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Dear readers,

Today, when academia – industry cooperation and collaboration through clustering and technology transfer trigger new surge of novel activities, it is very important to strengthen such interaction in variety of ways and forms using diverse means and channels. One of such means is science translation, which can be implemented though inclusion of business, society, military, NGOs and other actors into common discussion about processes, problems and relevant policies.

Therefore, today, being a President of Lithuanian Business Confederation, which is the largest business organization of a country uniting service, trading and high-tech companies, serving as national committee of the International Chamber of Commerce in Lithuania, I want to introduce a scientific journal devoted to urgent contemporary issues related to secure sustainable development of regions and countries, businesses and societies.

Let us together foster innovations through efforts directed to converging of theory and practice by sharing the best practices, scientific insights, inclusion of various circles of society into common discussion and collaboration. Let us read, write and reflect in order to contribute to building of our common secure and sustainable future based on continuously emerging innovations born as result of fruitful cooperation of diverse market players.

Best regards

Valdas SUTKUS

President of Lithuanian Business Confederation

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INNOVATION MAGNITUDE OF MANUFACTURING INDUSTRY IN EGYPT WITH PARTICULAR FOCUS ON SMEs[1]

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Abstract. This paper is based on the main findings of the 2015 Egyptian National Innovation Survey, which covered 2700 SMEs firms with different manufacturing activities. The main objective of paper is to try to evaluate the situation in the private SMEs, regarding to the innovation. Also highlights on the roles of cooperation in innovation on performance of SMEs. Our findings show that 35.5% of Egyptian SMEs have at least one type of innovation (product or process). The innovation activities increase with increasing the size of companies in term of number of employees. The majority of SMEs are in the manufacturing sectors, whereas 2.1 % of innovative SMEs firms depend on universities, government, and public research institutions as main sources of information to developing their product or process innovation.

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Keywords: Keywords: Innovation; Innovation Survey; SME; Manufacturing; Measurement of Innovation

1. Introduction

Economic studies during the past several decades have concluded that innovation (and related capital and human investment) contributes nearly half of the nation's productivity, economic growth and standard of living.

It is thus imperative that government and business leadership pay the utmost attention to the role of innovation in developed countries growth, competitiveness and quality of life (Egils, 2015).
Innovation is important to Egypt; it serves as one of the most important drivers of economic growth. The Asian miracles, countries like Japan, China, India, South Korea, Malaysia, as well as a number of other countries like Brazil, Argentina, Peru, etc. are examples of success stories that directed their efforts to invest in R&D and innovation, therefore resulting in the success of those economies as innovators of new products and services worldwide (Rezk, 2015).

Small and medium enterprises (SMEs) have been considered one of the 'driving forces' of modern economies due to their multifaceted contributions in terms of technological innovations, employment generation, export promotion, etc. Of these, the ability of SMEs to innovate assumes significance because innovation lends competitive edge to firms, industries and ultimately, economies. Therefore, innovation has the potential to spur growth of individual enterprises at the micro level and aggregate industries and economies at the macro level (Subrahmanya, 2010). There is extensive signal to show that a number of SMEs in a wide diversity of sectors do engage in innovations, and that these innovations are likely to be an important determinant of their success (Hoffman et al. 1998). However, the ability and innovative capacity of SMEs varies significantly, depending on their sector, size, focus, resources, and the business environment in which they operate (Burrone and Jaiya 2005).

The majority of structure of industry in Egypt depend on micro and SMEs Firms, the last Egyptian National Economic Census (ENEC) 2013, issued by Central Agency for Public Mobilization and Statistics (CAPMS) showed the number of firms in Egypt are 2.41 million firms. Only 824 enterprises are public sector representing 0.03 % of all firms while the majority of firms 2409541 are private sectors representing 99.97% of all firms. About 56.9% from all Egyptian firms work in wholesale and retail trade then 16% of all firms work in Manufacturing sector and the rest 9.2% of all firms work in other services as transportation, education, health, etc. (CAPMS, 2015). The Total output of goods and services for all Egyptian firms during 2012/2013 was 1688.4 billion L.E. classified into 257.3 billion L.E. from public sector and 1431.1 Billion L.E. from private sectors. By analysis of the contribution of enterprises according to types of economic activities, the highest contribution of sector was manufacturing (Industry) sector recording 39% of all total output, then mining activities 14.9% then wholesale and retail trade 14.8%. (CAPMS, 2015).

Private sector has the majority of employees have 8.3 million employees from total employees 9.3 million and one million employees' works in public sector. Egyptian firms have Varity in size of enterprise based on number of employees from micro firms (less 10 employees), small (10-49 employees), medium (50-250 employees) to large (large than 250 employees). The Egyptian economy largely dependence on micro firms where 96.9 % of all Egyptian firms (2336239) are micro size firms, 2.7 % are small size firms (64399) and only 0.4% of all firms are medium and large firms (9727). (CAPMS, 2015)

The main player of industry in Egypt is Micro and SMEs, therefore the innovation policy should be aims to promote the commercial exploitation of new ideas as products, processes, and organizational techniques. There are many different approaches to measuring innovation at the organizational level and at the political level. Organizational level relates to individuals, team-level assessments, and private companies from the smallest to the largest company. Measure of innovation for organizations conducted by surveys, workshops, consultants, or internal benchmarking (Davila, Tony, 2006). While the measurements of innovation at the political level are more focused on a country or region competitive advantage through innovation.

Understanding of the national innovation system can help identify advantage points for enhancing innovative performance and overall competitiveness. It can assist in pinpointing mismatches within the system, both among institutions and in relation to government policies, which can thwart the technology development and innovation. They are the "Policies which seek to improve networking among the actors and institutions in the system and which aim at enhancing the innovative capacity of firms, particularly their ability to identify and absorb technologies (OECD, 1997)."

Based on to Oslo Manual 2005, an innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. The minimum requirement for an innovation is that the product, process, marketing method or organizational method must be new (or significantly improved) to the firm. (OECD, 2005) Other international organizations such as the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Intellectual Property Organization (WIPO) have favored this definition (UNESCO, 2013).

The requirement of "commercialization" is embedded in the definition. The Oslo Manual uses the word "implementation," but the meaning is clearly stated, "A new or improved product is implemented when it is introduced on the market. New processes, marketing methods or organizational methods are implemented when they are brought into actual use in the firm's operations" (OECD and Eurostat 2005). Therefore, the interconnection between trade and innovation works both ways. Trade rules, regimes, and flows provide some of the necessary inputs to innovative activities. On the other hand, inventions, new processes, goods, services, and intangibles benefit from global markets to increase sales, scalability, efficiency, profitability, productivity, and skills. Innovation activities are all scientific, technological, organizational, financial and commercial steps which actually, or are intended to, lead to the implementation of innovations. Innovation activities also include R&D that is not directly related to the development of a specific innovation. An innovative firm is one that has implemented an innovation during the period under review (OECD, 2005).

Egypt from the first Arab and African countries conducted of innovation surveys. The first National Innovation Survey (NIS) was conducted in 2008 following Community Innovation Survey, then the second NIS survey in 2012 and the third one in 2015 covering the period from 2012 to 2014. Egypt design the survey according to international standards agreed upon in the Oslo Guide 2005 issued by the Organization for Economic Co-operation and Development (OECD). The following paragraphs will show the main results of NIS 2015 conducted by Egyptian science, technology and innovation observatory in Academy of scientific research and technology.

