Mobile money
An overview for global telecommunications operators

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We are convinced that the growth of mobile money services will be one of the most significant trends of the coming years. It promises many new benefits for users around the world, and is undoubtedly going to shape the telecommunications, technology and financial services industries. For this reason, we have drawn together our firm’s experience of advising clients on this issue. With this experience, we are anticipating market trends, identifying the implications, and developing points of view on mobile banking and mobile payments, and how regulators around the globe can enhance the development of these markets.

Our expertise enables us to help our clients deploy mobile money strategies and take them to market. Here we outline our services, and the people across our global network who are advising our clients. It’s how Ernst & Young makes a difference.

When addressing the opportunities of mobile money in today’s rapidly changing environment, telecommunications operators, financial institutions and technology providers face the challenges of strategy design and modeling, operational efficiency, management of partnerships, risk, compliance and regulatory complexity. To help our clients address those challenges, Ernst & Young brings together a worldwide team of professionals with deep experience in providing assurance, tax, transaction and advisory services.

Norman Lonergan
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Foreword
The proliferation of mobile money services is imminent. They promise many new benefits for users, and are undoubtedly going to shape the telecommunications, technology and financial services industries. Technology innovation and new transaction types are changing the mobile money landscape, and opening up opportunities for a range of industry participants. The contactless system is poised to take off, offering multiple service capabilities and a unified platform to generate greater convenience for users.

As it develops, each market will need to understand customers’ demands, and develop its own ecosystem and business models. A key facilitator will be converging regulation and legislation which needs to address fraud and money laundering issues. A favorable platform for industry stakeholders to collaborate will be one that maximizes the benefits to all parties.
The burgeoning growth in the last decade has made the mobile phone as indispensable as the wallet — many will not leave home without it. The ubiquitous nature of mobile communications has the potential to vastly improve and transform access to financial and transaction services for people, including the developing economies.

What is mobile money?
The definition of “mobile money” varies across the industry as it covers a wide scope of overlapping applications. In general, mobile money is a term describing the services that allow electronic money transactions over a mobile phone. It is also referred to as mobile financial services, mobile wallet and mobile payment. In this report, we define mobile money as a broader term that includes all types of monetary transactions executed via mobile phones.

A wide range of mobile money applications have developed throughout the years. Some major categories include:

1. **Mobile banking** – use of a mobile phone to remotely access a bank account, primarily for account balance checkup and bill payment services

2. **Mobile money transfer (remittance)** – a peer-to-peer application making use of a mobile phone to send money to family or friends, primarily across international borders

3. **Mobile commerce (payment)** – use of a mobile phone to perform financial transactions for purchases or sales, either remotely or on-site, retrieve promotion information or coupons, and deliver gift items

This report examines the global development of mobile money services, highlighting key opportunities and challenges in this new market.
Mobile financial services and mobile commerce are not new concepts in the telecom industry. Mobile network operators began exploring the concept of mobile payments in 2000 with little success. However, recent advances in handset functionality, chip and mobile network technologies, and upgrades to point-of-sale infrastructure have dramatically improved the environment for mobile money solutions, bringing together different industry groups, such as banks and operators.
A multitude of market segments

Mobile money applications offer a channel to expand traditional services and extend access to multiple segments including underserved or unserved groups. These applications address the very different banking needs for both the banked population in developed markets and the unbanked population in developing economies such as Asia, Africa and Latin America. In developed markets, the service is at the initial stage and is seen as a convenience that does not generate high revenues, but one on which to build value-added applications. In emerging markets, the large rural populations provide a perfect base to tap the unbanked group with no bank account but a mobile phone.

The younger generations in developed markets are also a high potential segment, given their willingness to adopt new technologies. They often cannot access financial services as they are not old enough but are actively involved in virtual gaming transactions. Convenience will provide a main motivation for them to try new services. Lower income workers are also likely to take up mobile money services, as they are not well served by the large banks.

Prepaid recharge or top-ups are a key revenue source for many carriers as they provide an affordable and convenient service for low-usage customers. Existing service infrastructure currently makes the process of reloading prepaid SIMs unfriendly for the low-usage segment.
The development of the mobile money market to date is still relatively small-scale outside of Japan, but the mass market potential is considerable.

New forms of mobile banking and commerce are also emerging in this realm. Two major applications have developed:

1. **Mobile commerce as a cash replacement in developed markets**

   Despite a disappointing start in the early 2000s, mobile payment has regained popularity in the mature economies. Typically SMS-based in the early days, the over-the-air mobile payment method is now moving towards the Wireless Application Protocol (WAP) platform and wireless internet, thanks to the proliferation of 3G technology. However, to make mobile commerce readily available, changes to retail infrastructure are required.

   Mobile money is evolving towards a lifestyle and convenience proposition, with applications commonly developed around transportation, retail, banks and mobile commerce. NFC technology has recently emerged in the mobile contactless market as a mechanism for micropayments (payments of small value). There is a great deal of interest in the industry about this physical mobile payment solution. Operators trialing the NFC technology are hoping to turn mobile phones into payment devices for transportation systems, convenience stores and for other goods and services requiring micropayments. Additionally, companies are now leveraging the technology to look at other applications such as location-based advertising, commonly called “smart posters.” By tapping the advertisements or posters, users can access product information, obtain promotional items, subscribe to services, vote in contests, find directions and make reservations. The information will match the user’s location and personal profile.

