

INNOVATIONS AND USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN ENTREPRENEURSHIP IN LATVIA

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Abstract. The daily life within a modern society is unimaginable without the use of information and communication technologies (ICT). Also the use of collaborative work and file storage platforms becomes increasingly popular. These technologies contribute to making the work fast and efficient and allow working together in multinational groups with no geographic constraints. Such processes advance the dynamics of work and the ability to create ideas without the limitations of the physical location. Thus people that can work with these technologies and are also creative and innovative are the key factor of successful entrepreneurship. Therefore, investment in human capital is considered highly important and enterprises orienting towards new knowledge, creativity, innovative ideas and skills are strong rivals of the traditionally oriented enterprises. The aim of this study is to analyse the links of the use of ICT in Latvia with the innovation activity and compare the national situation with the situation in the European Union (EU). The results of this study indicate that Latvia is reaching low results in both innovation and the use of ICT comparing to other member states and the use of ICT would need to be enhanced for the improvement of innovation potential and competitiveness.

Keywords: innovations; entrepreneurship; information and communication technologies.

Introduction

At the beginning of the last century, natural resources were regarded as the drivers of economic growth; besides, the key resource was believed to be land and labour. As the role of industry increased, an increasingly greater focus was placed on capital, while the role of labour declined. Nowadays, economy is referred to as an innovative economy, an intellectual economy and a virtual economy; the role of labour has increased again in this period. Labour starts dominating in economic growth increases, and investment in human capital is considered to be very important. Enterprises orienting towards new knowledge, creativity, innovative ideas and skills are strong rivals of the traditionally oriented enterprises.

Innovations are the driver of the knowledge-based economies. Innovation is the ability to take new ideas and translate them into commercial outcomes by using new processes, products or services in a way that is better and faster than the competition [1]. In the last century, the term invention was mostly used, and the term innovation is a newer one. Even though there is strong association between these two terms, sometimes it is difficult to distinguish between them; J.Fagerberg suggests there is, however, a significant distinction between these terms. An invention or discovery is the initial idea about a new product or process, while the initial commercialisation of this idea is an innovation [2]. So, in case of innovation, it is required not only to create an innovation but also to introduce it in real life in order to make commercial gains.

The available scientific literature on innovations is very diverse; therefore, it becomes increasingly difficult to get a single opinion on these issues. There are different definitions of the term innovations, sometimes even very varied, which indicates that the term innovation is quite broad, seeking to embrace too many details. Nevertheless, both research papers and policy documents unambiguously focus on knowledge- and innovation-based economies [3-6]. Besides, there is a single understanding of two key issues regarding the nature of innovation: innovation is a process, and the effects of the process can be managed in relation to the outcome. Accordingly, the management of innovations is the process of value creation and “embodiment” in the entire chain of business processes and in a certain environment in which an enterprise performs its business activity in order to increase the enterprise competitiveness and achieve its objectives. Already in 1969, S. Myers and D. Marquis wrote that innovation is not a separate activity but a process consisting of interrelated sub-processes [7]. Innovation is not only the conception of a new idea or the invention of a new device, or only the development of a new market. Innovation is a process in which all its sub-processes are integrated and unified, and nowadays ICT have become an essential necessity for competitive and innovative entrepreneurship.

Materials and methods

The present study reveals the scientific literature on innovation and the use ICT in entrepreneurship and the data from the Organisation for Economic Co-operation and Development (OECD), Eurostat and the Central Bureau of Statistics (CSB) of Latvia.

Results and discussion

Innovations and entrepreneurship

Initially, the term innovations had focused on technological innovations, while now non-technological innovations have become important. Technological innovations are a process during which new or enhanced technologies are developed and commercialised, which can also involve such elements as marketing, external relations of enterprises etc. [8]. However, non-technological innovations are the new organisational or marketing techniques introduced in an enterprise and contributing to the creation of value for customers and the enterprise itself [9]. This suggests that both the enterprise and its customers make gains. The scope of non-technological innovations is very broad not only in the field of entrepreneurship but also management. In enterprise management, such non-technological innovations as marketing innovations, eco innovations, brand innovations, business model innovations, service innovations, design-driven innovations, supply chain innovations, financial and other innovations are used more and more extensively. Enterprises succeeding in combining technological and non-technological innovations, using their management and communication skills, will be able to introduce a greater number of innovations in the market [10].

Several authors have tried to group and structure innovations. For instance, S. Roy has classified innovations into three types:

1. radical innovations;
2. system innovations;
3. incremental innovations [11].

The first two types refer to the creation of new functionality for the object of innovation or the creation of new separate blocks, while the third one is associated with an enterprise's capability to persistently enhance and perfect the existing goods and services. However, P.Tumati divides innovation into the following kinds [12]:

1. breakthrough innovations;
2. incremental innovations.

