

ASSOCIATED RISKS TO DECISION MANAGEMENT IN ROMANIAN IT INDUSTRY, IN THE CONTEXT OF SOCIAL AND POLITICAL INTEGRATION OPPORTUNITIES FOR DEVELOPMENT

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Abstract. *The research was conducted through semi-structured interviews, with 10 managers that run their companies in the IT industry. The interview questions were designed so that the managers' answers should reveal important aspects of the managerial decision in risk conditions, being influenced by the context of integration of social and political opportunities, for the development of the ICT industry. In addition, the 10 managers revealed aspects regarding popular risk management techniques applied in Romania IT industry and strategies for risk mitigation to company development. The first research question was set to find out what is the opinion of the ICT industry's specialist regarding the online environment and the business opportunities of this field in the Romanian context compared with the international context. The second research question was set to find out if the ICT specialists have a standard procedure regarding the risk and opportunity identification process in their field of expertise. The third research question was set in order to bring to light the real life experiences regarding risk aspects that the ICT specialists encountered through their career. In the conclusions, was created a big picture that describes the most important aspects of ICT risks that specialists have to deal with and their view upon what the ICT context should really be in Romania when compared with the international context. The responses were very diverse but most of them really relate to one another. Being a semi-structured interview, the answers had been interpreted in the most efficient way possible so that the reader could extract his own conclusions while already having drawn the most relevant aspect of this study.*

Keywords: *risk; decision management; opportunities; ICT; digital agenda; integration.*

Introduction

At a global level in the European Union, through the internet and technology innovations, communities are to be strengthened in the digital space. There are many discussions about digital inclusion and the potential to create social cohesion through the online environment, but the main plan is to create a digital single market. The decisions taken at the EU level affects every Member State differently. In the following chapters, the context in which the European Union stands collides with the context of

the ICT industry existing in Romania, in order to create an overview of the situation in which companies are placed. Some SMEs present a lack of IT capabilities and are facing specific problems regarding their quality of delivering products and services caused by a limitation in technological competencies (Balocco et al., 2012, p.2). Romania is a country that has many opportunities for the IT companies to do business given the fact that is an underdeveloped country compared with the average indicators presented at the EU level. Therefore, is very much space for businesses to grow and many opportunities to collaborate with the public institutions and non-governmental organizations. With financial resources provided through public funds for the companies, in order to stimulate the accomplishment of the Digital Agenda's objectives, the business sector should not miss this opportunity in the next years. In a fast growing environment like the IT industry, with high competition, managers must calculate very carefully their decisions and manage the risks in order to win market shares.

The European Union`s vision of the digital space

The European Union Digital Agenda 2020, the seventh pillar of Europe 2020 strategy, proposes to create a digital single market. Economy and society, along with accessibility and the environment, are the three pillars that underpin the Agenda. Even though the internet has no boundaries, barriers in terms of online markets are necessary to be removed. Among all the actions that are to be taken, one of them is the standardization of the interoperability so that the ICT industry could take full advantage of the devices, applications, services and networks. Another action included in the Digital Agenda is the internet security that prevents cyber-attacks. The European Union wants the internet to be a safe place as possible as it can become for users among all the 28 countries. Another action that is to be implemented in the member states is to create an infrastructure that enables users to access the internet at a much faster speed compared with the present situation. Alongside this action, the digital agenda has proposed computer operation training programs regarding the skills needed for EU citizens to access the digital space. The development of ICT infrastructure on EU soil will also include an action regarding more investments in the R&D sector of the ICT industry. The social benefits of a strong developed digital space will be found mostly in the disadvantaged rural areas, in promoting cultural diversity, in government platforms and in a much more flexible mobility for citizens (COM 245final/2, 2010, pp.7-27).

New regulations will occur with the formation of the digital single market in the European Union. For instance, interoperability licensing has been much discussed and debated. The largest companies in the IT industry should license the process by which applications exchange data between them. The directive that requests licensing for interoperability was challenged by international companies and were brought arguments questioning the feasibility of the standards imposed by the European legislative act (Graef & Valcke, 2014, pp.8-12). Other regulations require firms to take into account several aspects related to human rights in the online environment at EU level. Regarding access and use of online services, users must have granted access to the electronic communication network and a minimum of services and applications. In the case of online accessibility, there shall be no discrimination, confidentiality must be ensured and the users must benefit of personal data protection and security. The

companies must be very transparent and provide clear information about contracts, as well as offering the possibility of withdrawal from a contract. Another regulated action is the providing of goods and services, referring to particular defects and delivery time of the products. In addition, dispute resolution and access to justice are another important right that is part of the EU code for citizens using the online environment (European Commission, 2012, pp.4-19). The digital space is both a private and a public one. Public opinions can be easily expressed and recorded through various platforms owned by organizations or by national and supranational institutions. The digital space gives the citizens of the European Union an opportunity to connect and exchange different views and receive answers regarding state actions or to contribute to topics put under public consultation. In addition, through digital space, citizens can form a public space that enables discussions on political issues (Papacharissi, 2002, pp.21-23). It must be taken into consideration that a high-level interaction between citizens from different cultures with different points of view requires also a code of etiquette regarding communication via the internet.