   As such, there will be great potential for NFC to address both the payment and the new non-payment markets. It will therefore be a key driver of mobile payments in the future.

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**Addressing the needs of customer segments**

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<th>Segment</th>
<th>Value</th>
<th>Size</th>
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<tr>
<td>Youth/students</td>
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<td>Unserved market</td>
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<tr>
<td>Expatriated workers</td>
<td>Blue-collar/ clerical users</td>
<td>Underpowered market</td>
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<td>Advanced users</td>
<td>Enterprise</td>
<td>New market</td>
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<td>Mass market</td>
<td>The unbanked</td>
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2. Financial services for the emerging economies

In many emerging markets, particularly in rural areas, access to financial services is costly and very limited. A large proportion of the population therefore has little or no access to traditional financial services. The exceptional reach of the mobile phone, helped by the proliferation of low-cost handsets, represents a significant opportunity to create profitable services for the unbanked or underbanked\(^2\) people. According to the GSMA, the trade association for mobile operators, the number of mobile phone users has exceeded credit card users by 2 to 1, and has outnumbered the use of automated teller machines (ATMs) by 2,000 to 1.

In addition, there is a sizeable migrant worker market in developing economies such as Africa, Asia and the Middle East, where low-income groups are seeking better working opportunities in developed nations. This creates a substantial need for systems to enable these workers to send money back home to their families. According to the World Bank, recorded remittances to developing countries were estimated at US$240 billion in 2007 – double the value in 2002. This represented three-quarters of the world’s total remittance inflows. India, China, Mexico and the Philippines were the top four remittance-recipient countries with a combined US$95 billion. Mobile money transfer therefore extends remittance services to billions of the underbanked population.

\(^{2}\) Definition from Wikipedia: The underbanked are people or businesses that have poor access to mainstream financial services, such as cheque cashers, loan sharks and pawnbrokers, targeted at poor people. They may be distinguished from the unbanked who have no banking facilities at all.
The Mobile Money Transfer program, jointly launched by the GSMA and Western Union in October 2007, encouraged the adoption of a mobile remittance service. About 40 mobile operators in 100 countries are participating in the program, in a bid to get a foothold in the market.

Meanwhile, the global economic downturn may have a negative impact on the remittance flow to developing countries, which had double-digit annual growth in the last few years. However, the decline is expected to be small relative to the projected fall in private capital flows or official aid to developing markets.

**Value propositions for operators, banks and merchants**

The benefits of offering mobile money services are three-fold – reaching the untapped segment, increasing share of wallet and delivering cost benefits.

The prevalence of mobile phones has generated consumer convenience as well as access to financial services for the unserved. This opens up many opportunities for stakeholders to set foot in the rural and emerging economies. Mobile money services could potentially increase ARPU (Average Revenue Per User) for mobile operators by increasing data traffic. This is particularly important as operators are expanding into developing markets where ARPU is traditionally low.

One reason for mobile operators to promote mobile money services is the potential to increase the share of wallet of the customer. Telecom companies may broaden their reach to a new segment of customers by offering new non-telco services. Increased market share from the new customer group would also open up opportunities to cross-sell telecom services, thereby spurring revenue growth.

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3 According to the World Bank projection, remittances to developing nations will fall by 5% to 8% in 2009.
On the other side, delivering financial services over mobile devices offers significant cost benefits to banks as it reduces the overhead of installing and maintaining a high-cost physical ATM network. Also, transaction costs for mobile operators are much lower as they are highly automated networks. International money transmittance is currently costing US$5–US$87 for a remittance amount of US$500, according to the World Bank.4

Mobile operators may also save billing costs associated with prepaid and postpaid customers by not paying a high margin to the retail distributors of mobile top-up vouchers.

Globally, the industry acknowledges the social and economic benefits that mobile money brings, especially to developing countries, given the physical limitations of financial services infrastructure. The wide reach of mobile phones enables more people to access financial services quickly and easily, even extending to billions of people in remote, rural areas with a less expensive, more convenient alternative. Mobile banking can keep low-income consumers’ money safe while giving them an affordable and flexible solution.

Compelling reasons for key stakeholders to invest in mobile money

| Mobile operator | 
|  | ► New revenue channel (e.g., share of fees)  
|  | ► Increased customer acquisition  
|  | ► Increased data traffic  
|  | ► Increased ARPU  
|  | ► Increased customer retention  
|  | ► Reduced billing costs  
|  | ► Opportunity to up-sell mobile content and postpaid service  
|  | ► Meet corporate social responsibility agenda  
|  | ► Enhanced brand image  

| Bank | 
|  | ► Extended banking penetration and reach into untapped market  
|  | ► Increased number of transactions  
|  | ► Low acquisition cost  
|  | ► Increased customer stickiness  
|  | ► Opportunity to up-sell other banking products (e.g., mortgage, loans, insurance)  
|  | ► Fulfill government’s service obligations  
|  | ► Increased security options in advanced handsets in comparison to cards  

| Merchant | 
|  | ► Reduced transaction and maintenance costs  
|  | ► Reduced transaction processing time  
|  | ► Reduced labor costs  
|  | ► Reduction in lost sales  
|  | ► Ubiquitous channel to accept customer payments  
|  | ► Good audit trail and secure ticketing  
|  | ► Increased amount of customer data for marketing  
|  | ► Quicker transaction than cash at the point of sale  

