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CHALLENGES AND SUCCESS FACTORS IN THE ICT INDUSTRY

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Objective and methodology

- Objective: The aim of the paper is to analyze the challenges and success factors in Information and communication technology industry. The focus is on European Union market. It faces different challenges related to organizational culture, structure and strategy. The industry relies on the people as an asset but in the same time has to cope with the challenge to find and retain the right experts, motivate and develop their skills while keeping the dynamics of the business clients and the economic reality.

- Methodology: The scientific approaches that are used for the purpose of the article are analysis, synthesis and abstraction.

ICT overview: definition

The International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4 (ISIC, Rev. 4, 2008), Statistical division of the United Nations, now we have statistical Section J for Information and communication. There are 6 divisions in the section, two of them focus on programming an information service:

- **Division 62 "Computer programming, consultancy and related activities"** which includes writing, modifying, testing and supporting software; planning and designing computer systems that integrate computer hardware, software and communication technologies; on-site management and operation of clients' computer systems and/or data processing facilities; and other professional and technical computer-related activities (ISIC, Rev. 4, 2008, p.213);

- **Division 63 "Information service activities"** - this division includes the activities of web search portals, data processing and hosting activities, as well as other activities that primarily supply information (ISIC, Rev. 4, 2008, p.214).

ICT overview: definition

- " …. production of ICT goods and services" (ISIC, Rev.4, p.278)

- Industry Classification Benchmark (ICB, 2011) launched by Dow Jones and FTSE in 2005;

- Global Industry Classification Standard (GICS) initially developed in 1999 by Standard & Poor's, in the article is used version from 2015;

ICT overview: revenue and market specifics

- The importance of ICTs lies less in the technology itself than in its ability to create greater access to information and communication in underserved populations (Horizon 2020 Programme).

- The ICT sector represents 4.8% of the European economy (ICT Research and Innovation, 2014).

- ICT industry is one of the most dynamic in Europe (ICT Research and Innovation, 2014).

- Approximately 5.3 million people in the EU are employed in ICT jobs, in a market worth more than 670 billion € (Kable, ICT Investment Trends in Western Europe, 2013).

- The largest ICT markets are Germany, the UK, and France. But the division ranges at ICT product level.

- The largest software market is France, while Spain is the largest market for communications equipment.

ICT overview: key players on the market

Key Players in ICT industry in European Union:

- **Austria** - with around 15,000 enterprises employing 170,000 employees. The total revenue generated by ICT sector in Austria is approximate EUR 45 billion. Companies: Microsoft, Hewlett-Packard, Polycot (Invest in EU Agency).

- **Germany** has the largest ICT industry in terms of volume revenue earnings. Germany is also the fourth largest ICT market in the world which is 5.5% of the world market. The approximate turnover of Germany's ICT market is EUR 130 billion, around 850,000 people work in Germany's ICT industry. Some of the big ICT players in Germany include eBay, Oracle, DELL and many others (Invest in EU Agency)

- **France** is also one of the leading nations in ICT industry. Some of the big players include France Telecom, Capgemini, Dassault Systèmes, ST Microelectronics, Motorola and LG Electronics, Atmel, IBM, NXP and Freescale

ICT overview: EU market

- Most of the ICT enterprises in European Union are micro-companies – with up to 10 people employed (Eurostat, 2013).

- In Europe prevail the small enterprises in ICT compared to USA (Miller and Atkinson, 2014).

- ICT industry could contribute to the stability of economy of the European Union and both ICT and EU can take initiatives to overcome this challenge (Miller and Atkinson, 2014).

ICT overview: EU market

Both ICT and EU could benefit if apply the seven principles which are:

- Focus on Raising Productivity
- Focus on Across-the-Board Productivity Growth, Particularly Through Greater Use of ICT
- Actively Encourage Digital Innovation and Transformation of Economic Sectors
- Use Tax and Trade Policy to Spur ICT Investment
- Create Larger Markets for EU Firms
- Reduce Preferences for Small Businesses
- Do No Harm (Miller and Atkinson, 2014, p.27-31)

Human capital – challenge accepted

- Employment and lifelong learning, information and consultation, regulation on labour conditions and mobility are key issues for the ICT industry.