Given the above, this paper attempts to understand issues such as what types of innovation in SMEs, what is the nature of SME innovations, what are the cooperation network of SME innovations?

2. Research methodology

2.1. Definition of SMEs

It is difficult to define SMEs, not only with the fact that the definition changes with time but also the definition varies from countries to countries and in different size ranges (Peres and Stumpo, 2000). SMEs are generally considered to be non-subsidiary, independent firms, which employ fewer than a given number of employees where this number varies across countries (OECD, 2005). The most frequent upper limit designating an SME is 250 employees, as in the European Union. However, some countries set the limit at 200, while the United States considers SMEs of fewer than 500 employees (OECD, 2005). Small firms are mostly considered to be firms with fewer than 50 employees while micro-enterprises have at most ten, or in some cases, five employees (OECD, 2005). The definition of Egyptian SMEs is markedly different from other countries that may make it difficult to compare. Therefore, in our studies, we follow the OECD definition of SME, small firms from 10 to 49 employees; medium-sized firms between 50 and 249 employees.

2.2. Survey design and data

The data were collected via "Egyptian National Innovation Survey (ENIS), 2015" with a coverage of innovation activities of the period 2012 - 2014. Sampling frames were obtained from economic census 2013 that has been made by Central Agency for Public Mobilization and Statistics (CAPMAS), show that the overall enterprise in Egypt totaled of 2.4 million covered 80 different economical activities (Table 1). A stratified random survey sample of 3000 firms are chosen to reflect the area's industry and size mix, it allows circulates it to the level of this category with confidence level 95% and by a margin of error does not exceed 2%. A well-structured questionnaire following OSLO manual (OECD 2005) has been developed with the aim of collecting specific innovation insights in business. Certain minor adjustments were made to the questionnaire after conducting a pilot survey, followed by personal interviews conducted by trained personnel.

The total number of Egyptian manufacturing firms is 385582 distributions according to International Standard Industrial Classification of All Economic Activities (ISIC), revision 4 into 24 sectors (10-33) (United Nation statistics division, 2016). The majority of firm concentrated in furniture 27% of all firm, the second position is manufacture of food product firms 20% of all firms then manufacture of fabricated metal products, except machinery and equipment recorded 13.8% of all firms then manufacture of wearing apparel and manufacture of wood and of products of wood and cork recorded 12.6 % and 10.1 consequentially.

However, if going to distribution according to size of firm for Micro firm (less than 10 employees) the main dominate manufacturing is manufacture of furniture 28.6% then manufacture of food products 18.4% then manufacture of fabricated metal products, except machinery and equipment 14.3% of all micro manufacturing. For Small firms (10- 250 employees) the majority of firms concentrated in manufacture of food products then 46.6% then manufacture of wearing apparel and Manufacture of other non-metallic mineral products 9.6% & 6.5% of all small firms. For large size firms (+250 employees) the majority of firm is manufacture of food products as small size firms representing 17.4% manufacture of wearing apparel and Manufacture of textiles 16 %and 9.5 % of all large size firms.

The survey design includes firms with at least 10 workers following Oslo Manuel and a sample that is representative of Egyptian manufacturing firms that employ between 10 to >250 workers and that is stratified by firm size, sector and geographical area. In this paper, we selected the small- medium enterprises frame to study the innovation performance of SME. The firms were assessed in respect of the process; product and/or other innovations during the previous three years. Size classes have been defined following Oslo Manual (OECD 2005) classification: small firms 10-49 employees; medium-sized firms between 50 and 249 employees; large firm's ≥250 employee. A stratified random sample was selected according to International Standard Industrial Classification (ISIC), Revision 4 (reference). The target sample was 3000 firms representing 35 economic activities and distributed on 20 governorates. In addition, 1000 alternative firms selected for any reason are met, to be a replacement of the same classification of property category including number of employees and economic activity. (see Appendix A for definitions).

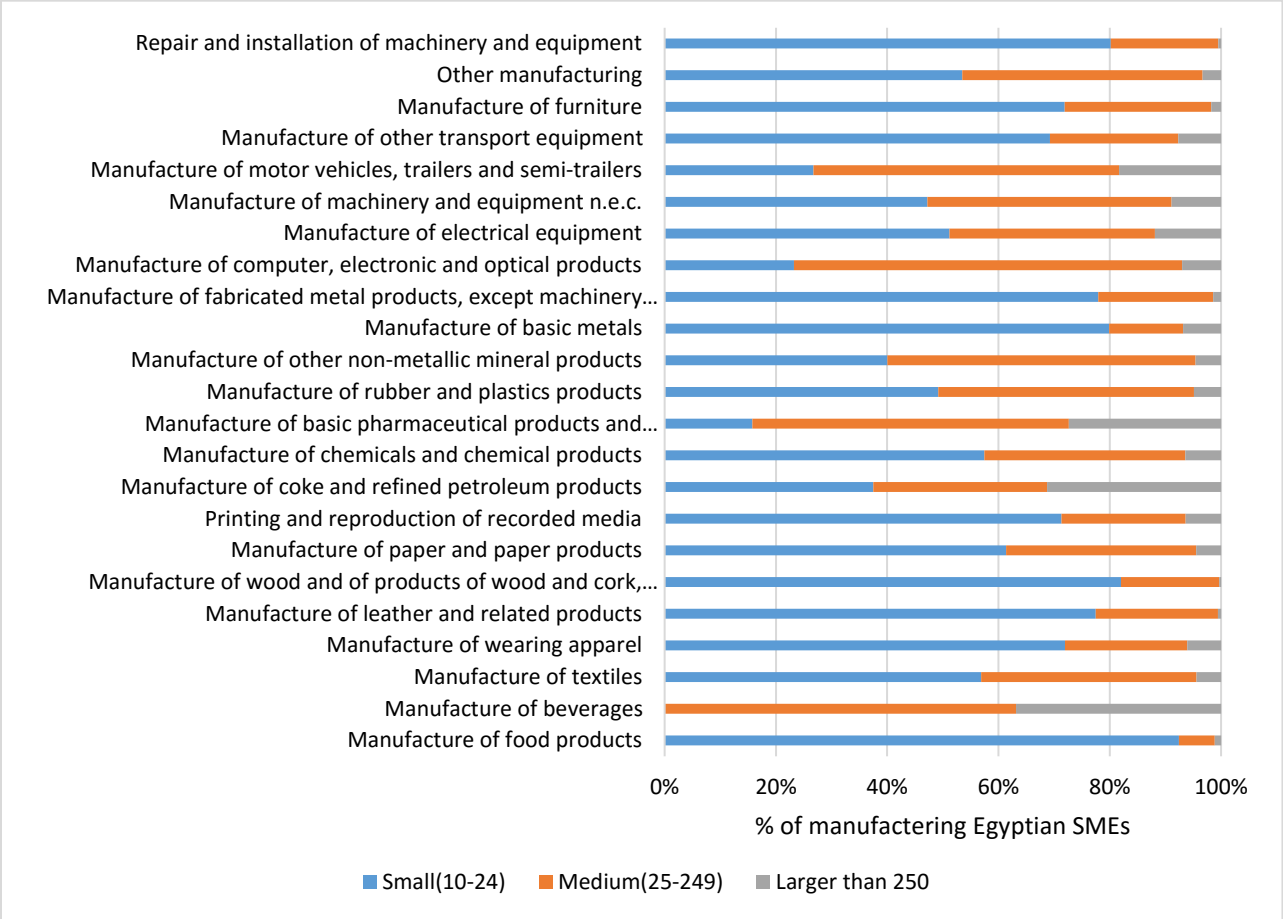

Figure 1. Population of Egyptian SMEs firms classified by International Standard Industrial Classification of All Economic Activities, Rev.4

