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Surviving and Thriving in the Global Economic Crisis: the Journey and Potential of the Romanian IT&C Sector

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Abstract

We are living in a new, post-industrial age which is best described by all kinds of new information technologies. This new reality is leading all of us into the society of the future, a society of new knowledge. This statement also describes the present reality of Romania, and the upward trend of its information, technology and communication (IT&C) sector. Even with the negative impact of the recent global economic crisis on the overall Romanian economy, the IT&C sector not only found a way to weather the global crisis, but also propelled Romania into one of the top countries worldwide in this field. For the first time in Romania's economic history, the IT&C sector contribution to the economy (~6%) surpassed all the other sectors, including those of agriculture and construction. The economic future of Romania looks bright; especially considering that globally, the technology sector is poised to grow faster than any other, and for this country the IT&C sector represents a very important competitive advantage. This article presents: (1) how the IT&C sector survived the economic crisis; (2) how it changed during the last couple of years, and (3) what the economy of this country will look like if Romania successfully doubles the growth of its IT&C sector, knowing that it already has become one of the most attractive nations for outsourcing because of its strong workforce talent.

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1. The global financial and economic crisis

The economic crisis, which began at the end of 2007, and amplified one year later following the collapse of Lehman Brothers, has certainly had a big negative impact on the entire global economy. Prior to that, the United States federal government placed Fannie Mae and Freddie Mac, two of the largest mortgage holders into conservatorship as many mortgage holders were defaulting on their loans and so the value of housing plummeted

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(Uslaner, 2010). That was the beginning of the end. Soon after that, the economic turmoil deepened, and quickly spread throughout the world, in what many observers called the worst downturn since the Great Depression of the 1930s. The economic traumas turned fast into a crisis of public confidence, which was widely seen later as a crisis of trust by an outraged public (Barry, 2009); (Economist, 2009).

Some economists argue that the long boom era before the crash of 2008 was in part caused by increases in the service economy due to the new technologically developments. The late 1970s, leading up to the mid 1990s saw a surge in new technologies such as the personal computer, and the Internet. Nowhere were these technologies more impactful than in the financial sectors, enabling banks to have both a global strategies, and presence. Following the dot-com bubble of the late 1990s and with the advent of global technology distractors such as Google, software became the new raw material of the 21st first century. In fact, before the crisis made its appearance, the world was actually going through what Marek Dabrowski (2010) calls "the golden period of global growth". In fact, the years 2003-2007 recorded a remarkable pace of global economic growth and macroeconomic stability. Looking back, that period of prosperity and relative stability resulted from different factors. First of all, the world economy benefited from comprehensive and far-reaching policy reforms, conducted in a number of important countries and regions in the early 2000s. Secondly, the vast majority of less developed countries at the time, adopted a more prudent attitude, which resulted in an impressive disinflation trend worldwide, the rapid building up of international reserves and a substantial improvement in fiscal balances (Dabrowski, 2010). The fact that those positive trends were also accompanied by a unique calm in global financial markets has done nothing else, but to help the global economy.

The major beneficiaries of this positive trend were the emerging market economies, as they were growing at a much higher trend compared with the already developed countries, and were contributing to impressive progress in global economic and social convergence. This trend was also experienced by Romania, and the rest of the emerging market economies of Central and Eastern Europe. Those countries also benefitted from gaining full access to a single European market, as they were now new members of the European Union. Once the global crisis struck, all of the favorable factors previously describes disappeared. In the financial sphere, liquidity and credit dried up, capital started to fly back to the main financial centers, especially in the US, stock markets and commodity prices declined, the risk for both sovereign and private borrowing grew in a dramatic way, and last but not least, many national currencies depreciated threatening with the massive insolvency of economic agents borrowing money in foreign currencies (Aslund, 2009). In the real sphere, external demand for exported goods and labor quickly declined, and some countries also experienced banking sector troubles.

Mr. Martin Wolf, associate editor and chief economics commentator at Financial Times, argues in his new book "The Shifts and the Shocks" that the world economy is still stuck in low gear and set on an unsustainable course. He argues that the post-crisis recovery has been feeble because too many policymakers failed to understand the fact that unfettered finance transformed the saving glut into a credit bubble. Far too little emphasis was put on restructuring unplayable debts. He believes that the only way to deal with today's underlying problems, a fragile financial system, and a secular weakness in demand may be to move away from bank-based credit and rely on permanent budget deficits financed by central banks. Mr. Wolf argues that forcing banks to match their deposits with safe government bonds would eventually reduce the risks of bank crashes and encourage a healthier reliance on equity finance. In turn, permanent money-financed deficits would provide a safer way to sustain spending than private-assets booms and busts. If done responsibly, they need to cause inflation (Wolf, 2014).

