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IMPACT OF THE WORLD FINANCIAL CRISIS ON THE UKRAINIAN IT-MARKET

The article examines the classification of IT market segments, investigates the development dynamics of the Ukrainian IT market, its structural changes caused by the world financial crisis, highlights the expansion prospects of the domestic market of information technologies.

Keywords: information technologies, IT-market, world financial crisis

У статті розглянуто класифікацію сегментів ринку інформаційних технологій, досліджено динаміку розвитку ІТ-ринку України, його структурні зміни внаслідок впливу світової фінансової кризи, проаналізовані перспективи розвитку вітчизняного ринку інформаційних технологій.

Ключові слова: інформаційні технології, ІТ-ринок, світова фінансова криза

В статье рассмотрена классификация сегментов рынка информационных технологий, исследована динамика развития ИТ-рынка Украины, его структурные изменения в результате влияния мирового финансового кризиса, проанализированы перспективы развития отечественного рынка информационных технологий.

Ключевые слова: информационные технологии, ИТ-рынок, мировой финансовый кризис

1. Introduction

In the era of the global knowledge-based economy, informational technologies (IT) play a unique role in increasing competitiveness of economic sectors and the state as a whole. IT help to spur efficiency in the production process, they set business to the global level and make government more transparent. The success of IT industry should be a key determinant of Ukraine's potential to compete in the world economic system. There is an urgent need to resort to knowledge-intensive, value-added production in order to provide sustainable economic and social development.

This article is devoted to a contemporary problem of the IT market's transformation in Ukraine. The world financial crisis has posed brand new questions and choices for Ukrainian government and IT companies. It has caused the necessity to analyze the impact of economic crisis on the IT industry in Ukraine, to find accessible opportunities to withstand the crisis and to preserve the competitiveness of IT companies.

Impact of the financial crisis on the Ukrainian IT market makes a big interest for scholars and economists-practitioners. Berner C. and Starkell N. have explored the prospects of Ukrainian IT industry. Yaroshchuk M. has compared the drivers of IT industry in Ukraine, Bulgaria and

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Romania. Pilipenko O. and Samokhina T. have taken the critical stand towards the characteristics of downturn in the domestic market of informational technologies. Despite the author investigates the development of the Ukrainian IT market and its structural changes caused by the world financial crisis. The aim of the research is to analyze the impact of the world financial crisis on the Ukrainian IT-market. Conclusions about the expansion prospects of the domestic IT market are also drawn.

Methods of the scientific research implied in the article are such as: complex and system, graphical and statistical analyses, comparison method. The empirical and methodological parts of the article are based on domestic and international scientific publications in this field, as well as on analytical and statistical data of international organizations and consulting companies.

2. IT market structure

The IT industry can be defined as companies' concentration on the development, production, distribution and sales of products and services in the field of information technologies. It indicates that IT industry covers a diversity of activities related to IT (ranging from hardware, software to IT services).

