



INFORMATION, COMMUNICATIONS & ENTERTAINMENT

Mobile Payments in Central & Eastern Europe

KPMG CENTRAL AND EASTERN EUROPE





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Preface

To better understand what's changing business in the 21st century KPMG continuously analyzes the key drivers effecting the Information, Communications and Entertainment industry (ICE) - ranging from consumer preferences and new technologies, to new business models and the evolution of human capital. Our practice is currently focused on the convergence of the most significant sectors, products and services, all of which are enabled by advanced digital technologies.

This report "Mobile Payments in Central & Eastern Europe" attempts to provide a closer look at the development of mobile payments in the Central and Eastern Europe (CEE) region. This promising and innovative service combines the advantages of both modern banking and telecommunications technology to bring a variety of mobile financial services to both consumers and businesses.

In order that our clients and business partners can truly understand the development of this dynamic new market, KPMG has analyzed the key initiatives which are driving mobile payments in the region. Our goal is to summarize the current state of development of m-payments in the region identifying some common trends as well as the major differences among the different local markets within CEE. To accomplish this goal we studied the leading examples of m-payments services in the following countries:

- Bulgaria
- Lithuania
- Czech Republic
- Poland
- Estonia
- Romania
- Hungary
- Slovakia
- Latvia

In looking at the wide variety of initiatives present in the region one of our key objectives is to identify those services which are either the most successful across all markets in the region, or which are deemed more likely to succeed than others. At the same time, we attempted to delve into the root causes for why the same or similar initiatives, which were successful in one country, tended to fail in another.


Ultimately, however, this report is not aimed at providing a final judgment on which players, products or markets will ultimately fail or become the most successful. Rather a basic lesson from our analysis is that similar initiatives may succeed or not in a market largely due to the local conditions (e.g. the stage of development of the banking and telecom sectors) and adopted business models.

We have also briefly surveyed the regulations for those countries covered in the report. Although the EU regulatory regime forms the underlying framework for all the countries and provides directions for all the local laws to follow, there are - and probably always will be - differences in local regulations among CEE countries.

Finally, when considering the different m-payments applications, we were not surprised to see that CEE markets tend to follow the fundamental trends observed world-wide. This is true for both the main drivers of success as well as for the hurdles facing each of these initiatives.

While surely many questions regarding the development of m-payments are left unanswered in this report, we hope that it brings the topic closer to the reader interested not only in m-payments, but also in the development of the CEE markets.

Kind regards,



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Introduction

M-payments are payments made using mobile handsets and other devices, either to directly purchase or to authorize payments for goods and services. Such devices are playing an increasing and evolving role in the wider development of electronic payment systems world-wide.

There are currently two distinct m-payment channels:

- Pay-as-you go or 'contactless card' technologies
- Text messaging systems using the so-called "Over the Air" technology.

The first are used mainly for in-store payments (i.e. in shops, restaurants etc.), when a POS reader is required. Due to the ease of use and the swift execution of transaction, the technology is gaining a wide acceptance of customers. This system is witnessing increasing availability and user acceptance among public transportation providers. Contactless cards work as "e-wallets," where money is stored on a virtual account. Text messaging systems are suitable for remote payments and applied both for micro- and macro-payment solutions, by independent service providers, content providers as well as banks.

The mobile payment market is segmented into categories that are combination of different purchase places (local and remote) and amount size (low and high amount):

	Low Amount	High Amount
Local Purchase Place	Face-to-Face	Retail Shopping (with or without POS terminal)
	Parking	Person-to-Person (P2P)
	Vending Machines	
Remote Purchase Place	Content Purchase (Ringtones, Games, News)	Bill Payment
		Fund Transfer (P2P)
		Internet Payments
		Mobile Shopping
		Prepaid Accounts Top-up

Remote payments cover the online payments in which a mobile phone is used as a device to authenticate personal information stored remotely. Remote payments can be used for transactions that take place locally i.e. face to face, parking and vending machine transactions. Low-value transactions usually are recorded on the user's mobile bill and the merchant is reimbursed by the mobile operator. This way of payment is mainly used for small transactions as the level of security is low – i.e., network authentication only. High-value transactions are processed in different ways using debit/credit card or wallet/stored value accounts. Security requirements for this type of payments are an important issue that's why

authentication via PIN code is required. The transport of high-value transactions is encrypted over WAP, IVR or SMS.

Overall, member countries of the European Union (EU) are a very diversified group, and this is equally true with respect to the m-payment sector. The development across the EU has not been homogeneous, and is unlikely to be so anytime soon. Among the countries in the CEE region only Estonia is perceived as being beyond the initial stage of development. The majority of CEE countries are at the bottom of the ladder.

Initiatives which have been driven globally show that there is no one comprehensive m-payment marketplace representing the bulk of the “Initial” or “Not Developed” stages. Because m-payments represent the further development of electronic payments, there is a wide range of opportunities for m-payments across different industries as well as applications. In our opinion m-payments in the CEE region has seen promising developments in sectors such as transportation, retail and media, and can include commercial transactions on-line as well as off-line, selling content via mobile phone or even advertising¹. Although there is a significant number of varying mobile payments initiatives across the globe, the mobile payments market in Europe is still quite fragmented.

There are both positive and negative aspects of this decentralized approach reflected in the development of standards. On one hand, carriers can still go ahead with their own individual offerings based on local needs and business environments. On the other hand, the lack of a common platform causes interoperability problems in inter-platform and international transactions, limiting the markets for each service provider.

Though it is clear that Central and Eastern Europe is perhaps a step behind the more developed nations of Western Europe, the pace of change in the ‘New Europe’ is extremely dynamic on all fronts including the commercial, regulatory and political arenas. For this reason, our goal when carrying out this research is not only to identify the most interesting initiatives for our client and business partners, but also to uncover those trends which will provide insights into the potential further developments in this unique marketplace. Additionally, as most payment solutions are targeted at specific countries and driven by local requirements, this report also identifies the distinct patterns of adoption that can be seen in the different markets within the region.

The main questions we attempt to answer in this report are as follows:

- What were the most interesting initiatives relating to the m-payments in the region?
- Which business models are driving these initiatives?
- How are these different models developing, and in which countries?
- Who are the key players along the value chain?

¹ More information can be found in KPMG Report 2007, Mobile Payments in Asia Pacific.



Note on methodology:

This report, which focuses on mobile payments in Central & Eastern Europe, is an extension of an earlier study on mobile payments in Asia. In carrying out this research an international team of practitioners from local KPMG offices, working within the Information, Communications and Entertainment industry carried out secondary research with the local markets mentioned in the introduction of this report. Our final analysis and interpretations are based on publically available data from market research firms, the media and KPMG International, which were used to supplement KPMG's proprietary industry knowledge and provide qualitative examples in support of the analysis. We would also note that our research was conducted in the Spring and Fall of 2008, prior to the full scale unfolding of the financial and economic downturn of 2008. This is a potentially limiting factor to our survey.

Business models and the m-payments value chain



Business models behind different transaction types²

This section outlines five types of mobile payments, each driven by different incentives and revenue earning opportunities.

Business-to-consumer (B2C) mobile payments

The B2C model is the business model with the highest potential to enhance commerce through mobile payments. B2C m-payments can rely on either an operator-centric or bank-centric model. The key features of B2C m-payments are integration onto (or access from) a mobile handset interface, and a payment for the direct acquisition of goods or services. The handset interface is the crucial business driver, allowing consumers to use their handsets to pay for everything from groceries and lottery tickets to insurance premiums and tax bills. Most B2C solutions provide an alternative to cash transactions and are, therefore, gaining more and more attention due to their potential to fundamentally change consumer behavior. The design of the handset interface is an important success factor for many B2C

initiatives.

Business-to-business (B2B) mobile payments

B2B and C2C solutions are largely being driven by the telecommunications industry's fixed-to-mobile convergence and therefore mobile transactions are simply supplementing, or extending, existing transaction practices. B2B solutions are focused upon facilitating business processes rather than on end-payment for goods or services. This encompasses specific industry solutions (for example, logistics processes utilizing technologies to track and pay for shipments and inventory), and third party platform aggregation and billing solutions (including payment gateways which do not themselves own content, but provide platforms for accessing content). These types of m-payments are still relatively small-scale at present.

Consumer-to-consumer (C2C) mobile payments

C2C transactions occur directly between end-customers, across a business platform specifically established to facilitate the exchange. One example that stands out in particular is eBay. The company's payments arm, Paypal, has greatly facilitated C2C e-commerce by holding

buyers' money in escrow accounts until the customer confirms receipt of goods, thus removing the risks of non-delivery or of faulty goods. With such a substantial platform to build on, Paypal has also been the leading player globally in C2C m-payments. Locally, however, an increasing number of new players have been springing up in the last few years, but mainly they provide easier payments made over the Internet. These smaller players have yet to enter the m-payment market, but expect that to change in the coming years as the technology becomes more ubiquitous.

