



COMPARATIVE ANALYSIS OF MOBILE PAYMENTS IN THE EUROPEAN UNION

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Abstract. Recently, due to the strong penetration of the information technologies into the society, the number of small payments in the electronic environment has increased. The mobile phone is an integral part of many people's everyday life, and as a consequence, payments via the mobile phone become more and more widespread. This is both a new way of payment and a new solution for the intellectual economy. The regulation of mobile payments in the EU is still being implemented. European Commission's consultation of 2004 clarifies the distinction between mobile payments and e-money and their interrelation.

Taking into account the experience of 3 EU Member States, namely Belgium, Germany and Lithuania, regarding mobile payments, the article reviews the legal implementation of E-Money Directive (2000/46/EB) and the status of mobile payments, as well as introduces the main mobile payments models, together with their characteristics.

JEL Classification: G210, M410.

Keywords: e-money, e-payments, mobile payments, m-commerce, pre-paid card, mobile payment model.

Reikšminiai žodžiai: elektroniniai pinigai, elektroniniai mokėjimai, mobilieji mokėjimai, judriojo ryšio prekyba, išankstinio mokėjimo kortelė, mobiliųjų mokėjimų modelis.

1. Introduction

Mobile phones have nowadays become personal electronic devices and for that reason they can perform an increasing range of services. New modern mobile phones are now in fact small personal computers and have a wide set of input, output and communication features. All these limitations are not a barrier for payment processing, however, because this capacity is not fully used.

New payment systems are relevant to current intellectual economy. The wide use of mobile phones creates a new payment environment, in which, while using the capacities of the mobile phone, it is possible to perform the so-called indirect function of this device – payment. It is especially relevant when talking about micro-payments.

The issue of mobile payments is rather significant, but the authors did not manage to find other authors' articles on the subject. Payment models for the mobile environment and pre-paid payments pro-

ducts have been analysed in the works of B. Adrian [1], J. Ondrus [12] and S. Chakravorti with V. Lubasi [7]. In Lithuania e-money and electronic payment systems have been analysed in the works of L. Butkevičius [6], M. Laurinaitis [9] and V. Vaškekaitis [19], however, in their works e-money is mentioned only as one type of e-payment, without any deeper analysis of mobile payments.

The purpose of this article is to clarify the regulation of mobile payments in the EU and the implementation of this regulation by the EU member states, both legally and in practice.

The method of the research: analysis of the collected scientific data and its comparison.

2. Mobile Payments and their Legal Issue in Europe Union

Payments can be classified using a number of parameters, such as the size (micro-payment, macro-payment), the time of payment (pre-paid, post-

paid), the place of purchase (real or online) and the medium (paper, electronic) [20]. These criteria can be used to create demarcations between different payment models, one of them being mobile payment.

What is a mobile payment? In their article, Laurent Bailay and Bernard Van der Lande propose to define a mobile payment as a “payment for products or services between two parties for which a mobile device, such as a mobile phone, plays a key role in the realization of the payment” [5].

The rapid growth of e-commerce has influenced the development of new payment mechanisms capable of exploiting mobile phones. Nowadays, the broader usage of mobile phones has promoted banks and non-banks to develop new payment services for their customers. At the moment, the situation concerning micro-payments is that if a consumer uses a bank for this service, sometimes the fee in a bank is bigger than the payment itself. Therefore, non-bank institutions saw this drawback in the system as a possibility to start providing improved services. One of these providers is mobile operators. Mobile payments are defined by the channel through which instructions for this payment are entered into the payment system. Buhan, Cheong and Tan have described the main phases of mobile payment with the same type of representation tool introduced above (see Fig. 1) [6].