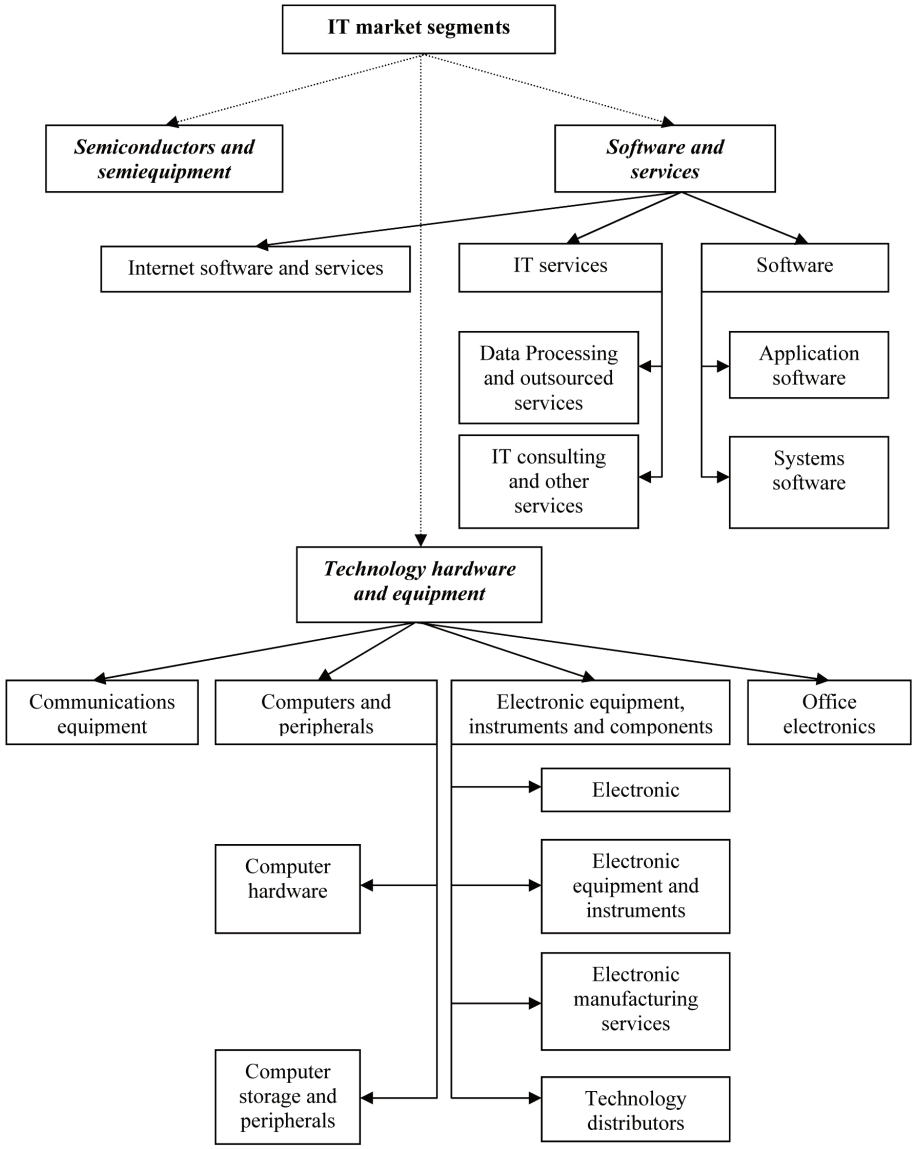

Fig. 1. IT market segments [12].

According to the international consultancy agency Bloomberg, the market of information technologies includes the following segments: semiconductors and semiequipment, software and services, technology hardware and equipment (Figure 1).

We would like to use another classification of IT market segments. In our opinion the division of the IT market on segments of hardware, software and IT services is more appropriate.

1. Hardware segment includes personal computers (PC), notebooks, monitors, printers, multifunctional devices, servers and data storage systems, data centers, networking telecommunication equipment, structured cable systems, engineering systems (infrastructure) etc.

2. Software segment consists of graphic packages, office applications, computer-aided design, data security systems, core applications (software for certain industries), Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Customer Relationship Management (CRM), Business Intelligence (BI) systems, Enterprise Content Management (ECM) and others.

3. IT services may include services concerning introduction of IT infrastructure, applications, design of applications, IT outsourcing, IT consulting, IT education, virtualisation, "clouding" computing, lease of applications or hardware- "Software as a Service" (SaaS), "Infrastructure as a Service" (IaaS) respectively and others.

3. Response of the Ukrainian IT market to the world financial crisis

Ukraine has been a pioneer in the computer industry. A small-scale computer, the first in continental Europe and the third in the world after the United States and Great Britain, was designed in Kyiv in 1951. By 1982, the V.Glushkov-led Cybernetics Institute and Design Bureau developed and released 30 types of different computers, computer complexes, as well as networks and equipment, and designed the respective software. Kyiv and Kharkiv designed and released onboard computers for nuclear submarines, ships and missile systems. The traditions of the world's leading scientific schools that have formed over many years have been preserved until today, and the potential of computer specialists still corresponds to the level of major IT-producing countries.

The Ukrainian IT market belongs to the market ray with great prospects. Communication systems, e-commerce and electronic payment systems are developing very rapidly here. The Ukrainian IT sector is represented by almost 4,000 companies employing over 47,000 people. The software supply and development segment is represented both by Ukrainian companies and by representative offices of international IT corporations. Nowadays IT services account for more than 13% of the entire Ukrainian market, while computer hardware and equipment supplies account for the rest. That is why experts predict that this market segment will experience the most rapid growth, both due to increased domestic consumption and increased exports. Ukrainian specialists are sufficiently qualified to implement the most difficult projects. By various estimates, there are 30,000-50,000 highly-qualified programmers in Ukraine. Almost half of them are employed with companies taking orders from international corporations. Ukrainian outsourcing companies develop software used, in particular, by the world's leading financial institutions. So far, Ukrainian exports of IT products and services account for about 1% of the world market [15].

The Ukrainian economic system is integrated into the world economy closely enough to be involved in the global processes. During 2000-2008, high growth in Ukraine was supported by favourable external conditions and was mainly demand-driven. Due to the massive decline of external demand and the reversal of capital flows during the global financial crisis some factors that have underpinned growth since 2000 have been exhausted. The terms of trade have already deteriorated and foreign credits granted to households and enterprises, which fuelled the consumption boom, have already strongly declined [6].

