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MOBILE COMMERCE AS ONE OF THE MOST PERSPECTIVE TRENDS OF ELECTRONIC COMMERCE

Abstract

The article examines the notion of mobile commerce, which is a new form of electronic commerce that appeared due to combination of the Internet and mobile technologies. The author presents practical recommendations concerning further development of the national telecommunications industry.

Key words

Information and telecommunication technologies, the Internet, mobile commerce, electronic commerce, mobile communication link.

The development of the world economy at the end of the 20th century is marked by the introduction of the information and telecommunication technologies. Their expansion affects all spheres of human activity. The process of their integration leads to the immersion of the new branches of the economy, new products and services, and satisfaction of new social requirements.

The newly emerged «cyberspace» is enormous and grows very rapidly. It serves not only for preserving and processing information, but also for its active

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interchange. There is no choice left; the market has reached a decision. That is why the key task now is to keep pace with the global processes taking place in the modern world on the basis of the information and communication technologies development (ICT). The countries that failed to adopt new changes in all the life spheres, basically, those connected with the tempos of the global telecommunications and the Internet development would risk to be excluded from the future international economics, and thus, would encounter lots of crucial and irreversible loses.

However, not all countries have access to information resources not only because of consciously imposed restrictions, but also because of poverty and underdevelopment. The so-called global «digital divide» is being formed. Its issues draw much attention at the international forums today.

On the one hand, the cyberspace has introduced a great number of innovations in the period of time insufficient for their adaptation. On the other hand, due to global networks like the Internet, it can help the developing countries, as well as transition economies, to integrate more into the arising global economy.

Today, we are the witnesses of an avalanche-like expansion of computer and Internet-technologies, with an increasing number of users and large financial investments.

The sphere of ICT becomes one the most efficient trends of business and investment. According to the Organization of Economic Cooperation and Development, 25 operators of communication networks from the member countries of this union produce more income than do 100 world's largest banks.

There is no doubt that transition to the electronic way of business is one of the outstanding modern tendencies, an integral aspect of the future world economic development. However, the ambiguity and argumentativeness of this new phenomenon should be specifically noted. It presupposes a profound theoretical analysis of the problem, as well as perspectives and consequences of the modern information technology development.

These issues have long been in the centre of the foreign researchers' interests. M. Castels, J. Jobber, J. Lancaster, S. Coen, J. B. Queen, L. I. Nevdulajev, A. A. Tedejev, I. T. Balabanov, and others investigated different aspects of the scientific study of this phenomenon. Recently, these issues have also become the research subject for the Ukrainian scientists, in particular O. G. Bilorus, O. V. Zernets'ka, O. K. Skalenko and others.

The scientific novelty of this article is determined by the lack of specialized scientific investigations and publications devoted to these issues in the current national literature.

In this article, mobile commerce will be examined as a modern form of electronic commerce, which developed on the basis of the Internet technologies and mobile communications. The objective of this article is to determine the nature, the structure and the peculiarities of mobile commerce both in Ukraine and abroad on the basis of statistical data and analytical investigations; to elaborate

practical recommendations with regard to development perspectives of the national telecommunications branch, which is an integral precondition for integrating the national economy into the global economic system and ensuring its competitiveness at the world market.

What are the mobile communications and mobile commerce? We attempt to give a thorough analysis of these notions.

Mobile communication is a connection among subscribers which are in constant motion. It can take one of the following forms:

- cellular
- trunking
- satellite
- paging

Mobile communications emerged in 1950ies. In the early 1980s, their development resulted in the emergence of cellular communications, which, in their turn, led to introduction of mobile commerce at the end of the 20th century.

Mobile commerce (or «m-commerce») means buying and selling of goods and services by means of mobile phones [2; 92]. In other words, mobile commerce is electronic commerce realized in the mobile environment. The analogy with the word "e-commerce" (electronic commerce) is not accidental; actually, m-commerce is its continuation, transit of electronic commerce to mobile forms.

It should be noted that before the appearance of mobile phones, the electronic commerce had been fully dependent on the costly infrastructure and equipment. But today there is an alternative solution, and the Internet becomes increasingly closed in with mobile communications.

The introduction of mobility into the world of electronic commerce is of paramount potential.