Despite the fact that the world is still fighting to end, or at least reduce the many negative aspects caused by the financial crisis, one thing is certain: during all these years and prior to that, technology has reshaped the way we live our life. This article summarizes a disparate range of data and information to present a clear and powerful narrative as to the case study of the Romanian IT&C sector's past, present and future within the Romanian and global economy.

2. The economic crisis in Romania

The global financial crisis made its presence felt quickly in Romania too. In fact, in 2009, the country's gross domestic product (GDP) faced a significant decline (about 7.1%) (Aslund, 2009), and sharp declines were registered in the industrial production, and construction sectors, in exports, and even in the landing activity (Aslund, 2011).

During the first quarter of 2009 the biggest reductions of the activity volume registered in agriculture, forestry and fish breeding, (-10.9%), and in industry (-1.1%) in comparison to the first quarter of 2008. In the same quarter, the final consumption of the population decreased by 12.3 percent as a reduction of the retail goods volumes, (-16%) and services for the population (-5.4%) (Băcescu-Cărbunaru & Condruz-Băcescu, 2012). The drop in exports has been caused by the effects of the global crisis, mainly of the EU market, which has contracted both the external demand for the Romanian products, and the international offer for Romanian imports (Zaman & Georgescu, 2009).

As many other countries around the world, Romania started to take measures in order to counter the effects of the global financial crisis that struck in an unexpected way (Pop & Pop, 2009). In order to deal with the high budget deficit, and with short-term liquidity pressures, Romania, as well as other countries in Eastern Europe, entered a financial agreements with international organizations like the IMF (International Monetary Fund), which showed the fact that it had learned the lessons from the East Asian crisis of 1997-1998, and so it adjusted its behavior considerably (Aslund, 2009).

Using the money received from the IMF (International Monetary Fund), alongside the short-term measures for economic growth and job creation, Romania slowly started to recover, and it returned to economic growth by the second half of 2010 (Aslund, 2011). The main objectives of the country during this period of recovery were maintaining financial stability and investment attractiveness in Romania, stimulating the industrial production and increasing exports, creating jobs and to protecting the economic interests of the population, reducing the competitiveness gaps compared with the European Union, stimulating economic activity and development, especially of small and medium-size enterprises, improving the social security system, and improving working conditions (Prodan, Grigorescu, & Moscu, 2014).

One sector that really helped Romania in regaining trust among foreign investors and attracting new investments in the country was IT&C, which continued to develop, becoming one of the most important sectors for the Romanian economy.

3. How technology transforms our life

The last couple of decades have not only been characterized by financial crises or economic problems. Instead, technology has really started to shape more and more the way people live their lives. Clayton Christensen was among the early commentators to observe in his book “The Innovator’s Dilemma”, the two different types of technology that affect business (The Economist, 2015). He describes what he called “sustaining technologies”, technological developments that enabled organizations to accomplish marginal improvements in their activities. On the other hand, he spoke about “disruptive technologies”, wild and unexpected technological breakthroughs that require corporations to radically rethink their very existence (The Economist, 2009); (Bower & Christensen, 1995). This fact proved to be true not only for corporations, but also for individuals.

Technology has become ubiquitous in both our personal life and in business. From television, to the smart phone and all the way to the Internet, it seems that our lives are dependent on technology. In fact, in the 21st century, Internet seems to be indispensable (Moradi, 2014). The development and enhancement of technology has greatly improved people’s lives. Just as Clayton Christensen, professor at Harvard spoke about “disruptive technologies”, technology has led to increased productivity and improved the quality of living. Technologies have transformed our business and personal lives in substantial ways (TNARK, 2012).

Global commerce and trade has become very fast, easier, and more reliable. Banks and other financial institutions are now filling data on computers instead of doing it manually as they used to until not too many years ago. The education system has become computer dominated and has gone beyond notebooks, and blackboards. Even the way universities are organized has also changed radically (Lafferty & Edwards, 2004). Nowadays, it is more possible for the general audience, and students who are located in different geographical areas to get access to lectures, which are being conducted through video conferencing even if they are at thousands of kilometers away. Social networking websites are entirely commonplace nowadays. Websites like Twitter, or Facebook have given birth to a new concept that of social media marketing, and other technologies like three D (3D) printing are starting to revolutionize various industries. Technology enabled the outsourcing of white-collar jobs, particularly software development. Because of this, countries like India became a power in this area, due to their advanced technical skills and cheap labor there.