Some authors [13; 14] call breakthrough innovations radical or destructive ones, even though other authors do not agree with this opinion, stressing that destructive innovations involve lower technological uncertainty and they can create real products to develop a market segment [15]. The nature of breakthrough innovations involves brand-new practices or techniques that are not comparable with the current ones. They are usually created in laboratories and are not associated with customers' needs. As an example, P.Tumati mentions the creation of computer programs for interconnected computers in 1980, which later enabled the Internet to be developed, although there was no clear idea of the usage of this innovation during the stage of its development. So, breakthrough innovations find application only when customers try the new good or service and later demand it. Incremental innovations are based on identifying the customers' wants; these innovations are evolutionary and in part substitute the current goods and services in the market. High technology innovations, according to P.Tumati, are incremental innovations, for example, the operating system Windows XP [12].

Innovations are divided into internal and external [16]. Internal ones are inventions and innovations implemented at an enterprise and serving its economic considerations, whereas external ones are inventions and innovations oriented towards supplying innovative products to consumers and the market. Most often, external innovations are used in chemical industry, pharmacy and information and communication technologies.

Examining the nature of innovations and their role in economic growth leads to a finding that an essential role in developing innovations is played by possibilities to access various kinds of information. It is important that there is access to:

1. information on consumer and market needs;
2. information on technological solutions.

Information and communication technologies make production and distribution more available, thus innovations become available to a greater number of individuals – starting with the idea, the design of prototypes in a digital environment, possibilities for virtually ordering goods, massively using the so-called shared production facilities, which are based on the approach of open innovations [8]. The fast development of industry causes demand changes in the development of innovations based on new technologies and techniques and the opportunities created by them. New IT and communication technologies, according to Ericsson, can create new “forms of intelligence”, for instance, Ericsson’s project “Uniting Things” aimed at uniting 50 billion things in a single data network [17]. New technologies increase the role of information from year to year and create demand for programming industry services.

Information and communication technologies involve computers, software and communication devices, including the Internet, which provide easy access to information as well as information exchange at both national and global levels. The fast growth of the use of information and communication technologies provides advantages to their users in information exchange. H.Lincoln emphasises that the use of such technologies determines the quality aspects of human life, among them how people live and work [18].

In her research, Veronica Černakova proved that the municipalities that had used advanced information technologies in providing public services for their population were more financially stable and, in a long-term, became financially independent, compared with the municipalities that did not use advanced information technologies [19]. Also the authors of the present paper, in their research on agricultural holdings in Latvia found that the farms the owners of which had more social capital were much more advanced and they were more eager to take the initiative in starting something new; so they were more capable to engage in the field of innovations. Besides, networking is an important element of social capital, including using information and communication technologies [20;21]. Innovations in industry are also the key driver of progress, while in the sector of services a tremendous breakthrough regarding the innovations related to advancing marketing and information and communication technologies was seen, particularly during the last three decades. It is clear that the drivers of innovations are energy-full individuals endowed with imagination and enthusiasm who are able to identify a problem and solve it [22], but information and communication technologies are an additional tool for creating and promoting innovations. The mentioned technologies are a safe guarantee for innovation development. For this reason, it is important to assess their availability and use in entrepreneurship.

According to the data gathered by OECD 30.4 % of enterprises in Latvia are innovative enterprises placing Latvia only in the 25th place among the European Union (EU) member states (lowest score is only for Bulgaria, Poland and Rumania). On average, the share of innovative enterprises in the structure of entrepreneurship is 45.8 % (see Fig. 1) [23].

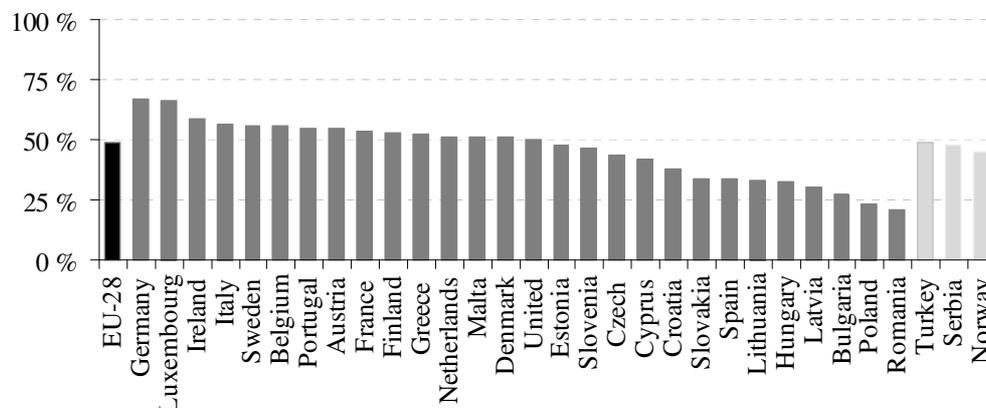


Fig. 1. Share of innovative enterprises in the structure of entrepreneurship in the EU member states and associated countries, 2010-2012, % [23]

The Global Innovation Index places Latvia in the 34th place in the world ranking with the score of 44.8, in comparison to 2013 the score is lower by 4 points (Latvia was placed 33rd in 2013) The first place is taken by Switzerland with an index of 64.8 points [24].