Source: GSMA; Ernst & Young analysis

4Based on 134 country corridors which studied cash flows from 14 major remittance-sending countries to 72 receiving countries, representing around 60% of total remittances to developing countries.
Growing mobile banking in Africa

The lack of access to formal banking in the mass market in Africa has opened the door for mobile operators to build successful mobile payment services. The gap between banking penetration and mobile penetration means that while many people do not have access to financial services, they do have a mobile phone. Capitalizing on the phenomenal growth of mobile telecommunications in Africa, a number of service providers are already active in deploying mobile banking services to tap the demand from the large unbanked population.
Strong untapped demand: Kenya

In Kenya, only one in five people have access to banking facilities, mainly due to the high transaction fees and a scarcity of bank branches. In response, leading operator Safaricom, in co-development with its major shareholder Vodafone, have established M-PESA as one of the most successful mobile payment services in emerging markets. Teamming up with Kenya Commercial Bank and Western Union, M-PESA has become a market leader, acquiring just under six million users – one in six Kenyans – since its launch in March 2007. The strong growth of M-PESA, reaching 35% penetration of its subscriber base, has helped Safaricom to enlarge its market share.

M-PESA is so popular that more than 10% of Kenya's GDP passes through it. After the post-election violence in 2008, the Red Cross used M-PESA to pay its staff. It has become so widely accepted and used that it is now possible for even low income consumers to spend a day in Nairobi without carrying cash by simply using their mobile phones to make payments. While it contributed just four percent of Safaricom's revenue in 2008, M-PESA is expected to become EBITDA positive in 2009. But its real value has been to enhance customer loyalty in a very competitive environment.

Following on from the success in Kenya, Vodafone has replicated the M-PESA solution in Tanzania through its partnership with Vodacom, with plans to launch a similar product for the South African market in the future.

Established mobile banking for low-income group: South Africa

In 2005, South African based MTN – the largest mobile operator in Africa – teamed up with Standard Bank - the largest banking group in Africa – to form MTN Banking which at the time was one of the first truly mobile banks globally. The rationale behind this joint venture was to bring a large number of the previously unbanked population into the formal banking sector in a low cost and easily accessible way. With literally millions of subscribers on their network – significantly more subscribers than Standard Bank had accountholders – the proposition to the banking partner existed around increasing the number of account holders. By contrast, the proposition to the network was centred on enhancing the brand equity as a lifestyle brand and generating new revenue streams from various forms of transaction fees.

MTN Banking adopts varied strategies for different segments in the country with half of the population unbanked. For the unbanked, MTN Banking provides a basic bank account at very low cost while for the high-income group, it offers an innovative, multi-access payment solution. MTN MobileMoney, a model in its MTN Banking service, allows users to perform a range of basic financial transactions using their handsets without the need to open or have a bank account. Currently commercially available in South Africa, Uganda, and its West and Central African operations, MTN plans to launch MobileMoney across all of its 21 markets.

Wizzit, a startup mobile banking provider in South Africa, is targeting rural low-income consumers. Launched in December 2004, Wizzit offers a low-cost transactional bank account to unbanked and underbanked people to make person-to-person payments, transfers and prepaid purchases, independent of mobile operators. Without its own branches, Wizzit partnered with the post office and banks to provide access points for customers. Wizzit has also adopted a unique direct sales approach, employing nearly 2,000 previously unemployed youth with good local knowledge of, and contacts in, the neighborhoods where they operate. In November 2007, the International Finance Corporation, a member of the World Bank, acquired 10% of Wizzit as part of its efforts to extend banking services to the poor.
Cross-border initiatives

European mobile payment provider, Crandy, inaugurated an international transfer service in Cameroon in June 2008, with a plan to roll out in eight other countries in Africa. The “Call & Pay” service offers the capability for mobile phone users in the European Union to transfer money to Africa. Partnering with UBC, the depository bank, Crandy is entering a crowded but lucrative market, with Western Union and MasterCard both attempting to utilize mobile phones for remittances by working with the GSMA to develop the commercial and technical specifications for services.

African telecom company Zain is also attempting to create a borderless mobile banking network across Africa. It has launched its mobile banking product, Zap in Kenya, Tanzania and Uganda, with plans to roll out services to all of its African operations. Partnering with leading international and regional banks including Citigroup and Standard Chartered, Zap will be included as part of Zain’s cross-border One Network service. Its recent alliance with the money transfer giant Western Union to link its platform to the Western Union’s global agent network has further strengthened the initiative, allowing customers to receive cash in their mobile accounts or at a Western Union agent location.

