



## ALTERNATIVE PAYMENT SYSTEMS: LITHUANIAN OUTLOOK

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**Summary.** The article elaborates on an electronic payment instrument of a new generation – electronic money and preconditions for using this instrument in Lithuania. It discusses the definition of electronic money, analyses requirements defined for electronic money, as well as needs of buyers in the framework of electronic commerce (security, low cost, universal nature, etc.).

The article discusses problem issues of double spending of electronic money, issue of electronic money, and establishment of specialised banks in Lithuania. A considerable focus is made on the analysis of the relation between electronic money and payment cards, as well as disadvantages of payment cards against electronic money. The authors also rise a problem of legal regulation of electronic money – the authors believe that electronic money brings in novelties into thus far settled doctrines of settlement regulation, therefore, the current legal regulation must be immediately adjusted to the new reality of electronic money and at the same time avoid restricting implementation and usage of electronic money systems.

**JEL Classification:** E440, G200.

**Keywords:** electronic money, electronic payments, electronic commerce.

**Reikšminiai žodžiai:** elektroniniai pinigai, elektroniniai atsiskaitymai, elektroninė komercija.

### 1. Introduction

Electronic settlements are of great importance. Electronic settlements represent a phenomenon of the XXI century banking. A rapid development of electronic settlement relations, new technologies used by banks allow for payments and settlements to be made in the virtual environment. As virtual services are becoming more and more popular, the scope of internet trade is growing, and in order to make virtual services/goods easier accessible, and to simplify purchase and sale procedures, various forms of electronic money are developed. Electronic money is an ideal instrument for settlements in the electronic environment. Although often the potential of electronic money is related with low value payments [1], the authors are of the opinion that this kind of money has a potential to become a key payment instrument in the future (see Figure No. 1).

Electronic money is among the most interesting electronic payment instruments from economic,

technical and legal point of view. States already now are trying to take over control over electronic money; however, the applicable control regimes allow companies to create basically their own “virtual states”. Presently, quite a number of companies offer using electronic money created by them, buying in their virtual shops. Each such settlement system has reached rather different level of development and practical applicability, and each system incurs specific legal problems.

So far usage of such payment forms in Lithuania is limited, but the development potential is enormous. Thus, this article aims at analysing electronic money, its features, requirements for electronic money, and preconditions for its circulation in Lithuania. The study covers organisational and legal preconditions of the electronic money circulation in Lithuania. The article employs comparative, analysis and other methods. It refers to the opinion of the most prominent scientists of this area, discusses main relevant legal acts, uses statistical information, offi-

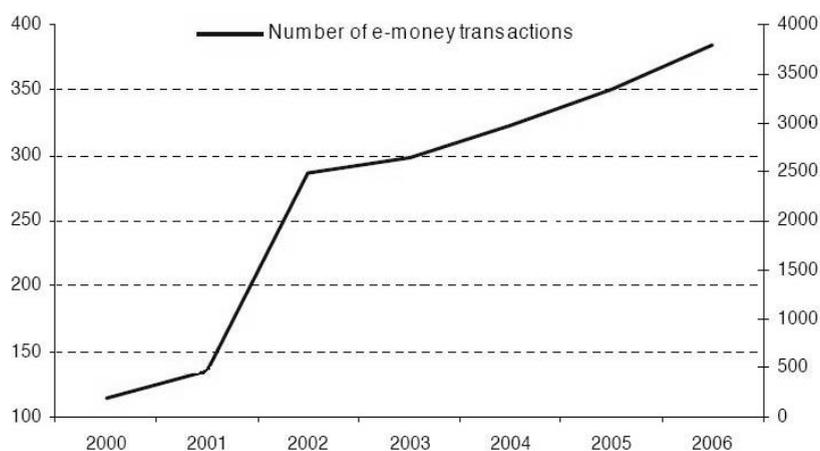


Fig. 1. Number and value of total e-money transactions in the euro area, in millions [2]

cial reports and other sources. The topic of the study has not been explicitly analysed in the Lithuanian academic framework.

