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INFORMATION TECHNOLOGIES - A CRISIS SOLUTION FOR ROMANIA?

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Abstract

In this paper we discuss about the evolution of the information technologies (IT) market and about the achievements and trends in the ERP market, e-Health, e-Education, e-Government, mobile applications, e-Religion, cloud computing, social networks and social media, in the case of Romania, one of the Eastern European countries with an emerging economy. Our paper aims at achieving a valuable synthesis of the IT market in Romania, synthesizing the most knowledgeable opinions of IT specialists. All the aspects presented here offer us a dynamic image of the potential and tendencies on the IT market in Romania, as a country with an emerging market economy for the near future. In conclusion, we think that the IT industry and market may provide one of the solutions that will limit the effects of the economic crisis in Romania.

Keywords: IT market, ERP market, e-Health, e-Education, e-government, mobile applications, e-Religion, cloud computing, social networks, social media, trends.
JEL classification: I00, D83, G14, M15, O30

1. INTRODUCTION

The International Monetary Fund (IMF) places Romania in the category of countries with emerging economies, together with other countries from Eastern Europe, such as Bulgaria, Hungary, Poland, Ukraine, Russia, Estonia, Lithuania, Croatia and others (IMF, 2009). In April 2009, less than two years after the onset of the bankruptcy of Lehman Brothers Bank, IMF, within the *Global Financial Stability Report Responding to the Financial Crisis and Measuring Systemic Risks*, included *Romania in the category of high risk emerging countries*.

Even though Romania is considered to be one of the critical emerging countries, the information society is more and more present in the daily life of a Romanian. We can easily notice that in Romania *the third wave of Toffler information society* is present in all walks of life, including the religious one. In other words, services in Romania exceeded 50% of the GDP early in the first semester of the year 2006, registering 51.3%, compared to the Western countries which registered 60% (Pelinescu, 2006, p. 131). Given these conditions, we can also notice the presence of *a new economy* in Romania; an economy dominated by *bit* or by *digital products* from which we expect the efficiency specific to a modern economy with interconnected activities. All these elements highlight a fast rate of change of technologies, of organizations and institutions, which can be included in a *social changes pattern* specific to *The New Old Economy,* as it was seen by J. Potts (2001) early in 2001.

2. THE EVOLUTION OF THE IT MARKET IN ROMANIA

Before 1989, Romania presented no particular interest in the IT field, its economy being a closed one, unconnected to the flows generated by transnational and multinational companies. After 1989, the Romanian economy has steadily opened, leading to the necessity of adapting the investments to the market needs. This was followed by an increase of the foreign companies' interest for the Romanian market regarding the supply of hard equipment and IT solutions, determining its continuous growth, which culminated with the achievement of a maximum level of more than 1 billion dollars in 2007 (Pelinescu, 2006, pp. 135-136).

In one of his works, Oancea (2007) establishes a hierarchy of five periods regarding the evolution of the IT market in Romania. ***The first stage,*** comprising the period between1990-1994, is that of the inclusion of new IT specializations in computer study programs, concomitantly with the emergence of a desire to have permanent access to technology. The period 1995-2000 is ***the stage of the turnover „war"*** for the sales of simple computers with installed operating systems and a few attractive applications, including games. ***The third stage*** starts with the launch of the large IT companies' cooperation in the struggle of counteracting the software piracy and acting as a catalyst in the sale of preinstalled applications systems. The end of 2003 and the beginning of 2004 mark the opening of the ***fourth stage,*** in which the large companies come with increasingly tempting offers addressed to home users and small companies, where the prices are artificially lowered. In 2007 ***the fifth stage*** starts and certain *market saturation* is reached as a result of the volume of sales, together with an *increase of credibility* won by the IT of solutions.

We notice that the fifth stage was dominated by the necessity to adopt and adapt to the international certification and security standards imposed by Romania's EU accession in the context of IT budget shortening further to the economic crisis.

For the years 2008 and 2009 in the fifth stage, IDC Romania synthesized four factors which had a negative influence on the IT market evolution in Romania, namely (Rizea, 2009): economic crisis, public procurement decrease, lack of IT education and Romania's EU accession.

