Chip-Enabled Mobile Marketing

A Smart Card Alliance Payments Council White Paper

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About the Smart Card Alliance

The Smart Card Alliance is a not-for-profit, multi-industry association working to stimulate the understanding, adoption, use and widespread application of smart card technology. Through specific projects such as education programs, market research, advocacy, industry relations and open forums, the Alliance keeps its members connected to industry leaders and innovative thought. The Alliance is the single industry voice for smart cards, leading industry discussion on the impact and value of smart cards in the U.S. and Latin America. For more information please visit http://www.smartcardalliance.org.

TABLE OF CONTENTS

1   Overview

As of December 2009, 286 million people in the United States—over 90% of the population—were using mobile phones.[1] Mobile phones are clearly a mainstream consumer device.

Almost one-quarter of the handsets sold in the United States are powerful, user-friendly smartphones (such as the iPhone, Blackberry, and Android). Retailers, banks, consumer product companies, and other specialty industries, such as airlines, can increasingly use such mobile phones as a key channel for customer interaction. Compared to other channels, mobile phones enable more targeted interactions, using consumer preferences and behavior to reach out to consumers in real-time.

Retailers can send real-time ads, coupons, and offers to customers that are based on consumer preferences and physical location, delivering better value to consumers and producing stronger responses. On average, today's paper coupons yield a redemption rate of only ½%, whereas early results for personalized coupons delivered through mobile phones have achieved redemption rates of between 15% and 50%.[2] Merchants using Near Field Communication (NFC)-based loyalty programs, such as those offered by Zapa Technologies in Europe, are also experiencing higher rates of customer participation.

Such results clearly demonstrate the power of mobile. Consequently, mobile marketing and advertising are expected to continue the rapid growth shown in Figure 1.[3]

U.S. Mobile Advertising Spending, 2008-2013 (millions)

Year	Spending
2008	$320
2009	$416
2010	$593
2011	$830
2012	$1,140
2013	$1,556
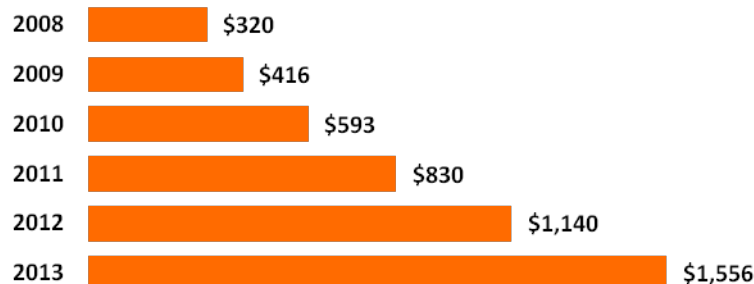
Figure 1. Growth Rate of Spending on Mobile Advertising

1.1 Mobile Technologies and Mobile Marketing Approaches

The technologies available in mobile phones have been evolving steadily. New mobile marketing approaches can rely on a number of features and functions of modern mobile devices or combinations of these features:

- The voice channel from the network to the mobile device (used for infomercials or telemarketing)
- The data channel from the network to the mobile device
- The capabilities of the mobile screen in its various designs, resolutions, and forms to present information and act as a user interface
- The capabilities of the mobile speaker to use sounds (e.g., to communicate with a point-of-sale (POS) reader or marketing kiosk)
- The capabilities of the mobile camera to capture visual information (e.g., barcode coupons, images, and text)

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[1] CTIA, http://www.ctia.org/media/press/body.cfm/prid/1965/
[2] Eagle Eye, a mobile coupon company in the UK, and Tetherball, a mobile loyalty company in the United States.
[3] www.eMarketer.com, September 2009. Includes display, search, and messaging-based advertising.

- The global positioning system (GPS)/location-based service (LBS) capability that allows a device to be location-aware (e.g., to push marketing offers to the user and make location-aware offers)
- The accelerometer technology that allows the device to be orientation-aware
- The Bluetooth capability that allows the device to exchange data with other Bluetooth-capable devices (e.g., to push marketing during the channel scan)
- The Wi-Fi capability that allows the device to recognize local area networks (e.g., to push marketing during the channel scan)
- The mobile Web capability (e.g., to download coupons, ads, and offers during Web-based sessions)
- The mobile app store capability that allows a user to enhance the functions of the device by downloading value-added apps (e.g., to embed marketing inside a mobile application, usually in return for a discounted app)
- The Near Field Communication (NFC) capability that allows the device to exchange data with other NFC-capable devices (e.g., to enable direct communication with a POS device, a smart poster, or a public transportation kiosk)

Mobile marketing initiatives use a number of approaches that leverage the mobile phone's capabilities to implement mobile promotions and advertising.

- **Mobile Web approaches** (using the WAP capability on the mobile phone or other mobile device (e.g., iPad)) allow consumers to use the online browser and search engine on a mobile device to find ads, coupons, or promotions and store them in the mobile device. The coupons can be retailer-specific (e.g., a discount coupon from Pizza Hut) or product-specific (e.g., a discount coupon for a six-pack of Coke). For redemption, the coupons are typically coded with 2-D or 3-D barcodes or simple numeric codes for manual entry by a sales clerk at the point-of-sale.

- **Text- or SMS-based approaches** allow consumers to sign up for a promotion program with a merchant and provide a mobile phone number. Merchants then use SMS and text messages to send coupons or promotions to the consumer's phone.

- **Smartphone-based wallets** allow consumers to download a coupon management app onto a smartphone. Consumers then search or receive coupons through SMS or MMS. Coupons are redeemed manually, by displaying the coupon on the screen to a sales clerk, or automatically, by processing the offer on a back-end server.[4]

- **Loyalty program-based approaches** allow consumers to sign up for a loyalty program that is bundled with coupons, instant awards, and real-time redemptions. Coupons are sent through SMS or MMS and redeemed by tapping an NFC-enabled phone on a contactless-enabled POS reader or by settling the transaction through a back-end server (e.g., as a statement credit).[5]

- Another approach leverages **NFC chip-enabled mobile wallets**. NFC-equipped phones come with wallet software that can store coupons, loyalty points, and payment account information. Consumers carry and manage their coupons and promotions in the mobile wallet. They can access personalized coupons and promotions by searching through the wallet or by tapping the NFC phone on a smart poster or shelf tag. With a consumer's permission, retailers can also send coupons or promotions "over the air" directly to the phone. Coupons are redeemed electronically, by tapping the phone on a contactless-enabled POS reader.

This white paper focuses on **chip-enabled mobile marketing**—mobile marketing that uses an RF chip, either built in or added to a mobile phone—to enable mobile contactless transactions. Contactless technology is already built in to new NFC-enabled phones, such as the Samsung Star Smartphone. Add-on accessories that enable existing handsets with NFC capability are also becoming available, such as a sticker that can be added to the back of any phone, or a microSD card, sleeve, or clip (Figure 2).

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[4] Cellfire is an example of this approach.
[5] Zapa Technologies and Tetherball are examples of this approach.