## 2. Alternative Payment Systems: Conception

Scientists have different opinions about the definition of electronic money. For instance, Charles Goldfinger describes electronic money as any form of money which is stored and moves via computer networks, and stresses the IT role in the settlement relations [3]. David Choum, a founding father of the concept of “electronic cash”, depicts electronic money system as a free banking system with convenient and “bodiless” money. According to Choum such a system where every transaction is implemented by using electronic money will contain all obligatory requisites (time, place, parties, and amount) [4].

Professor V.Vaškėlaitis in his works uses a definition of “digital money”. According to Vaškėlaitis, this is an analogue of cash, possessing a form of monetary tokens, made of a set of coupons. A set of coupons is a digit chain corresponding to the amount of money. An issuer, who issued these chains of coupons, verifies each coupon by an electronic signature. Prior to passing over the coupon to the beneficiary, the issuer verifies it with its digital seal. When a user wants to spend a certain amount of digital money in the shop, he/she will only give a required amount of coupons to the merchant, and the merchant will pass the coupons to the issuer to check if he had issued them [5].

The report of the European central bank on electronic money of 1998, electronic money is broadly defined as an electronic store of monetary value on a technical device that may be widely used for making

payments to undertakings other than the issuer without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument [6].

The definition of electronic money is also presented in the legal acts of the European Union. Directive 2000/46/EB describes electronic money as a monetary value as represented by a claim on the issuer which is: stored on an electronic device; issued on receipt of funds of an amount not less in value than the monetary value issued; accepted as means of payment by undertakings other than the issuer [7].

The law on payments of the Republic of Lithuania describes electronic money as a monetary value, as a representation of the user’s claim on a credit institution, stored on a device issued by a credit institution (cards, memory of a computer or other hardware). Subject to usage of the identity verification instrument they can be used for payments for any beneficiary who is able to accept such payments and (or) the user to receive cash [8].

By its features electronic money are similar to usual money, and the only difference is that electronic money or, to be more precise, its form is expressed not on paper or metal, but in appropriate electronic signals. Thus, the real electronic money must be understood as appropriate payment instruments, using which the user buys at an electronic value from a person who provides a services of electronic money issuing. The aforementioned electronic value must be equated to cash, and the difference is that the movement of electronic money in the circulation is limited and it can be stored in the card chip (card-based or other hardware based electronic money instruments) or on the hard disk of a computer (software-based electronic money instruments).

## 3. Requirement Set by Electronic Commerce for Electronic Money

It is noticeable that presently used electronic payment systems based on bank accounts are not able to meet the needs arising from using the internet. The following main disadvantages of the modern electronic payment systems can be distinguished:

- Low security level. After banks had launched their services in the electronic environment, customers of banks faced a threat to become

victims of crime. New ways of fraud diminished trust of customers in the security of electronic payments.

- Low speed of transactions (if compared with transmission of simple information on the internet). Current banking settlement systems offer relatively fast settlement systems to their customers. If a payment is made within the same bank, it will take from 5 to 30 minutes. However, if a money transfer is made to another bank, urgent transfer is charged extra. Otherwise, the transfer takes longer time.
- Absence of anonymity and privacy. Activities of credit institutions are based on the principle – know your customer. When a customer opens an account with a bank, he/she must be fully identified against valid ID documents.
- Complexity. In order to make banking settlement systems really safe, additional measures are imposed, i.e. actions of the customer are restricted (e.g. in order to protect the client from possible fraud, limits on the daily number of possible transactions are introduced, also one-off maximum transfer amount and daily turnover is limited) or sophisticated recognition tools are used.
- High cost price of transactions.

It is not possible to make small payments without losses. In order to make a small payment, such a service will be more expensive than the amount to be transferred.

The main elements of private electronic money system (today there are 10, but there is no system to have all of them) were first distinguished by Tatsuaki Okamoto and Kazuo Ohta [9], in 1991; they suggested 6 features that are necessary for electronic money. Later on 3 more features were added and finally the last element was suggested by Jon W. Matonis [10] in 1995:

- *Secure* – the transaction protocol must ensure that a high-level security is maintained through sophisticated encryption techniques
- *Anonymous* – untraceability and confidentiality of the transaction is important, the absence of confidentiality makes the contemporary payment systems obsolete.
- *Portable* – The security and use of the electronic money must not be dependent on any physical location. Users should have a possibility to move freely with their electronic money and transmit it not necessarily using computers and computer networks. Electronic assets should not be restricted to the existence in the framework of computer network only.