The world financial crisis of 2007-2008, as any other, has influenced the development of IT industry in Ukraine. The sharp decline in trade, foreign direct investment and access to international financing poses a risk to the global supply chains that underpin innovation of IT companies. These supply chains are critical sources that provide IT companies with technical expertise, knowledge of foreign markets, business contacts and international partners. The decline of trade and investment flows could have severe consequences for the transfers of information technologies and for innovation process at the global level. Since trade binds economies closely together, it helps to spread developments from one country to another, the negative developments as well as positive.

The crisis has been unfolding in several waves. The first wave rose in 2007, when stock indices of the world's leading banks and financial institutions went down. Under the circumstances, risk capital looking for stable yet high-profitability markets moved from developed to emerging markets, which continued to show high growth rates and profitability. As a result, stock markets in respective countries grew in 2007. China and Ukraine were leaders of such growth. The inflow of credits was also substantial: in 2007, Ukrainian economy borrowed USD 24.3 billion in the middle- and long-term credits [13]. In 2006–2007 the Ukrainian IT market's growth rate stood at 40–45%. This was the highest growth rate among Central Eastern European countries. With over 3.4 billion USD in volume, the Ukrainian IT market ranked fourth after Russia, Poland and the Czech Republic [15]. In 2008 the Ukrainian IT market has expanded to 3.9 billion USD [14].

The second wave started at the beginning of 2008, when the ongoing fall in the world stock markets re-directed cash flows from one class of assets to another, in particular to commodities (inclusive hardware) and energy resources. These assets became more marketable, and commodity prices soared up. The average metal and oil prices rose [1].

Ukraine's economy responded to the above challenges in the following way. The overall inflationary background intensified. Inflationary spiral, set spinning in 2007, has been in motion in 2008. Political instability affected economy. The convergence factor (resulting from openness of the Ukrainian economy to global trends, e.g. to the 2008 consumer price rise in most countries of the world) also accelerated inflation processes in the domestic consumer markets. In September CPI amounted to 101.1% (in January-September it amounted to 116.1%). The overall inflation was driven, first and foremost, by rising prices for services. The role of export-oriented production in the country's economic growth increased. At the beginning of 2008, production growth in export-oriented sectors accelerated, and the financial resources of the national economy were re-distributed, in particular through the banking system, from other sectors into commodities and export-oriented ones. The second wave of the global financial crises set off ripples in the Ukrainian stock market. The PFTS index lost 43.5% in the first seven months of 2008, primarily

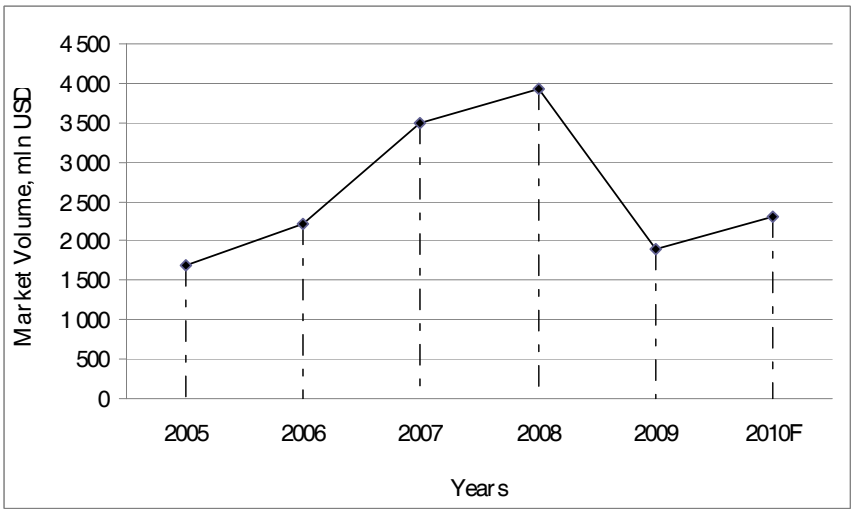

Fig. 2. Volume of the Ukrainian IT market in 2005-2010, million USD [14].

due to the withdrawal of some foreign investors from Ukrainian, as well as from the global, markets and to political instability in Ukraine.

The third wave of the global financial crisis has already caused a series of bankruptcies of the world's leading financial companies and financial crisis rollover to the real economy sector, drop in demand on global markets and, plummeting commodity prices and stagnation of economies [13]. In 2009 the Ukrainian market of information technologies has fallen approximately 50-52%, to 1.8 billion USD (Figure 2).