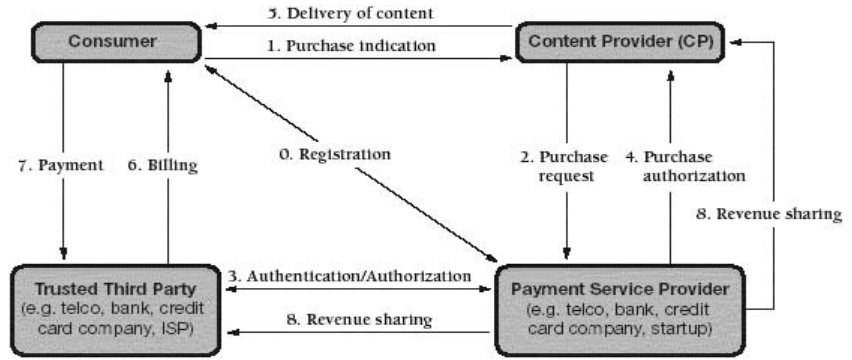


Fig. 1. M-payment main phases [6]

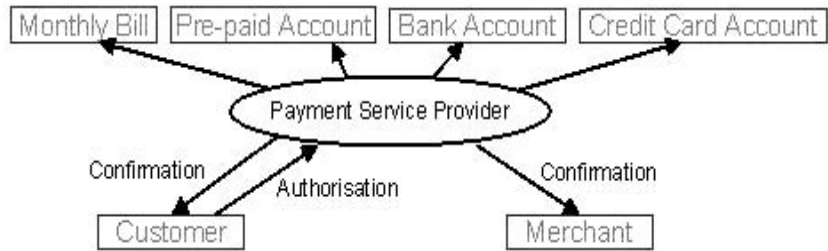


Fig. 2. The structure of mobile payments [9]

Payments made using mobile phones have become quite important in the field of electronic retail payments which have recently been compared to e-money. Mobile payments can be made through short messaging service (SMS), voice access, or wireless application protocol (WAP), which is a gateway to the Internet. Two business models are used for mobile payments – paying later with the mobile phone bill, and paying from a prepaid balance. The table below shows structure of mobile payments (see Fig. 2).

Mobile payments are rapidly becoming one of the mostly used applications in m-commerce. In the literature, the mobile payment market is usually categorised as a combination of micro/macro payments and remote/proximity payments [21].

The micro/macro distinction is made at approximately 10 euros [12]. Summarized information is given in the table below (see Figure 3). Merchants are reluctant to accept credit card transactions for small amounts because of transaction fees [15]. Mobile micro-payments for goods and services, such as ring tones, logos, games, information, parking, launderette services, tickets, etc., is already a mature market in most European countries. Usually, these services are provided by mobile operators, with payment being

	Remote	Point of sale, manned	Point of sale, unmanned
Micro-payment	Mobile content - ring tones - logos - information - games	Small purchases in shops, kiosks and fast food restaurants	Vending, self-service - soda - tickets - cigarettes - instant photos - launderette Gas Toll
-10 EUR	Ticketing		
	Person - to - person payments		
Macro-payment	Internet purchases - physical goods - digital content/ services - Prepaid card reloads	Restaurants Retail shopping Taxi payments	Car wash

Fig. 3. Mobile payments framework with examples [13, p. 34]

made mostly via premium SMS/WAP using mobile operators' billing infrastructure [5].

The main legislative framework for mobile payments in the European Union is the E-money Directive (2000/46/EU) [9]. Not long after the transposition date of the E-money Directive, some authorities concluded that mobile operators *de facto* issue e-money. The question has thus been raised: are mobile operators e-money issuers? In its Consultation paper of Directorate General Internal Market on the "application of the E-Money Directive to mobile operators", which was published in 2004 [3], the European Commission noted that, "as the Directive applies to all issuers of electronic money, the identification of covered undertakings depends on the definition of e-money", and, from that definition, it becomes clear "that only the pre-paid mobile phone card could correspond to the definition of e-money". Furthermore, in May 2004, Member States interpreted the 2000 E-Money Directive as imposing restrictions on pre-paid phone cards. This meant that they could only be used to buy services directly related to the mobile phone, such as ring-tones and wallpaper.