With Africa’s mobile phone boom creating a base for low-cost banking, expectations still remain cautious, with services needing to meet required in-country banking and telecommunications regulations.
India: from microfinance to banking

In India, the need for mobile banking has largely been tied to microfinance. Many unbanked people in rural India are taking their first steps in banking by acquiring microloans via a mobile phone. In relation to this, handset manufacturer Nokia launched a pilot program in July 2008 with a microfinance institution to offer customers loans repayable on a weekly basis. The program, offered in the Indian state of Andhra Pradesh, makes it possible for the lower-income villagers to own a handset, through innovative payment options and affordable mobile solutions. This increases the scope of mobile banking opportunities for these groups.
Rural India, which comprises more than 70% of the population, is primarily a cash economy because many people do not have bank accounts or access to other payment methods. The prevalence of mobile phones has the potential to help make sophisticated banking and payment services available. This presents an opportunity to reach the next billion consumers. Although there is a substantial demand, mobile banking is still in its formative stages in India. Regulations play a key role in shaping the landscape, and the Reserve Bank of India has imposed a set of operating guidelines for adoption by banks.

Despite significant levels of remittances into India through standard money transfer channels, mobile banking services are limited to Indian rupee-based domestic services. Mobile banking services for cross-border inward and outward transfers are strictly prohibited. Currently, only banks which are licensed and supervised in India with a presence in the country are eligible to provide mobile banking services.

Banks in India have been exploring the feasibility of using mobile phones as an alternative channel of delivery to the customer. Operators are also involved in an attempt to share a slice of the market. In May 2009, Tata Teleservices formed a partnership with ICICI Bank, the nation’s second largest commercial bank which launched a mobile banking system in January 2008, to offer mobile banking services. In addition, different models of partnership have emerged in the mobile money field. For example, payment service provider Obopay India and private sector bank YES Bank have partnered to tap the mobile money transfer business opportunities. Targeting the large number of migrant workers, Bharti Airtel and Western Union also joined forces to pilot a money transfer service in 2007.

Rural India is primarily a cash economy because many people do not have bank accounts or access to other payment methods.
NFC to take mobile money to a new level

Due to the lack of ratified global standards, many mobile money services are currently being deployed around proprietary point solutions, which make it difficult to break out of local closed networks. The arrival of the standard-based specification of NFC creates a broadly interoperable platform for multiple consumer applications.
While text-to-pay has certain limitations in terms of its convenience, the emerging NFC technology has the potential to become the next driving force for mobile money services. This is not only true for countries such as Japan where cash is the primary payment type, but also in places where credit cards are not yet popular. However, growth could be a challenge in markets with established payment infrastructure such as contactless card readers, e.g., Hong Kong. Also, the cost of installing readers in point-of-sale shops could be an issue in developing markets.

The industry is bullish about the future of NFC. Despite limited NFC handsets today, the imminent standardization of NFC and successful trials across the world will likely boost the handset availability, making it one of the core functions of future mobile phones. Recent trials have concluded there is significant customer demand for NFC mobile payment services and high expectations for simplicity and convenience. A vast array of service and equipment providers have already come together to determine a stable hardware configuration. As the NFC ecosystem involving banks, mobile operators, merchants and equipment makers evolves, the mobile payments market will begin to move from trials to mass adoption. Reaching economies of scale can help to reduce cost of the reader at the point of sale.
Implications for mobile operators

Having control over different parts of the value chain, each industry stakeholder may offer its own NFC-based payment service. While telecom operators and handset manufacturers have the greatest customer base, credit card companies and independent card issuers have a well-established retail network. The banks, another important player, carry a comprehensive financial infrastructure that is essential for processing financial transactions.

While NFC offers a lucrative business future for operators, the new technology opens a platform that allows more competitors from different industries to enter the space (without the mobile network).

Industry groups target consumers with different assets

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<th>Asset</th>
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<tr>
<td>Retail infrastructure</td>
<td>Payment/independent card companies</td>
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<tr>
<td></td>
<td>Credit card companies</td>
</tr>
<tr>
<td>Mobile customer</td>
<td>Telecom operators</td>
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<td></td>
<td>Handset manufacturers</td>
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<td>Financial backbone</td>
<td>Banks</td>
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<td></td>
<td>Credit card companies</td>
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Source: Ernst & Young analysis
Mixed development in Asia

Japan and South Korea lead the world in adopting contactless payment solutions, and implementing nationwide services on a commercial scale. Other mature markets in Asia are focusing on NFC because saturated mobile phone penetration promises enormous potential for mobile transactions. The Philippines and Bangladesh have marked the biggest success in addressing the unbanked.
Leaders: Japan and Korea

As the pioneer market in offering mobile money services, Japan’s NTT DoCoMo launched a mobile wallet service known as Osaifu-Keitai in 2004, and introduced i-mode FeliCa chip and contactless payment services in 2005. Amassing 47 million Osaifu-Keitai users in the last three years, the service has created innovative businesses by bringing together various existing card models such as Suica and Edy. Through this, credit card and financial service, transportation and mobile service companies have aggressively adopted FeliCa-based mobile phone and smartcard payment solutions. The dominance of NTT DoCoMo allows it to rent space on the mobile wallet at favorable commercial terms, and create a complete value chain by forming strategic alliances with merchants, banks and retailers.