Person-to-person (P2P) mobile payments

P2P m-payments are private transactions between two individuals and are typically SMS-based. This may involve the dissemination of top-up credits (for example transferring minutes or minutes-value in exchange for a good or service), an m-banking transfer of funds, or digital barter such as in the exchange of content or virtual world goods. Thus, commercial platforms may be involved in the transaction, but the transaction is a direct one from one person to another.

² Presented classification of business models is based on KPMG's 2007 Report, "Mobile Payments in Asia Pacific."

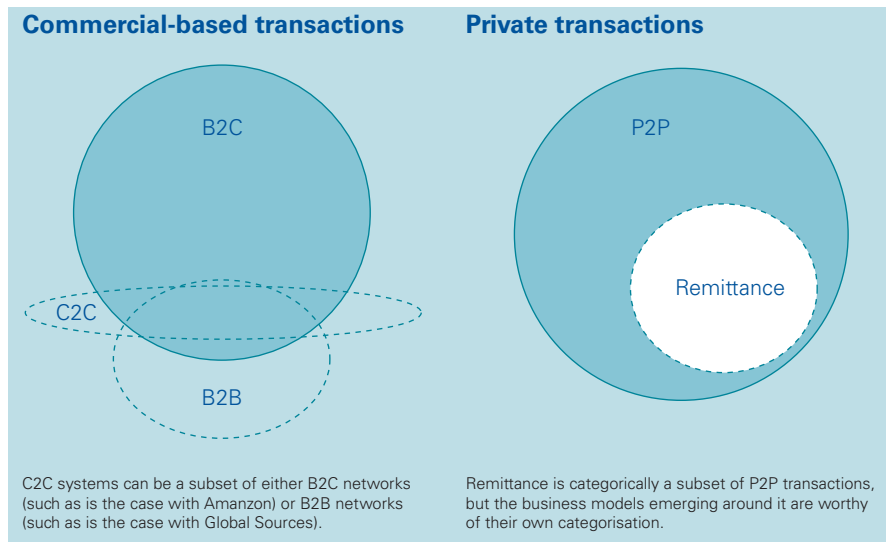


Peer-to-peer lending models have also been springing up on this basis, led by the likes of Zopa in the UK, Prosper (US), Smeva (Germany) and Boober (Denmark). A similar service, PPdai, was also established in China.

Remittance mobile payments

Remittance can be viewed as a subset of P2P payments, since it is usually a one-way P2P transaction. Examples include a parent using their mobile to remit a taxi fare to their child across the city, or a domestic worker remitting his monthly wages to his family abroad.

These five models are more generally categorized as either commercial transactions (B2C, B2B, C2C) or private transactions (P2P, remittance).



Emerging business models in CEE

M-payment services were launched for the first time in the CEE region in the late 90s. Since then different initiatives have expanded in the markets and business sectors across the region.

We have focused our research in the CEE on both m-payment services which predominate in the market place as well as those which represent the leading edge of new business models. Therefore we have purposely tried to avoid overly focusing on services such as mobile phone pre-paid account top-ups³, content downloads, and Premium Rate services that can be found any place in the world, and have been widely described in numerous publications. Our attention is therefore on other m-payment initiatives developed across CEE, in order to understand the following:

- whether or not trends in the CEE region follow specific trends observed in different regions across the globe;
- which group of players is the most active in this region (e.g. financial institutions, mobile operators or independent providers);
- to what degree there are similarities in m-payment trends among the different CEE countries.

Predominant initiatives in the region

Premium Rate SMS (added value services)

An obvious first step into m-payments for the mobile operators has been to offer “top-up” of pre-paid cards through m-payments, bypassing the need for producing and distributing scratch cards. As the voice market matures, mobile operators are moving into data services in order to increase margins and average revenue per user (ARPU). Currently, most of the m-payment systems in CEE concentrate on the so called “Premium Rate SMS”. Mobile operators are very active in this sector by providing services which are geared toward purchase of digital goods such as ringtones, wallpaper, and games. Progress is driven also by the web-based entities. These services use MNO (Mobile Network Operator) networks and have agreed upon revenue sharing with mobile operators, where the end-customer is billed through the MNO’s monthly phone bill. Among all the initiatives, the revenues for these services are the highest.

Transportation solutions

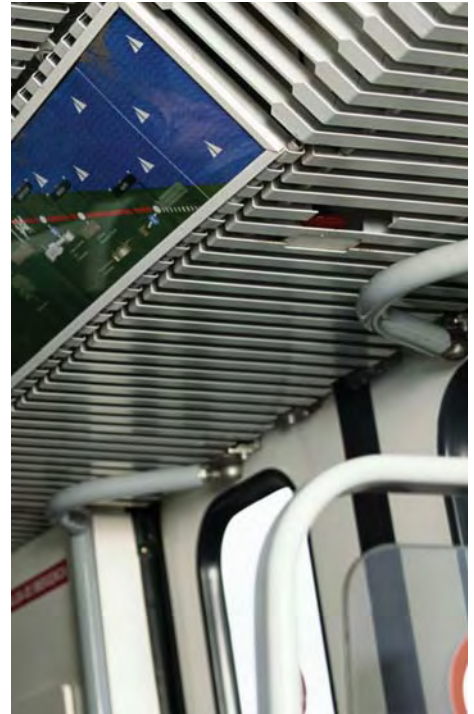
Due to convenience and ease of use of such cards, they are a dominant⁴ m-payments solution in CEE markets and will most likely continue to grow. They are present in all countries and fall under the jurisdiction of municipalities. As yet, it is the most successful and the most widespread initiative. Slovakia’s “Čipová karta”, for example, is a contactless card launched in February 2001 by the Bratislava Transport Office, which gained popularity in the capital, Bratislava, and later spread to other major Slovakian cities. Additionally, paying for tickets on public transportation in Bratislava by SMS has just been introduced.

Just recently, Orange in Slovakia and the Slovak Rail company are offering a service enabling their customers to buy train tickets via mobile phone. The only requirement is to activate the “Orange Teleplatba” service.

The PR SMS ticketing system launched last year by the Prague public transport system is another example of new m-payment services. Users can send an SMS and within 2 minutes they receive an electronic ticket in the form of an SMS. The Czech Railways is planning to launch a similar service in 2008.

³ The emergence of digital top-ups has enabled these digital credits to be transferred between users, thereby creating also a virtual remittance market.

⁴ Not surprisingly, we have found several similarities to m-payment patterns observed elsewhere in the world. One service that stands out is the wide and fast acceptance of transportation contactless cards, the first m-payment solution offered in CEE.



Prague Public Transport SMS Tickets

Since 22 November 2007, it has been possible to pay for Prague public transport tickets via SMS. Only interchange tickets for CZK 26, valid in the inner city zone (P), are available at this time. The ticket is valid for 90 minutes for all types of public transport – busses, trams and metro. The new ticketing system enables customers to bypass inconvenient ticket vending machines, benefiting both customers and the transport providers, who might otherwise experience invalid fares for those customers unable to purchase a ticket. To buy a ticket, the user must send an SMS with the text, "DPT"; to the number 902 06 26. Within two minutes he receives an electronic

ticket in the form of an SMS consisting of a number with the encoded time of purchase and validity. In case the user accidentally deletes the ticket, he can apply for a duplicate by sending DPTA to the number 900 06 06. The system charges CZK 6 for the duplicate. Some critics stress that the operator did not bring added value to the SMS tickets as they cost the same price as paper ones. For instance a similar system in Helsinki offers the electronic tickets 10% cheaper than the regular ones, which reflects the difference between the actual costs of the paper tickets compared to the electronic ones.

Poland has also adopted SMS ticketing system provided by Transport Authorities and Projekt & Parking Serwis Polska Sp. z o.o. under the brand name moBILET, firstly in Poznań, later in other cities. So far, these contactless cards are the most popular in the Polish transportation sector. The function of contactless cards as e-wallets is so widely accepted it is encouraging providers to extend the cards' functionality to include payments for parking, and other goods and services. Such functionality has been launched by Mennica Polska in Poland.

M-parking

Using m-payments for public car parks is gaining wide acceptance by users in CEE. The model for m-parking is mostly the same in all countries. Typically, customers receive a password and through their mobile phone they can start and stop the parking payment by sending an SMS. In some cases, such as Estonia, customers initiate a phone call. The system will automatically register the duration of the parking time and compute the cost which is invoiced regularly to the client.

