Czech Republic's Competitiveness in ICT Market

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Abstract

In the last decade the ICT sector in Czech Republic significantly developed, both in manufacturing and in services. The purpose of this study is a quantitative analysis of the situation in the Czech ICT market. Other subjects of research are also the proportion of ICT goods on exports and imports of the Czech Republic, the development of value added and turnover generated by this sector and the role of innovation. The outcome of the study is the SWOT analysis of the Czech ICT market based on obtained data and recommendations that result from this analysis.

Keywords: ICT sector, Czech ICT market, ICT market SWOT analysis, ICT exports;

1. Introduction

Competitiveness of the economy is one of the main drivers of economic growth. The development of the information and communication technology (ICT) brings opportunities also to other sectors of economic activity, because investment in ICT can help to increase productivity, efficiency and overall competitiveness. It is estimated that up to half of the productivity growth in the European Union was achieved thanks to information and communication technologies.

In the last decade the ICT sector in Czech Republic significantly developed, both in manufacturing and in services. The purpose of this study is a quantitative analysis of the situation in the Czech ICT market with regard to the number of enterprises and their actual focus (ICT production, trade in ICT, telecommunication and IT services). Other subjects of research are also the proportion of ICT goods on exports and imports of the Czech Republic, the development of value added and turnover generated by this sector and the role of innovation. The outcome of the study is the SWOT analysis of the Czech ICT market based on obtained data and recommendations that result from this analysis.

2. ICT sector analysis

The first examined aspect was the distribution of Czech ICT companies according to their size and turnover, to obtain the necessary data the CreditInfo database (Soliditet, 2012) and the Czech Statistical Office (Český statistický úřad, 2012) were used.

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There are more than 33 thousand ICT companies in Czech Republic with the annual turnover of 4.7 billion EUR, about 96 % of these companies are in private ownership. The vast majority (nearly 99 %) of ICT companies has less than 50 employees; moreover most of these small companies have even less than 10 employees. They are engaged mostly in IT services and participate in the turnover of ICT sector by more than 58 %. Middle-sized companies with 50 to 250 employees are represented by 0.88 % and their share of the sectors turnover is 29 %. Large companies with more than 250 employees make up only 0.2 % and generate over 12 % of the total turnover.

### 2.1 Main economic activities of ICT companies in Czech Republic

The ICT companies were further examined by prevailing economic activity – this distribution is shown in Figure 1. The monitored economic activities of ICT sector according to classification CZ-NACE (Czech Statistical Office, 2008) are ICT Manufacturing, ICT Trade, Telecommunications and IT services.

Predominant economic activity (82 %) in ICT companies is information technology (IT) service, which include programming and other activities related to production of software, consulting and management of computer equipment or data processing, hosting, web portals, etc.

![Figure 1. ICT companies in Czech Republic distributed according to their main economic activity](image)

Second most common economic activity in ICT is manufacturing, represented by 9 %. In this sector dominates manufacturing of magnetic and optical media, followed by manufacturing of communication devices, there is also included manufacturing of electronic components, boards or computers and its peripherals. 6 % of ICT companies trade with information and communication technologies. Lowest is the number of companies with a focus on telecommunication activities (3 %), mainly due to capacity constraints of existing infrastructure. In this section dominate activities related to wireless telecommunication networks.

Since 2005, the dominant IT services sector is still growing. This progress indicates that there are relatively low entry barriers, mainly due to low demands on the infrastructure. ICT trade and ICT manufacturing show slight but steady rise. Telecommunications show slight variations in number of companies with this main economic activity over the years and since 2009 there is a continuing decrease. In this sector there are relatively large entry barriers, mainly because of the high demands on the infrastructure.

Highest total sales (5.8 mil. EUR) earn telecommunication activities, which are least represented in the Czech ICT market, as mentioned above. The second highest volume of sales (3.3 mil. EUR) is reached by ICT manufacturing, followed by ICT trade with sales of 2.3 mil. EUR. On the other hand the lowest total sales (only 2.5 mil. EUR) achieves most common ICT sector – IT services.

Value added produced in ICT sector in 2011 is shown in Figure 2. IT services achieved the highest added value of 3.1 billion EUR, followed by telecommunications with the total added value of 2.4 billion EUR. Significantly lower added value (486 mil. EUR) is created by ICT manufacturing. Least added value is brought by ICT trade, only 408 mil. EUR.
According to the data (ČSÚ, 2012), specifying imports (see Figure 3) and exports (see Figure 4) in the ICT sector, foreign ICT companies represent strong competition for the domestic ones. Import for the last 20 years increases, both in absolute terms and as a share of total imports to the Czech Republic. First decline of ICT goods import occurred in 2011, the share of ICT goods in total imports fell even below the level of 2009. Figures show also growing share of ICT exports, but there is still lower level of export than import. But the share of ICT goods export on total exports from the Czech Republic grew significantly more (by 13.4 %) than the value of import.