Before the crisis IT market of Ukraine showed rapid growth among the countries of Central and Eastern Europe. Since exchange rate of national currency has deteriorated, the sales to customers have greatly decreased in their volume. Pro tanto the commodity overabundance on storages has become a sharp problem. For its decision the row of market players have set to sell out IT products on the understated prices. This process has violated the natural cycle of novelty receipt. As a result, the last year was not marked by appearance of some brand new technologies and innovations in the IT industry. Rather it has caused the necessity to analyze the impact of economic crisis on the IT industry in Ukraine, to find accessible opportunities to withstand the crisis and to preserve the competitiveness of IT companies.

The hardware segment has declined in 2009 for 55 % to 1.5 billion USD (Figure 3). According to the IDC, the import of computers and laptops in Ukraine has decreased on 41 % in 2009 as compared with 2008 and reached 1.36 million devices. The share of notebooks has remained practically on the same level of 46 % in the import. 95 % of deliveries were held in Q3 and Q4 of 2009 due to overstocked storages of distributors and the low market activity in the first half of the year. In 2008 the volume of mobile PC market segment has declined on 56 % as against 2008 to the point of 345 million USD. The share of netbooks among the mobile computers has tripled to 11.3 %. In 2009 the volume of Ukrainian monitors segment was estimated in 500 thousand units that is almost twice less in comparison with 2008. The market share of Samsung and LG is over 70%. Acer and ASUS have approximately 10% both and Philips - about 5%. The technological tendency of 2009 was the transition to widescreen monitors that accumulated 86 % of the monitor segment. The demand softness for IT products has also caused the reduction of average price in the market segment.

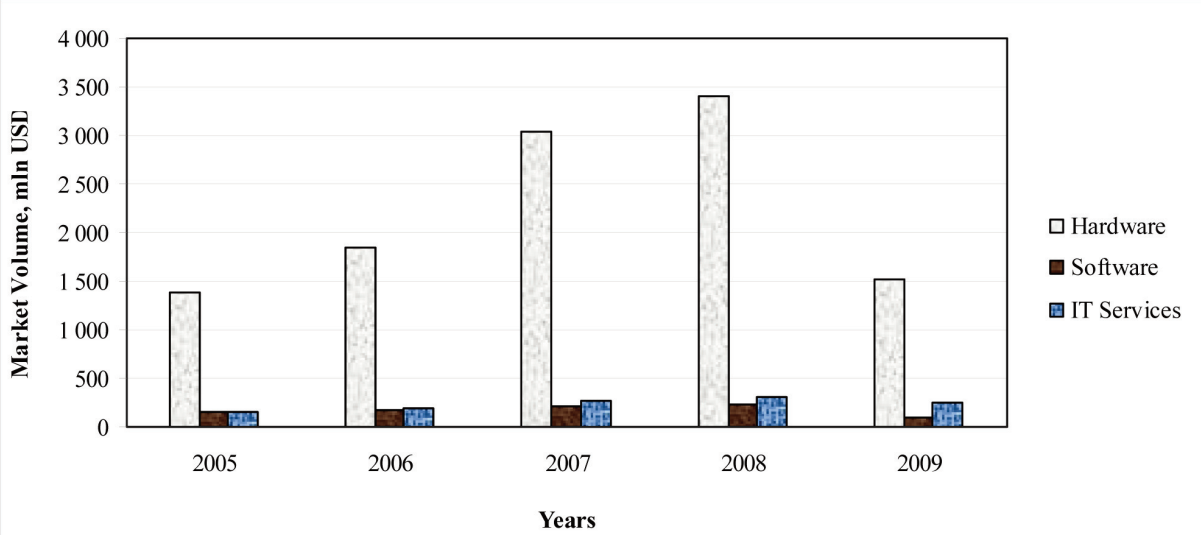

Fig. 3. Segments of Ukrainian IT market: hardware, software, IT services in 2005-2009, million USD [14].

The economic crisis has also influenced the domestic market segment of printing techniques. In 2009 their import in Ukraine equaled 422 thousand devices, that is only 45 % of the

previous year rate. The tendency is the further growth of the multifunction devices in the market segment.

In 2009 the sales of servers and data storage systems have deteriorated on 58 % to 50 million USD as compared to 2008. The leaders of this market segment have remained unchanged: Hewlett Packard, Dell and IBM.

The sales dynamics of hi-tech products was changing variously depending on a device class. In some segments, such as printing technique, a failure was about 80% in separate months. The falling proceeded up to the middle of 2009 for the market segment of notebooks.

In 2009 the software sales in Ukraine fell approximately on 40 % up to 90-100 million USD. Thus, the dynamics differed strongly depending on a category. The demand for office applications has fallen down on 50 %, for graphic packages and computer-aided design – on 30%, the segment of data security systems has increased on 10 %, of virtualisation systems - has grown about 50 %. The reason of general decline is obvious – in the period of IT budgets' contraction the demand for licensed software has declined. Most of the companies displaced accents from development to support and optimisation of present infrastructure, to protection of internal resources.