The Member States of EU have the opportunity to shrink the social exclusion of citizens that cannot have access to the internet network because of the geographic area or because of the lack of knowledge. In the first stage is intended to facilitate access to the internet network in term of creating the necessary infrastructure. In the second phase, it is intended to train the skills of the citizens that have no knowledge of how the digital space functions; therefore, they cannot integrate properly in the online community. These types of borders that restrict the access to the internet for some of the EU citizens do not have a solid form. The border shrinks as more and more EU citizens gain access and become active in the online community. One-step towards a well-consolidated online community is the initiatives taken by the European Union regarding policies that affect the online environment. There are strict policies for data protection and privacy in the online environment, thus ensuring greater security for users and becoming one of the most developed online environments at a global scale (Mark, 2014, pp.65-66). The skills to use the internet and internet access, give people the opportunity to integrate into different social environments that are specific to their needs. New Media allows people who still do not have access to the internet to integrate into different interest groups and get informed or receive feedback from other users. In addition, integrating the people that do not have access to the internet will give researchers the opportunity to study the social phenomenon and prospects, resulting from a much larger number of citizens (Petrajanosova, 2014, p.404). Social media describes the identity of its users through the information that the users are sharing intentionally or unintentionally on their personal accounts or with other users. We can state that the internet has the potential to act as a surveillance instrument for researchers and other interested parties but must be used inside the boundaries of the law and code of ethics (Xinaris, 2016, pp.61-67).

At the European Union Level, the ICT infrastructure development continues. The development lies not only in broadening coverage but also in changing the existing equipment with equipment that can provide a data circulation at a higher speed in the digital space. The economic benefits of investments that are to be made in the development of ICT infrastructure outweigh the costs at the entire level of the EU. There are small differences in terms of cost-benefit if we individually analyze every member state, but the resulting values are not much behind or in front of the average

value calculated at EU level. The Member States in Eastern Europe will need to invest more in ICT infrastructure, especially in rural areas (Gruber, 2014, pp.1056-1057).

Regarding economic gain, the most advantaged will be the urban areas. A developed ICT infrastructure is most useful to companies that have employees with the required skills to use the full potential of a fast data exchange network and companies that are dependent on accessing an abundant flux of information. Rural towns nearby urban areas are second in line to benefit from a developed ICT infrastructure. In disadvantaged rural areas, simplifying access to information in the digital space and developing social services is more than enough at the given moment (Florence School of Regulation, 2016, pp.11-12).

Developing the online environment in Romania

Romania Digital Agenda for 2020 includes four areas of action that reflect the vision of the Digital Agenda for Europe 2020. The first area of action in the Romania Agenda is targeting the public administration. The main concerns are the reducing of costs, the rising of efficiency and developing the e-government platform. Romania Digital Agenda for 2020 ensures the cyber security, develops cloud computing, open data, big data and social media. The second area of action focuses on existing social needs nationwide. The main concerns are implementing ICT in education, health, culture, and achieving inclusion. The third area of action targets the economic environment in Romania. The main concerns are implementing ICT in research, economic development, innovation, and developing the e-commerce platform. The fourth area of action focuses on both infrastructure development with a wide range of broadband access and the inclusion of citizens in the online environment (Ministry of Information Society, 2015).

In Romania, there are 4 objectives for developing the ICT infrastructure undertaken in the Digital Agenda for Europe 2020. The first objective is to identify and define the context that exists on Romanian soil regarding the ICT infrastructure and calculating the volume of investments needed. The second objective is related to identifying specific areas where investments will most likely be made from public funds. The third objective is to identify sources of funding for ICT infrastructure. The last objective is related to motivating private companies to make investments in ICT infrastructure. Thus, nationwide investments required for the vision of the Digital Agenda for Romania 2020 is intended to be financed by public funds in partnership with private funds (Ministry for Information Society, 2015).