Figure 2. Examples of NFC Implementation Approaches

This white paper is not covering mobile marketing applications that do not use an RF chip (e.g., mobile Web or downloaded apps).[6]

Mobile phone technologies and features will continue to evolve and the market will continue to see innovative new marketing approaches. To implement mobile marketing, it will become increasingly critical for the NFC function to be able to interface with and use other mobile phone technologies to enhance the mobile marketing approaches that are deployed.

Please note that this white paper does not endorse any specific product or service. Product or service references are provided to illustrate the points being made.

1.2 Mobile Marketing Participants

Many participants in the direct marketing and couponing industries may be affected by or play an active role in mobile marketing, including:

- Direct marketing agencies
- Advertising networks and exchanges
- Telemarketing companies
- Coupon printers, processors, and clearinghouses
- List compilers and sellers
- Analytical support providers

Direct marketing agencies provide services to companies engaging in direct marketing to acquire new customers. They develop strategy, write copy for direct mail materials, manage the printing and mailing of solicitation pieces, and analyze results. They may also be involved in managing telemarketing companies and developing phone scripts on behalf of their clients.

Advertising networks connect advertisers to Web sites that host advertisements. They pay software developers and Web sites to allow their ads to be displayed on the software or Web site. Advertising exchanges are typically Web sites where companies bid to place their online ads in space provided by advertising publishers.

Telemarketers perform the task of calling prospective customers, either exclusively or to follow up on previously mailed offers. They can also contact existing customers to follow up on customer service issues or offer additional products and services.

Developing, printing, collecting, and processing coupons involve a number of processes and parties. Some of these parties may be involved in the mobile marketing process. Much of this work is traditionally done manually, and moving the industry to more digital or automated processes has proved to be a

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6 The National Retail Federation report, "Mobile Retailing Blueprint: A Comprehensive Guide for Navigating the Mobile Landscape," includes a discussion of all mobile technologies and their use for mobile marketing and payment. The report is available at http://www.nrf.com/modules.php?name=Pages&op=viewlive&sp_id=1268.

challenge. Offers made within a closed infrastructure are not necessarily an issue, but any offers that involve multiple retailers or product providers will require some type of clearing and settlement process.

List compilers and sellers compile and market lists for use by companies interested in executing direct marketing programs. Both list compilers and sellers and firms providing analytical support offer expertise in analyzing direct marketing data. They can be instrumental in helping companies determine which prospects to include in a mailing or telemarketing program. They can also help companies assess the success of a program.

Stakeholders in chip-enabled mobile marketing implementations (described in Section 4) will have to partner with the direct marketing and couponing industries to deploy new mobile marketing applications that leverage the existing delivery and redemption infrastructure.

2 Value Proposition

Chip-enabled mobile marketing implementations offer strong value propositions to all stakeholders:

- Consumers
- Content aggregators, brands, and mobile marketing companies
- Merchants
- Issuers

While this section describes the general value propositions for chip-enabled mobile marketing implementations, note that such propositions will vary by use case.

2.1 Value to Consumers

The value of mobile marketing to consumers centers on personalization, convenience, and control.

2.1.1 Personalization

Personalization offers consumers several advantages. They only receive offers that are judged to be useful specifically to them—offers based on their preferences and past purchasing behavior that also identify local participating merchants. Consumers then always have these offers with them on their mobile phones, ready to be redeemed. In addition, they can be reminded of offers while they are shopping at a participating merchant, leading to additional savings.

2.1.2 Convenience

Mobile marketing techniques can make shopping more convenient in a number of ways. Integration with Internet-based coupon sites, mobile applications, smart posters, and local displays makes it easier for consumers to discover and "clip" offers. Redeeming offers using NFC – tapping the phone at the POS to redeem the coupon – is both very convenient and engaging for consumers.

Coupons can be stored "in the cloud" (on the Internet) or on the mobile device, eliminating the requirement for paper-based storage. In addition, the NFC-based process by which coupons are redeemed at the POS is more convenient and reliable than the process for redeeming paper coupons. Consumers can also store various loyalty cards on the mobile device, rather than carrying physical cards, and use them automatically when they complete a payment transaction.

Mobile marketing can also enable consumers to order goods in advance and check out more quickly.

2.1.3 Control

The consumer is in control of the chip-enabled mobile marketing process. Mobile marketing is not intrusive; consumers initiate contact with the merchant, and there is no requirement that consumers provide merchants with a phone number. Programs allow consumers to opt in or out of a program at any time and set preferences for the types of offers they want to receive, reducing the risk that they will be spammed with irrelevant offers.

Chip-enabled mobile marketing also offers consumers enhanced security. They can receive and store offers securely on the mobile device and retrieve offers if the device is lost.

2.2 Value to Content Aggregators, Brands, and Mobile Marketing Companies

Mobile marketing can reduce costs for content aggregators, brands, and mobile marketing companies. In addition, the improved targeting effectiveness and data offered by mobile marketing programs can help establish these companies as innovators and technology leaders.

2.2.1 Reduced Costs

Mobile marketing reduces distribution costs and the cost of fraud. Lower printing, delivery, and reconciliation costs, achieved through increased operational efficiencies, lead to lower costs per unit moved. Because chip-enabled mobile offers cannot be copied, counterfeited, or forwarded without permission based on campaign rules, fraud and campaign costs are reduced.

2.2.2 More Effective Customer Targeting

Targeting for mobile marketing offers companies the advantages of addressability and access to good analytical data. Campaigns can be targeted efficiently to gain new customers, increase customer loyalty, and cross-sell products. More efficient targeting typically leads to improved redemption rates and, therefore, to increased foot traffic. And because mobile offer campaigns are real-time digital campaigns, content providers can change the offer parameters quickly and adapt to changing market conditions.

2.2.3 Improved Analytical Data

Improved, real-time analytical data allows companies to predict and measure responses to a campaign more reliably. Mobile provides superior authentication and therefore can be useful in checking the rapid proliferation of discount offers, as in the case of offers distributed on the Internet. Better response predictability ensures that the outcome and performance of a digital campaign can be predicted with more confidence (lower variability from forecast), leading to more confidence on the part of content providers in mobile as a channel for new offers.

2.3 Value to Merchants

Merchants can realize value from mobile marketing in the form of improved targeting effectiveness, increased consumer engagement, and improved analytical data. Mobile marketing can also help establish merchants as innovators and technology leaders.

2.3.1 Improved Targeting

Mobile-based targeting is more efficient, permitting consumers to be addressed in real time and improving customer segmentation and behavioral targeting. Improved targeting permits merchants to engage and reward a current customer base with personalized and targeted offers. Targeted new customers can be sent high value offers to entice them into a store.

More effective targeting also results in improved redemption rates, meaning that merchants can achieve lower costs per unit moved.

2.3.2 Consumer Engagement

Mobile marketing supports consumer engagement in a number of ways.

Merchants can reach out to customers with mobile marketing offers using techniques such as mobile direct marketing, location-based mobile triggers, or mobile-enabled digital free-standing inserts (DFSI) coupon portals. These techniques can help increase foot traffic to merchant stores.