- *Two-way* – electronic money can be transferred to other users without any limitations. Payments must be possible also in the absence of a user of a specific service. I.e. in order to receive electronic money it is not required to be a registered user of a particular service.

- *Off-line capable* – a transaction between two users does not require any third party or their identification.

- *Divisible* – an electronic monetary unit can be subdivided into smaller units (amounts). Electronic money must be divisible in order to make reasonable payment and get change.

- *Infinite duration* – electronic money does not expire. It maintains value until lost or destroyed provided that the issuer has not gone bankrupt.

- *Wide acceptability* – electronic money is well-known and accepted in a large commercial zone. Primarily a brand issue, this feature implies recognition of and trust in the issuer. With several electronic money providers there should be a possibility to use the most “preferred“ electronic money that are not restricted in local or operational zone;

- *User-friendly* – simplicity leads to mass use and mass use leads to wide acceptability.

- *Unit-of-value freedom* – electronic money may not be influenced by the political world, the market should determine their place and value.

Electronic commerce may have a couple of most important tasks; they include identification of the parties to the transaction, data confidentiality and inalterability during the transmission, as well as protection against refusal of one party to close the deal. These natural requirements are applicable in the modern business sector; but how to translate those 4 main requirements to the electronic environment and ensure them?

Electronic money systems presently operating in the world do not meet requirements set by theoreticians. Scientists particularly criticize the identification possibility in the case of electronic money: e.g. Professor Maria E. de Boyrie and others state that the identification contradicts one of the key ideas of electronic money – anonymity [11]. We can present an example of electronic money system PayPal. The system was developed in 1998 by Peter Thiel and Max Levchin. PayPal gives a possibility to make electronic payments via e-mail or a mobile phone with an access to the internet. This system has been developed based on the existing infrastructure of bank accounts and credit cards. PayPal is one of the payment instruments in many electronic auctions and shops engaged in electronic commerce. When the system was launched in the USA, users willing

to register in the system were requested to indicate an existing address in the USA. Today, users from Lithuania can also access this payment system which presently reached a world scale [12], however, there are a couple of obstacles. A user is required to have a credit card of a bank, and only having indicated its data, the user is register with PayPal system and the credit card is charged with an insignificant amount of money. The bank statement specifies a digital chain which must be entered in order to complete the registration with PayPal system. Therefore, no anonymity is ensured, PayPal account is linked to an account with a bank and the account holder is fully identified. Also the absence of the two-way principle should be stressed – it is required to have a credit card of a bank.

Electronic money can be more advantageous than payment cards issued by banks. Even if no issuer of electronic money is in place, large companies can start issuing their electronic money. Directive No. 2000/46/EB gives such a right to the “institution of electronic money” which can be a company or other legal entity that issues payment instruments in the form of electronic money [13]. In Lithuania the provisions of the aforementioned directive have been transferred to the Law on Banks of the Republic of Lithuania, here the issuing of electronic money is entrusted to a specialised bank which is a credit institution established in the Republic of Lithuania and which has a licence to issue and manage electronic money. Besides, there are no e-money institutions yet in Lithuania, while other countries already have fully operating e-money institutions or waived e-money institutions (see Figure No. 2).

It is important to mention that a specialised bank is given only one service from all financial services licensed in Lithuania – issuing and managing