3. Result and analysis

3.1. Innovative performance of SMEs: introducing technological and non- technological innovation

Technological and non-technological innovative capacity of the SMEs has significant increased in recent years as indicated in table (1). Technology innovation activities include the innovation in the product and the process while non- technological innovation activities include the innovation in the organizational and marketing. The innovation rate of SMEs calculation is based on the firm has product or process innovation activities.

Table 1, Types on innovation activities in SMEs

Firm Size		Technological Innovation		Non-Technological Innovation		Rate of Innovation in SMEs
		Product Innovation	Process Innovation	Organizational Innovation	Marketing Innovation	
Small	10-49	22.70%	29.20%	16.8%	22.6%	32.60%
Medium	50-99	44.70%	61.20%	43.3%	41.9%	65.10%
	100-250	52.30%	64.00%	49.1%	48.2%	66.30%
SMEs		24.80%	32.10%	19.3%	24.4%	35.50%

During the past three years (2012-2014), (35 %) of the total Egyptian SMEs have at least one type of innovation product or process innovation (Technological). Table (1) Shows that the different types of innovation in SMEs, 24.8 % of SMEs have product innovation by introducing improved or new product to the market; 32.1% have process innovation include significant changes in techniques, equipment and/or software, 31.2% have at least one type of organizational or marketing innovation.

By examine the effect of firm size on the rate of innovation, taking into account that firm size to examine the effect of size (small firms (10-49 employees), medium firms 50-99 employees and 100 to 250 employees. The results show that increasing the rate of innovation with increasing the size of firms (Table1). Firms with employee size 10-49, have rate of innovation (32.6 %). This ratio increases to (65.1 %) in firm with 50-99 employees reach to (66.3 %) at 100-250 employees' Firm.

Egyptian SMEs engaged in many economic activities, they distribute on services, manufacturing, and construction sectors, many firm concentrate in specific activities as manufacturing of food, wearing apparel and Textile. The classified economic activities in our study is based on International Standard Industrial Classification (ISIC), Revision 4 (United Nations Statistics Programmes, 2008).

Figure (2) show that the top ten innovative economic activities SMEs, the results indicate that 13.4 % of firms work in manufacture of food products are innovative; 3.8 % of firm in manufacture of wearing apparel have at least one type of innovation in product or process; 2 % of firm have innovation in manufacturing of textiles and manufacture of leather and related products sectors. While the innovation rate in other economic activities are less than 2 %,

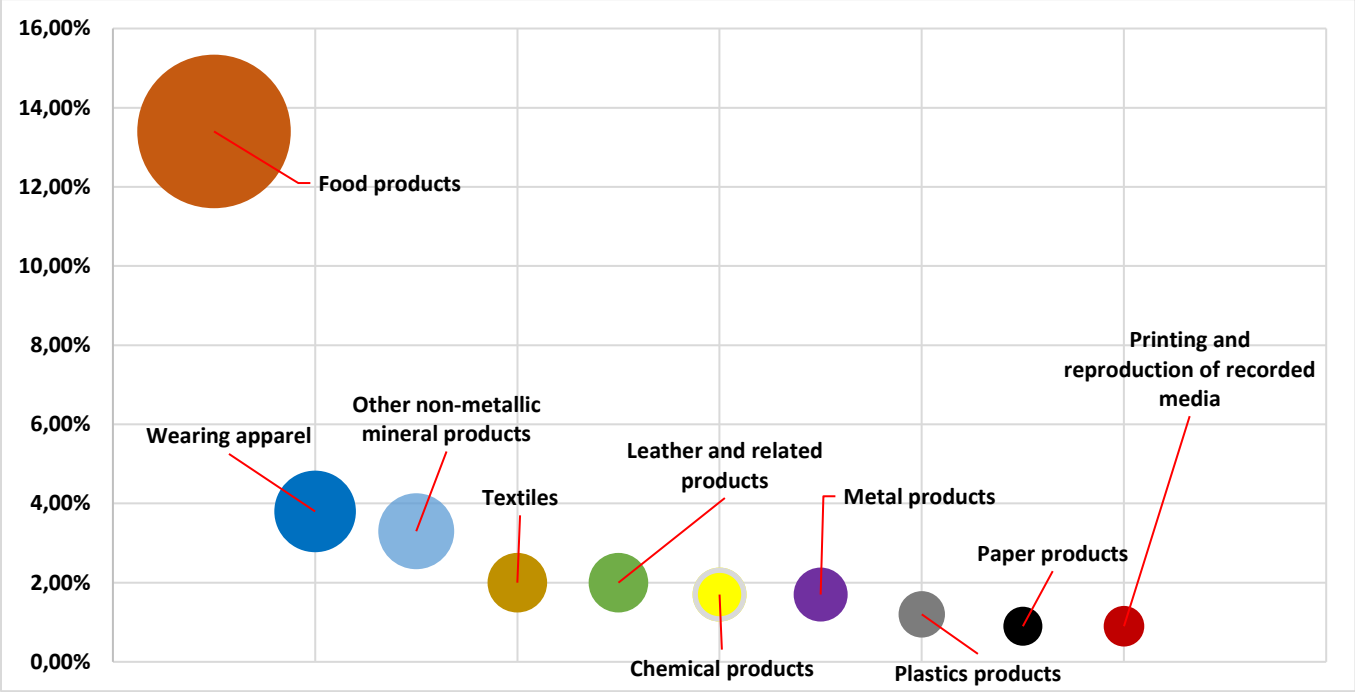

Figure 2. Top 10 Innovative SMEs sectors

The Y-axis refers to innovation rate in SMEs and size of circle refers to number of innovative firms in each sector.

3.2 Relationships between innovation and Sources of information

Innovation activities in SMEs are complex, requiring the co-ordination of multiple inputs. Firms can gain guidance, Ideas or advice, for their future innovation product from a broad range of sources (OECD, 2005). Accordingly, the firms were asked about10 sources, which are split into four groups: (1) internal sources: within enterprise or enterprise group, (2) market sources: customers, Suppliers of equipment, Competitors, (3) institutional sources: Universities, Research institutes, and (4) other sources: conferences, scientific journals, associations. The firms should indicate for each source whether it had a low, middle or high importance for their innovation activities.