The use of ICT in the entrepreneurship in Latvia

The data analysis for the use of ICT in the entrepreneurship in Latvia reveal (Fig. 2) [25] that in the period from 2009 to 2014 there is a slight increase in the use of computers, the Internet or homepages in the enterprises in Latvia. And the intensity of their use is connected to the size of the enterprise – almost all enterprises with 250 and more employees use all three analysed items, computers and the Internet are also used in the most of the smaller enterprises while only 50 % of the enterprises with less than 10 employees have homepages.

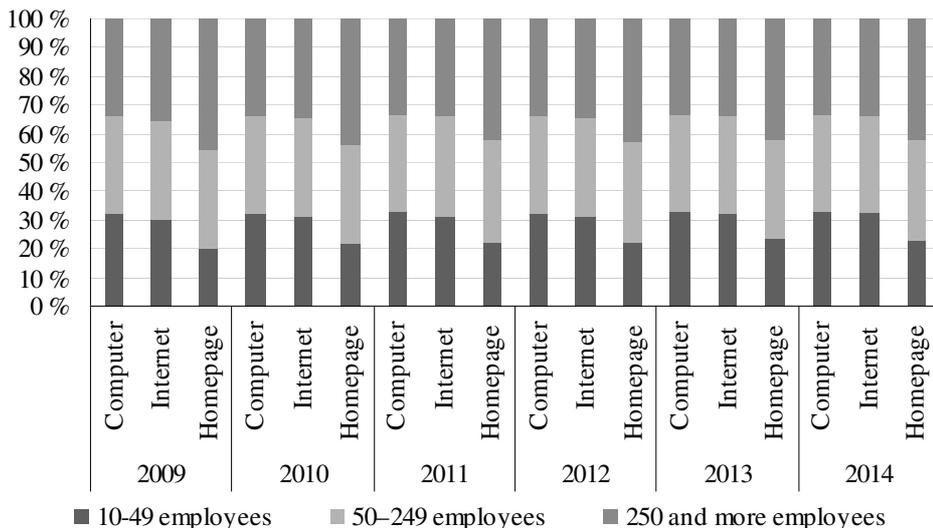


Fig. 2. Use of computers, the Internet and homepages in the enterprises in Latvia, 2009-2012, % from the total number of enterprises [25]

The data on the use of computers, and the Internet connection in the stationary computers or mobile devices show (Fig. 3) [25] that the group of enterprises which uses computers without the Internet connection has vanished till 2011 and since then this group is substituted with a growing group of more innovative enterprises – the ones that use mobile internet connection in the mobile devices like smartphones or tablets for work purposes. A growth can be observed in the use of computers with the Internet connection showing that more and more enterprises and their employees are becoming open to the use of ICT in the daily oprations.

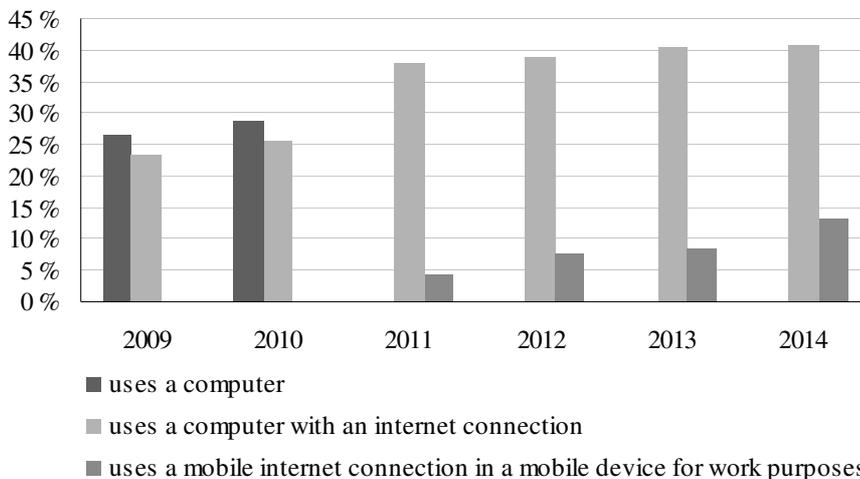


Fig. 3. Use of computers, computers with the Internet connection and mobile devices in the enterprises in Latvia, 2009-2012, % from the total number of enterprises [25]

Also the data [25] about the percentige of enterprises which sell their goods throught the Internet show that overall since 2009 the number of such enterprises has grown in half – on average from 7 till 14 %. There are also differences noticable according to the size of enterprises – mostly large and medium enterrises develop e-shops and other internet selling oppurtunities, also small scale enterprises are developing such options. 12.5 % of enterprises in 2013 and 16.9 % in 2014 use social networks (Facebook, LinkedIn etc.), but the use of blogs and microblogs (i.e. Twitter), wiki pages and shared multimedia networks (i.e. Youtube, Flickr, Picasa, SlideShare) is rather consistent from 2013 to 2014 with a slight growth in the use of blogs and microblogs from 7.4 to 7.9 %.