South Korea is another nation with an encouraging take-up of mobile money services. Its model, unlike Japan, is highly driven by payment gateway service providers due to competing status among mobile operators, banks and hardware vendors. Card issuers including Visa Wave and MasterCard PayPass began implementing a contactless payment system that includes mobile payment solutions, in the South Korean retail sector early in 2006. Visa has also partnered with the T-money provider Korea Smart Card Co., the issuer Shinhan Bank, and Korea Telecom Freetel, allowing commuters to top up the balances on their T-money transit cards automatically.

The smartcard market: Hong Kong and Singapore

The dominating consumer contactless card, Octopus, attempted entering the mobile payment market in Hong Kong. In 2002, the company conducted a pilot with Nokia to embed its chipset into a Nokia mobile phone case. In view of the fast handset replacement rate, the card issuer abandoned its plan for mass launch.

In Singapore, StarHub partnered with EZ-Link, the contactless card company, in a large NFC trial involving 1,000 participants for transportation, balance enquiry and coupon downloads. The operator is currently exploring the integration of the EZ-Link purse in the mobile wallet service imported by NTT DoCoMo. A four-way NFC trial by NETS (another contactless card provider for retail payment), SingTel, United Overseas Bank and ViVoTec was also introduced in September 2007, initiating an over-the-air download of promotional coupons, and stored-value wallet on NFC-enabled handsets.

Developers: Malaysia and Taiwan

Taiwan is focused on NFC deployments where the three biggest mobile operators have offered trials. Two credit card companies, Visa and MasterCard, teamed up with Chunghwa Telecom and Taiwan Mobile respectively to launch payment services. Far EasTone also made inroads into the commercial deployment of mobile contactless payments, launching an NFC trial on over 5,000 Visa payWave stores island-wide in mid-2008.

Malaysia’s mobile payment market has developed modestly but uptake remains limited. Existing services focused predominantly on bill payment and mobile banking, while new services are emerging slowly. Operator Maxis has already launched a mobile payment service called M-money. It trialed a NFC service in October 2007 in cooperation with Maybank.

In Australia, a mobile payment trial began in Melbourne in early 2008. A partnership with Telstra and National Australia Bank (NAB) represents the first trial to allow customers to pay for goods and services on-the-go using contactless enabled smartphones with a SIM card loaded with a NAB Visa Card application.
Early adopters: the Philippines and Bangladesh

Smart Communications and Globe Telecom are driving a shift in mobile banking based on the exchange of simple text messages. As of December 2007, around 5.5 million Filipinos had used their mobile phones as virtual wallets, making the country a leader among developing countries in mobile transactions.

Smart, an innovator in prepaid top-up services, was the first to offer one-way person-to-person remittance in 2000. The service, addressing the large overseas worker market and the need of low-income users and the unbanked, has gained phenomenal uptake in the Philippines.

In Bangladesh, Grameenphone developed a mobile money service for utility bill payment to serve the 95% unbanked population. The operator partners with a bank to deliver the service, and customers visit an operator’s center to make the payment. Grameenphone receives transaction fees from the end-users.

New force: China

The enormous online gaming community in China has driven the growth of peer-to-peer payments, including the transactions of virtual goods and purchases of game attributes using virtual currencies. This has already created a huge market for mobile payments as it offers a more secure and ubiquitous platform than online payments. Tencent began issuing virtual currencies (called QQ dollars) in 2002 for trading of electronic services and allows users to turn it back into cash. In August 2003, China Mobile established a joint venture, Beijing Union Mobile Pay, with China UnionPay, the country’s sole electronic payments and card-clearing organization, to manage the mobile wallet payment service. Alipay.com, a subsidiary of Alibaba Group, launched a mobile payment service in June 2008, allowing subscribers to pay via voice and SMS, free-of-charge.

Nevertheless, regulation remains a concern, with China’s central bank preparing a licensing scheme for the operation of online third-party payment systems by non-financial institutions, requiring at least RMB100 million of registered capital for a nationwide license. To date, cash is still the most widely used form of payment in China, even for large transactions.

In China, gaming has created a huge market for mobile payment, although regulation remains a concern.
Fraud is a key concern
Fraud and money laundering are of great concern with the emergence of global mobile money remittances, which are outside traditional financial institution regulations.

As mobile commerce emerges, spam, malware and outright theft of personal financial information will become an increasing threat that must be prevented. Managing fraud will add costs and complexity to this process, which will make it more difficult for new market entrants to succeed.
Security remains important

Security remains an important issue that needs to be addressed for mobile money services. While mobile networks already have encryption on the messages transmitted across the network, mobile transfers require additional tracking and logging for regulatory demand.

As services move to NFC-based, the extra security issues may come with stored value applications on the NFC chip. Meanwhile, chipset vendors are working on minimizing the hardwire information into NFC tags.

Business model issues

Although cash displacement and payment cost reduction is high on the agenda, the business case is far from straightforward for banks and operators. With a lack of clear and viable business models (e.g., revenue-sharing issues), a large-scale mass market launch of mobile payment has yet to take place.

Financial regulations and legislation

In many countries, telecom operators are not allowed to adopt the role of a financial institution, as is the case in the Philippines. The need for regulatory compliance has caused many non-financial service providers to stay away from the service.