M-parking is a definite success story for EMT telecom and Estonia. Starting in 2000, nowadays 55-60% of parking sales across Estonia are generated through mobile handsets. It has also spread to other Baltic states. According to Rigas Satiksme (a state-owned organization, which provides parking places and parking services in Riga, the capital of Latvia) the volume of m-payments grew from 333 clients per day in January 2007 to 547 in December 2007, a growth of over 64%.

M-parking is also one of a few m-payments services provided in Romania. Individuals in Timisoara, for example, can use the TelPark system, offered by TPark to pay for parking

Warszawska Karta Miejska

Karta Miejska, a contactless transport card was launched in Warsaw in 2001 by the Warsaw Transport Authority (ZTM) and Mennica Polska SA. The solution is based on the MiFare system (trademark of NXP Semiconductors), a technology selected for most contactless smart card projects in Europe. The card operates for buses, local trains and underground which facilitates everyday travel.

The aim of Karta Miejska is to become a regional e-administration instrument that will integrate city transport with other ventures like parking fees, theatre tickets and others services. Today Karta Miejska enables payments for all means of the public

transportation in the Warsaw area as well as public parking. In the near future trials for purchasing transport tickets with mobile phones are expected in Warsaw.

In 2007, the value of sales for Mennica Polska reached about EUR 69 million with these types of tickets generating over 50% of Mennica Polska revenues. Recently Mennica Polska has expanded its offering by installing additional points-of-sale called "Strefa Karty Miejskiej". These are located in most underground stations and many kiosks, and allow the users of Karta Miejska to top-up their transport cards as well as their mobile phones. So far 600 points are open, with 400 operated by Mennica Polska.

Public car parks payment system – Blue zone project

The public car parks payment system is the first m-payment initiative in Bulgaria facilitating payments for car parks with the use of a mobile phone. It was implemented by the three mobile network operators, the Bulgarian Telecommunication Company, EBG.BG, Voicecom, Interactive Media Service, Antima and Telelink.

Starting from October 2007, subscribers of Bulgaria's three mobile

operators (Mtel, Globul and Vivatel), started using the simple SMS messages to pay their parking fee in any of the "Blue Zone" parking lots in the capital Sofia.

During the last year, the public parks payment system has been gaining wide acceptance by Bulgarian users. An average of 800 car owners in Sofia use the service every day and future growth is expected to remain strong.

fees. M-parking is also the most notable mass scale example of m-payments currently in operation in Bulgaria. However, due to the low number of parking lots in the blue zone in Bulgaria this type of payment is still

relatively small-scale at present, but holds great potential.

In some countries, the business model for m-parking has been dominated by independent service providers (ISPs).

For instance, Rigas Satiksme is the general partner for the CiTYCREDiT Company generating 90% of payments for Latvian provider. Hungarian provider, EME Zrt., has started to offer m-parking services in Budapest and 17 other cities.

The model of m-parking has been deployed in most other countries in CEE, except Slovakia. After the service

was piloted there in 2006, it proved not to meet the expectations of the market. Also, the Polish pioneering m-parking initiative, Idea WaPark SMS, has been discontinued, however for reasons related to company ownership. The service returned under a different provider, mPay together with Projekt & Parking Serwis Polska Sp. z o.o (moBILET).

EME Zrt. – micro m-payments

EME Zrt. defines itself as a facilitator and developer of m-payment solutions. Payments are generated from a separate pre-paid account which can be topped up from the client's bank account or with cash. The current portfolio includes the payment of parking fees, highway tickets, visit fees and newspaper subscription. The company plans to continue to add more and more customers as its services take on wider acceptance.

The first service provided by EME was m-payments for car parking. With this service registered clients (approx. 50,000) can manage their parking via mobile phone in Budapest and another 17 Hungarian towns. Clients have pre-paid accounts from which they pay the amount of parking fee when they use the parking meter zone. At the beginning of the parking procedure clients send an SMS or give a call which activates the account. At the end they send an SMS or call again. This method is not only easier, it is more cost effective as well. This is because users are able to pay a minute-based fee for their parking. Moreover, if a customer buys a ticket for a fixed time period and wishes to extend, the client need only send an SMS.

Buying a highway pass is also part of EME's m-payment portfolio, a service EME has been providing since 2006 in cooperation with Állami Autópályakezelő Zrt. (National Highway Managing Plc.). The payment method is similar to the service for car-parking: clients send an SMS and receive permission from the Állami Autópályakezelő Zrt through EME's server, and the payment is again debited from clients' pre-paid accounts.

Another service EME introduced is in the healthcare sector. The Hungarian government introduced the so-called visit fee in the health care system in 2007. The payment of this fee used to be mandatory for all patients who go to a general practitioner or to other health care providers. EME Zrt. facilitates the paying of this fee by allowing for its clients to pay via mobile phone. Sending an SMS is enough, without going to a physical terminal, to get the electronic receipt which justifies the payment of the fee. Since this introduction however, the fee was waved as a result of a popular referendum, so this service is no longer active.

Idea WaPark SMS

The first m-payment initiative in Poland facilitated payments for car parks in Warsaw with the use of a mobile phone. The new service, "Idea WaPark SMS" was launched in September 2001 with the cooperation of mobile operator PTK Centertel (a subsidiary of France Telecom and Orange), and WaPark, the company licensed to control public car parks in Warsaw. Access to the service was available only for PTK Centertel post-paid subscribers, who could receive an identification number to be displayed in a visible place in their car.

"Idea WaPark SMS" operated through SMS communication with special SMS content containing a set of commands for users to follow. Money was collected through private, virtual accounts opened by the mobile operator upon activation of the service.

The advantages of the solution include:

- availability through any mobile device capable of sending and reading an SMS;
- real time payments for parking according to a standard pricelist for WaPark;
- a cashless method of payment.

During the three years when the service was offered, "Idea WaPark SMS" gained wide acceptance among Idea users. Nevertheless, in November 2003 the service was discontinued due to the change of ownership structure of the public car parks payment system (the city of Warsaw terminated the services of WaPark to manage the vending parking machines itself).

M-banking

M-banking is usually implemented as a complementary channel to banks' existing on-line infrastructure, enabling customers to view transactions and balances, transfer money and make payments, with the mobile phone also used as a communication channel between bank and customer.

Since m-payments became available, banks have always been interested in broadening the use of mobile phones as a banking channel. However, WAP, which was highly promoted in the early days of m-payment development (the WAP browser was launched in 1998), was not accepted by the market because of the relatively slow speed of service and its relatively high price. The SIM Toolkit was the next stage of m-banking development requiring a special SIM card with bank applications, as in the case of SIM Intelli-IQ in Poland (a service provided by Inteligo, a company offering Internet bank accounts) or 'OTP direct aktív SMS' (launched by the largest Hungarian bank). However, all these initiatives have largely been regarded as niche solutions and have yet to attract numerous users.

The reasons for the low uptake of the service are driven by both the supply and demand side of the equation. On the supply side the main barrier is that any particular application is limited to the subscribers of a given operator, requiring banks to provide different customized solutions in cooperation with different operators. This of course makes it more complicated and more difficult to manage the service effectively. On the demand side the inconvenience for the customer of

having to switch SIM cards for the purpose of executing transactions formed a significant barrier. For both of these reasons m-banking has only achieved a low share of electronic banking in general.

In Estonia, the most advanced market in the region, three major banks: Swedbank, Hansabank, SEB and Nordea, serving more than 80% of customers, provide active m-banking through WAP. At the same time in Romania, just three banks (BRD – Groupe Societe Generale, Raiffeisen Bank and Romexterra Bank) out of 29 in total, provide such kind of services. In comparison, in 2006 in Hungary, there were 14 banks providing SIM Toolkit m-banking service, five of which offered active transactions.

For Estonian banks, P2P money transfers (mobile phone credit orders) appear to be one of the most successful applications. In November 2007 transaction volume stood at EUR 470,000, up from EUR 196,000 in December 2004. Average daily volume typically reaches EUR 9,500, with some 400 transactions per day. While the volume is still relatively small, the service has a strong foundation for growth.

When it comes to m-banking, the Baltic States are the clear leader and are the only countries with services that go beyond simple transactions. The development of SMS loans is a cutting edge service in this sub-region of CEE. The service is provided in Estonia by a number of private players, which enable individuals to take a short-term loan of up to EUR 320 by sending an SMS "application" to a

lending company. Such loans are much more expensive than those from the bank, however, their advantage is that the borrower can receive the cash in a few hours, without a credit check, after submitting the SMS-application. On one hand the credit for small-sum loans is easier to get; on the other hand, loans are definitely riskier and thus more costly in terms of loan interest. There are approximately 15 firms in the market who offer loans of EUR 64 to 320 for durations of 15 or 30 days. SMS Laen OÜ, the distinct market leader in this area with market share of 55%, distributes over 300 loans daily. Also, Lithuanian Moment credit provides such a service. The credit is granted up for up to LTL 600 (EUR 174) after submitting an SMS to a specific number. The only requirement is to be registered in the local Moment Credit system and users must have their own ID with password.