of electronic money [15]. A specialised bank cannot accept deposits from non-professional market players, it can only exchange usual money for electronic. Activities of specialised banks in Lithuania are regulated by the resolution of the Bank of Lithuania as of May 2005 Re: Requirements for Activities and risk management of specialised banks [16]. This resolution elaborates on issues of capital formation, risk appraisal and control. The resolution does not mention electronic money system. What electronic money system will be chosen by newly established specialised banks? An answer to this question is very simple, it will be identifiable electronic money system as the definition of electronic money in the Law on Payments of the Republic of Lithuania says that it is required to use an ID verification tool, and only then electronic money can be used for payments. Moreover, on 26 October 2005 the European Parliament adopted the third, so called anti-money laundering directive [17]. Paragraph 5 of Article 11 of this directive specifies a simplified identification of a customer, sub-paragraph (d) indicates that a proper checking of customers can be skipped in case of issuing of electronic money when electronic devices cannot be supplemented, and if they can, the highest amount stored on the device does not exceed 150 EUR, or when electronic devices can be supplemented, but the total value of transactions within a calendar year is limited to 2 500 EUR, except for cases when during the same calendar year the holder of the electronic device withdraws 1 000 EUR or higher amount, in other words exchanges back to cash [17]. The aforementioned directive will be transferred to the new wording of the Anti-money Laundering Law of the Republic of Lithuania, and as result specialised banks will have to choose identifiable electronic money systems. It is easy to understand why the

European Union has chosen such a model of electronic money regulation; during the recent year the turnover of electronic money rose considerably, and member states face more and more difficulties to control the movements of such cash flows. Domestic financial systems are threatened by a wave of money laundering, terrorist financing; and these are the reasons why requirements for electronic money set by many theoreticians were abandoned.

Another serious problem that may be faced by newly established specialised banks is double spen-

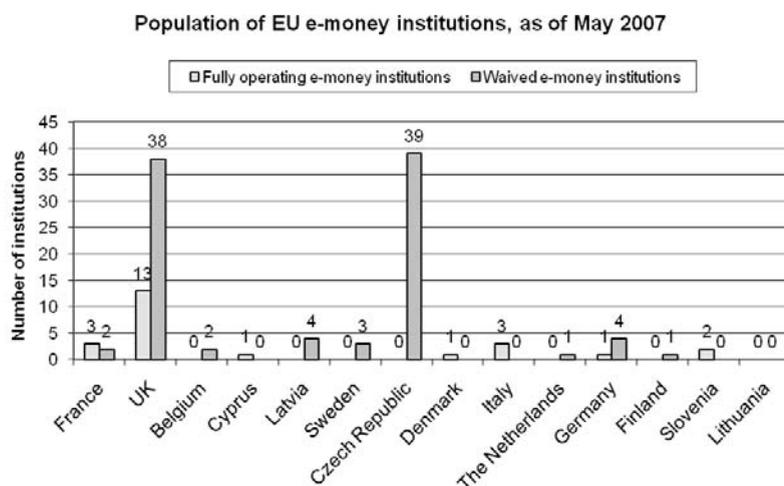


Fig. 2. Population of E-money institutions [14]

ding problem [19], falsification of electronic money. It is quite simple, a digital copy does not differ from the original, in other words there is neither original, nor copy. Thinking in such a way makes it possible to expect that such copies of electronic money will not be noticed. The simplicity of electronic money would allow us to accumulate electronic money and its copies, copies of copies. However, the real existing electronic money systems prevent from such double spending. Current internet-based electronic money systems prevent from it by requesting to connect to the central data bank; this data bank stores all information about valid and non-issued electronic money. The system directly checks if such money had not been issued previously and, upon receipt of the confirmation, allows making a payment. This method is almost identical to the one used to service electronic cards, only here no connection to a specific account is made, and the balance is not checked. Autonomous electronic money systems use different approaches to address the double spending problem. Smart card contains a chip, the so called “supervisor”. It accumulates data about all electronic money used with this card. If a holder of such card tries to copy electronic money and spend it twice, the “supervisor” would stop the transaction and prevent from executing the desired procedure. As the “supervisor” collects information and stores it in its memory, its holder may try to delete it, however, the card is made in such a way that this is not possible without damaging the card. Another effective method is to link electronic money and relevant encryption protocols in a structured way in such a way that during every payment, money is identified, and an appropriate portion of money bearing the feature of authenticity would go to a specialised bank. Such method makes it possible to promptly identify double spending of electronic money, and this would repel criminals in its turn. The advantage of such systems lies in the fact that they do not require the aforementioned “supervisors” and can be placed in cheaper electronic cards. Such a system and its software can be used on a computer or in cheap cards.