New kinds of software were created and developed, cloud computing being one big example of what recent technology was able to create. The importance of this new trend is highlighted in a recent study, where three out of four companies said that are contemplating the purchase of new cloud computing in the next few years (MaxQ Technologies, 2015).

This phenomenon is only set to continue, as computers become more powerful, and have greater and greater applications, it will not be long that we will plan our lives around the computer. It can be argued that we now live in the "computer age", but whether this is true or not, Romania will play a big role in the development of this "post-industrial age".

4. The Romanian IT&C Sector

In recent decades, the IT&C sector has been "Romania's wonder-child" (Fiscutean, 2014), maintaining steady growth and being supported largely by outsourcing companies. In fact, since the turn of the century, the Romanian IT&C sector has had a significant positive impact upon the economy of the country. It created numerous, high-paying, knowledge-based jobs, it increased the nation's international exposure and reputation, it positively contributed to the Romanian exports and it also attracted significant volumes of foreign investments. In the last few years Romania became one of the most attractive countries in terms of IT&C, and it recently became the sector with the biggest contribution to the economy in the country. In the first semester of this year, 2015, the total share of the IT&C sector out of the Romanian GDP has risen to between six and seven percent (Barleanu, 2015).

The IT&C sector was been proudly named the sector with zero unemployment and this achievement is mainly due to the great quality of the talent pool, the high numbers of IT graduates, the expansion of current companies and the birth of many start-ups. The sector is permanently creating new jobs, and it has the potential to become the prosperity engine of Romania. Even if it seems it has come from nowhere, if one takes a closer look, it can bee seen that Romania has always been known for its strong technical culture, which is in fact the main reason this highly successful trend should not be a surprise.

4.1 The strong technical culture of Romanian Universities

IT&C in Romania has deep roots in the past. In fact, Romania was the first country in Eastern Europe to build first generation computers. It happened in the late 1950s and early 1960s and later on, an industrial base was built in the 1970s, with research, manufacturing service, trade and data processing organizations reaching a 40.000 people workforce in the 1980s. Even if minicomputers "Made in Romania" were exported to East Germany, China, and the Middle East, technologies became obsolete in the 1980-1989 period due to the lack of investments in hard currencies (Baltac, 2006).

Due to the lack of investments, between 1992 and 1999 Romania's IT&C sector contributed with only one point three percent to the country's GDP, putting Romania last in a hierarchy of 51 countries studied at the time (Pohjola, 2002). When investments started coming, immediately after the year 2000, the strong technical culture, that characterized Romanian universities, has done nothing else but to help the development of the IT&C sector. The Romanian educational system, which even at the time was recognized as one of the best in the world of IT&C, had every single year over 5.000 new graduates enter the labor market and by 2002, the IT&C sector was growing by 77 percent from year to year. In fact, in only five years (1997-2002), the Romanian IT&C sector sold three and a half time more, had a three times higher production, its contribution to the GDP increased by five times, and it offered new jobs to two point three times more employees (Institutul Pentru Tehnica de Calcul SA, 2003).

4.2 The IT&C sector before the crisis

The new millennium brought about the continuous development of the Romanian IT&C sector. In 2003, the sector exceeded one billion dollars, with a 35 percent growth compared to the year 2002. At the time, there were almost 9.000 IT&C companies during the same year (Institutul Pentru Tehnica de Calcul SA, 2005).

The strong upward evolution of the Romanian IT&C sector continued also during the years 2005 and 2006. The production of the entire IT&C sector reached the level of five point fifty three billion dollars and a turnover of six point seventy five billion dollars, 32 percent higher than the previous year, and three times higher compared with the year 2000. In terms of employees, the year 2005 was the first one in which the number of IT&C employees went over the 100.000 benchmark. The volume of exports had almost reached one billion dollars, (985 millions) and the number of companies established on the Romanian territory increased by 16 percent, to 16.300 (Institutul Pentru Tehnica de Calcul SA, 2006).

The positive trend of the IT&C sector continued during 2006 and 2007. The total contribution to the Romanian GDP rose to almost four percent. The turnover level for the sector increased by 24 percent in 2006, and reached the level of 11.2 billion dollars. The same thing happened for the exports, with the total amount of IT&C exports in 2006 reaching one point three billion dollars. The number of companies reached the number of 18.130; a 10 percent increase compared with the year 2005, and the total number of IT&C employees surpassed 110.000 for the first time (Institutul Pentru Tehnica de Calcul SA, 2007).