Merchants can discover customers as they enter stores or while they shop in the aisles and engage them with in-store offers triggered by smart posters in real-time. These interactions can lead to increased basket size and spontaneous purchases.

Merchants can also enable NFC shelf tags to instantly display product marketing content (such as product ingredients and links to related information such as recipes or targeted brand promotions), thus increasing merchandising effectiveness.

With NFC applications, merchants can communicate offers more easily with their customers, without needing to know a customer's mobile phone number or email address. Consumers can tap their phone to get an offer or information from an NFC-enabled smart poster or shelf tag.

2.3.3 Improved Analytical Data

Marketing program measurement and reporting are more reliable and faster on a mobile platform. Improved analytical data and enhanced real-time engagement with customers offer increased opportunities for merchants to up-sell and cross-sell products. The real-time, digital nature of mobile offer campaigns allows merchants to change offer parameters quickly and adapt to changing market conditions. In addition, mobile offers cannot be copied, counterfeited, or forwarded without permission based on campaign rules, reducing fraud and campaign costs.

2.4 Value to Issuers

Issuers can realize value from mobile marketing in the form of increased revenues, stronger brand images, and enhanced insight into their customer bases.

The ability to send relevant offers to consumers helps issuers increase transaction volume on their payment products, leading to increased revenues. The ability to send timely offers also helps issuers keep their brands in front of the consumer, increasing the issuer's "share-of-mind."

Issuers can leverage the more accurate information obtained from mobile marketing to understand customer behavior better. Issuers can track and analyze the delivery and redemption of offers and rewards in real-time, collecting consumer preference information and transaction data. The insights thus obtained can be used to refine merchant-specific relationships and improve an issuer's marketing strategies, both for merchants and consumers.

3   Chip-Enabled Mobile Marketing Use Cases

Chip-enabled mobile marketing can be characterized by the incentives it provides – both rational and emotive, or emotion-based – and by the customer relationship driver, ranging from "transactors" to "loyals." Some customers respond to rational incentives, such as offers, while others respond to emotion-based incentives, such as winning a game or earning privileges. Transactors are driven by speed, while loyals want to leverage the depth of their relationship for discounts and privileges. Figure 3 illustrates the types of mobile marketing techniques that apply based on the incentive and customer relationship, including engagement, privilege, speed and convenience, and discount applications.
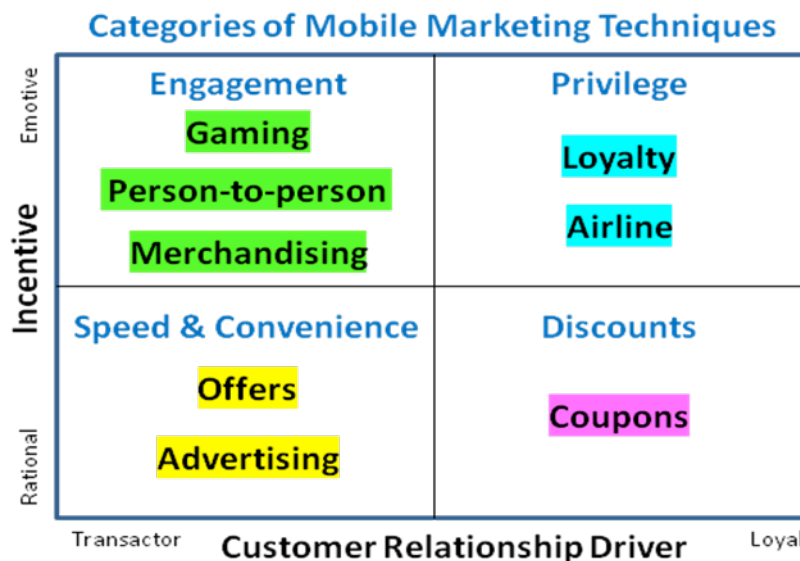
Figure 3. Mobile Marketing Techniques Based on Incentives and Customer Relationship

This section[7] outlines trial programs, pilot projects, and implementations of chip-based mobile marketing from around the world, illustrating the power of chip-based approaches to drive loyalty through discounts and privileges and to create incentives through speed, convenience, and customer engagement. While some of the scenarios described leverage SMS, all of them use contactless, smart chip, and/or NFC technology.

3.1   *Privilege Applications*

Loyalty programs have been the area of greatest activity for mobile marketing, going back more than 10 years. Several airlines are using NFC phones to speed the check-in and boarding processes. The past two years have seen an explosion in the number of tests of loyalty identification, many using the bridge technology of contactless stickers (see Section 4.1). More sophisticated applications include the ability to store multiple loyalty cards or to interact with games.

3.1.1 Contactless in Japan[8]

Chip-enabled contactless technology is used in Japan to support Japan Airlines flight check in, loyalty at McDonalds, and gaming at Hangame.[9]

Chip-based mobile marketing applications have a long history in Japan. NFC is used in a mobile/Internet game, "Half of Life is a Game," offered by Hangul, a popular South Korean online game portal operated

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[7]   This white paper does not endorse any specific product or service. Product or service references are provided to illustrate the points being made.

[8]   http://www.slideshare.net/cbillich/future-insight-mobile-marketing-in-japan-2420949

[9]   http://www.slideshare.net/cbillich/future-insight-mobile-marketing-in-japan-2420949

by NHN Corporation. Launched in Japan in December 1999, the game offers a face morphing game. Phase 2 includes an "instant lottery," implemented using an NFC chip embedded in certain "out-of-home" figurines. The offering resulted in a nine-fold increase in new daily gaming subscriptions.

3.1.2 Smart Contactless Stickers in New Zealand

In November 2008,[10] Air New Zealand provided 100,000 contactless stickers to frequent domestic travelers as part of a major improvement in its check-in process at Auckland airport. Attached to the back of a passenger's mobile phone, the smart sticker acts as a permanent and reusable boarding pass. Other changes include a new state-of-the-art check-in and boarding experience, kiosks for customers to print their own luggage tags, a "direct to conveyor belt" luggage drop zone to eliminate queues, and new gate scanners for "straight to gate" check-in and boarding for customers without bags.

3.1.3 NFC Airline Application in France

As of April 2009,[11] Air France frequent flyers travelling from Nice to Paris (Orly) are participating in a project called "Pass and Fly," an NFC-based boarding pass. This pilot project was designed to simplify passenger recognition, loyalty point credits, and aircraft boarding. The project is a partnership with Amadeus and IER, who supplied Air New Zealand's smart sticker project (see Section 3.1.2).

Travelers check in through the Web, a mobile phone, or a self-service kiosk. The traveler carries an NFC-enabled mobile phone that contains the frequent flyer information. (The NFC component is either integrated into the phone or a sticker.) At the airport, the traveler goes through a fast security lane by tapping the mobile phone on a reader, which identifies the passenger and loads a boarding pass on the phone. Frequent flyer points are automatically credited, eliminating the need to go to a separate kiosk. At the security inspection point, the traveler taps the mobile phone on a second NFC reader, which displays the boarding pass to the security staff. At the gate, a third NFC reader checks the boarding pass and prints the seat information, enabling the plane to be boarded quickly.