It is much easier to develop a system of fully identifiable electronic money. Identifiable electronic money “grows” each time it is spent. Details of a transaction are added to electronic money and this is the way to move forward. In such a way it travels from hand to hand until it reaches its issuer who, in its turn, will review the data for attempts of double spending. It is easy to do, as each payment can be tracked, and a counterfeiter of electronic money can be identified. In an off-line capable and anonymous system of such electronic money a solution of this

problem is also possible. Off-line capable and anonymous systems without a “supervisor” also accumulate information about executed payments, only this information is accumulated in a different way. Such electronic money with its accumulated information, upon arrival to the bank, are also reviewed, however, there is a key difference which enables to separate anonymous from identifiable electronic money – the bank reviews transactions without any details and only in case of double spending the system will generate relevant data; in other words, if there is no fraud attempts, the system will not record data about them.

In addition to the discussed requirements for electronic money, it is important to outline needs of buyers. After all, such systems are developed for wide usage. Witold Stabla analyses minimum requirements for electronic money systems and outlines needs of buyers and merchants [20]:

I. *Security* – users have to be convinced that instruments of the payment system represent the real value and good. Service providers keep informing their clients about system security. They arrange information campaigns during which users are familiarised with prevailing fraud cases on the internet. The following security levels are identified:

- Identification means identification of parties to the transaction who have rights and responsibilities;
- Authentication is a process which verifies that both transaction parties are those they claim to be;
- Authorisation means that the process indicates the initiator of a transaction;
- Confidence means a guarantee that all information will not be accessible by the third party; the system must guarantee that no one has access to the data which is not needed to complete the transaction (e.g. the bank will not know for what service or product the payment is made, the beneficiary will not know the account information of the payer);
- Integrity of data means that during the process the data may not be changed or edited;
- Non-repudiation means that the customer cannot deny that he/she agreed to the payment and cancel it;
- Ensuring the client solvability – means that the merchant should be sure that the client has sufficient money to execute the transaction;

II. *Interoperability* – different payment systems must accept each other and recognise other issuers.

Therefore, a common standard must be developed (which by itself already requires legal regulation);

III. *Wide acceptability* – clients will be interested in using new electronic payment systems, provided that they can pay anywhere it is needed;

IV. *User-friendliness* – those systems which will require special knowledge or equipment will be considered as second-class;

V. *Flexibility* – easiness, convenience, low cost (even free of charge) while transferring to different systems of electronic money;

VI. *Anonymity* – it is important for a customer not to lose his/her anonymity, but it is also necessary to ensure a certain level of security which is needed by the merchant; therefore, it is an important aspect to find the right combination between desired anonymity and required security;

With reference to electronic payment systems, a great focus is made on user security, improvement of his/her interests; however, quite often merchants who provide services to be paid by means of those systems are neglected. One could distinguish the following needs of merchants:

- *Low cost* – merchants aim at offering a service at the lowest possible cost for themselves. Current popular payment systems do not meet needs of merchants at all. For instance, to enable a user to pay with an electronic card, the merchant has to have a card reader terminal in place. However, it should be noted that the bank charges for each payment via terminal and collects a service fee in the range from 3.5% to 4%.
- *Wide range of potential clients*. This system will be interesting to merchants, if clients will be willing to use it. What could be a possible action plan in Lithuania? Major merchant companies make agreements with banks with regard to issuing of payment cards with logos of merchants. Therefore, major merchant companies obtain discounts for banking services and form a group of loyal clients. It would be worth for major companies to establish a specialised bank. Maybe it is too complicated to do so for one company, but if a couple of major companies which possess a great number of shopping centres would become interested in such an idea, they, having established their own specialised bank, would issue and accept electronic money. It might be not attractive for a user to exchange one type of money for another and then spend them, but the user will be offered a possibility to make payments in a couple of different companies, depending on how many companies will join such a system. If major retail food companies joined this electronic money association, and oil product retailers joined them as well, the establishment of a specialised bank would become an easier effort, taking into account financial contributions of each company. What would be the benefit for companies? They will not have to pay the aforementioned fees from the transaction amount, and they would become independent members of the electronic payment market. What would be the benefit for users? At the beginning the user might find unattractive to use electronic money, but there will be a possibility to get discounts, take part in loyalty programs (after all, the saved amount which will not be paid to banks by companies will not only cover usage costs, but will reduce prices, as the system itself will belong to them). Thus, other companies will be able to join the model specialised bank, and if not, they will be able to establish their own specialised banks.
- *Security*, this requirement of merchants is understandable, the system must be secure. Security will ensure another requirement – *productivity*, the system should be designed in such a way that a cost of a theft would be higher than the value which is stolen.
- *Reliability*. The system must be reliable; clients have to trust the payment system, otherwise merchants will lose clients.
- *Scalability* – the payment system should be able to adjust to large and small scale. Here the aforementioned example is just perfect: electronic money issued jointly by several companies will circulate efficiently and will be operating in the same way as those of small companies which joined electronic money systems of large companies.