Table 2 presents the results for the entire range of sources of information for manufacturing SMEs. Overall, the results indicate that sources within the enterprise or enterprise group are the most important for innovation (63.1%). The second most important source is suppliers of equipment, materials, components or software (37.8 per cent), followed by clients and customers (29.2 %). Only slightly fewer firms retrieve information from competitors or other enterprises (18.4 %) and on conferences, trade fairs and exhibitions (11.5 %). By focusing on institutional sources, only (2.3 and 2 %) of the firms consider universities and research institutions respectively as main sources of information. It seems that the industry-university/research institutions relations are very weak and knowledge of the science sector is usually rather far from actual application and not ready to use in firms' innovation activities.

Table 2. Source of information in SMEs

Source of information		Small	Medium		SMEs
		10-49	50-99	100-250	
Internal Source	Sources within your enterprise or enterprise group	61.7%	66.8%	76.7%	63.10%
Market Sources	Suppliers of equipment, materials, components or software	36.6%	44.3%	44.3%	37.80%
	Clients or customers	28.9%	30.9%	31.1%	29.20%
	Competitors or other enterprises in your sector	17.8%	20.7%	23.2%	18.40%
	Consultants, commercial labs or private R&D institutes	3.6%	7.8%	7.8%	4.20%
Institutional sources	Universities	2.3%	1.9%	4.1%	2.30%
	Research institutes	1.7%	3.2%	1.9%	2%
Other sources	Conferences, trade fairs, exhibitions	9.4%	22.4%	22.3%	11.50%
	Scientific journals and trade/technical publications	7.7%	11.7%	15.2%	8.60%
	Professional and industry associations	2.8%	5.7%	5.4%	3.20%

3.3. Type of Innovation Activity in SMEs

Some of Innovation activities may be innovative in their own right, while others are not novel but are necessary to implementation (OECD, 2005). Innovation comprises a number of activities such as the acquisition of machinery, equipment and software, training, in-house and outsourced R&D expenditure, and the acquisition of other external knowledge. Some of activities that are not included in R&D, such as training and acquisition of other external knowledge.

Table 3 shows that the most of small-medium innovative enterprises (80.2%) acquired new machinery, equipment or software as part of their innovation processes. Training was the second most important innovation activity (73.9%), followed by market introduction of innovations (48.7%). 27.7% of all innovative SMEs spent money on in-house R&D and 6.2% on extramural (outsourced) R&D. The percent of Intramural (in-house) R&D expenditure increased as size of firm increased due to increase ability of firm to spend on R&D. whilst the small firm spent more money on “market entry innovation” as innovation activities than other firms.

Table 3. Types of innovation activities among innovative SMEs

Innovation activities	Small	Medium		Total
	10-49	50-99	10-49	
Intramural (in-house) R&D expenditure	25.4%	37.5%	43.2%	27.7%
Extramural (outsourced) R&D	5.8%	8.0%	9.0%	6.2%
Acquisition of machinery, equipment and software	78.4%	88.8%	89.9%	80.2%
Acquisition of other external knowledge	34.7%	35.4%	39.5%	35.0%
Training	72.1%	83.2%	38.5%	73.9%
Market entry of innovations	77.8%	49.1%	61.8%	48.7%

3.4. Cooperation networks at the innovation of SMEs

For small and medium sized firms (SMEs), business networks are particularly important for enhancing innovative capability. This is because SMEs are typically not endowed with significant internal resources for innovation (or its market exploitation) and so, in such cases, external guidance and assistance is often crucial to aid their competitive edge (De Propris, 2002; Rogers, 2004). Networks are significant conduits for exposing SMEs to novel sources of ideas, improving their access to inputs and enhancing the transfer of knowledge and technological opportunity (Nieto and Santamaria, 2007; Zeng et al.,2010). It is usually held that co-operative enterprise activities can significantly contribute to firm innovation performance (OECD, 1997a,b). Firms co-operate to pool technical resources, achieve economies of scale and gain synergies from complementary human and technical assets. (Ali Uzun, 2000).

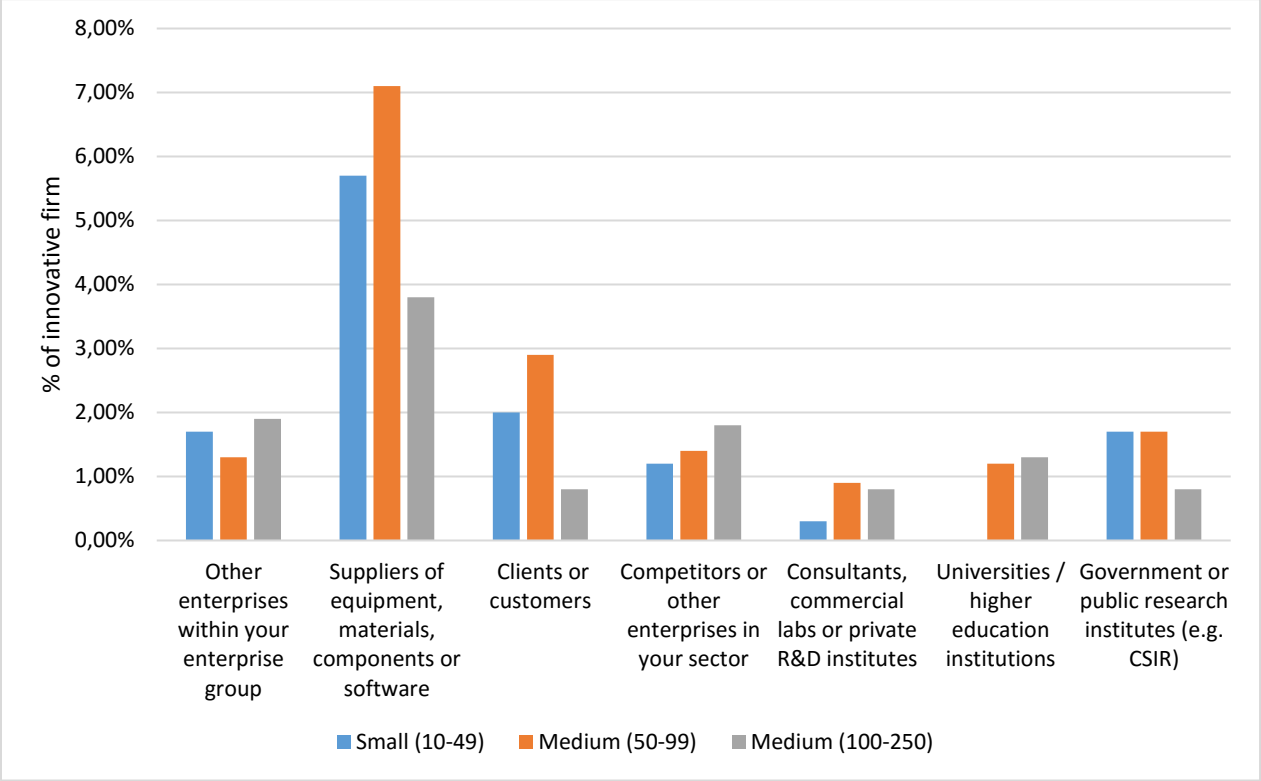

Figure 3. Collaborative partnerships for innovation activities by type of partner

Results of the present study indicate that the Egyptian SMEs have less significant partnerships in development or creation of innovation activities, (4.3 %; Table 3) of the firms engaged in innovation carry out joint Innovation with suppliers of equipment, raw materials and components; (1.7 %) with Competitors or other enterprises in your sector; only (1.2 %) of firms cooperate with universities and other higher education institutes and (1.0 %) with government or public research institutes. According to Hewitt- Dundas (2006), the external resources and capabilities that SMEs could access through external innovation partnerships might provide them with the stimulus and capacity to innovate, while the lack of innovative partnerships had a negative impact on innovation. Egyptian SMEs are required to seek more cooperation with other partners, such as research institutions, universities, and intermediary institutions by establishing cooperation networks.