The unique advantages of mobile commerce include the following:

- universal access;
- absence of many e-commerce restrictions;
- localization;
- personalization;
- efficiency and simplicity of use;
- data portability;
- speed of payments realization; etc.

Many leaders of the Internet-industry note the significant advantages of wireless electronic commerce. In the words of Jeff Bezos, head of Amazon.com, "… m-commerce will be the most fantastic thing ever seen by the world, weary of time famine" [9].

Ideally, the market of mobile electronic commerce should have the following characteristics:

- a developed culture of clearing payments;
- adequate provision of population with mobile communications;
- high Internet-penetration;
- significant maturity of the e-commerce market;
- aggregate consumer demand for the new services;
- relatively high solvency of consumers.

There is no doubt – the world faces the era of mobile e-commerce, which promises even more various possibilities for customers, as well as service and content providers.

Thanks to the Internet, the operators of mobile communications not only provide many people with access to on-line information, but also let them realize various transactions. M-commerce makes users more independent, free from using stationary devices; it gives them an opportunity to buy, perform a payment or participate in an auction sale having only a mobile phone or a PDA. This service has neither time nor space limits.

Nowadays, m-commerce is a part of the everyday life in Finland, Norway, Ireland, Austria, and other countries. Here, the usual thing is to press several buttons on the cellular phone to pay for car wash, flowers, chocolate or CDs, to book a ticket to the movie theatre, etc.

To engage in m-commerce, one can use the following devices: cellular phones (equipped with WAP), personal digital assistants, and smart phones (a hybrid of a mobile phone and a PDA).

To buy and pay for goods (services) on-line, e-shops use WAP (Wireless Application Protocol), which is the standard of interaction between the wireless devices (cellular phones, pagers, and electronic assistants) and the Internet. A specific hypertext mark-up language – Wireless Markup Language – was developed for WAP. To view pages in this format, many mobile phones are equipped with WAP-micro-browsers. The difference between conventional HTTP and WAP is that the latter does not support complicated graphics and sound.

The forecast of the Gartner Company predicts nearly half a billion of mobile phones to be sold out this year [11; 20]. The experts acknowledge that recently the demand for cheap mobile phones has become extremely high. It is typical of such countries as China, Russia and India; whereas customers in most of the western developed countries prefer new, advanced models of cellular phones equipped with colour displays and cameras. According to Gartner, Nokia is not so influential today as the most popular producer of mobile phones, while the South Korean Samsung and LG, as well as the German Siemens are steadily increasing their shares at the world market.

According to the research data analysis conducted independently by the experts of the Yankee Group and the ARC Group, in 2003 the number of mobile subscribers around the world increased faster than the number of fixed-lined

subscribers, growing from 50 million to 1 billion persons, 60 percent of which also gained access to the Internet.

Nowadays, over 90 percent of countries have mobile networks, and nearly each sixth citizen of our planet has a mobile phone.

According to statistical data of IDC, the share of total amount of transactions which account for mobile commerce should make nearly USD 24 billion in 2004 as compared to USD 1 billion in 2000 and USD 2.4 billion in 2001 [8].

At the same time, according to forecasts of Forrester Research, total revenues from mobile commerce will make more than USD 37.7 billion in 2005 [7].

Mobile commerce substantially facilitates the use of new electronic services, such as financial and banking services, information and commercial services, and entertainment services. Forthcoming are the positioning services based on the mobile operator's ability to determine the location of a mobile subscriber.

The branches that can soon realize the potential of mobile commerce and contribute to its development should be pointed out. These are:

- bank and financial organizations;
- transport and tourist agencies;
- mass media;
- trading enterprises.

It is not a secret that the potential of mobile telephony is of great importance for efficiency improvements in many economic spheres, especially in transport and logistics.

With billions of messages sent, SMS is a real basis for mobile commerce, as well as a practical alternative for those who do not have a computer. Today, a short message sent from the mobile phone is much cheaper than the telephone call. The highest concentration of SMS users is observed in Singapore, where 52 percent of subscribers use SMS delivery more than once a day. Australia, China and Philippines are also very active in SMS delivery.

Although the information and telecommunication services will play a dominant role on the market of mobile commerce at the initial stage, shortly afterwards they will be forestalled by the sectors of entertainment, commerce and multimedia.