#### 4. Electronic Money and Electronic Payment Cards

There are more than a billion plastic cards, both credit and debit, tens of millions service points, ATMs and bank branches in the world. The basic difference between a credit, debit card and electronic money lies in that a card is a way to reach own account at the bank, whereas electronic money is anonymous and are transferred without an intermediary. A payment by a card is linked with the third party – bank, and electronic money is transmitted directly.

Electronic money compete with SET<sup>1</sup> (Secure Electronic Transaction, this technology has been developed by such payment systems as Visa and MASTERCARD for safe payments by cards on an open network. SET represents execution of transactions on the network, when a buyer and a merchant can identify each other (by exchanging digital certificates) during the execution of the transaction. This allows for ensuring that the actions are legitimate and true. Majority of companies occurred in the crossroads – what to choose - SET technology based payments or electronic money?

Having analysed differences between credit cards and electronic money, the following summarised disadvantages of card-based payment systems can be identified:

- Necessity to check solvency of a customer and identify the card, which makes the entire procedure respectively longer, and becomes unattractive while making small payments;
- Absence of anonymity and pettifogging behaviour of merchants. By transferring information about the executed payment, it becomes known what it was made for and when; therefore, merchants can use it to offer advertising or products;
- Non-user friendliness, there is a need to open an account;
- It is not safe to transfer data about oneself and a card.

Electronic money has great advantages. While making a payment with a standard credit card, the transaction involves several parties, among them a buyer, a seller, a buyer's bank, a seller's bank, and in case the buyer's bank is in another country, an intermediary bank, correspondent bank may be involved as well. If one makes a payment of 100 Litas, for instance, an additional fee, representing 2-3% of the amount, will be charged, but what if we want to make small payments, below 10 Litas? Is it worth to use cards then? Here electronic money takes a lead. Namely, in the area of small payments, electronic money is more advantageous. Card payments have clear disadvantages, and in addition, high commission fees are charged by banks for transactions as rather risky. On the internet in particular there is a greatest need to have a possibility to pay by "small" money. It is necessary to follow a rule: the cost of

a transaction must be lower than the value of the transaction. On another hand, money of credit card holders are secured and insured against fraud. If a card is lost, it is possible to get a new one, of course, subject to an appropriate charge. If electronic money or its code is lost, one can loose all savings. However, here is solution, in the fully identifiable electronic money systems it is possible to use a technology suggested by the international system eCash, which was developed by a Dutch company "DigiCash" in 1994. This is an anonymous system of electronic money. Anonymity is implemented by means of an electronic signature, blind signature system [20]. The undersigned certifies all information by his/her signature, but he/she has access only to certain part (e.g. a specialised bank identifies the denomination of a note of electronic money, but has no information about its serial number). In order to avoid double spending, each denomination of electronic money is assigned an encrypted serial number. When an electronic note reaches the specialised bank, the serial number is checked. In other words, if the electronic note with the same serial number arrives to the bank for the second time, it is just not accepted. By using this technology, each holder of electronic money knows his money and, in case it is lost, he can just cancel its validity. The cancelled money will not be accepted, and the user, having paid a certain fee, will restore its lost money.

More detailed analysis of payment card systems reveals rather interesting facts. E.g. in many such systems, the only information which is transmitted via network is a card number. Developers of electronic money are in a better situation, they can just apply the existing infrastructure. However, money is not directly moving in the card systems. Governments, banks and companies producing those payment cards are mostly interested to retain the existing situation. Banks benefit from charging commission fees from transactions.