Conclusions

In spite of these positive outcomes, Egypt needs to make continuous efforts to maintain and strengthen its innovative power of SMEs. As innovation is needed in all manufacturing sectors and at all stages of production, extensive co-operation between universities and research centers and SMEs is required and policy should be working to improve the cooperation between them. Correspondingly, SMEs should be working on powering intramural and extramural R&D activities. There are about 35.5% of innovative SMEs in the industrial sectors,

Appendix A. Basic definitions (OECD, 2005)

Innovation: Implementation of a new or significantly improved product, process, organizational method, or marketing method by an enterprise. An innovation must be new to the enterprise, although it could already have been implemented by other enterprises.

Marketing innovation: Implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.

Organizational innovation: Implementation of a new organizational method in the enterprise's business practices, workplace organization, or external relations.

Process innovation: Implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.

Product innovation: Implementation of a good or service that is new or significantly improved with respect to its characteristics or intended use. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness, or other functional characteristics.

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PROMOTION OF RENEWABLE ENERGY IN MOROCCO[2]

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Abstract. The article analyses the problems of renewable and fossil based energy consumption. Particular emphasis is put on the promotion of renewable energy technologies. Morocco implements the energy efficiency programmes in the parallel with the Wind promotion plan and Morocco Solar Plan, which is one of the largest projects in the world. The authors of the article focus on the obstacles and barriers of implementing renewable energy promotion plan in Morocco. The investigation shows that Morocco faces with a lack of financing sources and risk implementing small projects, social-economic problems, a lack of transparency and lobbyism. Even public apathy or the acceptance of RE in the community might be a challenge.

Keywords: renewable energy, fossil resources, Morocco, promotion systems, sustainability

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1. Introduction

Energy sector represents a fundamental economic sector, as its efficiency strongly affects competitiveness of the entire national economy, particularly as regards industry (Jankauskas et al. 2014). At this moment, fossil fuel based technologies predominate across most countries. However, the perspectives and energy development trends in developed countries suggest that renewable energy technologies are rapidly growing. This tendency is significant as the consumption of fossil resources leads to economic and environmental problems (Klevas et al. 2013). Natural resources run out much faster than it is expected. Even more, burning fossil resources raise the level of CO2, which is recognised as exerting a negative impact on the environment and causes the greenhouse effect (Sarkis, Tamarkin 2008). Thus, this resulted to search for alternative energy sources. Another important determinant, to choose alternative energy sources instead fossil ones, is energetically security, which is extremely significant for countries that do not have natural resources. For that reason, the promotion of renewable energy (RE) has become one of the most important national goals to ensure sustainable development of the energy sector and the country's energy independence. The consumption of RE sources is equally important for reducing environmental pollution or climate change mitigation, and for the country's economic development, which promotes creation of new jobs, encourages innovation, and research development. However, the competitiveness of RE decreased as the prices of oil has dropped off. On the other hand, weighted average costs of electricity from biomass for power, geothermal, hydropower and onshore wind are all now in the range, or even span a lower range, than estimated fossil fuel-fired electricity generation costs (IRENA 2015).
The aim of this article is to analyse promotion system of renewable energy sources in Morocco.

2. Global Consumption of Renewable Energy Sources

As the world embarks on the transition to a truly sustainable energy future, the world's renewable resources and technologies increasingly offer the promise of cleaner, healthier and economically and technically feasible power solutions and sustainable energy access for all (IRENA 2015). Historically, the choice of energy has been based on economics and domestic conditions. The society has been driven to choose inexpensive energy (Marano, Rizzoni 2008). However, nowadays, the technical superiorities of energy systems may fail to describe for instance renewable energy systems or its technology properly. Still, the primary RE system investment decision-making criteria are economic. These criteria are focused on the RE system and its support ancillary infrastructure technical superiorities, such as efficiency and cost, which is reasonable in the context of generous financial support schemes (Azzopardi 2014).

As the global population and global economy are on increase, so is the global energy consumption. In the period of 2004 to 2008, the global population increased by 5%, consequently total energy generation and annual emission of CO2 increased by approximately 10 % per year (International Energy Agency 2006, 2010). Despite the global financial crisis, G20 states reported a decrease in energy consumption of 1.1 % only in 2009, which increased by 5 % in 2010 (Enerdata 2011), while CO2 emission increased by 5.8 % due to energy generation. According to the estimates of the International Energy Agency (2015), in case the current trend continue, in the 2030 the global energy demand might increase by approximately 60 % while the emission of carbon dioxide might increase by 62 %. International Energy Agency (2015) has warned that if urgent measures are not taken for reducing greenhouse gas, earth's temperature might rise by 3.5 Co by the end of the century. In order to decrease the volume of greenhouse gas, some researchers (Boharb et al. 2016; Utlu, Parali 2013; Siitonen et al. 2010) suggest to improving efficiency of energy consumption in industry and buildings. However, it is a quite challenge as the industrial sector accounts for 30–70 % of the total global energy consumption and is certainly responsible for a great part of the global greenhouse emissions.

For example, the industrial sector is responsible for 21 % of energy consumption in Morocco (Boharb et al. 2016). In addition, Morocco is the only North African country without any fossil energy reserves. Thus, it imports almost all of needed primary energy (Hanger et al. 2016).

The global leaders in accord that the above trends conflict with the objectives of sustainable development, therefore as early as in 2002, the global leaders came to an agreement at the World Summit on Sustainable Development to have the share of the renewable energy increased substantially in the global context. The European Union (EU) places particular emphasis on the renewable energy and increase of energy efficiency. In 2008, the renewable energy source was accounted for only as little as 10.3 % in the total EU energy balance. Thus, the European Parliament made a decision that very same year to cut the CO2 pollution until 2020 by 20 % across the EU, to increase the efficiency of energy use by the same rate and to obtain up to 20 % of energy from the renewable energy sources Meanwhile, in 2014 the share of renewables in electricity production in the EU amounted to 30 % (Enerdata 2015). Global investment into the renewable energy has demonstrated a steep growth over the last few years. Europe dedicates most funding to the development of the on combating climate change and development of a competitive and safe energy has become a key funding source for the RE projects. Over the last few years, the date of loans extended by the EIB for the development of the renewable energy sources has increased by several times and totalled €6.2 billion in 2010, while the share of the renewable energy in the total portfolio of energy investment grew up three times in the period of 2006 to 2010, i.e. an increase from 10 % to 30 %.