The pre-paid cards of mobile phone operators have been considered in light of Article 1 of the E-Money Directive. According to this Article, electronic money means monetary value as represented by a claim on an issuer that is: stored on an electronic device; issued on receipt of funds of an amount not less in value than monetary value issued; and accepted as means of payment by undertakings other than the issuer [3]. In its Consultation paper, the European Commission noted that "the user of a pre-paid card has an e-value to spend, which is expressed in monetary terms", and also that:

- "this e-value is (...) accepted as a means to pay additional and non pre-determined goods and services";
- "mobile phone pre-paid cards function on the basis of a remote access to the stored e-value";
- "in order to acquire a pre-paid mobile phone card a customer must pay for it immediately";
- "pre-paid cards are used to pay for goods and services other than airtime"; and
- "[i]n case of additional services and goods supplied without any intermediation of the mobile operator (...) the identity of the provider cannot be confused and it is clear that the mobile operator receives a payment only for the communication aspect of the transaction" [3].

As a conclusion, it was then noted that "in the light of the above, the e-value stored on mobile phone pre-paid cards that is used to pay third party products and services is indeed likely to be e-money" [3]. There is a school of thought, however, which suggests that no e-money is created when pre-paid customers use their store of value with mobile operators to purchase third party services, even though it is thought that e-money is created when the monetary value stored on a pre-paid card is accepted as payment by a third party merchant from the E-Money Directive (Article 1.3(b) (iii)) [4].

Nowadays, the mobile payments environment is open to several types of different players, such as mobile operators, banks and other e-money issuers. It is highly arguable that this niche is not fully used at present and will expand in the future, and that it will be complemented by new services and products that could be purchased via mobile phone transfers. The table below shows gross transactions value of total mobile payment market (see Figure 4). Mobile micro-payments are the payments of the future. At the moment, mobile payments comprise only a very small part of the payment system in the European Union, but it is believed that the increasing usage of mobile payments will require the better regulation of this area in the near future.

3. Legal and Practical Examples of Mobile Payments Service in Several EU Member States

Now we will examine the legal and practical realization of mobile payments in several EU Member States.

Belgium. In Belgium, the legal context for mobile payments is the law of 17 July 2002 concerning transactions executed with instruments for the electronic transfer of funds. The additional law of 25 February 2003 based on E-Money Directive concerning access to, exercise of and business economic supervision of the activities of electronic money institutions could also be applicable to this law, even if it is more focused on e-money [18].

This new law of 25 February 2003 on electronic money institutions makes it possible for non-bank institutions to issue e-money, but only under specific conditions. The supervision of e-money institutions is based on the supervision of classic credit institutions, which means that e-money institutions are limited in what activities they can undertake. E-money institutions for which the e-money is only used at a group level, or for which the total amount is less

than 5 million euros are, however, exempted from supervision.

The first model of mobile payments started in February 2002, when Proximus (one of the mobile operators active in Belgium) developed a scheme for reloading a prepaid "Pay&Go" card with a mobile phone for customers of Fortis Bank who wish to link their mobile phone's card with a Fortis Bank account [18].

Another model of mobile payments in Belgium is Banksys. This system has been offering a mobile version of its Internet-based banxafe, which is called mobile banxafe, since April 2003. Banksys was the first application of the mobile banxafe concept in the form of a scheme for prepaying phone credits from the mobile phone itself. The scheme is only being offered to the customers of Mobistar (another mobile operator in Belgium), and only for the business-to-customer (B2C) market [18].

Germany. In Germany, the E-Money Directive was implemented by the Fourth Financial Market Promotion Act that took effect as of 1 July 2002 [2]. E-payments key criteria had already been fulfilled by the Sixth Act Amending the Banking Act [19]. Formerly, concessions for prepaid card businesses were given to enterprises operating a prepaid card business only if the dissemination of prepaid cards and their limited use indicated were unlikely to pose a threat to the payment system. After a recommendation by the European Monetary Institute, prepaid card and network money businesses were made subject to prudential supervision pursuant to Section 1 (1) sentence 2 nos 11 and 12 of the older Banking Act [18].