In Lithuania users make their largest spending using banks' payment cards. Lithuanian banks widely use payment card innovations. In order to attract users, they offer cards of individual design. Banks are also implementing "Verified by Visa" (VbV) service. "VbV" service is intended to ensure a safe settlement on the internet and in such a way attract potential users of electronic money. In addition, Lithuanian banks and "Visa Europe" are implementing a novelty – a contactless "Visa" payment card, which simplifies payments and enhances client security. It would be very difficult for issuers of electronic money to compete with prevailing payment cards in Li-

<sup>1</sup> This technology has been developed by such payment systems as Visa and MASTERCARD for safe payments by cards on an open network. SET represents execution of transactions on the network, when a buyer and a merchant can identify each other (by exchanging digital certificates) during the execution of the transaction. This allows for ensuring that the actions are legitimate and true.

thuania, when payment cards become more attractive and better protected.

## 5. Conclusions

Electronic money must be perceived as appropriate payment instruments which are purchased by the user at an electronic value from a person who provides an electronic money issuing service. The aforementioned electronic value must be equated to cash. Also, absence of linking to a bank account and acceptance by natural and legal persons other than the issuer are very important features of electronic money.

Drawbacks of the modern electronic payment systems encourage development of electronic money systems which, if compared with the latter, have a number of advantages, but have to meet certain requirements, and, most important, main needs of clients (security, user-friendliness, interoperability, anonymity, low cost, reliability, usage possibilities, universal nature).

Occurrence of electronic payment instruments may be considered as a factor that certainly makes money supply regulation more complicated. States already now are trying to take over control over electronic money; however, the applicable control regimes allow companies to create basically their own "virtual states", i. e. offer new payment instruments as alternatives for payment instruments offered by the central bank. In the contemporary world there are companies offering to use electronic money created by them, buy in their virtual shops. Such a world may be identified with a decentralised world where individual companies have their own money, their symbols as states.

Lithuanian users have an option to use electronic money in the PayPal system; however, the account is activated by using credit cards issued by banks. Banks charge for all transactions with electronic money, and this considerably increases transferring costs of electronic money.

Although real electronic money systems are not yet functioning in Lithuania, the Lithuanian legislation capacitates occurrence of such systems. Future providers wishing to issue electronic money besides of applying for a licence as a full-blown credit institution have the possibility to apply for a licence as an electronic money institution under Electronic Money Directive.

While implementing requirements of the European Union, electronic money systems in Lithuania will not meet requirements for electronic money set by all theoreticians, e.g. the need of money move-

ment control forced to give up one of the main features – anonymity, and identification requirements were set for electronic money.

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## ALTERNATYVIOS ATSISKAITYMŲ SISTEMOS: PERSPEKTYVA LIETUVOJE

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**Santrauka.** Straipsnyje nagrinėjama naujos kartos elektroninė mokėjimo priemonė – elektroniniai pinigai ir šios priemonės panaudojimo Lietuvoje prielaidos. Aptariama elektroninių pinigų samprata, analizuojami elektroniniams pinigams keliami reikalavimai, taip pat pirkėjų poreikiai įdiegus elektroninę komerciją (saugumas, pigumas, universalumas ir kt.).

Straipsnyje aptariami elektroninių pinigų dvigubo išleidimo, elektroninių pinigų emisijos bei specializuotų bankų steigimo Lietuvoje probleminiai aspektai. Nemažai dėmesio skiriama elektroninių pinigų ir mokėjimo kortelių santykio bei mokėjimo kortelių trūkumų, palyginti su elektroniniais pinigais, analizei. Autoriai taip pat kelia elektroninių pinigų teisinio reguliavimo problemą – autorių nuomone, elektroniniai pinigai įneša naujovių į ligšiolines nusistovėjusias mokėjimų reguliavimo doktrinas, todėl šiuo metu esantis teisinis reguliavimas turi būti kuo greičiau pritaikytas naujosioms elektroninių pinigų realijoms ir nevaržyti elektroninių pinigų sistemų diegimo bei naudojimo.

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