The experts of the Datamonitor expect that having reached the level of USD 11 billion till 2005, the mobile access to entertainment information will outstrip information and communication services and become the largest source of income in the sphere of mobile commerce [6].

The experts of the telecommunications market assert that the «adult» pictures, which are the centre-piece of any information technology for already a

century, will be the driving force of the third-generation services. «Mobile sensuality» caused immediate public interest as soon as mobile phones with large colour monitors appeared on the market.

The Gartner Group estimated the total amount of the adult stuff bought via mobile nets in 2002. Thus, the revenues of western European operators made USD 87 million, while by 2005 this amount is expected to grow up to USD 1.3 billion [9].

Profits from mobile games (a service on access to the Internet-games via mobile phones) in the USA and Western Europe at the end of 2004 should have reached USD 6 billion. Entertainment and multimedia are the source of the most stable income received from the subscribers and users who prepay this service.

Banking services are rather basically presented in the sphere of mobile commerce. In 1999, over 90 percent of the European banks offered their clients some forms of mobile banking. At the early stages of development of the market for this service, the owners of mobile devices were offered some basic information services: checking account balance, execution of transactions, access to exchange rate information, etc. Merita Nordbanken was the first bank that rendered its financial service and introduced mobile payments already in 1992. Nowadays, the most popular mobile bank is The Woolwich (UK). It provides clients with a possibility to check out their balances, supervise over payments, and conduct money transfers via mobile phones.

Mobile banking service can develop rather quickly in comparison with online banking service in the countries, where the Internet-penetration is not so high. For instance, this may be the case in the Arabic countries.

Currently, most of the analysts also refer mobile brokerage service to one of the most perspective trends of m-commerce.

Proceeding to the analysis of the regional aspects of the world mobile commerce, it should be noted that Europe is the leader in the sphere of modern wireless technologies implementation, while the USA take the last positions in the sphere of ICT development.

According to the forecast of IDC analytical agency, the amount of mobile payments in Europe will rise to EURO 26 billion in 2005, and the number of cellular communications will exceed 300 million of people.

The analysts also suggest that the slowest dissemination of mobile payments will be in Belgium, France, Greece, Luxembourg and Spain: in 2005 an average mobile user will spend EURO 3.47 per month with the help of mobile communication devices. A bit faster process will take place in Austria, Ireland, Italy, the Netherlands, Portugal, Switzerland and Great Britain. Here, the indicator will make EURO 6.77. According to the Forrester Research, the Scandinavian countries (where over 70 percent of population use mobile phones) and Germany will be the leaders in adaptation to mobile commerce. The citizens of these countries will spend by means of mobile devices in average EURO 10.9

per month in 2005. Many experts suggest that Germany may be one of the largest European markets of wireless services, and the income from mobile transactions will reach EURO 11.3 billion in 2005.

A study of future trends in mobile business development realized by Forrester Research specifies that the scaled growth of incomes from m-commerce in Europe will start only in 2006, and until 2010 it will make USD 82 billion.

Mobile communications is already substantially developed in Asia, and mobile commerce is far more developed. Till mid-2002, the Asia-Pacific region comprised 300 million of mobile users. The number of Chinese mobile users exceeds the number of users from any other country: in mid-2002 they numbered over 170 million of people, and according to prognosis for 2005-2006, their number will exceed 400 million of people [12:94].

The most developed countries of this region – Japan and the Republic of Korea – are the leaders in using mobile phones capable of being connected to the Internet.

On the regional level, China is the brightest example of the developing country and of the country which succeeded in mobile commerce development.

The countries of the Latin America are marked with slower tempos of introduction of wireless communication devices. In spite of this fact, the expected growth is extremely high, and according to the forecast of the Inter Market Group, in the Latin America of 2005 there will be over 50 million of mobile Internet users.

Over 20 million of mobile users are numbered in Africa.

Undoubtedly, the European countries play a dominant role on the world mobile market as Europe is considered to be the cradle of m-commerce. At the same time, regarding the Internet use, the USA with decidedly the best physical infrastructure is ahead of the other countries for at least a year and a half.

However, according to the majority of analytical suggestions, the development tempos of changes in the world mobile business in the nearest future should not only put the leaders on guard, but also have a significant influence on the alignment of forces on the market.