Banks and mobile operators have been competitive in the mobile money space, primarily due to the stricter security requirements and tough local financial regulations. Both of them hope to control the market. This gives rise to a need for converged regulation, which is slowly coming to the attention of regulators around the world.

Lack of technical interoperability

Mobile money services are currently being deployed around proprietary point solutions and this leads to a one-bank one-solution problem. The upcoming NFC technology could be a way to address interoperability between all parties offering services and technology standards, so that payments can move between operators, and from one country to another.

User experience

One of the most crucial and basic elements to making mobile money services a success is ease of use and reliability. However, mobile operators, banks and payment providers have struggled to convince consumers that the new services are better than those in use today. In other cases, customers simply do not see the need for the payment functionality to be developed. A lot of work still needs to be done to promote customer acceptance.
The mobile money ecosystem spreads across a wide range of industry participants, from financial institutions, merchants, chip and equipment makers, to mobile operators. It therefore requires close cooperation among all stakeholders to make this service successful.
Many potential models have been described for mobile money applications. Among the most common ones are operator-centric and bank-driven models, given the fact that these industries have control over a mass customer base. However, there are a growing number of new parties such as handset manufacturers, payment companies and card issuers entering this market.

As technology advances, different mobile money applications create different business models. The mobile money ecosystem will develop in different ways in each country, and between different service providers and mobile network operators. There is no single model that fits all markets. The types of model adopted depends on a wide range of external factors, including the market composition, openness of regulatory regimes, maturity of related industry sectors, market dominance of the participants and potential cooperation within the value chain.

Common models taking on mobile money

Mobile money service providers charge a small fee for service provision, with the aim of recording a bulk volume of transactions. While the business case is not yet proven, several different business models exist with varied revenue flows. For mobile operators, mobile money offers new revenue sources through additional network usage and new applications for consumers. Banks and payment networks could earn commission or transaction fees from merchants and consumers. But in all cases, they need scale to make the service a lucrative business.
Operator-centric

Operators are in the best position to monetize transactions from mobile money services as one of the value-added service offerings. This is especially true as operators increasingly embrace 3G, which requires new data services to generate revenues.

As its own service offering, telecom companies, and in some cases media companies, have been independently deploying mobile money applications, providing prepaid top-up services, and digital content purchases through its billing platform. There is a growing trend for carriers to adopt contactless payment to extend their reach to much broader retail transactions and micropayments.

Carrier-centric models are commonly adopted in developing markets such as Africa for mobile banking serving the unbanked segments. A representative case is the M-PESA money transfer service, developed by Vodafone in Kenya. The operator, Safaricom, positions itself as a financial service provider under its own brand, although it does not manage the financial side of the service. It partners with a local bank, which manages the M-PESA account and is legally responsible for the financial liabilities.

G-Cash in the Philippines offers another operator-led approach for mobile money. G-Cash is a stand-alone account managed by Globe, not associated with bank accounts. Globe plays the role of a bank, as a provider of a payment solution, assumes the responsibility for financial aspects and has to comply with the financial regulations. The success of Globe depends on the provision of e-money regulation that allows mobile operators to adopt the role of financial companies. The model works well in the Philippines due to a number of factors including the large unbanked population, popular and cheap SMS and the massive demand for remittance.

Bank-centric

Banks are traditionally risk-averse and are reluctant to rush new mobile money products to market. While banks see an opportunity to increase customer numbers through mobile banking systems, they are cautiously gauging the amount of credit that can be issued against increased risk. Also, the volume of individual transactions is, in the beginning, small compared with traditional banking. Banks with existing client bases face the risk of cannibalizing this base through introducing low-cost offerings. Only banks with the strategy, brand and capacity to reach out to unbanked customers are likely to be major participants in transformational mobile banking models. Meanwhile, banks are less actively expanding their core banking products over the mobile channel.

The majority of developments have thus far been around simple mobile banking facilities that permit account enquiries or transfer of funds.
Banks deploy these solutions as an extension of their traditional banking services. However, the issue for the banks has been one of customer ownership, along with the question of who bears the distribution of risk.

Bank-led models prevail in Africa as major banks look at mobile banking as a competitive necessity to expand their service reach. For example, First National Bank in South Africa has rolled out mobile banking since 2002. The bank developed the applications in-house while it also worked with a third-party provider to deploy a SMS messaging gateway. The service, accessible from all mobile networks, has moved from a “first to market” product to a significant transaction channel, with millions of transactions worth hundreds of millions of rand per month reported by the bank. First National Bank explicitly regarded the innovation of product and product delivery as a key differentiator in its retail banking strategy.

Apart from the bank-driven models, there are joint-venture types such as Smart/Banco de Oro and MTN/Standard Bank where the services are built upon the existing ATM network of the banks and capitalized on their banking distribution networks.

Payment network

Increasingly popular are the entries of new industry groups in the mobile money area. This is unleashed by the growing numbers of unlocked handsets. These independent service companies have been active in the online payment space, providing secure payments between customers or between customers and merchants. Yet, the long-term viability of this model is challenged by the lack of sustainable revenues and the inconvenience of point-of-sale transactions.

Payment networks such as PayPal are extending their large presence in the internet payments market to the mobile market. For example, PayPal has recently introduced a mobile checkout for use on phones with a browser, allowing users to check balance, transfer money and find places to shop. The company is leveraging its considerable online auction user base to expand its payment services to a much broader range of customers.