In-store payments

The Czech Republic was one of the first countries in the CEE region that introduced m-payments. In 1999, Paegas (currently T-Mobile), launched vending machines with the possibility to pay for a Coca-Cola with a mobile device. The customer approached the vending machine, dialed the given number and followed the automated instructions. Shortly after, the offer was extended to Aral car washing plants.

The same year, the leading Estonian mobile network operator Eesti Mobiiltelefon (EMT, a subsidiary of TeliaSonera) also launched m-payments for purchasing goods from vending machines. This never really took hold and has been quietly phased out by now.

In 2001 Hansapank (now Swedbank, subsidiary of Swedbank Group) and Ühispank (now SEB Pank, subsidiary of SEB Group) also entered the mobile payments field, starting by offering mobile payments in pubs and restaurants. Transactions are executed based on the Bank Card Centre' infrastructure which Swedbank, SEB and Sampo bank set up originally for processing and supporting card transactions. By August 2003 the Bank Card Centre reported 570 merchants from whom it was possible to purchase goods via m-payments, and by January 2008 this number grew to 770. This number includes mostly smaller services: post offices, bars, small shops, health care clinics, flower shops, and some taxis. However, this payment method never really took hold among larger merchants (e.g. supermarkets) and is not being actively developed by banks or bigger merchants. Despite low user uptake these initiatives demonstrate the possibility and simplicity of m-payments.

In Poland, customers of mPay (an independent service provider in Poland) and the cooperating mobile operators (currently two MNOs out of four in Poland signed such agreements with mPay), can use a mobile handset to pay for goods and services in McDonald's, Sodexho, Telepizza and Dominium Pizza, selected coffee houses of the Coffeeheaven chain, as well as at Coca-cola and Nestle vending machines.

Since 2005 Near Field Communication (NFC) technology has been the most promising payment method. This mobile scheme is more successful than other physical mobile payment methods because of its simplicity.

mPay

Founded in 2003, mPay was the first entity in Poland offering mobile payments for goods purchased in shops and in vending machines. In 2007, the company was awarded the No. 2 position in micro-enterprises category in the ranking of "The 500 Most Innovative Companies in Poland" *.

mPay operates on the Polish mobile payment market based on its licensee agreement with National Bank of Poland (NBP) acting as a clearing house (payment agent) and taking responsibility for accounting and monitoring transactions. The company has chosen an SMS based model rather than an e-wallet. Its solutions offer mobile operators the opportunity to be active in the financial services segment, creating opportunities not only for additional revenue, but also a whole new range of service offerings. mPay has teamed up with mobile operator Polkomtel (2007) and P4 (2008), gaining access to a potential customer base of 14 million Polkomtel subscribers and 1 million Play subscribers.

The possibility of payment using the mPay solution is also offered by

Warsaw's radio taxi company, Taxi Plus, and by the first internet cinema in Poland, Kino.Cineman.pl. In February 2008, it launched parking service for its clients.

An agreement with another player in this sector, Allay, expanded the list of mobile payment possibilities to on-line auctions, local cash transfers and billing payments. So far, the company has managed to encourage about 7,000 clients to use its solution, which is less than originally expected. There are a number of reasons for this result, an important one being the low number of retail outlets equipped with the infrastructure to support the solution.

The company estimates that by the end of 2008, about 1 million Plus subscribers will use the service, and longer term the company expects about, 9 million subscribers will join the group of mobile phones users, who make payments via mPay platform.

** Ranking published by the Institute of Economics of the Polish Academy of Sciences in cooperation with BRE bank, Gazeta Prawna and Dun & Bradstreet.*

There are numerous NFC pilots underway all around Europe in a number of countries including the United Kingdom, France, Belgium, Finland, The Netherlands, Germany, Spain and Poland. At the end of last year, Poland, with the launch of MasterCard PayPass contactless card, was the first country in the region where the solution based on this new type of technology has been introduced.

A discussion about MasterCard PayPass implementation also started in Slovakia at the end of 2007. The vision there is to initiate these new contactless cards for Slovakian consumers by the end of 2008 and this has now been successfully launched.



Given there has been little or no progress for either in-store m-payment technology or providers till now, both Paypass and PayWave (Visa) may well prove to be the most significant initiatives in CEE in 2008. However, the increasing interest of international players leads us believe that 2008 has the potential to be a pivotal year in terms of the development of the m-payments market in CEE.

P2P/Remittance

Until now there have been no significant initiatives in the CEE region which would deliver P2P or remittance

services to customers. Thus, this service area is still in the very early phase of development. Given that there have been examples of successful implementation of P2P services in other European countries, we believe such initiatives can be introduced in the CEE region as well. This can also be the case of remittance services that have been especially successful in societies with large numbers of citizens living abroad – which is the case of some CEE nations that have recently joined the EU.

Key players on the market

This chapter reveals how different stakeholders' strengths and weaknesses could affect their role in mobile payments diffusion. It reports on the current status of collaboration among the main players, and finally, outlines the possible roles of mobile operators, financial institutions, and independent providers in successful implementations of payment solutions.

As previously mentioned, we have dissected several of these business models, where different parts of the value chain play a more or less important role.

The most typical scenario is for mobile operators and financial organizations to cooperate with each other intensively, in order to stimulate market growth. This is a logical outcome mainly from the view point that these two industries are complementary; mobile operators have a billing infrastructure for processing large numbers of relatively small transactions, while banks and credit card companies have the resources to authorize lending for larger amounts.

MasterCard Paypass

Up to 2007, m-payments have not taken off in Poland and there has been little or no progress. However, the most visible example of new trials for m-payments in Poland includes global MasterCard, which, in cooperation with BZWBK bank, is launching contactless card technology. It is the first such initiative in Central and Eastern Europe.

Around the world, 80,000 partner merchants are involved, and in Poland there are 500 so far including McDonald's, Mercer's Coffee and Euro Apteka. In the near future, retail chains of newsagents (Ruch, Empik and Kolporter) are also expected to take part in the initiative.

The service is a part of MasterCard's strategy to penetrate small volume cashless payments. By using MasterCard® PayPass, Polish consumers will be able to pay for small transactions of up to PLZ 50 (approximately EUR 15) without the need to use a PIN code. Payments are transacted by way of close physical contact with a specialized POS reader provided by eService. Higher value transactions will need to be authorized with a PIN code.

As part of the first trial BZWBK bank issued one type of card – a pre-paid Maestro Paypass. It is a type of electronic purse, which can be topped-up by a standard transfer from a bank account linked to the card.



Mobile operators are well positioned to benefit from m-payments. In most cases MNOs are the logical choice to lead market development, as they already have strong customer relationships, possess the necessary billing infrastructure and control the customer handset. Typical MNO-centric models, mentioned previously, are Premium Rate SMS solutions enabling for the full participation of operators. However, in the value chain of new m-payment initiatives the MNO's operating environment only enables m-payment transactions. Except for SMS fees, MNOs play a role as a connection channel between customers and other players. MNOs will find it difficult to broaden their offer of m-payments services by going it alone as they don't have a merchant network, or the systems to process transactions and clear payments. For this reason, a partnership with a bank or a credit card company may be necessary to ensure success.

The case of m-payments' development in the Baltic region shows such a trend.

In Estonia, banks and a dominant MNO are collaborating in certification, an area related to m-payments. The Certification Centre was established in February 2001 by two leading Estonian banks Hansapank (now Swedbank) and Ühispank (now SEB) and two telecom

companies, Elion and EMT (members of the TeliaSonera group). As such, Certification Centre has the backing of Estonian and Nordic financial and telecom sector. Certification Centre supports electronic certifying of ID-cards and thus enables authenticating payments relying on ID-cards. Even more related to m-payments, the Centre has also helped develop and supports Mobile-ID, which enables making electronic transactions, just like an ID-card. It makes it possible for a person to log into internet banks and sign various contracts digitally. Thus, Mobile-ID brings more security and mobility into authentication of transactions by using the handheld device.