The Romanian IT&C sector continued to grow even in 2008, before the global financial crisis started. In fact, the sector production rose by 13 percent, turnover increased by 17 percent to almost eight billion euros, the number of employees also rose by six percent to 130.500 and last, but not list, the export continued to rise to three billion euro, 50 percent more compared with the year 2007 (ITC - Institul pentru Tehnica de Calcul, 2011).

4.3 The IT&C sector after the crisis

Even if the crisis struck in 2008, it did not affected much the Romanian IT&C sector much, but the negative consequences started appearing in 2009, when the entire sector decreased by nine percent. Fortunately for Romania, over the next year, 2010, the IT&C sector was already starting to recover, increasing by six percent, to eight point eighty two billion euros, only three point three percent less than the referential year of 2008. Knowing how badly the entire economy was doing, the fact that IT&C exports rose by 45 percent in 2010 explains why this sector was, and still is today a very precious source for Romania's economy. During the period 2009-2010 the number of IT&C employees dropped by seven percent (- 7.000), but the salary level increased by 10 percent in 2010, after having declined by five percent one year earlier (ITC - Institul pentru Tehnica de Calcul, 2011).

During the years 2010-2011, the Romanian IT&C sector continued growing, almost forgetting about the problems caused by the financial crisis. The total turnover reached nine point four billion euros in 2011, and the total production surpassed the level of eight point five billion euros. Exports continued their upward trend increasing 55 percent compared to the year of 2008. Even if in terms of employees, the IT&C sector lost another thousand people, the 18.000-plus companies slowly returned to the level before the financial crisis. The salary level continued to increase, being highly above the economy's average. The biggest increase was seen in the software and services segments (ITC - Institul pentru Tehnica de Calcul, 2012).

At present the Romanian IT&C sector has about 120.000 IT&C specialists, more than 90 percent of whom speak English. The main cities for IT&C development are Bucharest, Timişoara, Cluj, and Iaşi. Romania produces over 7.000 IT&C graduates every single year and salaries vary between 500 euros for a junior position to 3.500 euros for a senior position depending also on technology, and language used (Brainspotting, 2015).

One of the most important areas of the Romanian IT&C sector is outsourcing. In fact, it is well known that during the recession, most of the Romanian outsourcing companies were hiring in a constantly growing market. In 2014, the A.T. Kearney Index ranked Romania fifth among the most attractive outsourcing destinations in Europe. According to the Times Outsourcing Business Supplements of 2012, Romania occupies the sixth place globally in the top 10 emerging outsourcing destinations. The right price-quality ratio and the large talented pool present in Romania are the main two reasons why investors continue to consider the country among the best in this area (Vigroux, 2015). In fact, a new funding program for supporting the IT&C sector in Romania has been launched in August 2015. The program aims to develop a range of IT&C products and services with applications in other economic fields, to implement innovative strategic projects with an impact on the entire IT&C industry, and to develop projects that will ensure a smooth transmission from outsourcing to development based on innovation and

collaboration between the cluster structures of the IT&C industry, in order to obtain innovative products. The total budget of the program rises to almost 60 million euros (DCCManagement, 2015).

A recent study among IT&C professionals revealed some very interesting facts about the sector. In fact, the most frequent benefits requested by IT professionals are the following (Brainspotting, 2015):

- 64% of IT professionals ask for medical insurance;
- 46% of IT professionals ask for financial support for training;
- 43% of IT professionals ask for flexible hours;
- 25% of IT professionals ask for meal vouchers;
- 22% of IT professionals ask for religious holiday bonuses;
- 16% of IT professionals ask for gym subscription;
- 14% of IT professionals ask for vacation bonuses;

The same study shows that 28.21 percent of the IT profiles have changed their job at least twice, while almost one quarter of the market (23.93%) have changed jobs three times. The most in-demand programming language are Java (28%), SQL, PL/SQL, Cobol, Python, Ruby, Perl, JavaScript (23%), PHP (15%), Net/C# (15%), C/C++ (12%) and Mobile (7%).