According to estimations of market participants, the segment of business-applications has fallen down on 60-80%, within the limits of 10-20 million USD, and that is a level of 2004-2005. Suppliers and integrators used the unprecedented discounts, offered different variants of purchase, payments for services by instalment. The customers expended their funds foremost on support of current projects and sometimes on instruments and measures, which contributed to efficient growth of enterprises. Being not able to sell ERP applications to new customers, suppliers began to offer applications with additional functionality, generally the instruments of business analytics. So, during the crisis the demand for BI systems began to rise, especially for branch-wise systems and quickly implemented products such as QlikView. The demand for CRM systems in Ukrainian IT market is comparatively low. One of the greatest events was the introduction by Microsoft of the Dynamics CRM on a stadium Donbass Arena [18].

In 2009 the revenues of system integrators have fallen on 55-60 % as compared to results of 2008 and made about 400-500 million USD. Practically all projects were frozen in the first six months of 2009, except those that were set to be completed in the Q1 2009 [17]. Retail business, industry and state sector have greatly cut their IT budgets. In this period integrators were forced to restrict their business, to reduce the costs, to sell off the storage and enable the repayment of debts. The majority of IT companies have focused on separate priority directions in the range of products and key customers. Telecommunication companies and large banks have become the most active customers. The revenues of system integrators were earned mainly due to off-load of optimisation applications for IT infrastructure, construction of data centers, CRM decisions, analytical and information security systems.

Against the recession in demand for hardware and software the market segment of business applications remains rather stable. At the same time the demand for outsourcing and IT consulting has slightly grown [16]. In 2009 demand for the services of IT educational centers went down more than twice in comparison with a previous year. The economic situation in Ukraine forces loads of companies to diminish and even mop up the financing of educational programs for personnel. Such IT services as information security providing, design of business processes automation systems, management of resources, relations with customers and corporate content, IT outsourcing, virtualisation remain perspective. In 2009 the client base structure of system integrators did not have noticeable changes. Its basis is still formed by corporate customers (over 70 %) in financial, telecommunication, transport, industry and energy sectors.

We propose to reckon the influence of the world financial crisis on the Ukrainian IT market as a spiral model stated below (Figure 4). The world financial crisis deteriorated greatly the economic situation in Ukraine. Thus state and loads of companies were forced to cut their budgets for renewal of information technologies.