In China, mobile payment service providers like UnionPay, YeePay and Taobao are the strongest backers of mobile payment services, each of which maintains a network of partnerships with banks, merchants and mobile operators. However, partnerships were mostly negotiated on a province or city basis, causing the service providers to maintain a limited network of partnerships in a small geographical region.

Meanwhile, a number of payment solution companies are active in Africa deploying mobile transfer and cross-border remittance services. For example, WIZZIT and Crandy are developed independently of operators and target the lack of access to banking infrastructure in this region.
In this model, banks, mobile operators and trusted third parties collaborate to manage the deployment of mobile applications. The collaboration model appears the most feasible for mobile money as it can capitalize on the strength of different industry groups. However, the large number of parties trying to work together has hindered rapid adoption so far. With the emergence of NFC, the collaboration model may prompt more creative sharing agreements that resemble today’s co-branding contracts.

Japan is by far the most successful mobile payment market, with participation from a wide portfolio of industry groups. Mobile payment has a large growth potential in Japan because it is still heavily cash-based. While the service is led and owned by the mobile operator NTT DoCoMo, its model is unique compared with other countries, in that the carrier drives the cooperation among the entire value chain by making investments within it. The dominance of NTT DoCoMo helps it to form an alliance with different parts of the supply side such as banks, merchants, payment card companies and chip makers, and even acquire them. In this way, it can obtain more favorable commercial terms from them, allowing it to adopt a more aggressive handset subsidy policy.

NTT DoCoMo earns transaction-based commission by acquiring target merchants with large networks. Apart from a winning strategy, the success of NTT DoCoMo’s mobile wallet services also boosted to the maturing credit card business and non-cash micropayments.

**Emerging industry groups**

Compared with other industry groups, handset manufacturers generally have the greatest reach of consumers, thus making them a perfect party to engage in the mobile money services. Nokia, one of the founding members of the NFC Forum, is the first handset manufacturer to introduce mobile wallet terminals by embedding the contactless technology in mobile devices. It has also conducted NFC field trials across Europe, the US and Asia, incorporating the functions of contactless transportation card and retail commerce in the mobile phone.

Yet this model is still developing, as the number of NFC-enabled devices are limited. In addition, handset manufacturers need to partner with organizations that have a strong retail infrastructure to penetrate the merchants. Likely partners candidates include organizations such as credit card issuers.

The latest trials involved the teaming up of Visa and Nokia to deliver debit and credit payment and payment-related services – including contactless payments, remote payments, money transfer, alerts and notifications – for Nokia’s new NFC handset. Visa also announced plans to develop financial service applications for Google’s new Android platform. In addition to facilitating payments, Visa and MasterCard are taking an active role in driving the development of the mobile payment market through co-branding and cross-promotion.
All the stakeholders have an interest in the mobile money market. Providing payment and money transfer services alone is not viable in all cases. A variety of closed systems have been piloted, and all have failed to succeed as each prospective party has aimed to gain the lion’s share of revenues and to own the customer. However, there are successful cases where the operator or bank has driven the development of mobile money services. In Japan and the Philippines, for example, the players are operating in a unique market and with favorable regulation.

Building a collaborative approach
Industry groups’ positions in the payment value chain

In a broader sense, banks, credit card companies, handset manufacturers and telecom companies can achieve greater success with the right innovative cooperative model. Mobile operators and handset manufacturers simply will not process all the capabilities, technologies and infrastructure necessary to serve this segment profitably. To promote new entrants into the market, current stakeholders may need to relinquish some of their existing strengths. For example, banks and telecom operators tend to apply very high security standards to mobile banking services, thus preventing others from entering the market. By building balanced collaborative models, banks and mobile operators can both utilize their strengths and create better services for their customers.

Strength of mobile operator and financial institution in the mobile money space

Handset manufacturers dictate the technical features and functionality in mobile phones, and telecom operators own a ubiquitous communications infrastructure that enables mobile money services to take place. However, banking is a heavily regulated industry, and banks are in the best position to go through the regulatory processes to enable all kinds of mobile money services.
Collaboration will become an essential part of serving future customers. But industry groups must proceed wisely. The large number of participants potentially involved in the mobile money value chain has complicated the assigning of both costs and benefits. Careless collaborations could lead to poor business economics and short-lived services that will leave the field open to other parties. There are many considerations such as financial value, legal mechanism, organizational process and distribution model in forming a partnership. A vibrant partnership is one that takes advantage of each party’s strengths and has balanced everyone’s interests.

Multi-faceted considerations in a partnership model

- **Distribution model**
  - Who owns the brand?
  - Up-selling/cross-selling?
  - Who owns the customer?
  - How to reconcile the target and the means of distribution?

- **Organization and processes**
  - How to customize the product to the needs of the distributor?
  - How to link production systems to distribution networks?
  - What governance?
  - What method to interface the IT applications?
  - What degree of industrialization for the key processes?

- **Financial value**
  - What value chain? How to estimate the added value of each partner?
  - What kind of compensation for the partners? (Sharing the margin?)
  - Who supports the risk? Who runs the risk?
  - What is the system of assessment of the synergies?