When asked about the main criteria selected for choosing an employer, the IT&C professionals responded as it follows:

- 52.36% of the respondents said the salary and benefit package is the most important criterion they are looking for;
- 41.12% responded that a friendly environment is what they consider the most important aspect;
- 31.69% consider a flexible working program the most important criterion they are looking for when selecting an employer;
- 30.56% of the respondents said training programs is what they looking for;
- 30.34% responded a good reputation or image is what they want when looking for an employer;
- 25.62% consider challenging jobs the most important criteria;
- 22.70% of the respondents want secure jobs and consider a secure workplace to be the most important aspect;

Even if it was affected by the global financial crisis, the Romanian IT&C sector seemed to recover more quickly and better than every other sector in Romania. Not only that, but analyzing a SWOT analysis undertaken by The Business Monitor International, it can be observed the fact that the Romanian IT&C sector still has a high potential for growth in the following years, too (Business Monitor International, 2014). In fact, among the strengths presented by the report, Romania is forecast to be one of the fastest growing Central Eastern Europe IT&C markets over the next few years, with multiple growth drivers. The greatest weakness consists in the political instability of the nation, which has already delayed some necessary reforms in some industry sectors. Among the opportunities of the market, SMEs (Small and Medium Enterprises) and the public sector are potential growth areas, and outsourcing continues to expand, with new opportunities in the sale of higher value services including cloud computing. Regarding threats, the economic environment remains vulnerable to potential external shocks from the Eurozone, and the continued price erosion in the tablet market could limit growth in the hardware market value.

By doubling the growth of the IT&C sector, Romania could experience huge benefits for its long-term economy. If at present, the sector counts around 120.000 specialists, by 2020, Romania will need around 300.000 people working in this sector. In order to achieve this, Romania should focus on increasing the number of IT&C school places at a national level, and sustain professional reconversion through accelerated classes with international certificates. The companies' involvement in the educational process is essential (Haraga, 2014). Romania has talented young people who must not be wasted. It will not be an easy task, but if Romania manages to double its IT&C sector growth, the impact will be felt in a variety of economic factors such as the GDP, the exports and the employees' salaries.

For example, Romanian's GDP growth could range from around three to five percent every year for the next four years and reach a peak of up to 13 percent in subsequent years while net exports should continue to represent, and act as the main driver of economic growth in the following couple of years. At the same time, the number of jobs could rise by 11 percent, which will also influence the amount of money people in the IT&C sector will earn. In order to accomplish all of this, it was estimated that an investment of around two point five billion euros would be needed (Ministerul Pentru Societatea Informațională, 2014). It might seem a lot of work to do, but recent history tells us that it will certainly pay off.

5. Conclusion

As it was shown above, the IT&C sector in Romania is crucial to future of not only the economic status of the country but also the daily life of the majority of Romanians in terms of both microeconomic experiences as well as technological and social changes and transformations. Both before and during the economic crisis, the IT&C sector was well positions to meet the global challenges presented by extremely negative global economic changes. Due to its strong technical and educational culture and history as well as the fact of strong IT&C positive growth before the crisis, the Romanian IT&C business community came out of the worst parts of the crisis ready to meet the increasing opportunities in the global IT&C market.

One of the prime drivers of positive economic growth has been the expanding global role of Romanian IT&C outsourcing services. Even as Romania seeks to be the new India in terms of outsourcing services still many questions remain (Fiscutean, 2014). Can the Romanian IT&C market respond to the strong and positive internal environment in a way to continue this desire for growth? In order to do so, three main areas will have to be addressed. First, will employers and businesses respond the needs of current and future IT professionals? Survey data speaks to the need to address adequate salary and benefit policies, training and work environment needs for Romanian IT&C professionals lest these highly trained and highly-skilled individuals seek other opportunities in other EU markets and beyond. Second, will Romanian educational systems, both formal and informal, rise to meet the challenge of necessary academic and applied training in an ever-changing technological landscape? Third, will the Romanian IT&C domestic market be carefully and successfully accessed given the large potential for growth in both hardware and software sales in a country with modest personal and household technology access and ownership?

With both increasing GDP and employment gains to be made in a relatively short period of time, Romanians stands to benefit greatly from the previous successes and new data being collected concerning "Romania's wonder-child", the Romanian IT&C market (Fiscutean, 2014). This paper attempts to elaborate and synthesize on the past, present and future of this market for the benefit of current and future policy and business research and innovation in order to make real the positive trends that have marked this industry. We hope this paper and future research in this area will encourage the many stakeholders to take seriously the need to more than double the number of well-trained and supported IT&C professionals needed in the country within five years. This is not hyperbole but a reality given the economic and empirical data being currently analyzed and presented in this paper and in other areas of Romanian academic and business dimensions.

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