Moreover, at the beginning of 2010, IT experts said that the Romanian IT market is a precious and super-elastic one, by reference to the GDP. Therefore, the Chief Executive Officer of Microsoft Romania envisaged for 2010 a ten-fold increase in IT, by reference to GDP increase. In other words, an increase of 1.5% of the Romanian GDP would have determined an increase of 15% of the IT market. The reality was different: the IT market decreased in 2010 (Wall Street, 2010a).

We think that, currently, the four factors synthesized by IDC are fully present on the Romanian IT market, which leads us to expect *a sixth stage* at the end of 2012 and the beginning of 2013.

3. IT ACHIEVEMENTS AND TRENDS IN ROMANIA

ERP Market

An ERP Romania study, published by Pierre Audoin Consultants (PAC), stated that the IT market in 2009 decreased by almost 17% compared to 2008, as a result of the economic crisis which determined an acerbic competition between the suppliers of ERP solutions, who "*focused on minimizing the prices, sometimes even beyond the acceptable levels and financed by the possible clients*" (Teodorescu, 2010).

In 2011, the central idea of the sixth edition of the same ERP Romania study highlighted that the *Romanian ERP market is not out of the crisis, but it increases slightly* (Anis Research, 2011). In figures, The Romanian ERP market increased in 2010 by 3.2% compared to 2009, given the conditions in which the related implementation services decreased by 7.5% compared to 2009. According to the same study, "*the Romanian public sector is, together with the Russian and Turkish ones, the least modernized, the least transparent and the most inefficient in the Central and Eastern Europe*", which gives hope for the future ERP market.

The possibility of registering improvements with regard to the public procurements is foreseen for the next 5 years, leading to an increase of ERP request by the public administration, on the model of the UE and USA states. This will lead to an expected average increase of more than 20% for ERP in the public sector for the period 2011-2015.

eHealth

In the eHealth field, Romania starts having considerable progress, as a result of the fact that it represents an essential component on the Digital Agenda of the United Europe (Lita, 2011). In essence, eHealth aims at ensuring secure online access to its own medical information by the end of 2015 in all EU countries, regardless of the country of residence. There is also a desire of implementing, on a large scale, telemedicine services by 2020. For this particular purpose, the Ministry of Communications and Information Society allocated 40 million Euros for two information systems aiming at making electronic prescriptions and filling in patient's file. From a financial point of view and because of the complexity of the solutions needed, creating such a system requires a period of at least 10.

Currently, in Romania there is the Sole Integrated Information System within the National Health Insurance Fund, which integrates all the new components of eHealth, including the health card. In January 2012 an extensive program of modernization of the entire health information system was launched. For the successful development of this project, similar experiences were taken into account, from countries such as Poland, Slovakia and Italy, on information modules such as emergency care, medication, vaccinations, laboratory analyses, etc.

eEducation

The term *eEducation* is directly related to the one of educational technologies corroborated with the support technologies for educational activities. In Romania, we encounter both the classical educational technologies and the digital technologies, such as e-tablets, tablet-PC, e-books, e-recordings, video projectors, educational software, educational games, multimedia presentations, e-learning platforms, digital libraries etc. We appreciate that, currently, there is no educational entity where the „*digital spirit*" is not present to a smaller or a greater extent in the educational process, starting from simple presentations to the use of Internet and intelligent blackboards. There are high schools which succeeded by their own efforts to achieve the *computerization of the educational and administrative activities*, such as „Mihai Eminescu" National High School of Suceava, high schools which publish *their own magazines* in order to inform and train the students, such as Tourism High School of Iaşi and Gheoghe Lazăr National High School of Bucharest, high schools which *implemented informatics applications like the electronic catalogue*, such as the National High School of Iaşi, or high schools which promote *training educational games*, as it is the case of Mihai Eminescu National High School of Iaşi.