2.3 Innovations

The Czech Republic is undergoing a transformation on the economy driven by innovation. The main challenges for innovation potential include a lack of cooperation between the research and business sector, lack of human resources for innovation and low efficiency in the use of public funds for research and development (Inno-Policy TrendChart, 2009).

The innovative performance of the Czech Republic in 2010 is lower than the average performance of the European Union (EU) and thus belongs to the group of medium innovators together with Poland, Italy or Spain. In 2011 the Czech innovation performance increases, but its position in relation to other EU member stated remains the same as in the previous years.

The volume of enterprise investments in innovations is slightly above European average, which indicates that Czech companies do recognize the importance of innovation to maintain its competitiveness. Most investment in innovation is spent on machinery and equipment, significantly less resources is spent on corporate research and development (R & D). Private research is concentrated primarily in companies with foreign capital and long-term development concepts, which include research and development. The innovation process in Czech enterprises is characterized primarily by the implementation of advanced technologies, processes and other methods focused on manufacturing. (Inno Metrics 2010, 2011)

The Czech Republic (CR) is also above average in employment in knowledge-intensive activities, export of high-tech products and knowledge-intensive services, sale of new innovations, licenses and patents abroad. On the contrary in development of product, process, marketing and organizational innovations is the Czech Republic distinctly behind. Major influences on this result were particularly foreign direct investments in manufacturing companies, from where did the new technology and innovation processes spread further. (Inno-Policy TrendChart, 2009).

CR belongs to the group of European countries with moderate average growth of innovative performance (along with Italy, Poland, Hungary and Slovakia), which is about 3 %. Before, in 2009, it even showed rapid growth of innovation – the biggest growth factors include the size of population with tertiary education, the number of international scientific publications and registered trademarks. On the other hand the growth is suppressed by low number of innovation in small and medium-sized companies and low corporate spending on research and development.
The innovative growth of the EU, including the Czech Republic, has inevitably reflected the impacts of the global economic crisis. According to a survey from 2009 (Pro Inno Europe, 2009) more than 23% small, medium and large companies decreased their spending on innovation and the total growth of innovation performance in the European Union slowed down. Particularly product and process innovations are expected to decrease in the Czech Republic. Organizational innovations on the other hand will be further developed through the effort of companies to reach maximum efficiency. The economic crisis may also lead to greater product diversification and focus on production with higher added value. Speed of these changes, however, depends on the flexibility of Czech companies.

3. SWOT Analysis

3.1 Strengths

• Large size of population with tertiary education.
• Rising number of international scientific publications and registered trademarks.
• Czech companies recognize the importance of innovation to maintain its competitiveness.
• Growing interest of Czech researchers to be involved in international research and development.
• National information policy and EU policy supports investment in ICT, especially through the purchases of government.
• Tradition in research and development, quality of research institutions.
• Relatively high credit rating, ability to attract foreign investment.

3.2 Weaknesses

• Lack of cooperation between the research and business sector.
• Low efficiency in the use of public funds for research and development.
• Quality of the public research system as well as its insufficient financial support.
• Low number of innovation in small and medium-sized companies.
• Lack of research and development results suitable for commercialization.
• Inability to implement new technologies without foreign capital (MPO, 2011).
• Major entry barriers in the telecommunications sector.

3.3 Opportunities

• Focus on high value added ICT services such as development of IT solutions, applications and research and development of ICT products.
• New business opportunities for Czech companies in foreign markets.
• Greater product diversification and focus on production with higher added value.
• Increase of the number of internet users and growth of households demands for information and communication technologies.
• The ongoing development of e-government.
• Use of European Union funds to enhance research and development.
• Foreign direct investments in the ICT sector and technology transfer (MPO, 2011).

3.4 Threats

• Lack of skilled workforce, mainly in young and middle aged ICT specialists (Czech ICT Alliance, 2010).
• Market assessment of research and development is often missing; there are no transparent evaluation criteria (MPO, 2011).
• Universities annually educate only 50% of required ICT specialists (Koubský, 2008).
• General problems of Czech business environment – low law enforcement, bureaucracy and relatively high taxes.
• Strong foreign competition in ICT market.
• Rapid technological development leading to obsolescence of production.