Romanian's National Strategy aims to increase competitiveness in the business environment through innovation. In the coming years, there will be a direct impact on the ability of the technological strategy of companies that will benefit from the services offered through online platforms and integrated research networks (Bacescu-Carbanaru & Condruz-Bacescu, 2014, p.138).

The IT specialists working in Romania are highly train considering that many of them are looking to be hired by international companies. We can say that the skills of experts in the IT industry are a result of their own will to accumulate knowledge and making high standard deliverables because the Romanian education system does not offer very advanced studies in relation with the IT industry. The courses do not have a

very technical approach, students wanting to be taught techniques used on a global scale. For Romania students to benefit from an advanced IT educational system, courses must be constantly adjusted to the requirements of the international IT industry. This is a need for every IT educational system as an effect of the globalized world that we live in (Fotache, Dumitru & Greavu-Serban, 2015, pp.14-15). Thus, Romania has part of a skilled labor and recognized for the work quality of part of its citizens, but must take the opportunity offered by improving the IT educational system so may further increase the quality of skills owned by the future specialists in the field.

Context and opportunities for the IT industry in Romania

In such a dynamic environment as the creative industry, the risks and risk management methods are different, depending on the specific sector of activity. There is no standard by which to manage risks, each company has its own style in accordance to their specific activities. Although there is no specific standard, most companies believe that the risks are of high importance in the work that they carry. For example, one of the biggest risks in media is changing the content strategy to an audience that was already won but based on a previous content strategy (Stan & Duicu, 2015, pp.125-127).

An important change will be made based on how the companies sell their products and services. Through social media, consumers have access to a variety of products, may collect information from other beneficiaries who have purchased the products in the past and can choose the location of purchase. There has been a paradigm shift of the old method of marketing. In the new paradigm, companies are put in a position to compete in the digital space aiming the consumers directly. In the future, it is expected that the consumers will no longer have to search for products or services, but products and services will reach out to the consumers. Today, web media is an important component of the ICT industry and represents some of the sectors with the highest growth rate. It is important to note the fact that influence of digital media on a global macroeconomic perspective, corresponds with a decrease in industrial and economic influence for western countries (Vukanovic, 2015, pp.54-65). For example, in Bucharest, 12,5% of all companies belong to the creative industry. Most of the domains included in the creative industry are related to ICT. In 2013, most of the companies that are part of the creative industry were activating in fields like media, advertising, software, the web and IT. In the same year in Bucharest, the turnover of companies in the creative industry was approximately 10% as part of the overall turnover registered by all existing companies (Volintiru & Miron, 2015, pp.125-127).

The opportunities that Romanian companies can access through the ICT industry are many. This can also be a statement of the current context that Romania exists in. A fast way to develop the IT sector is to gather business models from other states and implement the best practices in IT companies as well as in the Romanian institution. For example, in France, IT companies have a greater lifespan and a lower number of employees compared to the IT companies in Romania. Interestingly is that the productivity of IT firms in France is 3 times higher than the productivity of IT companies in Romania, considering that the number of employees is lower. This is an opportunity of gathering the best practices implemented in other countries in order to develop the ICT industry in Romania (Ceausu & Bourbonnais, 2014, pp.983-984). In

addition, the development trend must not be neglected. There are 3 main changes in development represented by an increase in performance of hardware devices, more user-friendly applications, and more entertainment-centric applications than information-centric (Andy Ng et al., 2005, p.50).

The digital space brings a considerable improvement in the operational process within the public institutions, also bringing considerable improvements in the communication process used by the civil society. The digital environment enables organizations representing civil society, to communicate with each other, both on a national and international scale and to communicate important information in specific areas of expertise. Thanks to the digital space, citizens have access to other sources of information on vast topics of interest. Thus, there is the potential that more citizens interested in a particular subject to bring support and to become involved in cases initiated by civil society organizations (Burlacu, 2014, pp.92-94).

Regarding the public institutions, the e-governance system is one of the weakest in the European Union. It must be specified that Romania citizens were a factor that influenced the performance indicators used for the evaluation. According to the statistics presented in 2013, there were only 5% of Romanian citizens who used e-government services. In 2014, the percentage raised at 10%, but still not enough to reach the EU average. Also since 2013, 2% of Romanians used the internet to send completed forms to public institutions, following that in 2014, the percentage of those who send completed forms via the internet grew to 3%. A very small percentage if we compare to the EU average of 21% (Didraga & Brandas, 2015, pp.68-69).