3.1.4 Contactless Stickers in France

In October 2009,[12] French children's clothing retailer Tape à l'oeil rolled out a contactless sticker-based loyalty program across all 170 stores and its Web site. The system was supplied by Adelya and INSIDE Contactless. The stickers provided quick, secure contactless identification for the customer. Branded stickers attached to mobile phones are highly visible symbols of the customer's preference. The retailer is exploring other ways to use the contactless stickers, such as enabling customers to top-up prepaid cards.

3.1.5 Contactless Stickers and NFC in France

In October 2009,[13] La Croissanterie, a French chain of 180 fast food outlets, adopted Airtag's Airfid system. The system offers customers a variety of devices, from NFC phones to transport cards and 2D barcodes, that they can use to identify themselves at the POS. The system is currently installed in three outlets; La Croissanterie planned to roll the system out across all locations by early 2010.

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[10] http://www.nearfieldcommunicationsworld.com/2008/11/19/3216/air-new-zealand-issues-100000-smart-stickers-to-frequent-flyers/

[11] http://www.nearfieldcommunicationsworld.com/2009/04/24/3980/air-france-tests-nfc-boarding-passes-at-nice-airport/

[12] http://www.nearfieldcommunicationsworld.com/2009/10/21/32049/french-childrens-fashion-retailer-issues-300000-nfc-loyalty- stickers/

[13] http://www.nearfieldcommunicationsworld.com/2009/10/08/31962/french-fast-food-chain-picks-airtag-for-contactless-nfc-loyalty-programme/

3.1.6 Integrated NFC Mobile Service Nice, France (Cityzi)

On the 21st of May 2010,[14] the world's first NFC commercial deployment took place in Nice in the south of France with the involvement of mobile operators (Orange, Bouygues Télécom and SFR), banks (Crédit Mutuel, Société Générale and BNP Paribas), public transportation company (Veolia), and several retailers and fast food chains (La Croissanterie, MacDonalds, Game.fr). Along with mobile payment and mobile transit services, a loyalty program application is offered to customers, allowing accrual and redemption of points associated with payment activity. The loyalty application provided by Oberthur Technologies included the ability to consult the point balance and receive vouchers and special offers directly on the mobile phone over-the-air. For application management, the loyalty application can be downloaded, activated, deactivated, personalized and removed dynamically over-the-air. The application lifecycle management is enabled by a trusted service manager platform provided Oberthur Technologies.

3.1.7 Contactless Stickers In Ireland

In October 2009,[15] the Irish coffee chain Insomnia began offering a contactless sticker-based payment and marketing system. Insomnia is using Zapa Technology to enable a loyalty program that delivers points to customers equipped with a ZAPA TAG every time they make a purchase. A total of 12,000 customers began using the technology in the first 3 weeks.

As of November 2009,[16] the Irish town of Tuam in County Galway offered an NFC-based loyalty program from Zapa Technology to citizens of the entire town. The majority of Tuam retailers are implementing the scheme. Customers affix a small tag (the ZAPA TAG) to their mobile phone handsets, and tap their phones on a terminal at the POS for discounts, special offers, and other loyalty rewards. Ireland is the one of the first countries in Europe to use NFC technology, and the deployment of the technology in Tuam is one of the largest of its kind in Europe. The scheme is a ”one size fits all” system for Tuam, replacing numerous paper and plastic loyalty cards.

3.1.8 Contactless Stickers at Fast Food Chains in the U.S.

Since November 2009,[17] multiple fast food chains (including McDonalds, Qdoba Mexican Grill, Arby's, Dairy Queen, and Dunkin' Donuts) have been testing Tetherball's contactless sticker-based mobile marketing system. Customers are issued contactless stickers to put on their mobile phones. The sticker is activated when the customer sends a text message with the ID number on the sticker to a control center. When the customer makes a purchase at a participating location, the customer is uniquely identified at either a contactless POS terminal or a dedicated kiosk and can earn or redeem loyalty points. In addition, the back office can send the customer targeted marketing and promotional offers (based on the customer's purchasing history) in the form of SMS text messages or mobile coupons redeemable in the store.

Qdoba reports that the results of this mobile rewards program have exceeded its most optimistic projections: the redemption rates for mobile loyalty average 16%, the campaign redemption rates at university locations are as high as 40%, loyalty member growth is faster than predicted, and opt-out rates are less than 8%.

3.1.9 Integrated Contactless in South Korea

South Korea's largest mobile operator, SK Telecom, launched a "T Smart Pay" service in March 2010.[18] The service enables customers to store up to eight credit cards, 30 membership or loyalty cards, and 50

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[14] http://www.nearfieldcommunicationsworld.com/2010/05/14/33638/nfc-city-pilot-to-go-live-in-nice-on-21-may-under-cityzi-banner/

[15] http://www.nearfieldcommunicationsworld.com/2009/10/01/31859/insomnia-coffee-chain-signs-up-for-zapas-nfc-sticker-based-marketing-system/

[16] http://www.zapatechnology.com/news/42-tuam-leads-the-way-with-zapa-tag-loyalty-programme.html

[17] http://www.nearfieldcommunicationsworld.com/2009/11/12/32271/mcdonalds-arbys-qdoba-dairy-queen-and-dunkin-donuts-testing-tetherballs-mobile-loyalty-system/

[18] http://www.nfctimes.com/news/sk-telecom-launches-next-generation-payment-service

coupons on their phones. Customers download SK Telecom's T Smart Pay application to their SIM cards, which in South Korea have a contactless interface and connect to antennas built into specially equipped handsets sold by the country's major operators. (While contactless, the phones and SIMs are not NFC compliant.) SK Telecom is not launching its own payment scheme and brand, and expects to collect a portion of the merchant transaction fees from mobile purchases. T Smart Pay supports the Visa payWave contactless payment application.

3.2 Discount Applications (Coupons)

Over the past two years, an increasing number of trials and pilot programs, using software technology provided by companies such as ViVOtech, show that NFC and contactless chip technology improve loyalty through the use of coupons and interaction with smart posters.

3.2.1 Trial Program in San Francisco

A trial program launched in San Francisco in January 2008[19] combines smart posters, coupons, and transit payment.

Customers in the San Francisco Bay Area used NFC-enabled phone capabilities and a stored value account to pay at Jack in the Box locations and for rides on the rapid transit system (BART). They could tap smart posters at transit stations to download special offers and receive directions to the nearest Jack in the Box. Customers could reload the account on their PCs or by handing cash to a Jack in the Box clerk. Customers could automatically top up transit value over the air once the balance dropped below $10. Participants received nearly $50 worth of free rides when they began the trial.