The following factors may substantially alter the situation:

1) Some Asian countries, such as Japan, Hong Kong, and the Republic of Korea will have possibly started to outperform Europe in mobile Internet development.

2) In spite of the Scandinavian domination in the volumes of mobile phones sales, Samsung and LG, the South Korean giants, will have significantly increased the sales of mobile devices compared to previous years.

Definitely, wireless communications may be the primary means of access to information and telecommunication technologies (ICT), the Internet and e-commerce for the majority of people in the developing countries and countries in transition. Expectedly, in many of the above-mentioned countries due to little cost of infrastructure development and moderate cost of exploitation, the operators of telecommunication systems will keep on extending the circle of their mobile subscribers.

Owing to wireless technologies, the access to fixed-line telephone network increasingly extends in the least developed countries (LDC). Uganda is a bright example. As a result of liberalization of the telecommunications sector, as well as low cost of building wireless communications networks, the number of subscribers has increased 8 times from 1995 to 2000. Within the LDC group, according to mobile communications penetration indicator, Uganda shifted from 28th position in 1997 to 8th position in 2001. Besides, nowadays, the mobile communications network takes the third upper position in terms of network branching [12:97].

Thus, the progress in assimilation of wireless communications is even observed in the regions with relatively low incomes, thus proving the fact that communication is a vital human necessity.

It should also be noted that in connection with rapid development of mobile commerce, the problems of security become more essential, as far as they are also specific for electronic commerce. Moreover, the anxiety about data interception in wireless communications environment increases. And finally, since mobile phones store personal information, such as passwords, codes, and pin-codes used for authentication and data security for the purpose of checking financial transactions, they will become the popular objects of theft with the subsequent malpractice. Mobile commerce security is the utmost prerequisite of becoming an electronic instrument of micro-payments for users around the world.

The Forum on Mobile Payments was founded in November 2001 and is supported by financial service companies. Among its first members were MasterCard International, Visa International, American Express, and the Banking Cards Bureau of Japan. Currently, the Forum has nearly 89 members.

The Forum is oriented towards ensuring the security of mobile commerce by applying the mechanisms of data protection that exist in the framework of mobile communications infrastructure or by implementing similar levels of safety for authentication, data storing, data confidentiality, and impossibility of payment cancellation.

In addition, the governments should be enthusiastic about elaboration of policy and other regulations that control the issues of authentication and data confidentiality in the sphere of mobile commerce.

When considering the conditions at the Ukrainian IC market, it should be noted that according to the first research analysis of the International Union of Electronic Communication, Ukraine ranked 89th in terms of digital development.

Among the former Soviet countries, Estonia has the best rating with the 29th position, and Russia ranked 64th [11: 8].

In general, in 2003, the communications companies of Ukraine maintained effective growth, further development and technical rearmament. During this period, the value of communication services delivered was estimated to constitute UAH 13.2 billion, including UAH 6.5 billion of services delivered to population, that is respectively 19.6 percent and 38.9 percent higher than in 2002.

In 2003, Ukraine exported USD 83.1 billion and imported USD 79.1 billion of communication services, which is accordingly 1.96 percent of total exports of services and 5.7 percent of total imports of services; the balance in surplus.

In 2003, the capacity of fixed-line network increased by 713.4 thousands of telephone numbers in the urban area and by 76.4 thousands in the rural area. In Ukraine as a whole, there were installed 9.7 million of basic telephones, 85.6 percent of which for population. The level of telephony grew from 45 to 47 telephones per 100 households.

Mobile communications network increased 1.8 times in 2003. The number of mobile subscribers reached 6.5 million. Exactly the high increase in the mobile subscriber base is one of the impediments for the development of mobile commerce in Ukraine. Unless the rapid growth stops, the mobile operators will not focus on client retention and provision of m-commerce services.

The breakdown of realized communication services in 2003 shows that the leading positions in terms of profitability belong to the following types of connection services:

- telephone long-distance (including international) (35.1 percent);
- mobile (29.1 percent);
- urban telephone (19.1 percent);
- postal (5.5 percent);
- computer (4.9 percent).

The breakdown of revenues from realization of international communication services:

- telephone (78.5 percent);
- mobile (9.1 percent);
- computer (8.5 percent);
- postal (2.6 percent).