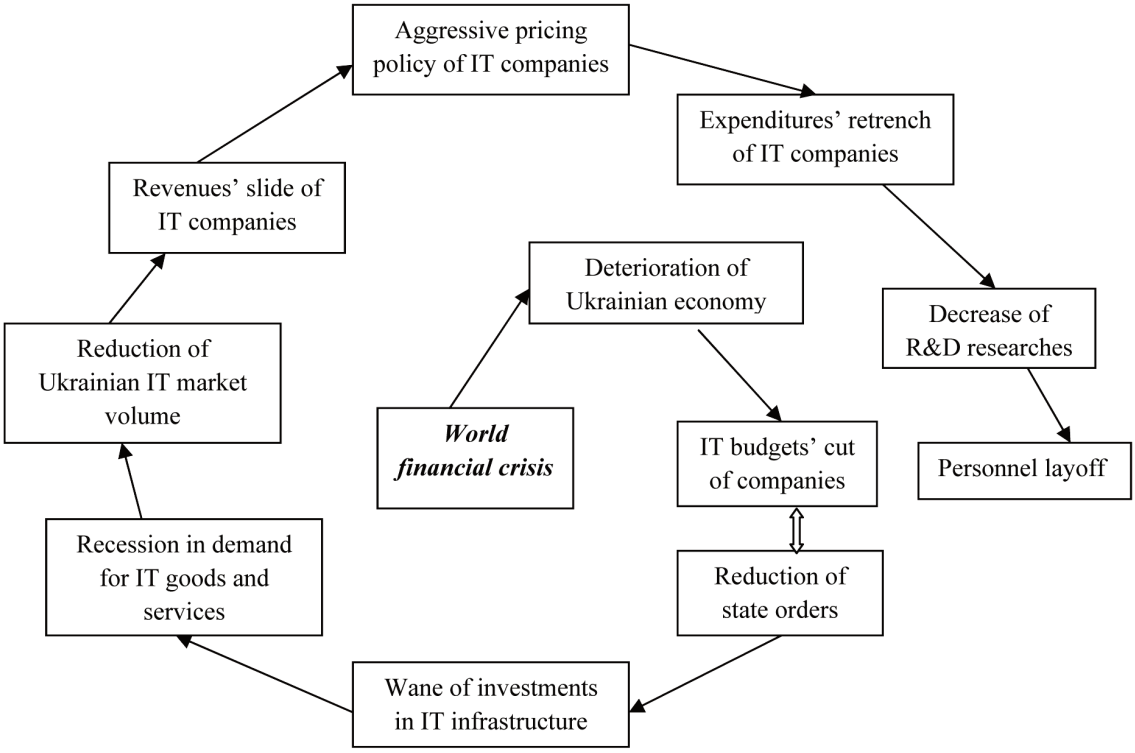

Fig. 4. Impact of the world financial crisis on the Ukrainian IT-market

The wane of investments in IT infrastructure has caused the recession in demand for IT goods and services and so, the volume of Ukrainian IT market has reduced. The most severe situation for IT companies was in Q1 2009. The majority of customers has mopped up large-scale IT projects and has financed only the current support of IT infrastructure. This has led to the sharp slide of revenues earned in the Ukrainian IT market. The overstocked storages, aggressive pricing policy of IT companies have caused the intension of competition in the IT market. The majority of the companies have also faced with the liquidity problems [4].

The banking system was not able to finance the cash spreads and also large-scale projects. As a result IT companies have cut their expenditures in all directions, research and development inclusive (R&D). The IT companies were forced to announce layoffs. This human capital depreciated quickly because the downturn protracted. Some IT companies were not able to withstand such a severe situation and have withdrawn the IT market of Ukraine.

R&D is declining because it is mainly financed from cash flow (retained earnings), which contracts in downturns. At the same time, as banks, markets and investors have become more risk averse; firms face difficulties in tapping into external sources of funding to support their investments in R&D.

Business R&D is also being re-oriented towards short-term, low-risk innovations, while longer term, high risk innovation projects are being cut first [5, p. 6]. Small, innovative enterprises are particularly hard hit because in many cases their primary asset is intangible in nature (e.g. an idea or a patent) and difficult to value, making it hard to borrow against, or sell, to stay afloat. The crisis can, however, magnify the competitive advantage of research-intense IT com-

panies who seize the opportunity to reinforce market leadership through increased spending on innovation and R&D. Many of today's leading firms such as Microsoft or Nokia were born or transformed in the "creative destruction" of economic downturns.

4. Development prospects of the IT market in Ukraine

We suggest that the world financial crisis should influence the further renewal of Ukrainian IT market due to:

- optimisation of expenditures;
- diversification of IT goods and services by IT companies;
- optimisation of customers' network structure;
- active and rapid decision-making;
- quality improvement of IT goods and services;
- amelioration of competition in the IT market;
- market share's decline of hardware in the total IT market structure;
- growth of demand for IT outsourcing, "cloud computing", "green technologies".

IT market of Ukraine still has the low level of saturation. Thus, its potential is very large. Moreover, IT companies as well as individuals began to invest heavier in the appropriate fundamental IT education and training that significantly adds to the general trend. Ukraine will definitely keep the appreciation of the customers from all over the world for yet another decade. It will attract new clients by professionalism of the experts, low labor cost as well as by geographical vicinity and cultural connection to the Western Europe.

Ukraine is conspicuous among the international IT community, judging from the observation that almost every Ukrainian company has a western project in its portfolio. According to the Global Outsourcing Report, the leading forces in the IT outsourcing market worldwide are now quality and speed to market, not just cost of services. It is commonly known that Ukraine has inherited a scientific base along with its various technological and scientific establishments, mathematics schools and centers of computing technologies. Another fact is that 30,000 computer students graduate each year, who are praised for their analytical and creative skills. Employers are not satisfied, however, as graduates do not have good command of English, management skills and solid knowledge of the software development process. Thus, despite the large number of capable young workforce the industry experiences a shortage of IT specialists. At the moment, the percentage of professionals trained by higher educational institutions is growing, but is still low.

As a result, the business community calls on the state to reform the educational system. Companies suggest that the content of curriculum should undergo change, as the quality of IT-education in Ukraine cannot satisfy modern market demands and challenges. Industry observers also point to the problem that educational institutions do not employ practitioners to teach new courses in computer sciences. Consequently, more potential employees go abroad for education.

The representatives of the educational field bring up an argument that national universities should give a good basic foundation, and the rest of skill tailoring is to be done by the industry players, because IT industry evolves rapidly. Nevertheless, most recently Ministry of Education and Ministry of Transport and Communication have started to pay attention to this issue by organizing several conferences, which called for brainstorming solutions to the problem of educational service in IT discipline, the practical outcome of which is still to be seen.

Any industry cannot stay competitive long enough just based on the inherited factors of production and without support from the government in the form of favorable policies. Of course

each state has its own tradition and blindly duplicating policies in order to gain competitive advantage can lead to unexpected outcomes [11].