3.2.2 Taiwan Trial Program

A trial program conducted by Taiwan Mobile and Taipei Fubon Bank (beginning in February 2008[20]) used NFC-enabled phones and involved 100 customers. Customers could pay at more than 2,000 merchants accepting MasterCard PayPass and download coupons over the air by tapping their phones on NFC tags on smart posters. A total of 75% of the customers preferred the phone to conventional credit cards and used the phone 20% more often for payment.

3.2.3 Singapore Trial Program

NETS and SingTel concluded a trial in Singapore in February 2009[21] in which customers provided with NFC-enabled handsets were able to top-up mobile wallets with a SingTel-United Overseas Bank Platinum Credit Card and use it for payments at participating merchants with a contactless reader. The wallet was equipped with a coupon application. Tapping the NFC-enabled phone on smart posters downloaded a coupon.

This solution was the first to allow customers to open a coupon on an NFC-enabled phone and tap the mobile phone with the coupon on a contactless reader for automatic redemption.

3.2.4 Contactless Sticker Pilot in Indiana

In June 2009,[22] Dairy Queen tested a contactless chip customer loyalty program from Tetherball in Indiana. Customers received coupons on their mobile phones in a text message and redeemed the coupons using contactless stickers attached to the phone. Customers presented the sticker at a standard contactless payment reader or took the phone to a standalone kiosk to print a paper coupon.

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[19] http://www.nfctimes.com/project/us-multiapp-trial-involves-transit-agency-fast-food-restaurant

[20] http://www.nfctimes.com/project/taiwan-taiwan-mobile-holds-trial-though-promised-rollout-delayed

[21] http://www.nearfieldcommunicationsworld.com/2009/06/09/31312/dairy-queen-tests-stickers-for-targeted-mobile-coupon-campaigns/

[22] http://www.eweek.com/c/a/Mobile-and-Wireless/INSIDE-MOBILE-Innovations-of-Mobile-Marketing/

Customers joining the program provided a mobile phone number and zip code, so that promotions could be targeted to the Dairy Queen closest to a customer's home. The system allowed for real-time voiding of a coupon when scanned, so if the offer was time-limited, the customer could only redeem the coupon once. Coupons cannot be copied, forwarded, or sold. The system eliminated the need for customers to download applications to their mobile phones.

Tetherball's Web-based reporting system provided visibility into and real-time analysis of coupon redemption rates, customer behavior, demographic information, and overall program performance.

3.2.5 Kuwait Trial

A six-month trial in Kuwait (launched in October 2009[23]) enabled customers to download Visa credit or prepaid card accounts by tapping phones on smart posters located in The Avenues mall. The credit card was cobranded by the National Bank of Kuwait and the telephone company Zain. Customers could select the account with which to pay at the POS by using a menu on the phone. They could also tap smart posters to download coupons redeemable at more than 100 merchants in the mall.

3.3 Speed and Convenience Applications (Advertising and Offers)

Currently, mobile advertising typically uses the ubiquitous SMS message. In the future, smart posters and kiosks can deliver offers and specialized product information to NFC phones.

3.3.1 NFC and British Telecomm Concept Store

British Telecomm's London "Concept Store" showcases the latest communication and retail payment technologies. Working with Proxama, the store simulates shopping environments to test the potential of NFC to drive impulse purchases and improve redemption of coupons and personalized offers. Beginning in November 2008,[24] customers were able to tap their NFC phones on a kiosk to receive personalized text messages with special offers. Smart posters in the store window sent information and time-limited money-off vouchers to a customer's phone. The process by which coupons were redeemed at the POS was very similar to a simple contactless payment transaction.

3.3.2 NFC Deployment at Greenbuild

ITN International, Inc., a provider of registration services and information exchange tools for trade shows and events, completed the largest deployment of NFC mobile technology in the U.S. trade show and event market at Greenbuild 2008 (December 2008[25]). A total of 500 exhibitors used Nokia NFC-enabled phones to read contactless-enabled credentials, collecting inquiries and conducting surveys. More than 150,000 transactions took place over a period of three days.

3.3.3 NFC Pilot Program in Bengaluru

In March 2010,[26] Citibank conducted a pilot program in Bengaluru. Over 3,000 Bengaluru residents participated in the trial. Customers were current Citibank MasterCard credit card holders who were also Vodafone mobile subscribers. The trial tested mobile contactless payment transactions and merchant marketing through coupon redemption programs for special discounts and two-for-one offers.

Customers purchased NFC-enabled Nokia 6212 phones at a discount and downloaded their card credentials onto the handsets. The cost of the phone could be "earned" back in rebates after the customer made 12 contactless purchases. Smart posters for the different merchant promotional campaigns were placed at locations where customers could conveniently pick up their mobile coupons. The discounts and other sales offers could be downloaded by tapping the phone on a poster. The

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[23] http://www.nfctimes.com/project/kuwait-trial-lets-users-download-credit-and-prepaid-accounts

[24] http://www.proxama.com/case-studies/16/NFC-Propositions-for-a-Retail/

[25] http://www.exhibitoronline.com/news/enn-display.asp?counter=6927

[26] http://www.edgardunn.com/pointsOfView/showpov.cfm?instanceid=100021&type=whitepaper&popup=1, http://www.paymentssource.com/news/nfc-mobile-payments-exceed-30bn-2012-2697861-1.html

downloaded coupons were redeemed manually at the POS by displaying the coupon to the merchant on the phone screen.

The results of the pilot showed significant growth in transaction and purchase value and a significant cash substitution effect. Grocery stores were the biggest category of merchant growth. However, coupon offers and redemptions were quite limited in the trial, highlighting the need for merchant promotion of NFC coupon offers to spark consumer interest.

3.4 Engagement Applications (Merchandising)

The most sophisticated and futuristic techniques emerge in the area of merchandising. Interactions with "smart shelves" promise to transform the shopping experience of the future.

Virgin Mobile[27] has been experimenting with NFC smart poster service prototypes. Working with Proxama, Virgin Mobile developed five applications for a "day-in-the-life" of a Virgin Mobile customer, including applications for purchasing an airline ticket, topping up a travel card, paying for goods and services, downloading music videos, and sharing content with another person. These scenarios are being tested for their ability to improve brand loyalty, reduce churn, develop new service and revenue opportunities with partner companies, improve the quality of marketing data, and encourage mobile internet usage.
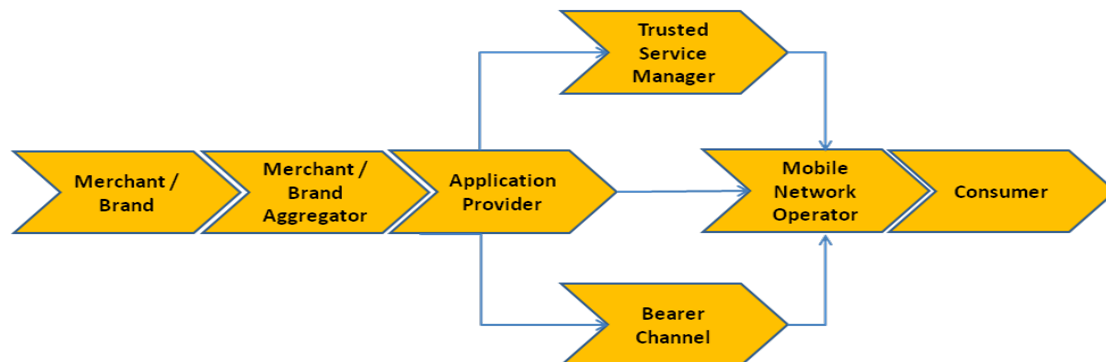
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[27] http://www.proxama.com/case-studies/17/NFC-Smart-Poster-Service/

4 Chip-Enabled Mobile Marketing Implementation

Figure 4 illustrates the participants in a chip-enabled mobile marketing value chain.