- Professionals in ICT – developers, project managers in IT, database specialists, etc., are the second most deficit professions in Europe for 2012 after the medical specialists.

- In a report of CEDEFOP - European Centre for the Development of Vocational Training (2011) is stated that in almost all Member States, more than 40 % of enterprises considered the **lack of relevant qualifications from education** and /or training to be a key reason why vacancies for ICT specialist jobs were hard to fill.

- A software engineer who does not refresh his/her professional knowledge can completely take away from the latest trends in their field for four years (CEDEFOP, 2011).

Human capital and ousourcing

- According to 2013 EMEA IT Leadership Report, over the next 12 months CIOs in Europe need to facilitate some critical goals: to do more with less budget (mostly cited by the UK respondents 45%) and overcome shortage of IT staff (prevailed by responders in Germany 31%)

- IT leaders expect a huge 40% of their infrastructure will be outsourced

- The highest percentage of outsourcing is seen in IT services, such as application development, IT helpdesk, infrastructure and testing, but also payroll services.

- The latest IT Sourcing surveys demonstrate that the majority of enterprises in the EU would transfer their IT support/development nearshore rather than offshore, if they make such a decision in the near future (Derksen, Luftman, 2014).

Human capital – specifics

- 63 % of ICT specialists in the EU-28 are aged over 35. The proportion of ICT specialists over the age of 35 has increased by 6 percentage points since 2005.

- The majority of jobs for ICT specialists are held by men. The proportion of women working in this segment of the labour market in the EU-28 has declined since 2005, to 18 % in 2014.

- The countries with the most pronounced gender inequality in 2014 were Luxembourg, Cyprus and the Netherlands. Bulgaria has the highest proportion of female ICT specialists (32 %), closely followed by Estonia (30 %) and Romania (29 %) (Eurostat, 2015).

- In the Eurostat report (2015) is said that the majority of ICT specialists in the EU-28 have completed tertiary-level education, with the proportion of workers with this level of education increasing slightly since 2005 to reach 57 % in 2014.

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Human capital – culture, structure, strategy

- Huge dynamics and constant changes.

- National values match those shown in IT organizations, which confirm the role of national culture for the organizational one.

- New philosophies for software development affect the organizational structure of companies practicing them - size and composition of the team, communication flows, and management style.

- Agile affects the interaction of strategy, structure and culture in ICT.

- Young people, informal atmosphere, very often open-space offices thus encouraging the sharing of ideas and interaction between team members. The more informal atmosphere is noticeable easier in the ICT than in other industries.

Case study: Bulgaria

- Bulgaria has strong traditions and skilled workforce in the ICT sector.
- One of the most stable industries in Bulgaria during the financial crisis is the IT industry - software development and outsourcing services (Bulgarian Industrial Association, 2013).
- 3% of the GPD in Bulgaria (BIA, 2013).
- Talented and creative labor force, with particular proficiency in C++ and Java, stable economic, business, and regulatory climates, low inflation and public debt, and regionally competitive costs for resources and real estate (A.T. Kearney Global Services Location Index, 2014).
- Both Bulgarian and international companies have offices in the country – SAP, VMware, HP, Visteon, Oracle, Bulpros, Skrill, etc.
- Around 17 000 people employed in software companies, aroun 300 000 in ousourcing companies (Invest in Bulgaria Agency, 2014).
- Lack of people (BASSCOM, BIA, 2013)
- Soft skills development and retention – key challenges

Conclusion

- The ICT industry has good business results, fast dynamics and good prospects for development. If it invests more in the human capital and aligns effectively its strategy to the other economic industries the growth can be expanded.
- Results show that organizations that operate in this sector are characterized by relatively stable economic performance, good levels of employment and working conditions.
- People development – education and soft skills training – key challenge
- Tight alignment between strategy, structure and culture will help to adapt to the constant changing economic environment
- The limitation of the paper is the lack of empirical evidence for the culture and the strategic orientations but we overcome this by a bigger research that we conduct in 2016 and 2017

Thank you for your attention!

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