Germany is the biggest market for IT services in Europe. It is also among the late adopters of global sourcing options, because German customers prefer dealing with local partners. The supply of IT skills from countries with overheated IT labour markets like Czech, Poland, Hungary, Slovakia, Latvia, Estonia or Lithuania is not an option to increase the competitiveness of the German IT service providers facing competition from India and China. Economically, it is obviously not in the interest of the German IT services industry to deal with outsourcing companies from Eastern EU member states like Czech, Hungary or Latvia which will themselves subcontract parts of the work to outsourcing companies in Ukraine or Belarus. Thus, Ukraine may become an integrated part of cross-border value chain for the German and Swiss IT services sector. These delivery models combine nearshore and onshore service components and go along with a high organisational maturity level. As an example, Ukrainian outsourcing market leader Infopulse with their partner REVACOM from Germany deliver software management services "Made in Ukraine" to customers around the globe. Successful worldwide projects uniting IT engineers from Ukraine and delivery managers from Germany have already become reality and it mainly depends on the direction of the educational policy of Ukraine if the country will become the leading Eastern European supplier of outsourcing services to the German-speaking markets [2]. Investing in technology, in life science will be more competitive than any other field [3].

As for the IT industry, acquisitions of outsourcing companies have been happening in Ukraine for a few years. In the portfolio of US outsourcing company Exigen Group is Starsoft, a Ukrainian company. US- and India- based Global Logic merged with Ukrainian Bonus Technologies, whilst Kharkivbased Telesens was sold for 2.7 million USD to NASDAQ-listed TTI Telecom in December 2007. Earlier that year Norwegian IT giant EDB bought Miratech and Infopulse, two Ukrainian outsourcing companies. The consolidation of the IT industry is set to continue [8].

The information technology sector is the one which is the least regulated. It requires the lowest number of permit documents, and therefore it is a great deal easier for a foreign investor to come here and make a "Greenfield investment", i.e. register a company, recruit personnel and organise the production of a software product which will be resold as a lot "at premium" for a specific consumer of the software product in developed markets. Therefore experts forecast no boom of mergers and acquisitions in the Ukrainian IT market. IT companies which are involved in programming in Ukraine – so called offshore programming – are companies which are not of interest from the point of view of a takeover; it is much easier to work with them on a contractor basis. This turns out to be less expensive. And there are fewer operational problems connected with management and with entry and purchase [9, p. 39].

Ukraine's economy is emerging from a deep recession, benefiting from global economic recovery, a good harvest and a favourable base effect. In 2010, growth is forecast to be supported by improved external trade prospects. In addition, consumer demand is likely to remain resilient on the back of pre-election social spending increases and a large informal economy. Public investments related to preparations for the Euro 2012 football championship will also contribute. At the same time, as credit will continue to remain scarce (some revival is expected only in the second half of the year) and export prices are unlikely to increase as fast as in pre-crisis years, real GDP growth is forecast at a relatively moderate 3% in 2010 [7]. In 2010 the Ukrainian IT market will grow more than 25 % up to 2.3 billion USD [14].

5. Governmental policies

As it is impossible to imagine any innovative advancement without IT, officials have declared information technology among priorities for national development. Thus, at the beginning of 2007 the Ukrainian Parliament adopted the Law of Ukraine "On the Foundations of the Development of Ukrainian Information Society in 2007-2015", which was followed by the Action Plan on Implementing the Tasks Envisaged by the Law of Ukraine. The goal of the law and the subsequent documents is to promote an information society in Ukraine, hence strengthening basis for IT sector development.

The growth of the IT market is conditioned also on improvement of investment climate. In this domain, was issued a decree at the end of 2005 which created a State Agency for Investment and Innovations (SAII). Two more additional bodies where brought into existence in 2006, such as the Ukrainian Center for Investment and the State Company for Innovations, which later were brought under the auspices of SAII. In May 2007, thanks to initiative of SAII and the National Technical University "Kyiv Polytechnic Institute" a special corporation was born, Science Park "Kyiv Polytechnic", which now brings together academia, science researchers and manufacturers to reinforce innovative and informational development of the country. The key effort needed to improve the situation is the development of a sustainable strategy in creating legislation that would help build institutional infrastructure in the IT industry.

Explanation for the absence of a concrete strategy on behalf of the state is mentioned by business community. They argue that if the IT industry is considered per se, then its current share of GDP is only 3%, whereas the threshold figure is 10%. Thus when IT industry in Ukraine reaches this point, it would be difficult to neglect it, and then it could be more realistic to expect assistance from the state. Thus, the IT market has to grow by at least 3 times before the state will take notice of it. Yet, this poses a puzzle, as it seems that such support is already badly needed, especially when it comes to intellectual property rights (IPR) protection laws and their enforcement, alleviation of taxes, custom rules, changes in copyrights, etc. Such influential companies, as Microsoft, Intel, and Oracle, repeatedly engage in discussions with the government to take necessary steps in this direction.