After the transposing of the E-Money Directive in Germany, a new type of credit institution was created that is able to issue electronic payment units itself. Pre-paid card and network card businesses have been combined and are now called e-money businesses, since payment practice has shown that it is no longer possible to draw a clear line between the two separate types of business (Section 1 (1) sentence 2 no 11 of the Banking Act).

In Germany, there is no specific ruling on whether authorization is required to operate payment systems via mobile phones or via other devices. However, enterprises that provide money transmission services need authorization for conducting this kind of business in accordance with Section 1 (1a) sentence 2 no 6 of the Banking Act [18]. The Federal Financial Supervisory Authority and the Bundesbank check every single system on case-by-case basis to ascertain whether money transmission services are involved.

The first system for mobile payments in Germany started in the beginning of 2003, when paybox solutions AG began to operate as an innovation

service provider supporting and developing payment applications and mobile services for telecommunications companies, local payment processors and banks. Even though the paybox system has now been discontinued, because of its significant use in the country, the business will be carried on by the mobile service provider Moxmo [18].

Paybox users can also transfer money to each other. The only thing that the sender has to do is to call paybox and enter, using his/her paybox PIN, the receiver's mobile phone number and account to be paid. This authorization process is used to allow a traditional direct debit payment from the current account of the customer [17].

The typical payment transaction using Paybox would go like this:

1. The customer gives his or her mobile phone number to the merchant.
2. The merchant transmits to Paybox the phone number and the price.
3. Paybox calls the customer and a voice message asks for authorization of payment.
4. The customer authorizes the payment by entering his or her PIN.
5. Paybox informs Deutsche Bank to settle the payment via the traditional payment system (direct debit).
6. The transaction is confirmed by an automated voice or SMS [15].

Transaction of this model is given in the table below (see Fig. 5).

Another mobile payment procedure in Germany is Street Cash. Offered in Leipzig, this system is based on text messaging and can be operated with all SMS-compliant mobile phones. This system is different from paybox because Street Cash is not a separate mobile payment procedure, but is integrated into a multipayment platform (powercash21). Street Cash allows bills to be paid through text messages. That type of service is encoded over the Global Standard for Mobile Communications (GSM) network and securely dispatched, which means that no personal data of the customer is transmitted during the underlying payment transaction [18].

Lithuania. The Bank of Lithuania monitors the development of e-payments in Lithuania. From June 2003, the Law on Payments stating legal provisions related to e-money was amended [12]. This Law regulates issues relating to mobile schemes by imposing minimum security requirements and fostering consumer protection. The E-Money Directive was transposed into Lithuanian Law in 2003 and, since then, the following definition of electronic money has been used in Lithuania: monetary value as represented by a claim on the issuer, which is stored on a

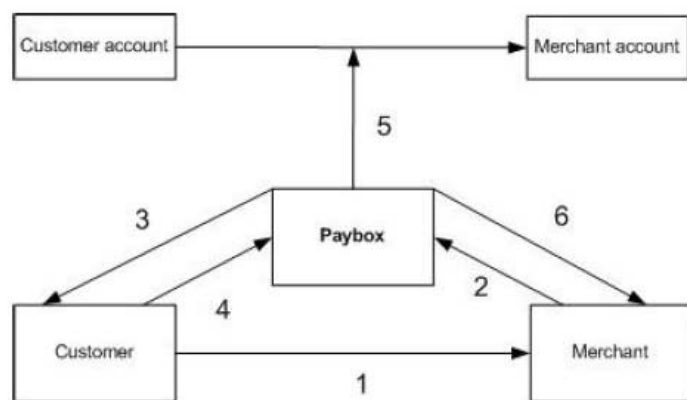


Fig. 5. A transaction using Paybox [16, p. 10]

device and accepted as a means of payment by undertakings other than the issuer (Section 1 sentence 2 no 6 of the Law on Payments). The Bank of Lithuania has no plan to be an issuer of e-money.