The revenues from realization of mobile communication services made UAH 3838.9 million in the same year, including:

- cellular mobile communications – UAH 3810.6 million;
- paging – UAH 16.8 million;
- trunking – UAH 11.5 million.

Today, the telecommunications branch of Ukraine is at an early stage of its development. As a result, its intensive and rapid development will be a prerequisite for the upheaval of the overall economy, building business infrastructure, development of modern information technology and strengthening of the country's prestige in international cooperation. The matter of prime importance is to choose a correct way of development at both national and regional levels. Ukraine should not simply copy the foreign experience. The history of the world's telecommunications development signifies that there is no single and correct way of their transformation into a successful branch. However, obligatory are a thorough study of the acquired knowledge and its adaptation to national realities.

Ukraine is characterized by a rather disproportional structure of regional communications operators. There are some other problems as well. First, unorganized is the system of normative and legal regulations necessary for ensuring efficient operation and development of the telecommunications services market. Most of the perspective undertakings in this sphere are hampered by juridical restrictions. Although many legislators are deeply interested in the sphere of telecommunications, there still are no de-facto valid laws. Moreover, the majority of active laws is often amended and altered.

Second, there is a lack of skilled personnel in the sphere of telecommunication and Internet technologies in Ukraine.

Third, in Ukraine, as well as in most of the developing countries, the nature of this sector of economy is often monopolistic. This means that telecommunications services are too expensive, inefficient, and of poor quality. That is why we observe the tendency to entry of foreign operators onto the domestic telecommunications market.

In view of the above-mentioned, it should be noted that the reformation of the domestic telecommunications sector is a principal task, and as proves the practice, the most efficient way to improve quality and access to telecommunication services.

The experience of the recent decade signifies that an effective reform should comprise of three major elements: market competitiveness, private sector participation, and elaboration of an independent regulating authority.

Under conditions of a simultaneous reduction of expenditures on stationary and mobile telephony, the measures realized in the following three key areas will definitely lead to an unprecedented growth of the number of telephone lines (both mobile and stationary).

While conducting the reform of the telecommunication sector, we should take into consideration the extension of the regular service in all regions of the country.

Finally, our state should actively elaborate national action plans to create favourable environment for the IC branch and reach a coordinate solution of the problems in such areas as infrastructure, human resources, normative and legal

basis, taxation, and local specifics. All this is realized in the increased operational efficiency of the whole economy and state governance.

Ignoring the above-mentioned actions can hamper market development of the young state. The «digital divide» may become a considerable obstacle for an intensive development of the national economy, as well as its integration into the world economy.

In conclusion, it should be noted that the development of the electronic forms of business (electronic and mobile commerce) in Ukraine seems to be rather formal. Moreover, unless all of the above-mentioned preconditions are realized and reliable foundation for the whole IC branch is created, it is too early to dwell on its development in our country.

Finally, we can define the following tendencies in the development of the world mobile trade:

- the 3G mobile communications reveal vast perspectives for mobile business development;
- the retail commerce will encompass much more than inter-firm commerce;
- the target markets for mobile commerce are potentially boundless;
- the intentions of the leading Internet-companies and the European infrastructure providers to cooperate closely are distinct;
- an intense competition among telecommunication companies is observed;
- the market players are distinctly striving for common standards;
- the USA and the Asian countries represent a potential threat to European domination in the sphere of mobile commerce (due to adoption of the advanced 3G technologies that will enable the USA and Asia to catch up with Europe in 3 – 4 years);
- fruitful participation is observed in mobile commerce of some of the developing countries, transition countries, and the least developed countries.

Despite a significant potential of the m-commerce market, there is a set of restraints to its development, namely the difficulties with payments realization; poorly elaborated security and confidence issues; problems with ensuring product compatibility of different producers; comparing mobile terminals with the Internet; limited capacity of networks and devices.

In general, it should be noted that today, the ICT and mobile telephony as their key element allow solving many issues. Without doubt, those who missed the process of introduction, further development and improvement of this per-

spective trend, would not only lose this market, but also stay aloof from the overall world economy.

The market is fierce with those who cannot adapt to new changes. And on the contrary, the history proves that those who do foresee the future – rarely lose.

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