Estonian banks between themselves also set up a joint venture (Bank Card Centre) which facilitates card transactions between all banks and their clients. Recently the Bank Card Centre was sold to Northern Europe Transaction Services (NETS), leading Scandinavian mediator of bank card transactions. The Bank Card Centre's main success was early adoption of card payments in Estonia. Because major banks were involved, the system was interoperating between different banks and thus convenient for users and merchants. Based on their infrastructure the banks also offered m-payments at merchants as the only major difference would be that the transaction is done using a

mobile device rather than card terminal – authorizing, processing, clearing and billing would be done using the Bank Card Centre's infrastructure. In the end this did not prove popular as the transaction is cumbersome and slower using a mobile rather than card terminal, and major merchants (supermarkets etc.) have not adopted it.

Vertical integration of the mobile payment sector represents another scenario for the development of the business model. Independent service providers look for their chance to grab a part of the cash and non-cash payments market, traditionally served by financial institutions (issuers, banks, etc.). They can eliminate other players by obtaining a license to process and clear transactions. Such players have not been present in all surveyed countries. However, in some of these markets the ISPs have dominated the market as they possess the one and only m-payment platform. Polish m-Pay, Lithuanian M-Pay, Bulgarian SEP, Hungarian EME Zrt, or Latvian CiTYCREDiT have all been designed to complement existing credit card systems by adding the ability to process m-payments. The system has been adapted to mobile operators to enable them to enter the m-payment market with micro- and macro payments.

SEP – System for Electronic Payments in Bulgaria

SEP Bulgaria is the third licensed payment operator in the Bulgarian market, offering an alternative to the existing card payments, using the mobile phone not only as a communication tool, but also as an instrument for electronic transactions.

SEP's license to operate a payment system was granted by the Bulgarian National Bank in November 2007.

Partners in this project are the private equity fund, Advance Equity Holding,

and the technological partner, Sirma Solutions, a leading software development company in the country.

The main objective of the operator is to set up, develop, and maintain a unified national system for electronic payments based on mobile telephones and GPRS point-of-sale terminals in Bulgaria. The SEP's pilot project for implementation of mobile payments is still under development.

Contopronto, a Norwegian m-payment provider that was also present in Poland is one clear European example of such integration. Contopronto launched an independent payment solution in 2002. The company has also received a license from the Norwegian Royal Ministry of Finance to become Europe's first e-bank, thus eliminating the traditional financial institution from the value chain.

The mobile initiative of Polish internet bank, mBank, is another example in the region. In December 2007 mBank started offering mobile telephony services under its own brand (mBank mobile), linking mobile telephony and banking services. This effectively allows the elimination of direct participation of an MNO in the value chain when providing m-payment services. Such a strategy was also applied by Rabobank in the Netherlands when the first Western European bank, MVNO, was introduced in 2006⁵.

CITYCREDIT

The ISP-centric model is also predominant in Latvia. SIA CiTYCREDiT is an electronic money institution (EMI) registered with the Bank of Latvia and it is regulated by the Law on Credit Institutions. CiTYCREDiT was established in 2003 to enable payments for parking in Riga using SMS messages to transact payments. The range of merchants

with whom the Company is partnering has now expanded. It includes transport payments, content download from DoReMi music portal, and paying bills in restaurants. In 2006, the enterprise was acquired by a group of private investors from Latvia who are developing CiTYCREDiT into a complete micro payment solution.

⁵ Forrester Research "Case Study: Rabobank Reduces The Supply-Side Barriers To Mobile Banking" by Alexander Hesse with Benjamin Ensor, Michelle de Lussanet, and Bill Nagel; March 17, 2008



Regulations, interoperability and security

One of the biggest questions facing the future developments of m-payments, including both threats and opportunities, is how and where to draw the line between the various players of the financial services chain. As MNOs become more involved in processing third party transactions and cross border remittances all players - regulators, MNOs, banks, third parties and consumers - will want to ensure a stable environment exists to support the many benefits m-payments will potentially bring.

MNOs and other third party providers have an opportunity to move into the retail, and possibly commercial, financial services business – a clear threat to the banking industry. On the other hand, should MNOs and others move too aggressively, they risk bringing down the heavy hand of local and EU regulatory bodies that typically tend to err on the side of caution. This could cause bottlenecks as new services try to come to market.

For these reasons regulations and security issues are crucial for m-payments. Since the development of

m-payments is at a relatively early stage and not yet a substantial market in terms of volume, most economies in Europe are approaching the subject with caution. Many have introduced laws and regulations governing e-payments, but not specifically covering m-payments. The following list summarizes some of the most pressing issues and questions that will need to be dealt with:

- When, where, who and how to tax m-payment transactions?
- How to apply prudential requirements to capital requirements, insurance and licensing issues for deposit taking activities?
- How well do existing laws function with respect to commercial theft – particularly when cross border issues arise?
- How to determine liability and minimal standards with respect to identity theft?
- How to handle customer and data transaction recording issues as they relate to privacy, money laundering and funding other illegal activities?

At the moment MNOs typically do not require special licenses when they serve as access and transmission networks for banks to provide m-banking services. However, as volume grows and the sophistication of the transactions increases, they may be required to apply for licenses under domestic legislation and regulations. In the European Union, MNOs are, for the most part, offered exemption from licensing, but this situation is only provisional.

MNOs as Banks

In many ways MNOs are already de facto banks, taking deposits, in the form of prepaid calling cards or as m-wallets, and creating credit in the form of billable services through post paid calling plans. While this form of assets and liability management is currently not a core business it would not be the first time an industry moved strongly into financial services from its original core business. Previous examples include the automotive industry (providing car loans), retail businesses (providing credit for consumer goods





and providing cash desk services), and industrial companies, (who finance the purchase of their equipment through leasing arrangements).

Because of this opportunity, regulators will need to consider how and whether to apply financial services regulations to MNOs. Considering the viewpoint of the different stakeholders, there are different reasons and approaches for developing such a regulatory framework. From the point of view of the licensed and operating banks, these stakeholders will strongly support higher levels of regulation for MNOs citing a number of factors; not least will be the possibility of a non-level playing field, which would be a disadvantage to the banks. The MNOs will likely argue that the current volumes of business, and limited legitimate banking activity pose less risk and therefore require less regulation, which if overly or wrongly applied could have adverse consequences on the development of the market. Finally, the regulators will want to ensure that they have a clear view on the actual money supply and that it is properly under their supervision. As electronic money increasingly replaces cash this is a very real issue in many countries.

Despite the early development of the m-payments market, governments in the region and across Europe are certainly aware that the development of the regulatory framework has a significantly large potential to influence the development of the market, as well as those ancillary industries and business models that will follow m-payments development. For this

reason individual governments are eager to maintain a certain amount of autonomy when setting the standards – both to ensure stability but also to maximize the opportunity. At the same time it needs to be recognized that a cohesive framework that can be universally applied will be necessary if the market is ever going to reach its potential. For these reasons EU policies will have a significant influence on the m-payments market, both at the country level as well as across the CEE region and all of Europe.

Legal framework in the European Union

The following three EC Directives and the debates around them will likely provide the most influential guidance for countries in the CEE region that are still developing their own policies and policy instruments.

- The E-Money Directive (EMD) 2000/46/CE relates specifically to e-payments, and “seeks to open the market for the issuance of E-money to non-banks through the creation of ‘Electronic Money Institutions’ (ELMI) regulated under a lighter prudential regime than that required of credit institutions.” Up to now, Member States have exempted MNOs and m-payments from ELMI licensing.
- The Payments Services Directive (PSD) 2007/64/CE sets out levels of information access, obligations and liabilities on the payment processors, such as banks and credit card companies. PSD is part of the direct action in the aid of creating a common market of payment services.

- The Single European Payment Area (SEPA), which launched in January 2008, opens cross-border credit and credit-card services to EU wide competition, but not so for m-payments. The rules and regulations governing ELMs, including m-payment systems, have been delayed until 2009.



The arguments for and against either stricter or looser regulatory stances vary when all the issues are considered. At the moment there are certainly concerns, for example, over security and the level of compliance that ELMs can and should achieve. However, because m-payments at the moment typically constitute micro payments, there is a general consensus against imposing regulations that are too strong.

In addition to security, there are other issues such as whether MNOs need to pay deposit insurance for money received for prepaid cards, or whether MNOs can or should pay interest on such monies. Licensing for banking activities is yet another realm that needs to be considered. Consensus on these and other issues varies and a key driver on the regulatory side is to what degree regulatory bodies need to balance between an easy but inflexible one-size fits all regulatory framework versus the time consuming approach of considering issues on a case-by-case basis.

The key issue at the moment is that of proportionality. In other words m-payments should be regulated in proportion to the risk that such

payments present to the general public. Because at the moment the risk appears very low, in large part due to the volume and nature of the transactions, a relatively low level of regulation would seem to be sensible.