Mobile payment schemes in Lithuania exist in a highly competitive market and oversight procedures are not necessary at this stage of development. Most mobile payment scheme operators are exclusively credit institutions, and thus all fall under the prudential supervision of the Bank of Lithuania [18, p. 106].

The majority of the banks in Lithuania offer their customers a SMS message-based service to check their account balances and put into effect transactions. SMS services, however, usually serve as an information channel, and not for the transmission of payment orders. Only one bank uses different technology from other banks and customers are given the possibility of making domestic and cross-border payments via WAP [18, p. 106].

The Lithuanian mobile payment model is Vero Mobile. It started providing mobile billing services in 2002, and is now the leading provider of these services. The customers of Vero Mobile can use exclusive customer services, text messaging and WAP billing rates for amounts from 0.5 LTL (0,15 EUR) to 10 LTL (2,9 EUR) within Lithuania. There is also a possibility to use WAP billing for the other Baltic States, Latvia and Estonia [23].

Conclusions

1. Mobile payments comprise a part of e-payments and this is a big advantage for today's intellectual economy. Increasing use of micro-payments provides mobile operators with the opportunity to take smaller fees for the same service than in the banks.

2. Only mobile prepaid payments, which are regulated by E-Money Directive in the EU, fall into the category of e-money; however it should be noted

that this regulation is not comprehensive, because it is based only on indirect interpretation of the definition of e-money.

3. After having reviewed the practices of the EU Member States, we can see that all the countries have already ratified the E-Money Directive, nevertheless, what concerns mobile payments, this regulation is applied to the bank legislation in Germany and to payment legislation in Lithuania and Belgium. Each country has its individual payment models and some of them are related to banks. Mobile payments models are varying from country to country, but all the users of these models get the same final result – mobile payment.

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LYGINAMOJI MOBILIŲJŲ ATSISKAITYMŲ EUROPOS SAJUNGOS ANALIZĖ

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Santrauka. Pastaraisiais metais informacinės technologijos vis sparčiau skverbiantis į šiuolaikinės visuomenės gyvenimą daugėja smulkių atsiskaitymų elektroninėje erdvėje. Mobilusis telefonas jau dabar yra neatsiejama daugumos žmonių gyvenimo dalis, todėl vis labiau populiarėja smulkūs atsiskaitymai mobiliuoju telefonu. Tai kartu ir naujas mokėjimo būdas, ir naujas šiuolaikinės intelektinės ekonomikos reiškinys. Mobilųjų mokėjimų teisinis reglamentavimas Europos Sąjungos šalyse dar tik pradėdamas įgyvendinti. 2004 m. Europos Komisijos konsultacijoje aiškinama, kuo mobilieji atsiskaitymai skiriasi nuo e. pinigų ir kaip jie susiję.

Remiantis trijų bendrijos narių (Belgijos Karalystės, Vokietijos ir Lietuvos) patirtimi mobiliųjų mokėjimų srityje, straipsnyje apžvelgiamas Elektroninių pinigų direktyvos (2000/46/EB) teisinis įgyvendinimas bei mobiliųjų mokėjimų padėtis ir pateikiami svarbiausi mobiliųjų mokėjimų modeliai su jiems būdingais ypatumais.

Rimantas Petrauskas holds the title of Professor of Social sciences from the Mykolas Romeris University (2001) and Ph.D. from Kaunas University of Technology (1971). More than 150 publications and presentations of Prof. R. Petrauskas are concentrated on the topics of development of e-governance and information society, general issues of information technology and public administration, business, law and education. Prof. R. Petrauskas has published substantial number of scientific articles in foreign and Lithuanian periodicals, and made presentations in major international conferences. He is a member of IFIP W8.5 committee, member of programme committees, reviewer or area chair some International scientific conferences, member of editorial board of few scientific journals.

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