Public institutions from Romania can make an impact with implementing an efficient IT system in the disadvantaged rural area. An example of good implementation can be received from China. A study concerning the implementation of health IT systems in China's disadvantaged rural areas has shown very good results. Health IT system resulted in improvement regarding the prioritization of patients depending on the severity of the situation and improvements to patient programming system that reduced the waiting time in line. After the implementation of the health system, the results showed the lower cost to patients and increased quality of medical service offered (Liu, Chen & Qin, 2014, pp.983-984). Given that such a system does not exist in the poor rural areas of Romania, it represents an opportunity for both the administration as well as for the IT service providers.

Another opportunity for implementing an efficient IT system in public administration is in the collection of statistical data. It generates decreased costs of collecting data from different institutions or citizens and also simplifies data collection process and the operational level. Taking into account that the Romanian Institute of Statistics has legislative support, makes it a more credible source regarding the accuracy of data, so this can generate great benefits for the institution as well as for the organizations working with the data (Moga, Popescu & Antohi, 2013, p.6). Even though there were presented many opportunities for the public institutions, most likely the companies are the ones that will try to win the implementation contracts on the open market. Some opportunities involve the public institutions as well as the social environment and the companies activating in the IT industry, at the same time.

Research methodology

In this study were involved four IT specialists, three marketers, two web developers and one expert in e-commerce. Of all these specialists selected for an interview, seven are graduates with a master degree, two are graduates with a bachelor degree, and one has only a high school diploma.

In order to check the theoretical background that is in the first part of the article and to answer the research questions, it was conducted a semi-structured interview that was based on the analysis of 10 manager's answers from the IT industry, involved in various levels of development in this area and having different roles.

Being focused on the relevance of the interview results, we have had structured the questions used, in terms of relevancy for our research theme, but also to put into value the specific experience of the 10 managers involved in our sociological approach.

The interviewees are all involved in the ICT industry, four of them being generalist ICT specialists; three are involved in the marketing area; two in software product development; and one in e-commerce. In terms of position in the company, respectively departments, five of the respondents are managers, two business analysts, one is an SEO, one is a software tester, and one is a content specialist. It should be noted that the level of education these interviewees have, is very high. Nine out of ten people are college graduates (of which 7 with an MA), just one of the subjects having completed only high school.

In perception terms of the current context that the IT industry from Romania finds itself in, the answer interviewees gave had a degree of diversification relatively high. For the general trend in the industry, seven of the respondents have a positive outlook on the context in which is located the Romania IT industry.

While A.F. and A.M. consider the environment as "*favorable*" there are opinions nuanced as those of B.M., claiming that the IT industry in Romania is "*in continuous development and expansion*" or M.D. who claims "*IT industry is growing and it pays to invest in this area*". The polar opposite lies in the perception of three other people interviewed and who consider the economic environment rather unfavorable for the IT industry, regarding its development (as G.S. states, "*the IT industry in Romania is not supported at the level that it should be, the most intelligent young people wanting to find a job abroad*").

Regarding the issue of specific decisions (in relation to the peculiarities of the local IT market) that are taken in companies, the views expressed were sufficiently diverse. Four of the respondents shared the opinion that decisions in their company are strictly related to the specific request of the customers in building the final product; while two of those interviewed are of the opinion that some specific influences but without getting them concretely, while the remaining three consider that there is a specific decision influenced by the IT market. The views expressed at this point were primarily taking from different contexts, one in which they were the decision makers, and from the role that they had in those actions. According to the most commonly circulated opinion, the most difficult decisions were related to the working relationship with the team, communication with customers, and planning projects specifically requested by

customers. A specific answer to the question says that *"the most difficult decisions have been taken in the planning phase of the development of applications and role. We had given up on applications before their official launch because they were deemed not to be quite promising"*. Among the most relevant opinions were those of A.M. related to *"decisions regarding the organization of the team. The result: I have not organized everything properly and as a result, we were all working overtime."* B.P. and G.S. argue that *"the decisions taken that led to the loss of customers"* when we asked what were *„the most difficult decisions that were made by the people interviewees and identifying the consequences of these decisions."* Another interesting perspective of this study was related to the role played by the interviewees in identifying opportunities and analyzing opportunities. This is the only point where the interviewees were unanimous in assessing for opportunities, special roles in making decisions. The responses included the phrase *"the role of opportunity in the decision-making process is a very big"* (T.A., G.S. and A.M.), the rest appreciating ratings of *"very important"* (G.L.) or *"significant"* (A.L.). Perhaps these answers polarization around the two concepts, *important* and *significant*, highlight the importance of the role that opportunity plays in decisions making within the organizations activating in the ICT industry.