- **Legal mechanism**
  - What is the legal scope of the partnership?
  - What legal framework (JV, status of bank/insurance, contracts, SLA)

Source: Ernst & Young analysis

**NFC creates a new ecosystem**

NFC creates a lucrative opportunity to tap the cash-dominant market. While it combines the contactless card with mobile devices, the beauty of NFC is its ability to offer consumers multiple services over the same platform. This creates opportunities for different stakeholders or service providers to develop services independent of the others.
**Trusted manager model**

An efficient way to facilitate the collaboration within the ecosystem (particularly for banks and mobile operators) is to employ an intermediary called a trusted service manager, a concept endorsed by the GSMA.

The trusted service manager serves as a middleman in the NFC ecosystem that connects multiple issuers, service providers, mobile network operators and users, enabling the multi-application use of NFC mobile services. The main role of the trusted service manager is to help service providers securely distribute and manage contactless applications, creating a trusted end-to-end system. Furthermore, the single point of contact for service providers can accelerate service deployment by facilitating contractual arrangements and other aspects of business relationships between service providers and mobile operators.

This approach offers benefits for all stakeholders. The independent operation of the shared platform can ensure a non-discriminatory use of the financial transaction gateway among service providers. Mobile operators may optimize their return on investment by connecting a maximum number of service providers, while service providers will be able to deploy their service quickly and easily, with just one intermediary giving them access to all customers.

The role of trusted service manager can be performed by independent third parties, card issuing banks, operators or a combination. The GSMA has set out detailed approaches for these four partnership models.

Intermediaries, called “trusted service managers”, are an efficient way to facilitate collaboration with the ecosystem.
Lessons learned — success factors for different industries

Generating return from small fees

Even though existing mobile money offers some encouraging benefits, such as increased transaction volume and customer retention, there must be a solid business case to launch the service. Payment revenues are declining rapidly because of increasing regulation. Achieving profit from the services may not ascertain profits for the mobile operators, as the small transaction charges will only prove their worth in high volume. The heavy costs arising from a large volume of transactions may overshadow revenue gains. Both service providers and retail outfits need justification for the infrastructure costs.
While financial gain was not always the main reason that operators looked towards mobile money in the past, the forthcoming NFC model brings a more encouraging prospect for revenue generation, given its stronger capability to address the critical mass and carry multiple services.

**Enlarging the addressable market**

Many early initiatives by the carriers and banks fell apart due to mutual distrust and fears associated with getting involved in alliances. Single-carrier, single-bank mobile banking solutions mostly don’t succeed beyond the initial pilot because the addressable market is too small. In this aspect, NFC will again become a potential saver by bringing a much larger addressable market.

**A balance of customer benefits**

Convenience proves to be a value which drives uptake for mobile money services. Service providers should focus on developing an easy-to-use service with high merchant acceptance, as well as interoperability across different operators or banks.

To entice consumers, especially the low-income group, the price of mobile money services needs to be less expensive than traditional channels. A mobile money platform run on WAP or mobile internet will incur expensive data plans, and thus impede user acceptance. As such, an SMS-based service appears to be a more economical solution. As it reaches scale in the longer term, NFC may prove to be the next-generation platform for mobile money services.

**Distribution matters**

The distribution network is vital to the penetration of the mobile money service. This is especially the case in rural emerging markets where it is not cost-effective to maintain branch networks of banks and operators to reach dispersed or low-income populations. Local agents can play a role in reducing the costs of service distribution while effectively controlling the risks. These are flexible, scalable retail channels which people can conveniently pay into or take cash out from their transactional accounts. Through local outlets, service providers and customers can interact remotely in a trusted way.

**Winning through innovation**

It is not sufficient for operators to build a business case simply by offering contactless card functionalities in a mobile phone, as this market has largely been addressed by the payment card companies themselves. It is vital to create new value by combining the functionalities of both mobile phones and contactless cards.

The merit of NFC is that it is not only a payment channel but also a reader. Operators need to decide which part of the value chain they wish to own. They should leverage the mobile network to provide added value to the consumers, such as personalized advertisements.
The growth of mobile money services is set to be one of the most significant trends of the coming years. As technology advances and the mobile money ecosystem expands, mobile phones are becoming a multi-purpose payment platform. Mobile money transactions across the globe will transform the world of finance and the world of mobile. It will change human's lives with increased convenience, enhance the standard of living for the unbanked population and stimulate economic development.

Conclusion
While the advance of contactless technology will enhance the quality of life, security is a question in consumers’ minds. Until their fears are quelled, the uptake of mobile money services is likely to suffer. Technologies such as fingerprint identification, facial recognition and iris scanning provide strengthened security by authenticating users before transactions are authorized.

In many parts of the world, there are no regulatory frameworks in place to cover these new services. A key enabler will be with regulators, both in telecom and financial services, to clear the way for mobile money through converged regulation. Meanwhile, resistance from merchants and a shortage of handset choice are emerging as new barriers.

Participants across many industries are looking to enter the mobile payment marketplace. However, there is no definite answer as to who will win the game, nor is there a single model that fits every market. Yet it is rational to expect that the party which owns the customer will have a higher chance of success.
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