In their turn, the state and private universities developed, purchased or implemented e-learning type platforms for supporting the educational activity. For instance, „Alexandru Ioan Cuza" University of Iaşi uses the *BlackBoard* elearning platform. Other universities, such as the Polytechnic University of Bucharest, The University of Medicine and Pharmacy of Timisoara, and even high schools, such as „Aurel Vlaicu" National High School of Orăştie, the Pedagogical High School of Tulcea, together with the organizations interested in the field of training their own employees, use open-source platforms such as the one from Moodle (www. moodle.ro). There are also universities, such as the University of Medicine and Pharmacy of Iaşi, which implemented in 2010 the Microsoft Learning Gateway platform which covers education, training, research and management activities.

Digital libraries acquired a significant width both in the academic environment, e.g. The Library of Economic Sciences Academy of Bucharest, and in the pre-academic environment, e.g. the library of Gh. Lazăr National High School of Sibiu. To these digital libraries we can add the access ensured by ANELIS projects to international databases with magazines, journals and books, in order to support the Romanian research.

To all these, we can add the important contribution to the promotion of the avant-garde ideas in the *eEducation field* brought by certain annual conferences in the field of e-learning and educational software, such as the National Conference for Virtual Education and the International Conference for Virtual Education.

eGovernment

Synthetically, the concept of e-government implies state governing with instruments specific to the new information and communication technologies. EUROSTAT (2010) data for the year 2009 highlight the fact that 28% of Europe's population used e-government services, while in Romania the percentage was of only 6%. In Romania, the Ministry of Information Communications and Information Society identified, for the year 2008, more than 40 e-government projects. Currently, we appreciate that the number of these projects is almost double as a consequence of some non-refundable funds accessed for this particular purpose. Among the most successful projects, we can list: *Snep-Ghişeul.ro* – The National Electronic System for Online Payment with the Bank Card (https://www.ghiseul.ro/ghiseul/public/), *E-Community* (http://www.ecomunitate.ro/proiect), *the system of electronic auctions for the public field – SEAP* (http://www.licitatia.ro), *the system of intelligent electronic forms* (http://e-forms.onrc.ro), *court portal* (http://portal.just.ro), *online printing of the certificates of criminal record* (http://www.igpr.ro/directia_cazier.htm) etc.

Mobile Applications

Mobile applications are ever more widely used thanks to their high performances. In *Programmatic Conference* (Faur, 2001a), regarding mobile applications, the main trends and novelties on the Romanian mobile IT market were synthesized, being connected to *Smartphone platforms,* such as Android, iOS, BlackBerry OS, webOS, Windows Phone 7, *support tools type libraries and compilers*, app store and distribution models *of Mobile Web* (HTML5, MobileAjax, Mobile Flash, J2ME.) and mobile advertising.

Presently, we think that there is a great interest, on the Romanian mobile IT market, in the increase of the connection speed to the Mobile Internet and that there is a particular interest for the hybrid applications for Android and for the over 80 thousand applications from the Android Market (available since March 2012), OviStore and Orange App Shop.

Two other interesting achievements on the IT market catch our attention. The first one comes from HP Romania, which launched on the market the smallest mobile printing instrument (HP LaserJet Pro 100 colour mfp M175nw intended for the Small and Medium-Sized Enterprises and HP LaserJet Enterprise M4555 mfp for the large enterprises). The second interesting achievement comes from Bitdefender Romania Company, which offers a commercial security solution based on cloud technology, called *Cloud Security for Endpoints*, which does not require special hard and human resources (Agoramedia, 2011) for users.

Other mobile applications enjoying high demand in Romania are those used by banks, among which we can list BRD Groupe Societe Generale (www.brd-net.ro) and BCR (www.24banking.ro) applications, those used in medical fields, such as the mobile application for depicting skin cancer (http://www.antena3.ro/high-tech/inventie-romaneasca-aplicatie-care-detecteaza-cancerul-de-piele-pe-telefonul-mobil-131336.html), but also those used in the field of insurance, where Groupama customers can approve the damage by means of their mobile phone (http://www.dailybusiness.ro/).

eReligion

In Romania, the religious field is also strongly digitized. Each church must be present on the Internet (for instance, http://www.parohiaorbeni1.ro) and official portals provide information and religious texts for any day of the year and for any feast of the church year (http://www.crestinortodox.ro). There are also portals which are specialized in religious tourism near the church institutions known in the field (http://pelerinaje.ro/). Therefore, we can state that in Romania, just like in other Western countries, the religious field expresses efficiently enough in digitized form too.