If in the case of the role played by opportunities in the decision-making process, appreciation is unanimous, in terms of *how to identify opportunities and analyze their opinions*, the answers diverge. Of the people surveyed, six consider that analysis of opportunities does not involve an algorithmically system, there is no specific methodology, but decision makers analyze opportunities based on personal experience. The views are representative of C.R.M., saying *"I do not use an algorithm or methodology. Professional and personal experience play a very important role in evaluating opportunities"*, or the response of W.B. stating that *„personal and professional experience plays an important role in evaluating opportunities; the decision is based on knowledge already assimilated."* If a majority of those surveyed state that opportunity management is strictly based on experience, there are two views from respondents who identify the role of the algorithmic approach and a specific methodology approach. Here we highlight the views of T.A. *"yes, both have a share of 50%"* or N.D., who says *"yes, I make a list of criteria ..."*. Here we can highlight the views of T.S. and F.A., strictly mentioning that *"there is a specific methodology"* useful for addressing opportunities as the foundation of decisions. A separate department pursued the study to identify the main risks related opportunities. Thus, the most frequently mentioned risks were related to *"subjective analysis of opportunities"*, *"decision-makers attitude to the project that was to be addressed"*, *"lack of transparency into the market"* and *"competitive risk"*.

Regarding the general risks encountered in decision-making, the most often mentioned were related to *"the risk associated with the human factor," "risk of insufficient communication"*, *"risk of erroneous decisions"*, *"risk that the final product does not meet expectations of the customer"* and *"lack of managerial skills"*. Regarding the *methodology for risk management decision-making* used currently by decision makers, they mentioned various ways from which we could highlight the *"probability theory"* (as in the case of C.R.M.), *"analyzing and monitoring risk"* (R.A.), *"recording risks"* (A.M.), and *"minimizing risk"* (W.B.). However, there may surprisingly views from four of those surveyed, expressing they are now aware of a risk management methodology that they could apply in decision management.

Regarding the main risks that have turned into problems in the activities of firms operating in the IT field is has been identified various perspectives. The first set of response options of interviewees referred to the question relating to *"insufficient testing of the software before being launched in the market"* or *"A launch too late into the market."*

Another perspective is the inadequate training of software developers as it appears to C.R.M., *"the specific training of personnel for different projects,"* or to W.B., *"continued development of technology involves a continuous improvement of the technical process used"*.

Another category of problems is related to the effective functioning of applications eliminating as many unnecessary functions as possible, according to the opinion of G.L. From another perspective is the issue of stable employment of IT programmers. There are fears manifested expressively by R.A., *"downsizing specialist immediately after product development. Many companies' programmers are fired immediately after they launched a great product."* Here one can mention the opinion of G.S. which says that *"when the two companies developing two applications that do the same thing, first that manages to develop the best application and manages to launch before the other can win even 80% of the market."*

The final component of the study aimed to obtain recommendations for the future that *"optimize management decisions and avoid transforming risk issues in the Romania IT industry."* The opinions of people interviewed were related to recommendations on *"making more market research and doing more analysis with focus groups"* (T.A.), *"hiring more active and proactive people to contribute to solving problems"* (G.S.), *"a better identification of a market segment served by the company and enhancing services provided by this segment"* (C.R.M.), *"the implementation of a risk management system"* (R.A.), *"a department of personal and professional development"* (A.M.), *"focus on achieving service and top quality products, not just fast results"* (D.G.), *"involvement in the design and implementation of software by people that have a better training"*(G.L.).

It is obvious that all these recommendations concern different perspectives, but the common denominator of these recommendations would be linked to keywords such as efficiency, optimization, professionalization, and a redefinition of a better market share, the measuring instruments on demand, and a better degree of customer satisfaction.

Conclusion

In the end of our paper, we want to emphasize the main conclusions that we have to get in our study, in order to emphasize the most important remarks in terms of qualitative perception (of 10 interviewed managers):

- The IT industry is well represented in Romanian economy, with a very important tendency for a positive evolution in the next years, but insufficiently supported in an effective way by the government.
- Even the IT managers knew a little beat about the risk management methodology, the conclusion of the study shows that they do not apply constantly risk methodology of specific knowledge in their current activities. In the majority of cases, risk

management is only a theoretical concept, considered to be very necessary, but hard to be applied.

- The majority of the problems emphasized are embraced by the majority of the IT managers in the interview. That proves very clearly that we had recorded a common base of initial risks that with an inadequate risk management approach will conduct to the same problems.

- The major categories of the risks identified, are related to human resources or to the managerial decision.

All these above-mentioned considerations, prove once again the keen important role of the risk management in the IT industry, but also the necessity to have good risk managers specialized in the field.

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