Figure 4. Participants in the Chip-Enabled Mobile Marketing Value Chain

The **merchant** is the physical store that originates NFC transactions for payments, promotions and loyalty (for example, a retailer such as Walgreens, Starbucks, or Target). A **brand** is the consumer packaged goods distributed through a merchant (for example, Procter & Gamble, Coca Cola, Pepsi, or Unilever). The **merchant/brand aggregator** is the entity that sources, aggregates, and manages the life cycle of mobile offers from merchants and brands (for example, Access Development, Mall Networks). The **application provider** provides the mobile marketing application.

A **trusted service manager** (TSM) is the entity responsible for securely distributing, provisioning, and managing the life cycle of the NFC services provided to the mobile handset. TSMs have relationships with both the mobile network operator and the application provider. NFC services include chip-enabled mobile marketing/loyalty applications. The **bearer channel** acts as a middleman between application providers and mobile operators (for example, Syniverse, Sybase365, or mBlox).

The **mobile network operator** is the company that provides wireless telecommunications services and supplies NFC-enabled devices (embedded in a handset or as an accessory) to the consumer (for example, AT&T, Verizon, Sprint, or T-Mobile). The **consumer** is anyone who wants to consume, receive, and exchange value through the mobile channel.

The following example illustrates the role of each participant and the process flow in a chip-enabled mobile marketing application.

Assumptions

- The application provider has sourced offers from a merchant aggregator. The merchant aggregator has sourced several offers, including one from Red Dot Coffee.
- The application provider has launched a mobile wallet application on a mobile application store that includes mobile payments and coupons.
- The consumer has an NFC-enabled phone and has downloaded the mobile wallet application that interacts with the NFC chip.
- The consumer opts in to receive mobile coupons and selects preferences for coupons.

Process Flow

1) The consumer receives notification that a new mobile coupon for Red Dot Coffee is available; the coupon is sent over the air (e.g., $1 off any beverage) through mobile network operator.
2) Since the consumer's phone supports GPS, the application also shows the nearest Red Dot Coffee locations.
3) The consumer decides to redeem the offer and walks to the nearest Red Dot Coffee location.

4) At the location, Red Dot Coffee has a smart poster with a special offer for sandwiches (e.g., $2 off any sandwich).

5) The consumer taps the NFC phone to the poster and downloads this coupon too.

6) At checkout, the consumer taps the phone on the contactless POS terminal to pay and redeem the two coupons ($1 off coffee and $2 off sandwich).

7) Red Dot Coffee deducts $3 from total amount and processes the transaction.

## 4.1 Chip-Enabled Technology Approaches

The end game for mobile marketing is the integration of NFC technology into consumer mobile handsets and other consumer electronic devices, thus allowing the handset to emulate a card (for example, by disseminating user details or preferences) and to act as a terminal device, collecting information or perceived value to be used, redeemed, or saved for future use. However, until NFC-capable devices are widely available, a variety of other devices can bridge the gap between today's legacy systems and tomorrow's technology (Figure 5).

Many of these devices demonstrate that contactless technology is no longer limited to a card form factor. Fobs, stickers, and more intelligent peripheral devices (e.g., NFC-enabled microSD cards) are being developed or are already commercially available, which will enable early adopters to take advantage of mobile marketing. The intelligence of these bridge products varies and, therefore, so do their abilities to implement successful mobile marketing concepts.

Device	Example	Characteristics
Peripherals (no integration)		• Unattached device that does not interact with the phone • Include, but not limited to, key fobs • Single application
Stickers (no integration)		• No direct interaction with the phone (but can interact via "the cloud") • Inexpensive relative to other options • Single application • Single card emulation only
Peripherals (contactless integration)		• Unattached device that interacts directly with the phone via some protocol (e.g., Bluetooth) • Multi-application capable • Additional power source required
Stickers (contactless integration)		• Attached device that interacts directly with the phone via some protocol (e.g., Bluetooth) • Various products support card emulation only; others can support full NFC
Peripherals (contacted integration)		• Attached devices utilizing a contact interface to the phone • Include, but not limited to, contactless-enabled memory card devices (microSD) and SIM-based solutions • Multi-application capable • Some full NFC capable
Embedded		• NFC chip set embedded in the phone at time of manufacture • Full NFC capable • Multi-application capable

Figure 5. NFC Technology Implementations[28,29]

It is also important to note that the NFC Forum has developed the "N-Mark" trademark (Figure 6), so that consumers can easily identify where their NFC-enabled devices can be used. It is a stylized "N" and indicates the spot where an NFC-enabled device can read an NFC Forum tag to establish the connection (e.g., on a poster or a kiosk). The N-Mark will help advance the acceptance of NFC short-range wireless interaction between consumer electronics, mobile devices, and personal computers, and NFC Forum tags.[30]

***Figure 6.
The NFC
Forum N-Mark***
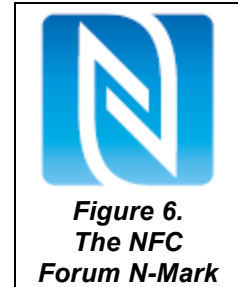
4.2 Consumer Preferences, Privacy, and Security

Consumer control over a chip-enabled mobile marketing interaction is critical to the success of mobile marketing. Consumers should be able to request (or opt in to) promotions that they want when they want them. Proactively sending a text promotional message may be a good way to get started, but consumers may not welcome unsolicited messages.

Chip-enabled mobile marketing with NFC smartphones will enable consumers to signal their interest in various products and services by physically tapping the phone on NFC-enabled product tags, shelf tags, smart posters, digital signage, POS equipment, kiosks, access controls, and other objects. This extremely powerful capability is interactive, real-time, personalized, opt-in-powered, and location-based. Retailers will be able to attract consumers to their stores, gain brand loyalty, and drive up-sell opportunities.

As exciting as this prospect is, it comes with a caveat: consumers could have their privacy compromised, or be bombarded with unwanted messages. If unwanted messages proliferate, consumers may turn to message filters just as they turn to spam filters to stop unwanted e-mail messages.

