consumers are most willing to make an M-Payment to avoid queuing to make a payment; to avail of special offers; and to avail of a discount.”
Preferred M-Payment Models

As part of the study consumers were also asked to consider, and indicate their preference for, four possible M-Payment models. The four models in question were:

1. M-Payments facilitated through an application provided by a Mobile Network Operator (MNO) (i.e.) whereby the payment would simply be debited automatically from your MNO “Mobile-Wallet” (i.e. you maintain a credit balance on your MNO account to facilitate M-Payments);
2. M-Payments facilitated through an application provided by banks, whereby the payment would simply be debited automatically from your bank account;
3. M-Payments facilitated through an application provided by a trusted third-party payment provider (e.g.) PayPal, whereby the payment would be debited automatically from your third-party payment account; and,
4. M-Payments facilitated through an application collaboratively shared by the Mobile Network Operator (MNO), banks, and a trusted third party. 

As revealed in Figure 1, the study shows that the preferred M-Payment model for Irish consumers is one facilitated through an application provided by banks, whereby the payment would simply be debited automatically from their own bank account. However, it is worth noting, that consumers do not currently perceive M-Payments to be a complementary mechanism to paying in cash at a Point of Sale (PoS).

In addition, forty seven percent (47%) of consumers also indicated that they are willing to pay a surcharge for making an M-Payment, from anywhere between 0.25% and 2% (Figure 2).

Willingness to M-Pay for Products and Services

In terms of the types of products and services, consumers are currently most willing to make an M-Payment for event, cinema, transport and flight ticketing; booking accommodation; and, parking and road toll fees (Figure 3). Purchasing books, CDs, DVDs, and Music Downloads feature prominently in the survey results, while fast food purchases, such as for pizza and drive-through, also rank highly. Interestingly however, clothing purchases also rank very highly.

Summary

Smart Phones present organisations with a vast potential of M-Commerce opportunities. For commercial organisations, an understanding of consumers’ willingness to use Smart Phones to engage with push and pull Smart Mobile Media Services (SMMS), and more importantly to make M-Payments, are of paramount importance. This White Paper presents key findings for commercial organisations considering M-Commerce opportunities. The next step for organisations is to examine their business models to ensure that they are sufficiently innovative and flexible, to enable organisations to maximise the return on their M-Commerce investments. The second White Paper in the Smart Mobile Media Services (SMMS) White Paper Series will focus on business model innovation for M-Commerce.

References


Figure 2: Consumers Willingness to Pay a Surcharge for Making an M-Payment

Figure 3: Willingness to M-Pay for Products and Services
Dr. Aidan Duane is a lecturer in Waterford Institute of Technology (WIT) and lectures in Information Technology Skills, Database Development and Integration, Web Development Skills, Information Systems Strategy, and Management Information Systems. He is the Programme Director for the BA (Honours) in Business Information Systems at WIT. Aidan is a Senior Research of Smart Mobile Media Services and is Co-Director of the Smart Mobile Media Services (SMMS) Research Group. Aidan has presented on SMMS research internationally including:

- MoMM Conference in Paris, France (November, 2010),
- IFIP 8.2 Working Conference in Turku, Finland (June, 2011),
- European Conference on Information Systems (ECIS) in Helsinki, Finland (June 2011),
- Web 2011 in Shanghai, China (December 2011), and,
- International Conference on Information Systems (ICIS) in Shanghai, China (December, 2011).

Aidan can be contacted @ ADuane@wit.ie

Dr. Philip O’ Reilly is a lecturer in Business Information Systems at University College Cork. He has been a leading member of research teams which have been successful in securing in excess of €1m in research funding since 2007. His research interests are in the area of business value of IT specifically focusing on Smart Mobile Media Services, M-payments, Social Media, Green IT and Business Models. Philip is Co-director of the Smart Mobile Media Services (SMMS) Research Group.

Philip recently received the Stafford Beer Medal in recognition of the most outstanding contribution to the philosophy, theory and practice of Information Systems (IS) from the Operational Research (OR) Society at an Awards Ceremony which took place at the Royal Society, Carlton House Terrace, London. Founded over 50 years ago, the OR Society is the world's oldest established society catering to the Operational Research profession and one of the largest in the world, with 3,000 members in 53 countries.

Philip can be contacted @ Philip.OReilly@ucc.ie