Cloud Computing in Romania

It is well known that, at global level, more than 40% of the enterprises use the services which refer to platform or infrastructure software resources, found under the denomination of cloud-computing. With regard to Romania, specialists notice that „*there is a tendency of increasing the capacity of interoperability and communities' involvement*" (Petre, 2011). In the same direction, Dana Şelaru, the Manager of Global Technology Services Division (Marchidanu, 2011), argues that IBM does not offer public cloud services in Romania, but in the near future IBM will establish partnerships with software suppliers on the local market, offering the data center and the hardware infrastructure. As for private cloud, IBM can offer for the Romanian customers SAP solutions, Smart Enterprise Cloud, content management services (electronic records) and also recovery systems in case of disasters for banks and insurance companies. Presently, on the Romanian market there are also other well-known suppliers in the cloud-computing field, such as Microsoft, BULL, EMC2, HP, Crescendo, Star Storage, DELL and Bit Software (Faur, 2011b).

Social Networks and Social Media

As far as social networks are concerned, at the end of 2011, Romania was dominated by Facebook, meaning that 80% of the social network users have a Facebook account, and 97% of them know what Facebook is. The statistic data processed by Socialbakers with regard to Facebook users highlight the following aspects: at the end of the year 2011 in Romania there were more than 3.8 million users registered on Facebook, which makes it the 38th in the world hierarchy (http://www.socialbakers.com/facebook-statistics/). Among Facebook users, 84% are adults, half of them being male persons and the other half being female persons. The best placed age segment is the one between 18 and 24 years old, holding 33%, while the users aged more than 44 hold 7% and the ones aged more than 55 hold only 3%.

Within social networks, a particular role is played by the Romanian companies which promote the company brand directly towards the interested users. In this respect, a Daedalus Millward Brown study (http://www.slideshare.net/evensys), published in July 2011, placed in the top 10 companies, names such as: Avon, Coca-Cola, BCR, Orange, Cosmote, ING, Orange, BRD, Nokia and Doncafe. What is interesting is the fact that 55% of Facebook users received a friendship request from a brand, that 50% follow a newspaper, magazine or TV channel on the Internet and that a tierce of the social networks users in Romania have a brand in their list (http://www.slideshare.net/evensys/tagged-mapping-up-romanian-segments-of-social-networks-users).

However, in an analysis of Zelist Monitor, the most visible fields on the social media are politics and segmental IT (http://www.dailybusiness.ro/stiri-it-c/brandurile-din-politica-si-it-cele-mai-vizibile-in-online-ul-din-romania-71079/).

4. CONCLUSIONS

Is IT a solution for Romania? We think it is. At least a partial one, even if at the end of 2010 Michael Golebiewski, the Marketing Manager of Microsoft Romania, performed a general radiography (Negraru, 2011) of the IT market in Romania, characterizing it as being much smaller but similar to the one from Poland a few years before, as being equipment sale-oriented at the expense of solution selling, as being the market where big retailers use computers without operating systems, as being different from the IT market in other emerging countries, as being very price sensitive and with a high rate of software piracy.

As regards piracy, in the Eight Annual BSA Global Software study, 2010 Piracy Study (BSA, 2011), published in May 2011, the software piracy rate in Romania was assessed at 64%, compared to 90% in the Republic of Moldova, 86% in Ukraine, 65% in Bulgaria and in Russia, 54% in Poland, 41% in Hungary, 35% in the European Union (average) and only 42% worldwide.

Even with these characteristics listed by M. Golenbiewski, we consider that the IT market in Romania, compared to the IT market in other emerging countries, has room to change and the opportunity of turnovers' increase as a consequence of the expected solution-sale increase and that there are significant reserves for piracy reduction, including in the case of big retailers. And all these occur as Romania´s economy is threatened by a new wave of economic recession.

Therefore, we believe that, presently, the Romanian IT market is an *ace up the sleeve* which can be used by the government in order to keep afloat the economy, together with other key fields such as agriculture and tourism.