Regulatory environment in CEE

There are no particular institutions regulating service of m-payments in the CEE region. M-payments are treated as a method of payment, which is to be provided by an eligible entity. In general the regulatory environment in CEE is considered neither strict nor particularly developed. In accordance to the directive 2007/64/EC, the relevant regulation on payment providers must be adopted in regional laws by 2009.

Some countries have applied even more restricted policy compared to, for instance, EU Directive 2000/31/EC (opt-in solution) regarding terms for sending commercial information and offers. Most countries of the EU, by applying an opt-out solution, allow for sending commercial information and offers by electronic means of communication unless customers

object. In Poland, for example, it is not the case – every time commercial content is transmitted the consumer's approval is required. This significantly limits opportunities for establishing a commercial relationship by lesser known customer service operators and provides an advantage to mobile operators that have already established commercial relations with their clients.

On the other hand, banking law imposes significant limitations regarding the issuing and hosting payment instruments and processing financial transactions. Many of the regulations that apply to banks also apply to mobile banking. The view of the regulatory bodies is that unauthorized access, information leakage or system outages due to malicious actions can have a severe impact on banks and on the banking sector. And some bodies took action. For instance the National Bank of Romania issued a regulation concerning the remote access payments instruments (such as mobile banking) which require banks to obtain an authorization from the Ministry of Communications and Information Technology (MCIT) in order to be able to offer such an instrument to their customers. In order to obtain this



authorization from MCIT, banks have to undertake a yearly security audit of the respective payment instrument performed by an independent, specialized auditor.

Generally speaking, CEE countries are planning further to adopt national legislation in the near future in line with the planned EU Directive for Payment services.

The impact of regulation on m-payments

The regulatory environment will delineate the market opportunities and the cost of compliance, and it will also influence the assignment of risk and obligations between stakeholders. A good example of this was the 'liability shift deadline' as it was widely called within the industry – on 1 January 2005 when the liability risk arising from credit card fraud within the EU was shifted from the banks to the merchants following the introduction of new levels of card security known as EMV. The banks and credit card companies regarded this as encouragement to merchants to invest

in upgrading their card readers to comply with the new standard, although codes of conduct still leave the banks with the burden of proof if a customer's card is stolen.

The other important issue is the effect of regulation on competition, efficiency and quality of service. MNOs and payment processors are not necessarily competitors to banks and other financial institutions, including payments clearing systems, but they can be. While restrictive financial regulations will ensure they are not, proportional financial regulations are more likely to bring about the benefits of potential competition.

Interoperability

Numerous service providers currently offer or plan to implement mobile payment system, but the services depend on proprietary technologies and therefore are still limited to the market. To accomplish fully the potential of a new payment scheme, interoperable standard-based solutions that cover various types of payments across multiple operators and countries

in less advanced regions of Europe must be implemented.

Till now, there has been a lack of common industry approach to standardization and this is seen as a key barrier, slowing down mobile payments from becoming available to the mass market. In recent years, many industrial bodies have initiated key work items necessary to enable a mobile payments' infrastructure, some of which have already been considered as essential as they try to standardize the technical aspects of mobile payments.

The impact of standardization can already be seen in a number of mobile payment services and market trials which have been launched in Asia, the US and, to a lesser extent, Europe, where the primary standard, EMV, is driven by financial institutions working together on one comprehensive card solution.

Security

Without the assurance that the exchange of secure information and safe electronic financial transactions



over mobile networks can be made, the deployment of the service will be limited. Also, without secure elements there would be a high probability of abuse, fraud and leakage of private corporate information, which could even reverse the introducing of new services. It is the Achilles heel of the m-payment sector. Therefore, different mobile security procedures and payment methods have been suggested and implemented towards mobile payments.

A secure mobile payment system must then contain the following features:

- Confidentiality - confidential information must be secured from an unauthorized person, process or device.
- Authentication - ensures parties with access to a transaction that are not impostors and are trusted. It is usually achieved by using network-based authentication protocols.
- Integrity - the information and systems have not been altered or corrupted by outside parties.

- Authorization - verification that the user is allowed to make the requested transaction.
- Availability - the system must be accessible for authorized users at any time.
- Non-repudiation - ensures that the user must not deny that he/she has performed a transaction and must provide proof if such a situation occurs⁶.

With greater infrastructure support for m-payments, mobile users will have the flexibility to make their safe purchases from mobile devices. The question is whether the parties developing and deploying this technology are ready to make a full-scale commitment.

⁶ S. Kadhiwal, M.A.U.S. Zulfiguar, Analysis of mobile payment security measures and different standards, Ali Bhutto Institute of Technology, 2007.

The road to somewhere?

Similarities, differences... prospects

In an uncertain world there is only one certainty – constant change. The same can be said about the m-payments market. Where it will go is anyone's guess. What we can say, however, is that it will continue to move forward. The benefits are simply too strong and too compelling for the key players to sit still.

There are many reasons for the development of m-payment initiatives in the CEE region, both on the demand and supply side. On the demand side, with a continuously rising number of non-cash transactions and mobile penetration exceeding 100%, it seems that the environment for the development of m-payments initiative has never been better. With mobile handsets commonly used by the majority of the population and the number of POS terminals installed in the region rising at a very fast pace, the supply side development also looks promising. Also, a key enabler, NFC⁷ enabled handsets, will appear on the market in several CEE countries already this year. Global players, such as MasterCard and Visa that control a global network of more than 21 million merchant locations and have more than 450 million cards in circulation, have decided that now is the time to launch contactless payment solutions and start developing the necessary POS infrastructure. In some countries innovative independent service providers have noticed their chance to take part in the lucrative business of payment processing and are launching

competitive m-payment initiatives, targeted not only for the local, but also other CEE markets (i.e. mPay in Poland).

It's easy to imagine that the only thing required to develop a particular market is to clone successful initiatives found in one country, in cookie-cutter fashion, to all the other markets. But this is not necessarily the case. All markets are different and such a decision should always be carefully thought through. An excellent example of how things work in practice is that of m-parking solutions. It is the successful business model for most countries in the region, but not for all.

On the other hand, it is also hard to find a simple correlation between the mobile penetration rates and the development of m-payments. In Lithuania, a country with the second highest penetration of mobile subscriptions in Europe⁸, the number and range of m-payment initiatives is surprisingly low.

Looking for similarities in trends can also lead nowhere. For example, while in some markets the underdevelopment of the banking industry provided a trigger for the mobile operators to launch innovative m-payments services, in others, like Romania, this has not been the case. The carrier's objective there was to develop their network and attract as many clients as possible and subsequently to offer value added services to their customers such as mobile payments. Only recently, as the market is soon set to reach the 100%

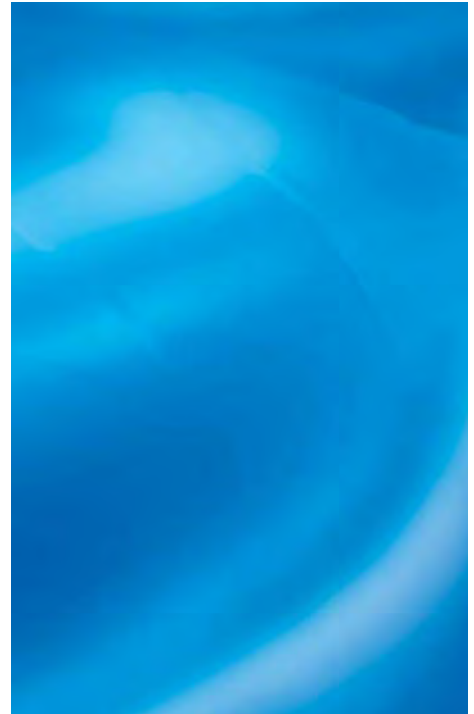
penetration rate, has it been clear that growing the client base will no longer be the main income generator; a change in operators' long term strategic objectives increasingly emphasizes the role of innovation and value added services as future growth generators. Thus, the biggest players on the market no longer make market share their top priority, but are increasingly interested in broadening their service portfolio. To achieve this, they will have to be even more innovative and launch new services that will increase the average revenue per user (ARPU). In this regard, m-payments are seen as one of the key revenue generators for the future.

The Baltics provide an excellent example within the region where common standards and business models are easy to implement due to the relatively low number of players in the market. In addition the market players already co-operate in various forms, and most of them are also present in other Baltic states. Therefore any form of future co-operation will be easier to carry out in those three states, than among any other group of countries in CEE.