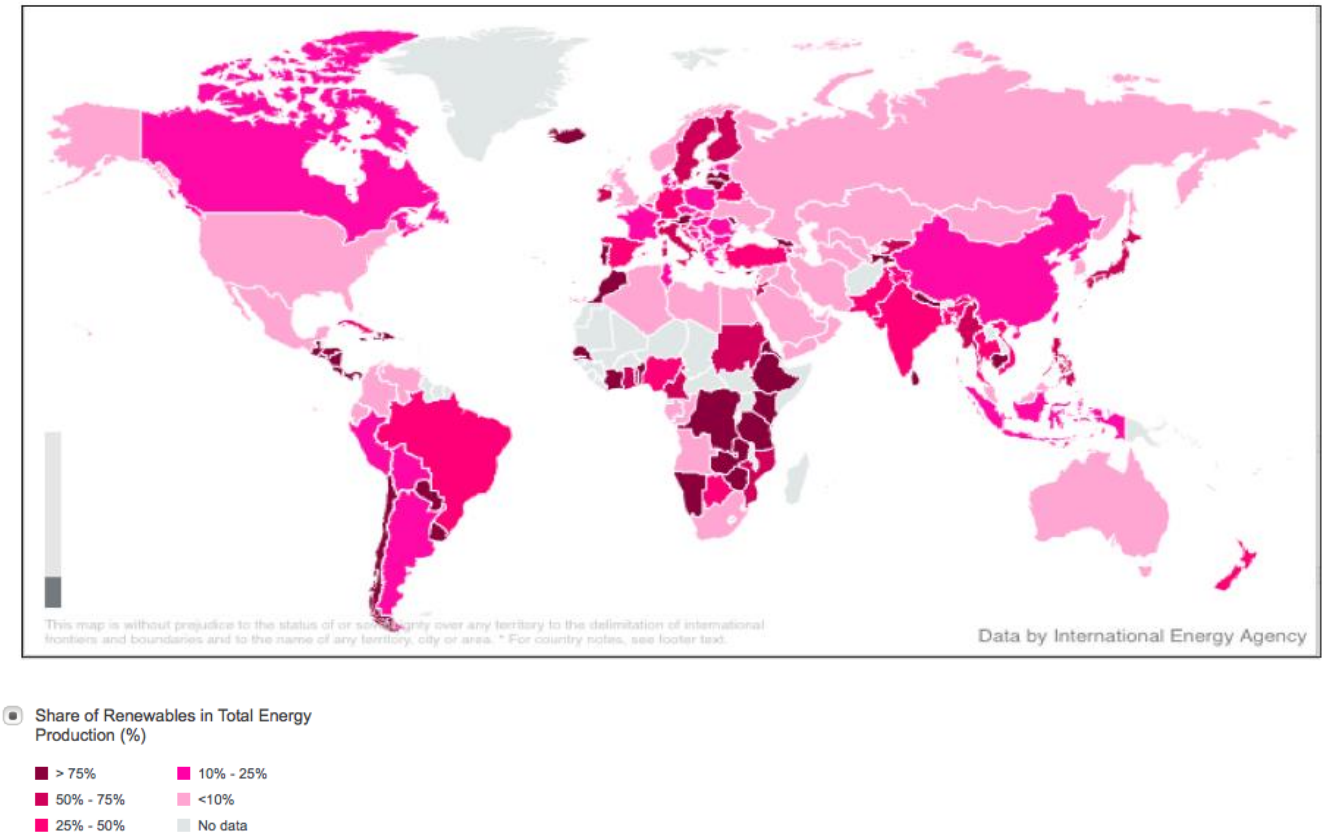

Fig. 1. Share of Renewables in Total Energy Production (%)
Source: IEA Atlas

The loans are largely dedicated to the development of wind and solar energy generation. Given the intention of the EU Member States to accomplish the tasks set, the coming decade would clearly require more funding for the development of the renewable energy sources, while the efficient use of the same funding might bring a tangible impact on the development of the region and the wellbeing of the public. The Member States must first of all estimate the benefit created by the same investment and to channel the same investment to those technologies that generate most benefits. Assessment of the added value in the sector of the renewable energy is not a simple task, as it concerns not the energy generation alone, and instead
covers a much wider field, including protection of the environment, sustainable development, creation of jobs, and impact on the economic development. Direct added value represents a single component of the value, however given that this component is the easiest to measure, it usually predominates over any other values.

Furthermore, the approach taken on the environmental requirements and sustainable development has undergone a material change. Consequently, standard assessment methods of costs and benefits demonstrate limited adjustment to the dynamic factors in the energy sector and possible changes that might come in the future.

3. Moroccan Policy and Regulation on Renewable Energy Promotion

All countries are using different policies for promoting research, development, demonstration, deployment and commercialization of renewable sources of energy. Development of RETs in a country depends on its renewable energy readiness (RE-Readiness) that indicates the gaps and strengths of their development (UNEP 2012) Currently, a wide range of strategies is implemented in different countries to increase the share of electricity (RES-E), from renewable energy sources (Haas *et al.* 2011).

In general, the policies promoting renewable energy might include:

- regulatory policies (feed-in-tariffs, quotas or portfolio standards, priority grid access, building mandates, and biofuel blending requirements)
- fiscal incentives, (tax policies and direct government payments such as rebates and grants)
- public finance mechanisms (includes mechanisms such as loans and guarantees)
- climate-led policies (include carbon pricing mechanisms, cap and trade, emission targets, and others) (Table 1).

Table 1. Fundamental types of regulatory instruments (Haas *et al.* 2011)

		Price-driven	**Quantity-driven**
Regulatory	Investment focused	Investment subsidies Tax credits Loan interests/ Soft loans	Tendering system for investment grant
	Generation based	Fixed (feed) in tariffs Fixed premium system	Tendering system for long-term contracts Tradable green certificate system
Voluntary	Investment focused	Shareholders programmes Contribution programmes	
	Generation based	Green tariffs	

Source: Haas *et al.* 2011

First signs of promoting renewable energy, Moroccan government showed in 2006 by issuing the Decree 1-06-15, which placed under obligation public institutions to employ competitive calls for tender in the award of projects. This Law applied to municipalities that may wish to contract with wind farms or other sources of electricity from renewable energy (Norton Rose Fullbright 2012).

In 2008, the Law 16-08 increased the ceiling for self-generation by industrial sites from 10MW to 50MW. The Law was conceived principally to support wind power, but also applied equally to other technologies. This Law adopted

the 1963 Decree, which created ONE (Office National de l'Electricite et de l'Eau Potable) and attributed to ONE a monopoly of production above 10 MW.

In 2009, renewable energies represented 4% of the Moroccan energy mix (without biomass) and produced 10% of the total electricity demand. The same year Moroccan government introduced law 13-09 on renewable energy with the target to increase these shares from 4% to 10% and from 10% to 20% of electricity production by 2012. The law 13-09 partially opened electricity market to competition for the production and commercialization of electrical energy from renewable energy sources for customers. The law 13-09 did not put a limit on the installed capacity per project or per type of energy, and provides a legal framework for clean energy export. In the same year, National Energy Strategy was adopted and set energy efficiency as a national priority.

Law 16-09, voted in 2009, was introduced for the establishment of ADEREE (Agence Nationale pour le Developpment). The agency is currently finalizing the regulatory framework on energy efficiency in passive building. After working on technical aspects of this type of buildings, the agency is currently working on its regulatory framework together with the Moroccan Energy Ministry.