Policy is important in addressing consumer choice and privacy issues. The Mobile Marketing Association has published a code of conduct for mobile marketers that provides a set of privacy principles to guide companies to leverage the mobile channel for marketing purposes effectively and responsibly.[31]

Technology is also critical. In an NFC-enabled phone, secured chip technology (the secure element[32]) enables multiple layers of security, including message authentication and security, security of the marketing channel, and data security for coupons, payment information, and personal information. The secure element may reside in the mobile phone SIM, be embedded in an additional chip, or be added to an existing phone as a microSD card.

Today's mobile marketing and advertising primarily leverages SMS messaging. The future of chip-enabled mobile marketing is interactive NFC technology and secure element-based mobile handsets. Chip-enabled mobile marketing will facilitate consumer choice and interaction and provide secure channels for marketing messages.

4.3 Application Security

Mobile marketing applications must be evaluated carefully for security requirements. This evaluation should also include any ancillary payment functions, such as authorizing or executing the actual payment;

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[28] When NFC is embedded in the phone, the mobile phone would be provisioned with both the NFC chip set and the secure element that stores data and enables secure applications. The location for an embedded secure element will vary depending on the mobile network. Architectures could include embedding the secure element in the SIM card or UICC (for GSM networks), soldering a hardware secure element into the phone, or integrating secure element features in the mobile device baseband processor. (Source: Eurosmart, "NFC Trends," November 2009)

[29] The images in Figure 5 are shown as examples only. The Smart Card Alliance is not endorsing any solution shown in the figure.

[30] Additional information on the NFC Forum N-Mark can be found at http://www.nfc-forum.org/resources/N-Mark

[31] Mobile Marketing Association, "Global Code of Conduct," July 15, 2008, http://mmaglobal.com/codeofconduct.pdf

[32] A dedicated microprocessor system that contains an operating system, memory, application environment and security protocols intended to be used to store and execute sensitive applications on a mobile device. A secure element may reside on a (U)SIM, in a dedicated chip on a phone's motherboard, or as an external plug-in accessory.

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storing, passing, or handling the payment credentials; and authenticating the authorized person holding or invoking the payment credentials.

In general, application security should be considered when development and implementation planning begin, not later, as an afterthought, which could leave room for the unintended consequences of accidental use or intentional misuse. Appropriate security is particularly important for applications used to enable mobile marketing tools that generate or manage incentives, such as:

- Product-specific or merchant-specific coupons
- Offers such as two-for-one item purchases or "buy two get one free"
- Loyalty or club cards that allow customers to collect and redeem points for cash value, product, or awards

At a high level, security for these incentives can be classified as:

- No security
- Basic security
- Hardened security

An application with no security means that the coupon or offer can be duplicated with little or no effort (which may be the intent of the program). No security lends itself to viral-type programs geared to allow or encourage consumers to forward the incentive to others.

In an application with basic security, the incentive cannot be duplicated or reproduced easily, making it economically impractical to attempt fraud. The associated risk assessment assumes that if fraud is attempted and successful, limited liability or acceptable minimal loss will occur. A more important factor in the risk assessment would be the effect on public perception resulting from successful fraud attempts.

An application with hardened security provides a marketing incentive with a high level of encryption and with several levels of security protections, including storage of the incentive itself in the mobile device's secure element. Incentives protected by hardened security are considered to be as secure as payment credentials and the payment applications themselves.

For security purposes, the application that manages all incentives (such as a mobile wallet) should be fully or partially stored in the mobile device's secure element. Since the secure element has limited memory, incentives at the no security and basic security levels can stored outside of the secure element, in the mobile device's base memory. Incentives using basic security are encrypted, but the encryption key needed to unlock and activate the incentive would be stored in the secure element and accessible only to the incentive management application. This key consumes very little memory, allowing potentially hundreds of basic security incentives to be stored in a mobile device.
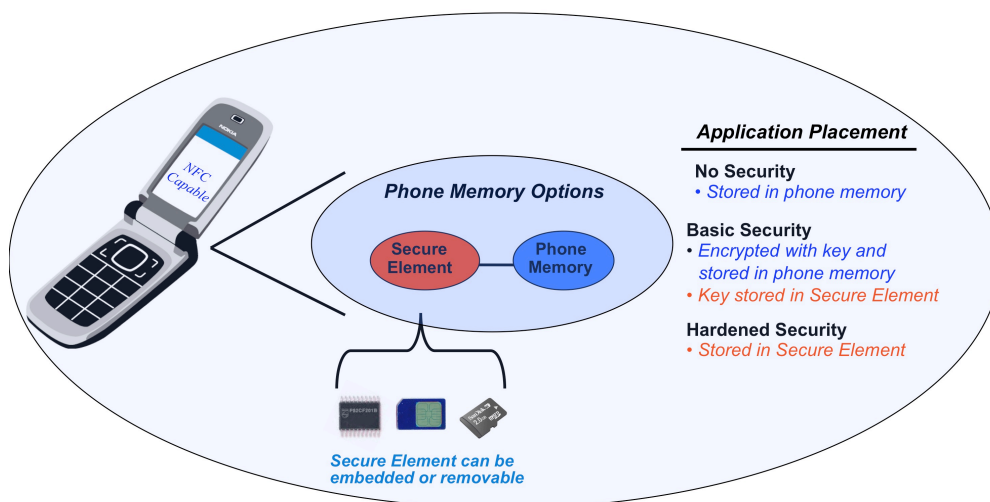
Figure 7. NFC-Enabled Phone Secure Element and Application Security

Smart Card Alliance © 2010

4.4 Mobile Marketing and Mobile Contactless Payments Implementation

Mobile marketing and mobile contactless payments must coexist in all form factors. There is currently no single application that is driving the business case for NFC implementation; the business case, therefore, is based on a combination of the possible capabilities (such as payment and loyalty marketing) that will provide the right business environment for all stakeholders. Consumers want convenience, issuers want to facilitate payment, content providers want to exchange value, merchants want to enforce brand loyalty, and content aggregators, product brands, and mobile marketing companies want brand awareness and loyalty.

Mobile marketing and mobile contactless payment implementations are similar technically, since they are based on common standards (ISO/IEC 14443 and NFC Forum Smart Tag definitions). However, at a business level, the two are very different. Payment brands provide rigorous approval processes for chip security, functionality, and performance. Mobile marketing implementations are typically closed loop solutions, not governed by an overall standards body. However, many of the loyalty systems will want to use the secure element technology, with basic or hardened security, and will therefore have to coexist with payment implementations.

What is still to be defined by the industry is how the mobile marketing ecosystem will load and manage applications within the NFC handset, as compared to payment applications which require high security. How to manage applets and keys, activate credentials over-the-air, and update and patch software are also still being defined but most likely will follow GlobalPlatform standards.

One of the key requirements is to standardize the interface between the marketing application and the contactless payment application. Since the technologies have been developed almost completely independently of each other, there has never been a single interface that will allow the myriad mobile marketing techniques to directly interface with the payment function and ensure that marketing benefits the consumer at the time of the transaction. Standardization at the POS is also required.