Another group that one could expect to show some similarities would be Czech Republic, Poland, Slovakia and Hungary, as they are the traditional Visegrad Four (V4) countries. However, even though similar m-payment initiatives can be observed in all these countries, there are many differences among them making it virtually impossible to adapt a one-size fits all approach to the markets. These

⁷ NFC is a short-range wireless connectivity technology that evolved from a combination of existing contactless identification and interconnection technologies. Operating at 13.56 MHz and transferring data at up to 424 Kbits/second, NFC provides intuitive, simple, and safe communication between electronic devices (<http://www.nfc-forum.org/aboutnfc/>).

⁸ According to survey "Market statistics" performed by Communication Regulatory Authority Lithuanian market of active subscriptions of mobile services as of September 30, 2007 reached 4,89 mln, with population of Lithuania – 3.2 mln. citizens, which means 145% mobile penetration rate.



countries' markets are vastly diversified internally. For example, varying structures of the primary sectors like banking make the m-payment market difficult to standardize (for instance the number of banks in Poland is approximately 70, with 37 in Czech Republic, 25 in Slovakia and 38 in Hungary).

Romania and Bulgaria appear to be the least advanced CEE countries in terms of the m-payments markets. This is a consistent and logical conclusion, given they are both relatively less-developed according to a number of economic, political and social indicators⁹. The situation in Bulgaria, however, could soon change with the anticipated introduction of the 'System for Electronic Payments Bulgaria', which may have the potential to allow Bulgaria to leap-frog some of the more developed markets in terms of m-payments. As long as these markets are still not saturated, they can be

potentially interesting for new entrants and could very easily soak up new payment solutions.

Opportunities

Despite the high level of innovation and increasing interest of consumers and businesses, m-payment in Central and Eastern Europe is still a fledgling market. This can change as industry analysts are sensing the coming of a second wave in m-payments across the CEE, which might very well make 2008 a very significant year in terms of m-payments' development.

Since the late 90s several mobile payment systems have been launched in a variety of European countries, including some systems available nationwide. Yet the choices remain as bewildering as before. In order to increase the share of m-payments there is a need for one comprehensive solution.

Within the EU, compliance to the EMV standard is mandatory and the major card companies are working together to achieve the next generation of compatible point-of-sale terminals. However the technical specifications for these will not become available before 2009 or even 2010.

M-payments are strategically important as a part of an overall trend towards the use of electronic money and limiting the use of cash which involves high costs for banks. Although different partners in the value chain are maintaining essentially separate m-payment systems today, this should not be regarded as an indicator of general strategic hostility between MNOs and banks. In addition to the fact that there are a variety of potential players on each market, a number of questions remain: What sort of consortium will be formed to take m-payments to larger client groups? Who will drive it? And what standards will be agreed upon?

⁹ See KPMG Comparatives 2007



Until recently, one development had the potential of changing the dynamics in the mobile payments standards consortia landscape: the formation of the Mobile Payment Services Association in early 2003 (since then, formally launched as Simpay). With the founding members being Vodafone, T-Mobile, Orange and Telefonica Moviles, and other operators joining in 2004, Simpay could well end up introducing pan-European standards which in turn

would render irrelevant the work of many of the standards' consortia. However, Simpay was dissolved in June 2005. The reason for its collapse was partially that participants were unable to agree on what types of mobile payments Simpay would offer, but most of all because costs for mobile operators were too high.

Estonia, the most advanced m-payment CEE market, shows a lack of diversity and the high cooperation of MNOs and banks. Dominant banks have cooperated on card payments, by forming a joint Bank Card Centre, and leveraging the Card Centre's infrastructure also to m-payments on limited scale. Dominant banks, MNO (EMT) and its telco parent company (Elion) have also cooperated on certification by forming a Certification Centre, which provides certificates for authentication and digital signing to Estonian ID Cards and Mobile-IDs, for instance maintaining and authenticating centrally ID-ticket sales. MNOs also cooperate among themselves, for instance with leading MNO EMT developing the m-parking solution and other MNOs using EMT's technical platform to offer the service for their customers.

In order to create a unified solution for m-payments in the Czech Republic the three mobile network operators - Český mobil a.s., Eurotel Praha, spol. s r.o. and Radiomobil, a.s. - in cooperation with five major Czech banks founded the Mobile Payment Association (2003). The MPA is a platform for coordinating the activities

of its members in the area of mobile financial products and services and actively influencing the conditions and environment for the provision of these services, including macro payment systems. The aim of the MPA is to implement a standardized payment tool that uses mobile devices.

In December 2007 the four mobile network operators in Poland signed a consortium in order to create a standard for m-payment services. The plan is to implement a solution allowing for contactless payments through the use of NFC enabled handsets.

Challenges

When the market becomes saturated mobile telephone operators will need to look for both new revenue sources and customer retention instruments. Independent service providers on the other hand will be looking for their chance to grab a part of the cash and non-cash payments market, traditionally served by financial institutions (issuers, banks, etc.). And this is a prize worth fighting for. In Poland for example, with 25 million payment cards issued so far (the number growing several percentage points quarterly), and 80% of the card transactions being small transactions¹⁰, the financial institutions will not be happy to share their revenues with new entrants.

To date, however, the market has faced a handful of key challenges which will need to be addressed in the near

¹⁰The number of card transactions in 2010 is estimated to reach 615 million, compare to 201 million in 2004.

future if m-payments is to reach its potential in the region:

- limited range of payment opportunities resulting from both limited supply (not enough infrastructure) or limited demand (not enough clients);
- difficulties with meeting the expectations of all parties in the value chain, and hence achieving the expected financial results, therefore making the business unsustainable over the longer-term;
- lack of a clear and compelling value proposition for the end-user (e.g. if the service was too complicated to use when compared to traditional solutions).

In this complex ecosystem of carriers, banks and other third party providers, every party has a different reason to participate in the m-payments market. Regardless of what m-payment solution we consider, the examples in our survey suggest that the first necessary condition for m-payment initiatives to be successful is the mutually beneficial cooperation of all the interested parties – including both traditional players in the value chain as well as the innovators.

Critical success factors

We have identified the following critical success factors for the successful implementation of m-payment solutions:

- The market will need to reach the critical stage, both from the saturation of mobile penetration as

well as the maturity of financial institutions, to create an environment which is stimulating to all stakeholders in order to aggressively launch mobile payment solutions.

- The initiative must be based on a win-win business model, where all involved parties achieve clear benefits within a defined scope. As new payment technologies continue to combine features from both the financial and telecoms industries, a central aim for the future is to identify the key competencies, natural roles, business models, and strategies that different players could have in the m-payment value chain.
- The proposed m-payment solution must offer an improvement over existing solutions in terms of convenience, security and cost for all parties, specifically for customers but also for merchants and service providers.
- The initiative must achieve a wide merchant adoption and thus become an attractive payment method for large numbers of consumers. However, we can imagine that merchants will be reluctant to invest in the new payment method before they have enough confidence that m-payments will be widely accepted and therefore will bring additional revenues. This is a classic “chicken and egg” type of problem that may be hard to overcome.

In a case of mobile top-ups and premium-rate mobile services that are a clear example of successful mobile

payment services, all conditions were met: the services are useful, easy and safe to use, the enabling infrastructure, i.e. mobile handsets, are commonly available, and the business model is clear and satisfying for all parties involved.

Also the case of transport contactless cards is a good example of a solution that was able to overcome the main hurdles. It provides a clear improvement for consumers over a traditional ticketing system. Because it can be used in all means of public transportation it drives consumer adoption. At the same time it offers a viable business model for the players involved – consumers, system operator and transportation authority. Here the business case for funding investments in contactless ticketing rests on the savings of eliminating cash payments and paper tickets.

In the other cases there is less clear evidence of the initiatives being able to meet all the critical success factors. The difficulty lays either in offering a clear improvement over the existing solutions for end-users - e.g. in most situations paying with mPay is neither easier nor faster than paying with cash or plastic card - or in building the necessary infrastructure which would drive greater consumer adoption of the services (e.g. in Poland the POS networks of mPay or MasterCard's PayPass are still very limited), or in developing a business (revenue) model attractive for all parties involved.

Conclusions



As this study clearly shows mobile payments in Central and Eastern Europe have a long way to go until they reach their full potential. The question remains, however, to what degree does m-payments present itself as an opportunity for the future? Like the old joke about Brazil's economy – is m-payments an opportunity which will always remain in the future, or will the marketplace convince virtually everyone that m-payments is the best solution, in the same way mobile telephony has proved itself over the past decade?

Mobile operators around the world are facing increasingly challenging environments with average revenue per user (ARPU) declining and customer churn rates increasing¹¹. Therefore operators are desperate to find new applications and services to reverse these trends. With many promising applications, such as WAP, failing to live up to their original hype, and the advent of new services only beginning to emerge, it will be difficult for mobile operators to ignore any opportunity that presents itself.