For implementing Moroccan Solar Plan MASEN (Moroccan Agency for Solar Energy) was established by the Law 57-09. SIE (Société d'Investissements Energétiques), reference investor in the energy strategy of Morocco, was founded in February 2010 in accordance with the guidelines of the national energy strategy aimed at the diversification of resources, promotion of renewable energy and energy efficiency (Moroccan Ministry of Energy, Mines, Water and Environment 2016). The new legislative framework for the renewable energy sector offered the possibility to private operators to develop electricity generation projects from renewable sources and to sell electricity to a consumer of their choice with a guaranteed right of access to the national power grids within the limit of available technical capacity of networks. For ensuring proper functioning of the free market for electricity generated from renewable sources and regulation of the access of self-producers to the national electricity transmission grid, in 2012 new Law 48-15 was introduced.

Although, National Energy Strategy was adopted in 2009, the implementation of energy efficiency programmes has started since 2008 (Arce et al. 2012). Energy efficiency programmes are implemented in the parallel with the development of renewable energy forms a major part of Morocco's energy strategy. Morocco's energy strategy aims to save 12 % in 2020 and 15 % in 2030 of total energy consumption. Moroccan government expects 42 % of its total energy mix to come from solar, wind and hydroelectric sources by 2020. At this moment, Morocco implements six energy efficiency programmes and Solar and Wind energy programmes. Moroccan Solar Plan is one of the world's largest solar energy projects and it is estimated that it will cost €7,8 billion. Moroccan energy efficiency projects, Solar and Wind programmes are supported and funded by the African Development Bank (AfDB), the World Bank (WB), and the European Investment Bank (EIB).

Among the others, the DESERTEC concept is one of the major projects developing in Morocco. The aim of the project is to build concentrating Solar-Thermal Power (CSP) plants and export renewable energy from MENA to European countries. DESERTEC involves the development of a trans-national super grid that integrates all types of renewable energies:

- CSP in desert regions;
- wind power in coastal areas;
- hydro power in mountainous regions;
- photovoltaics in sunny areas;
- biomass and geothermal power where geographic conditions are favourable (Norton Rose Fulbright 2012).

Morocco's energy efficiency plan includes a solar water heater programme (PROMASOL), which aims to increase supply to reduce equipment costs, improve the quality of solar-powered equipment and related services, and ensure the large-scale adoption of solar water heaters. PROMASOL is a United Nations funded initiative.

The energy efficiency programme GMT + 1 started in 2008, which aim is during the summer to improve the power reserve margin during peak hours. The decree No. 21 781-13-2 set the period of this schedule which runs from April to October each year with the exception of the month of Ramadan. National Programme of low consumption lamps reduced 3.3 % of energy consumption. The other programme aims to upgrade energy efficiency in 15000 mosques. The programme has double objectives: awareness of energy efficiency techniques to citizens and reducing the energy consumption of mosques. The first phase of this project has started in 2015. In the field of public lighting energy efficiency, some measures and actions were initiated to install equipment to achieve energy savings (LED lamps, stabilizers, and etc.). As the results of first project in public lightening, the public lightening installations in the cities were renovated, the network and widespread public to the entire urban territory was extended, lower energy costs reduced Communal budget; the preventive and corrective maintenance were established. The first phase of Regionalization program "Jiha-Tinou" was implemented in Agadir, Oujda and Chefchaouen during the period of 2012 – 2014. As a part of Regionalization program "Jiha-Tinou", the project "Green Cities" (2015–2017) aims to strengthen the methodological and technical skills needed for sustainable urban development in the cities of Morocco. Agadir, Beni Mellal, Benslimane, Chefchaouen, Oujda, Ouarzazate, Rabat, Marrakech and Tetouan participate in this programme.

Eco-neighborhood Project in Ouarzazate aims to integrate energy efficiency and renewable energy measures at the time of renovation of the infrastructure. In Ouarzazate, it is a planned to build 500MW solar plant, which will be among the largest CSP plants in the world. The project is financed from the World Bank's Clean Technology fund and the International Bank for Reconstruction and Development, and other funds. Ain Beni Mathar project is a part of DESERTEC, it is planed to build a 470 MW hybrid solar-gas plant. The African Development Bank is financing two-thirds of the cost of the plant, approximately €187.85 million.

Since 2010 Moroccan government implements Integrated Wind Energy Project, with an estimated investment €3.2 billion, aims to increase the share of wind power in the national energy balance to 14 per cent by 2020, to reduce by 1.5 million tonnes of fuel a year, corresponding to €648 million and prevent the emission of 5.6 million tonnes of CO2 per year.

4. Obstacles of Implementing Renewable Energy Promotion Plan

Although, Moroccan government has started to implement policy and regulation on RE promotion; however, still some barriers for developing renewable energy in Morocco exist. Hanger et al. (2016) as a primary barrier identify a lack of financing and risks of the project implementation for both private and public investment. Especially this is a problem for the small-scale projects. Moreover, foreign companies do not tend to invest in this area, as it looks too risky. Both foreign and local private companies prefer investing in high profitability projects and require to return in short time of period rather than in long-term, which is more common for project of renewable energy sources. Thus, most of financial support comes from the international funds and the government. The World Energy Council (2015) sees short termism one of the major economic and financial limiting factors.

Due to the fact that fossil fuels are more subsidized than renewable energy sources, it becomes even more difficult to encourage local and foreign companies to invest in RE. In this way, renewable energy sources lose their competitiveness. Competition in cost-driven markets increases when market penetration is large. However, Moroccan energy market is occupied by large monopolies, which expecting higher profits, use fossil fuel that is much cheaper than to install renewable energy technologies. The World Energy Council (2015) emphasizes that

Morocco faces with a shortage of businesses, entrepreneurs and trained workers and specialized industries, which would be able to promote and expand the market of renewable energy.

Moroccan government introduced various national programmes regarding promoting renewable energy. Particular attention is paid to Agadir, Marrakesh, and Quarzazate. However, World Energy Council (2015) notices that there are some ambiguities in strategy, it is not clear how decisions are made. According to Mahia et al. (2014) research, the social–political instability in the country and/or region is one of top five policy related barriers. Historically, statutory framework and institutional infrastructure were one of the weakest links in developing renewable energy sources and the enhancement of energy efficiency.

Even more, the reduction of lobbyism and corruption are two other challenges Morocco faces with (Global Competitiveness Report 2015-2016). Lobbyism serves in favour of large monopolies, which use fossil fuel. Thus, there is a lack of transparency and clearness over the management of the energy sector. The transparency in implementing policies regarding renewable resources would increase if the society would receive more information about new national programmes, availability of funding for the RE projects. Due to the lack of information, local investors do not recognize benefits and challenges of using renewable energy. Even more, key stakeholders do not how RE technology works. World Energy Council (2015) distinguishes cultural and behavioural barriers. The organization notices the public apathy to support renewable energy. In addition, the Moroccan society is inflexible to accept many changes. This might be explained as the consequence of illiteracy and lack of knowledge and understanding of added value of RE technology. Wolsink (2007) and Wüstenhagen et al. (2007) state that acceptance of RE in society is determined by various factors such as expected costs and benefits, social, economic and environmental risks, trust and perceived fairness, distance to the proposed power plant and the regulatory context. Meanwhile Hanger et al. (2016) find that the community of Ouarzazate, seemed to be overwhelmingly in favour of the project: 91% being completely in favour or in favour.