One driver for increasing consumer use of mobile contactless payments would be to ensure that mobile marketing techniques use the mobile device's NFC capability. A contactless payment function should be able to poll all available marketing channels and collect available marketing material before the payment transaction begins. If, for example, a marketing channel has offered a coupon to the customer, that coupon should be tied to the contactless payment account and be readily available for the contactless function to redeem at the POS. The POS should be able to recognize the coupon and apply it during the payment transaction. The transaction can be interactive, where the mobile user's screen prompts for coupon use or reflects the use of the coupon.

4.5 Future Use Cases

Section 3 describes 20 examples of mobile marketing use cases from around the world, including models for loyalty, smart posters, coupons, advertising, offers, and merchandising. The future is likely to see increased innovation along the lines suggested by these scenarios, such as:

- In-store marketing of instant promotions
- Co-branded marketing through display posters (for example, an apparel company providing promotion/advertising through a smart poster at a sporting goods outlet)
- Tapping to enter a queue at a grocery store (for example, the store sends an SMS message to inform the consumer when to go to the deli counter)
- Price comparison (for example, tapping grocery store items, such as an item weighing 2.5 oz. and an item weighing 4 oz., to provide the per-ounce cost of each)
- Tapping a shelf hanger (smart poster or panel device) to load an instant coupon, which could be redeemed at checkout by tapping or displaying a barcode on the phone
- Tapping a smart poster to store a promotion or advertisement on the NFC-enabled mobile device and then consuming the offer at leisure at an NFC-enabled device in the home (e.g., set-top box or personal computer).

5 Conclusions

The proliferation of mobile phones, especially smartphones, is driving the evolution of an exciting new capability that benefits both consumers and retailers: the ability, in real-time, to participate in interactions tailored to a consumer's preferences and location. Early results demonstrate dramatic improvements in the effectiveness of marketing campaigns and offer redemption rates in comparison with traditional paper coupons. As a result, mobile marketing and advertising is projected to nearly triple in the next three years.

Multiple approaches are being tested, including mobile Web searches, barcodes or simple numeric coded coupons, text message campaigns, back-end-based loyalty programs enabled with stickers, and approaches based on NFC-enabled wallets. While various bridging technologies are being tested, such as stickers and microSD cards, the ultimate solution leveraging secure chip technology will optimize usability, convenience, security, and the ability of consumers to opt in to marketing campaigns as desired.

Chip-enabled mobile marketing offers great value for consumers, marketers, and banks. Consumers can be freed from carrying paper coupons and plastic cards and benefit from increased personalization, convenience, and control. Marketers, including merchants, can dramatically decrease their costs and improve targeting effectiveness, finding new ways to leverage real-time analytical data and engage customers. Banks can realize more revenue and gain better insight into their customers' preferences.

While mobile marketing is relatively new to the United States, its use in Asia goes back more than 10 years. A review of 20 examples of mobile marketing around the world uncovers models for loyalty, smart posters, coupons, advertising, offers and merchandising. The various incentives – rational vs. emotive – cater to consumers based on the relationship basis – "transactors" vs. "loyals."

It will be important to implement an appropriate level of security to protect coupons, offers, and loyalty points. Possible levels range from no security, in which coupons can be duplicated, to hardened security, in which encryption and the use of the secure element mean that the contents of a mobile wallet are protected as securely as a payment application.

Implementing mobile marketing is complicated by the number of new players and the requirement to integrate with many legacy systems. Merchants, consumer brands, aggregators, application providers, TSMs, and mobile network operators all collaborate to provide value exchange for consumers. While NFC integrated into the mobile phone is the end game, chip-enabled approaches are evolving along a spectrum of increasing device integration, from non-integrated fobs and stickers to NFC-enabled accessories to embedded NFC chips.

Standards for interoperability within the marketing ecosystem are not as mature as payment standards and will likely conform to GlobalPlatform standards. Of particular interest is the standardized interface between mobile marketing and contactless payments. Ideally, mobile marketing and contactless payments should be tightly linked to drive consumer adoption. The evolution of capabilities available on mobile devices, such as cameras, speakers, accelerometers, and Wi-Fi, creates even more opportunities, but it will be critical for the mobile phone's NFC functions to be able to interface with these capabilities to take advantage of them.

Mobile technologies, combined with security, opt-in services for consumers, and global positioning, will unleash a flood of innovation. In the future, we are likely to see increased use of instant promotions, cross-promotions, and more merchandising techniques to engage and excite shoppers.

6 Publication Acknowledgements

About the Smart Card Alliance Payments Council

The Smart Card Alliance Payments Council focuses on facilitating the adoption of chip-enabled payments and payment applications in the U.S. through education programs for consumers, merchants, issuers, acquirers/processors, government regulators, mobile telecommunications providers and payments service providers. The group is bringing together payments industry stakeholders, including payments industry leaders, merchants and suppliers, and is working on projects related to implementing EMV, contactless payments, NFC-enabled payments and applications, mobile payments, and chip-enabled e-commerce. The Council's primary goal is to inform and educate the market about the value of chip-enabled payments in improving the security of the payments infrastructure and in enhancing the value of payments and payment-related applications for industry stakeholders. Council participation is open to any Smart Card Alliance member who wishes to contribute to the Council projects.

Trademark Notice

7 Glossary

Advertising
Public promotion of a product or service.

Chip-enabled mobile marketing
The use of RF chips to facilitate marketing campaigns using mobile devices.

Mobile Coupons
An electronic offer entitling the holder to a discount, free gift or some other form of marketing promotion to encourage commerce with the issuer of the offer.

Loyalty program
Program in which customers are rewarded with discounts or other special offers in order to encourage them to continue purchasing.

NFC (Near Field Communication)
A short-range, high frequency wireless communication technology that enables the exchange of data between devices over a distance of a few centimeters. NFC is covered by the international standard ISO/IEC 18092.

Merchandising
Promotion of merchandise sales by coordinating production, marketing, development, advertising, display, and sales strategies.

Mobile marketing
As defined by the Mobile Marketing Association, a set of practices that enables organizations to communicate and engage with their audience in an interactive and relevant manner through any mobile device or network.

Mobile offers
Similar to a mobile coupon, a mobile offer is intended to communicate awareness of a product or service to the receiver and ultimately would drive engagement with the issuer in terms of product or service purchase.

Person-to-person engagement
A one-to-one interaction between two individuals

Secure element
The component in a mobile phone that provides the security and confidentiality required to support various business models. A secure element may reside on the SIM, in a dedicated chip on a phone's motherboard, or as an external plug in accessory.

SIM
Subscriber Identity Module. A SIM is the smart card that is included in GSM (Global System for Mobile Communications) mobile phones. SIMs are configured with information essential to authenticating a GSM mobile phone, thus allowing a phone to receive service whenever the phone is within coverage of a suitable network.

SMS (Short Message Service)
A system used to send text messages to and from mobile phones.

Sticker
A form factor for deploying contactless RF chips that can attached to the external case of mobile phones and other devices without physical integration with the device.

WAP (Wireless Application Protocol)
A global application protocol that enables mobile phone users to access the Internet and other information services.