4. Conclusion

The development of ICT sector in the Czech Republic was initiated particularly by foreign investments. Despite the above-average productivity and good export performance, the knowledge-intensity remains relatively low level with weak emphasis on research and development (Kadeřábková, 2009). The main aim of the ICT sector should be the growth of knowledge-intensive production. This production should be in addition highly specialized and should have high added value.

I would be useful to set transparent evaluation and funding of research and development in order to raise the efficiency of R & D and especially related innovation potential. Further benefits can be realized by promoting cooperation between business and research sector, promoting commercialization of R & D and technology transfer.

Production of information technology is a field that is highly demanding both for capital and the quality of manpower. Development in this sector is happens rapidly and production technology becomes obsolete at a fast pace, so it is necessary to ensure a constant flow of investment in research, development and new production capacities. Likewise, the high pace of innovation comes with great demands on the adaptability of the workforce. Companies operating on Czech ICT market have to face strong competition in the open economy. Therefore it is necessary to engage strategies such as improving customer service, product differentiation and investing in innovation.

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References

Soliditet (2012). CreditInfo Albertina. [online, cited 30. 12. 2012] Available at www: http://www.soliditet.cz/poskytovana-reseni/obchodni-marketingove-informace/database-firem-albertina/.
Český statistický úřad (2012). Informační ekonomika v číslech. [online, cited 21. 1. 2013] Available at www: http://www.czso.cz/csu/2012edicniplan.nsf/p/9707-12, 56 – 64.
Czech Statistical Office (2008). Classification of Economic Activities (CZ-NACE) [online, cited 21. 1. 2013] Available at www: http://apl.czso.cz/iSMS/en/klastra.jsp?kodcis=80004.
ČSÚ (2012). Statistická ročenka České republiky 2012. [online, cited 21. 1. 2013] Available at www: http://www.czso.cz/csu/2012edicniplan.nsf/p/0001-12.
ČSÚ (2012). Česká republika od roku 1989 v číslech. [online, cited 21. 1. 2013] Available at www: https://www.czso.cz/csu/redakec.nsf/i/cr_od_roku_1989#08.
Inno-Policy TrendChart. (2009) Innovation Policy Progress Report CZECH REPUBLIC. [online, cited 14. 3. 2012] Available at www: http://www.proinno-europe.eu/page/innovation-and-innovation-policy-czech-republic
Pro Inno Europe (2009). European Innovation Scoreboard (EIS). [online, cited 9. 3. 2012] Available at www: http://www.proinno-europe.eu/page/european-innovation-scoreboard-2009.
Inno Metrics (2011). Innovation Union Scoreboard 2011. [online, cited 14. 3. 2012] Available at www: http://www.proinno-europe.eu/inno-metrics/page/innovation-union-scoreboard-2011.
Inno Metrics (2010). Innovation Union Scoreboard 2010. [online, cited 9. 3. 2012] Available at www: http://www.proinno-europe.eu/inno-metrics/page/innovation-union-scoreboard-2010.
Czech ICT Alliance (2010). Význam ICT sektoru pro českou ekonomiku. [online, cited 20. 3. 2013] Available at www: http://www.czechict.cz/ict-v-cr.htm.
Půžová, K. (2012). *Innovations in Czech ICT companies*. Advanced research in scientific areas. Thomson. Žilina. pp 484-489. ISBN 978-80-905243-3-0.

Kadeřábková, A. (2009) *ICT RTD ladscape in the CR*. [online, cit. 25. 3. 2012] Available at www: http://www.bermangroup.cz/ict-audit/themes/onirica/files/ICTRTDLandscape.pdf.

Koubský, P. (2008) *Informační a komunikační technologie v ČR*. Informační bulletin CES VŠEM. 22/2008. ISSN 1801-6871

Maresová, P., Čebišová, K., et al. (2012) *Konkurenceschopnost České republiky v oblasti ICT*. [online, cit. 1. 11. 2012] Available at www: http://www.tchk.cz/mepkit.html.

Půžová, K. (2012) *The state of ICT companies in the Czech Republic*. MMK 2012. Magnanimitas. Hradec Králové. pp 484-489. ISBN 978-80-905243-3-0.

Doucek, P., Nedomová, L. (2011). *Porovnání ICT sektorů v České republice a Slovenské republice*. Acta Oeconomica Pragensia. 19(5). pp 68-86. ISSN 0572-3043.

MPO (2011). *Analýza konkurenceschopnosti České republiky*. [online, cited 20. 3. 2013] Available at www: http://www.businessinfo.cz/cs-clanky/analyza-konkurenceschopnosti-cr-3109.html!