But the review of the data [25] on the purchased coloud computing services shows (Fig. 4) that in 2014 most of the enterprises and especially smaller enterprises use cloud computing for emails, fail storage and hosting. Also the use of cloud computing for office software and finance and accounting software is rather popular, again, especially among smaller enterprises. Mainly the use of such services is relevant to smaller enterprises as they are not able to assure all the mentioned services within an enterprise and it is cheaper to purchase cloud based services. The analysis of the hindering factors (according to the data of CSB [25]) for using cloud computing refleacts – mostly the enterprises feel that there can be safety risks connected with cloud computing, and espacially larger enterprises are concerned about this aspect. Also, the uncertainty about the legal aspects, costs, lack of knowledge about cloud computing (especially for smaller enterprises) is listed among the most significant factors.

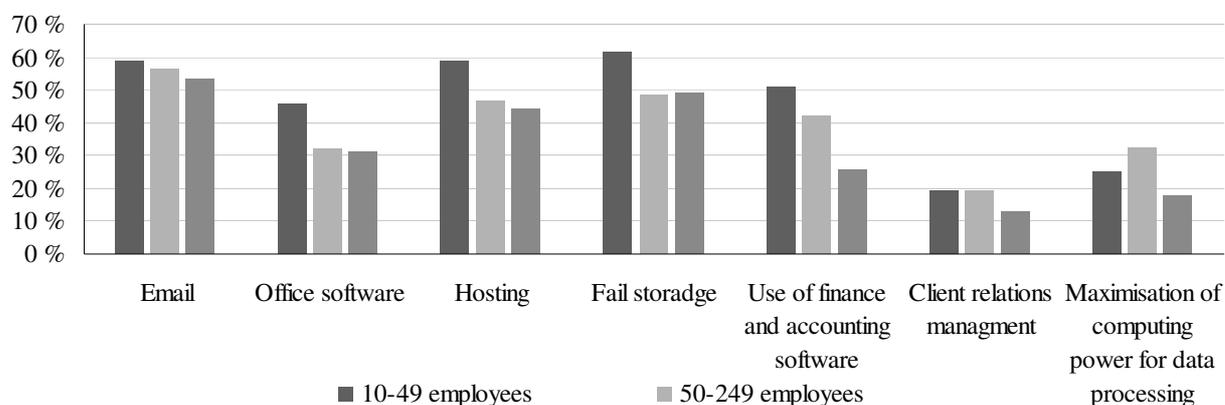


Fig. 4. Share of enterprises that pay for use of cloud computing services, 2014, % from the total number of enterprises [25]

In comparison to other EU member states, enterprises in Latvia use cloud computing rather seldom, leaving Latvia with the second lowest score in the EU [26]. The European Commission (EC) believes that the “smart” use of ICT by companies is a critical factor for success in innovation, competitiveness and growth. As large companies are moving to exploit the advantages offered by ICT, smaller companies have to follow suit or risk being left out of digital supply chains. But EC states that series of demonstration actions have positively illustrated the benefits that the smart use of ICT offers also to small firms [27], thus reflecting the mutual positive link between innovations and the use of ICT.

Conclusion

The scientific literature includes broad discussions on the term, content and nature of innovation, even though there are many contradictions; scientists and policy makers presently have a single opinion that innovation is a process and the effects of this process can be managed in relation to the outcome.

Innovation may not be regarded as a simple process; its key driver is self-motivated and intelligent individuals. The availability of various kinds of information plays a significant role. The previous researches found causal relationships between the existence and availability of information of higher level and successful development.

Even though the use of ICT in Latvia develops fast, it is still in the lowest part of ratings for the use of ICT and also in a similar position in the country ranking for innovation. Thus, it can be concluded that there is a link between ICT and innovation – if the use of ICT by individuals and in all types of enterprises (small medium and large) would increase, it would likely contribute to the increase in innovations.

Acknowledgements

The paper was supported by the National Research Program 5.2. “Economic Transformation, Smart Growth, Governance and Legal Framework for the State and Society for Sustainable Development – a New Approach to the Creation of a Sustainable Learning Community (EKOSOC-LV)”

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