To support this statement, we highlight some facts which can be observed on the market and which show aspects favourable to the development of the IT market.

a. Romanian people buy everything which has a low price in the IT and appliances field. Since April 2009, Romanians took refuge in the virtual world against the crisis (http://www.business24.ro/internet/magazine-online/romanii-fug-de-criza-in-lumea-virtuala-1454746) and at the end of 2011 they manifested the tendency to buy all IT products with low prices. A relevant proof is the behaviour of Romanian buyers on Black Friday, when the stock of the biggest online retailers in Romania finished as a result of the special discounts applied (see http://www.dailybusiness.ro the articles: Black Friday in reteaua Flanco: Peste 18.000 de vizitatori pana la ora 12, "Vinerea neagra", de bun augur: Marii retaileri online de IT au epuizat stocurile in cateva ore, Site-urile retailerilor IT, prabusite de febra reducerilor Black Friday).

b. Roland Binkofski, the current General Manager of Microsoft Romania, in the ZF Digital '11forum insisted on the idea (Wall Street, 2010b) that the Romanian IT industry has an increasing potential for the future, appreciating that there is a good solution-orientation and capabilities for the local economy and outsourcing, a market for which he assesses an increase, in the next 3-4 years, of about 50%. With regard to the assessment of our outsourcing potential, we can state that there are some solutions for the improvement of outsourcing services quality which refer to the appearance of subsidiaries of certain strong enterprises in the field, mixed ventures and the use of a modern management from similar enterprises.

c. The inclusion of four Romanian enterprises in the Deloite Technology Fast 500 EMEA 2011 ranking (Daily Business, 2011), which ranks the most dynamic technology companies in Europe, Middle East and Africa. We talk about *Vola.ro Student Adventure* (13^{th} position), *Teamnet International* (64^{th} position), *Crys Computers* (333th position) and *Fortech* (4976^{th} position).

d. In the business environment there are some obvious signals of certain intentions of investing in the Romanian IT market. Therefore, at the beginning of 2010 China expressed its desire of investing in the Romanian IT industry. A similar idea appears in November 2011 from the Romanian Government´s Prime Minister, who informed the public opinion about the intention of a Foreign IT company to invest hundreds of million Euros in Romania. Moreover, at the end of this year we can also notice that the Romanian labour market is on the Internet, in the sense that the specific flows which refer to offer, assessment, employment etc. are digitized.

e. The IT Romanian market wishes to massively hire staff trained by Romanian universities. This is one of the conclusions of HITECH Conference of IASI – Challenges and Solutions for Stimulating Investments in the IT&C Industries of Iaşi (http://www.industriicreative.ro/2011/11/concluziile-primului-eveniment-hitech-iasi/).

f. The trends in the mobile Internet field offer additional advantages to the Romanian IT market. We refer to some of these trends, delimited in February 2011 by M. Murphy and M. Meeker in *Top Mobile Internet Trends* (Murphy *et al*, 2011), namely: Mobile Platforms Hit Critical Mass, Mobile is Global, Social Networking Accelerating Growth of Mobile, Time Shifting to Mobile Usage, Mobile Advertising – Growing Pains But Huge Promise, Commerce – Changing Shopping Behaviour, Emergence of Virtual Goods & In-App Commerce, Change Will Accelerate - New Players Emerging Rapidly. For instance, one of the advantages for the following 4-5 years will be the low labour force cost compared to IT specialists´ training and talent.

All the aspects presented above offer us a dynamic image of the potential and tendencies on the IT market in Romania, as a country with an emerging market economy in the near future. We think that, given the current conditions, the IT industry and market can represent together one of the possible solutions for limiting the effects of the economic crisis in Romania.

This article aims at achieving a valuable synthesis of the IT market in Romania as an emerging country, synthesizing the most knowledgeable opinions of IT specialists at the end of the year 2011. In the case of Romania, we are sure that this information presents a high degree of outage, but we think and hope at the same time that the trend will be one positively funded on the IT human resource, still underused, and on the present and future opportunities that we learned from the experts in the field.

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