The root problems can also be eliminated by Ukraine's accession to WTO, which imposes certain sets of laws, standards and society's awareness of IPR issues. Accession to WTO serves as a positive boost for export-oriented industries, which is also a feature of Ukrainian IT at the moment. Consequently, an additional optimistic prospect for the Ukrainian economy will be the launching of a Free Trade Area with the European Union as a part of the upcoming agreement, which is currently under negotiation. These two milestones are the chances for Ukraine to bring its regulations into compliance with international standards.

When reviewing factor conditions, it becomes apparent that favorable and timely governmental policies still play a significant role in improving the country's image needed for international investment and for normal functioning of domestic industry players. In this respect, Ukraine can learn from regional leaders, which in turn emulated best practices of mature international IT nations. First, a clear-cut and balanced state strategy is needed in Ukraine to support the growing market, which, on the one hand, has a critical set of attraction factors, but, on the other hand, suffers from a weak business environment. Then, links with international markets can be more easily achieved due to improved credibility rating. Thus, work is to be done on two fronts: domestic and international, because a combination of strong players both local and foreign-owned is more beneficial for the country's economy as a whole. While international companies serve as drivers most of the time (for policies, collaboration initiatives, etc), local firms are perceived as necessary for development of high-value added national products needed to

maintain competitiveness in future. While Ukraine rates better in terms of market size, salary level, and potential for growth, it still has to catch up with mature IT states when it comes to relevant educational policies, share of services and infrastructure to maintain favorable local and international demand. Therefore, the key to success is to be ready when the opportunity comes [11].

Effective support of the national IT business is needed. In order to make this process less declarative, it should be based on corresponding regulatory and legal framework. It is, first of all, government and business partnership plan and also legislative enablers. In practice it is expedient to begin with a common solution of the problem of super high debts of national companies and with overcoming the situation of possible corporate defaults. Ukraine has low credit ratings and vague prospects of export revenue renewal. As a result, access of national companies to international capital market is limited. Thus, independent restructuring of leading Ukrainian companies' debts is next to impossible. The government should join negotiation in order to regulate the problem of international debts and to avoid corporate defaults, sometimes by giving government guarantees with the condition of restructuring the debts [10].

The new policies should include incentives to establish knowledge-based operations; growth of the education spending, stable economic and political environment. Inevitably the long-term outsourcing industry should flourish.

6. Conclusions

The world financial crisis has prompted an immediate response by Ukrainian government to avoid a collapse of the financial and banking systems and limit the economic effects of the credit crunch. Such policies aim at stabilizing the economy and initiating a rapid recovery. But policies also need to ensure that the recovery is durable, i.e. based on sustainable growth. For Ukraine it is the question of vital importance to shift to knowledge-based service economy where investment into information technologies is of equal magnitude as investment in machinery, equipment and buildings.

The current economic situation poses new questions and choices for Ukrainian government. It offers an opportunity to strengthen the medium and long-term potential of IT industry. Government should incorporate forward-looking structural measures that inject information technologies into the mix of policies being adopted to tackle the economic downturn. Some of these may add to demand for IT in the short term, but most are more likely to offer benefits in the longer term.

It is important to provide favourable investment terms for Ukrainian IT industry, especially to reduce risks of potential investors by development of weighed macroeconomic policy and functional legislative field. At the same time the state should provide the sufficient level of economic freedom for activation of IT market development mechanisms. There are highly skilled specialists in the IT sphere; their wage rate is much lower than the world rate. In spite of this the Ukrainian IT market is competitive neither in regional nor in global scale. Basic development obstructions for IT industry such as: low level of investment attractiveness, absence of the legal base in the IT field, per se the high level of the shadow IT segment, especially for software and also rapid rate of intellectual emigration from Ukraine can result in the irretrievable loss of perspective IT industry. So the domestic high tech field needs national development programs, balance of the world integration processes and objective national interests, balance between interests of foreign and local business.

Economic crisis is the time of industrial renewal. Less efficient IT companies fail while more dynamic ones emerge and expand. Creative destruction is an essential engine of long term

efficiency in the market economy. New business models and new technologies, particularly those allowing a reduction in cost, often arise in downturns. As some players in the Ukrainian IT market weaken, they open space for new players and innovators.

Information technology industry has a chance to outgrow due to an orientation on the offshore programming. The prior state vocation is to support the knowledge-intensive, value-added production based on the brand new information technologies. This will add up to the competiveness growths for Ukrainian IT companies in the regional and the world market of information technologies.

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