Nevertheless, differences between the CEE region and other geographies

demonstrate why players here cannot rely on the same factors which have driven m-payments growth in other markets. In Asia for instance, the growth of mobile payments in some countries has been driven by the poor banking system (the distribution network especially). Mobile payments has been introduced in fact as a substitute for a lack of retail banking services. The opposite is true, however, in most developed countries like Japan or Korea, where growth of mobile payments reflects customer needs and a market that demands value added services and other innovative services via mobile devices.

In CEE the already well developed network of retail banking creates a challenge for the mobile payments market seeking to find an opportunity in a saturated market. At the same time with mobile penetration across the region reaching saturation in recent years, MNOs looking for new revenue sources are focusing on more promising services in terms of revenue growth potential, such as content and media-related business, the natural consequence of digital convergence.

Nevertheless, the idea of the mobile phone replacing the wallet as a day to day vehicle for small value transactions is an opportunity no MNO will want to miss out on. While the value of small transactions currently looks to be a weakness of the m-payments business model, given the potential of future developments, this is a truly vast market encompassing a significant percentage of consumers' total spending, potentially eliminating the need for cash and eventually even credit cards.

Ultimately, the demand for m-payments can only be achieved if there are numerous services which can be reached via m-payments, thus creating a "network effect" whereby the more players who subscribe to a particular system increasingly bring everyone else with them. For this network effect to take hold, a key enabler, namely NFC technology, is a must. In the case of m-payments this means the introduction of both NFC enabled handsets as well as the equipment in shops to communicate with them. Given that this is only beginning to take place in 2008 the developments of the m-payments market is still in its early days.

¹¹ Mark Pickens, M-payments, m-banking and the future of mobile phone banking, Sunday, September 2, 2007. www.technology.cgap.org



Clearly, due to having well established payment infrastructures and big customer bases, global players such as MasterCard or Visa are likely to find themselves as the largest beneficiaries of transactions using NFC technology. They will also likely have a big role in its emergence as they will be a driving force, along with banks, for providing the equipment needed to make the transactions. The same can be said for hand set manufacturers such as Nokia who install NFC technology on new handsets and therefore drive their own sales.

For mobile operators who can charge a small percentage for each transaction the opportunity is equally appealing, provided of course a reasonable volume of transactions can be achieved. To date, not only the technology has been absent, but also the appropriate standards and effective cooperation amongst MNOs, banks and retailers. With the technology in place to make mobile payments easier than cash and credit cards, this could quickly change.

Real growth of m-payment transactions will therefore likely depend on a large

number of retailers recognizing the benefit of such payments. This, however, will require a clear demonstration of how providers and users can reduce costs, save time and conduct more transactions. To facilitate this it will be essential for MNOs to take a proactive stance and begin experimenting, particularly with retailers. It will also be essential for m-payment service providers (banks, mobile operators and other interested parties) to cooperate in order to convince a great number of retailers to apply these solutions. Therefore players who expect to benefit must demonstrate their willingness to be a cooperative partner alongside banks, regulators and credit card companies. Only in this way can m-payments achieve its enormous potential and ensure that all players benefit.



Appendix: Adoption of EU regulations in CEE

	General Legislation on E-Commerce	E-money		Consumer Protection	
European Union	E-Commerce Directive 2000/31/EC	Directive 2000/46/EC on the taking up, pursuit of and prudential supervision of the business of electronic money institutions	Directive 2000/28/EC amending Directive 2000/12/EC relating to the taking up and pursuit of the business of credit institutions	Directive 97/7/EEC on the protection of consumers in respect of distance contracts	Directive 2002/58/EC on privacy and electronic communications
Bulgaria	Law on Electronic Commerce	Law of Funds Transfers, Electronic Payment Instruments and Payment Systems	Law on Credit Institutions	Law on Consumer Protection	Law on Electronic Communications
Czech Republic	Act No. 480/2004 Coll.	The Payment Systems Act 124/2002 Coll.	Decree No. 547/2002 Coll., stipulating the essential elements of an application for prior	Consumer Protection Act No. 634/1992 Coll.	Act No 101/2000 Coll., on the protection of personal data in information systems
Estonia	Information Society Services Act	Electronic Money Institutions Act	Credit Institutions Act	Law of Obligations Act	Electronic Communications Act
Hungary	Act CVIII of 2001 on Electronic Commerce and on Information Society Services, Act CLXIV of 2005 on Trade, Government Decree No. 4/1997 (I.22.) on the Operation of Commercial Establishments and the Conditions for Conducting Business in the Internal Market	Act XXXV of 2004 on Specialized Credit Institutions issuing electronic money	Act CXII of 1996 on Credit Institutions and Financial Enterprises	Government Decree No. 17/1999. (II. 5.) on contracts concluding between absentees; Act CLV of 1997 on Consumer Protection	Act C of 2003 on Electronic Communications Act CVIII of 2001 on Electronic Commerce and on Information Society Services, Act CVIII of 2001 on Electronic Commerce and on Information Society Services, Act LXIII of 1992 on the Protection of Personal Data and the Disclosure of Information of Public Interest

	General Legislation on E-Commerce	E-money		Consumer Protection	
Latvia	November 2004 The Latvian Parliament adopts the Law on Information Society Services, transposing EU Directive 2000/31/EC on certain legal aspects of information society services, in particular electronic commerce.	Resolution No. 98/6 of the Council of the Bank of Latvia Riga, November 14, 2002 ON APPROVING THE "Regulation for issuance and maintenance of electronic money"	Resolution No. 98/6 of the Council of the Bank of Latvia Riga, November 14, 2002 ON APPROVING THE "Regulation for issuance and maintenance of electronic money" The Regulation shall contain standards established by the Directive 2000/46/EC of the European Parliament and of the Council of 18 September 2000 on the taking up, pursuit of and prudential supervision of the business of electronic money institutions and the Directive 2000/28/EC, which amends the Directive 2000/12/EC of the European Parliament and of the Council of 20 March 2000 relating to the taking up and pursuit of the business of credit institutions.		
Lithuania	Ratified on 17 July 2000	Ratified on 27 October 2000	Ratified on 27 October 2000	Ratified on 4 June 1997 and Replaced on 12 June 2005 by "Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council ('Unfair Commercial Practices Directive') (Text with EEA relevance)"	Ratified on 31 of July 2002 and Replaced on 2 of May 2006 by "Directive 2006/24/EC of the European Parliament and of the Council of 15 March 2006 on the retention of data generated or processed in connection with the provision of publicly available electronic communications services or of public communications networks and amending Directive 2002/58/EC"

	General Legislation on E-Commerce	E-money		Consumer Protection	
Poland	Act on electronic services (u.s.u.d.e.) + more restricted policy (opt-in solution) was applied regarding terms of sending commercial information and offers	Act on electronic instruments of payments (u.e.i.p.)	Act on electronic instruments of payments (u.e.i.p.), The Banking Act	Act of the protection of certain consumer rights and on the liability for damage caused by a dangerous product (Journal of Laws of 31 March 2000, No. 22 , item 271)	Implementation of part of the regulations in Act on electronic services
Romania	Directive transposed by Law no. 365/2002 regarding electronic commerce	Directive generally transposed by Government Ordinance no. 99/2006 concerning credit institutions and capital adequacy, as approved by Law no. 227/2007	Directive generally transposed by Government Ordinance no.99/2006 concerning credit institutions and capital adequacy, as approved by Law no. 227/2007 and by various regulations issued by the National Bank of Romania	Directive transposed by Government Ordinance no. 130/2000 concerning the protection of consumers in respect of conclusion and execution of distance contracts	Directive transposed by Law no. 506/2004 on personal data processing and data privacy protection in the telecommunication sector
Slovakia	Act No. 160/2005 Coll. which change and amend the Act No. 22/2004 Coll. On Electronic Trade and on change and amend of Act nr. 128/2002 Coll. on State Supervision of Interior Market in Terms of Consumer Protection and on change and amend of particular acts as amended by the Act No. 284/2002 Coll.	Act No. 510/2002 Coll. on Payment and Settlement as amended by the Act No. 604/2003 Coll.	Fully transposed by the Act No. 483/2001 Coll. on Banks as amended by the Act No. 644/2006 Coll.	Act No. 160/2005 Coll. which change and amend the Act No. 22/2004 Coll. on Electronic Trade and on change and amend of Act nr. 128/2002 Coll. on State Supervision of Interior Market in Terms of Consumer Protection and on change and amend of particular acts as amended by the Act No. 284/2002 Coll.	Act No. 610/2003 Coll. on Electronic Communication as amended by the Act No. 654/2007 Coll. – in complete accordance

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