Thus, in Morocco case information takes one of major parts in introducing renewable energy technologies. Furthermore, technical problems might occur as well. For example, the renewable energy has only been incorporated in the electricity sector while cross-sectorial system between heating/cooling and transport does not exist. There are unsolved issues with integrating renewable power on to the transmission grid system. Such issues may be successfully addressed by investment to reinforce the transmission grid. More problems might arise for large-scale project whereas there is not enough highly qualified staff that could operate RE facilities.

Conclusions

Although the fossil based energy still dominates in most of the countries, renewable energy sources become more and more important for reducing environmental pollution or climate change mitigation, and for the country's economic development. Even prices of RE and fossil based energy are nearly equal.

However, the development of RE technologies in a country depends on its renewable energy readiness that indicates the gaps and strengths of their development. For that reason, nearly every country implements policies promoting renewable energy. Usually, the regulatory policies, fiscal incentives, public finance mechanisms, and climate-led policies are included.

Morocco, in the parallel with Wind and Solar plan, implements Energy efficiency programmes. Additionally, the project “Green Cities” (2015–2017) aims to strengthen the methodological and technical skills needed for sustainable urban development in Agadir, Beni Mellal, Benslimane, Chefchaouen, Oujda, Ouarzazate, Rabat, Marrakech, and Tetouan. Morocco government introduced National Energy Strategy in 2008 and established several agencies, which are responsible for implementing various projects. However, Morocco faces with some barriers and obstacles in implementing National Energy Strategy. One of the most significant barriers is a lack of financing

sources and risk implementing small projects. A lack of transparency and lobbyism more serve for monopolies, which are using fossil based energy, shortage of qualified labour force might delay to implement RE projects. Even, the acceptance of RE in the community might be one of the challenges.

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THE INTERNET ENTREPRENEURSHIP: OPPORTUNITIES AND PROBLEMS

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Abstract. The article analyses the factors, influencing the young specialist training for the Internet business creation, discusses the main Internet business creation fostering techniques and highlights the problems faced by young people. A comparative analysis was carried out to identify the assessment variables of male and female respondents regarding personality traits and skills peculiar to business people, and to determine the assessment variables of the Internet entrepreneurship elements considering the responses of persons planning to create the Internet business and those who are not planning to create it. Considering the assessment indicators of the research participants, it was found out that the Internet entrepreneurship in higher school learners could be fostered by carrying out practices in business enterprises, cooperating with experienced entrepreneurs, participating in seminars and practicals of highly qualified teachers. The research results show that activeness, communicability, diligence, responsibility, initiative, creativity, perseverance and a high level of motivation, as well as the ability to create and develop business and take appropriate solutions are the traits assessed by the highest indicators and considered as key traits of a business person. The research revealed that training courses, seminars, business competitions, financial/monetary support, youth motivation, sharing success stories, experiences of professional entrepreneurs and dissemination of the Internet entrepreneurship information are major techniques fostering young people to create the Internet businesses; whereas the main problems faced by young persons willing to create the Internet business are these: the lack of motivation and self-confidence, the fear of risk, passivity, the lack of courage, ideas and skills, poor state funding, the lack of initial capital and funds and a shortage of counsellors.

Keywords: entrepreneurship, the Internet business, factors influencing the Internet business creation

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1. Introduction

Entrepreneurship is one of key factors influencing economic growth and having a strong impact on the country's development, the creation of new workplaces and social stability. Recently, in Lithuania and some foreign

countries, considerable attention is focused on investigating the entrepreneurship problem. Numerous researchers discuss the abilities and personality traits that are distinctive features of a business-like personality (McCarthy, 2000, Strazdienė, 2009). Lithuanian researchers also analyse distinctive features and abilities of an entrepreneur. Valuckienė, Ruškus and Balčiūnas (2004) defines entrepreneurship as a distinctive feature of personality, Garalis (2007) discusses the impact of entrepreneurship development/self-development on the study process and the acquired learners' skills Strazdienė (2009) and analyses the development/self-development of students' entrepreneurial skills when using a business enterprise simulation model. Numerous scientists when analysing business creation opportunities emphasize the impact of personality traits on a successful business development. (Strazdienė, 2009). However, there is a lack of researches analysing the Internet business creation opportunities and revealing the factors affecting this process.

Considering the significance of personal qualities and personality traits in the business environment it is necessary to carry out researches. Therefore, it is of major importance to carry out an empirical assessment of distinctive features of personality traits, skills and abilities necessary for the Internet business creation and readiness to create the Internet business. This type of research would help search for sophisticated techniques for training young specialists for the business environment. The training process, aimed at developing specialists for the Internet business creation, should focus on selecting appropriate activities and tasks for entrepreneurial skill development/self-development through using various teaching forms and methods and establishing preconditions for training the specialist who is able to incorporate himself into the modern business environment and independently create the Internet business.

After assessing the relevance of the theme analysed, problematic questions emerged: Which factors affect the readiness of young specialists to create the Internet business? What are major techniques for the Internet business creation? What are the problems of the Internet business creation faced by young people?

Research objective - to investigate the factors influencing the Internet business creation considering the responses of the research participants.

Research tasks:

1. To carry out analysis of scientific literature and the researches related to the theme analysed.
2. On the basis of the research findings, to identify the factors impacting the Internet business creation with regard to the following criteria:
    - the assessment of the study process organization aimed at training the specialists who are ready to create the Internet business considering the responses of the research participants.
    - the expression of skills, abilities and personality traits of a business person in the Internet business creation process.
3. to carry out a comparative analysis of personality traits, skills and abilities of business persons considering the responses of male and female respondents.
4. To identify the assessment variables of the Internet entrepreneurship elements in persons planning to create the Internet business and those who are not planning to create it.
5. To find out the attitude of the research participants towards the Internet business creation fostering techniques and identify key problems faced by young persons willing to create the Internet business.

Research participants The number of research participants is 76, 32 of whom (42.1 percent) were males and 44 (57.9 percent) - females. The research participants were between ages 18-20 (N=37 (48.7 percent)) and 21-25 (N=34 (44.7 percent)). Only 3 (3,9 percent) participants were between ages 26-30, one participant – between 31 - 35 and one participant - between 36 - 40. Analysis of the research results was aimed at identifying, which part of participants was going to create the Internet business. The research findings revealed that the major part of participants (N=59 (80.8 percent)) was planning to create the Internet business, while less than one third of participants (N=14 (19.2 percent)) were not planning to create the Internet business.

The research methods:

Analysis of scientific literature

Quantitative method The questionnaire was used to identify the attitude of the research participants towards entrepreneurial skills, abilities and personality traits, as well as their manifestation in the preparatory stage of the

Internet business creation, and to assess the factors affecting the Internet business creation considering the responses of the research participants.
Statistical method Statistical analysis methods were used to process the obtained research data: descriptive statistics (statistical averages, standard deviations); the Student's *t* criterion (to compare two independent variables). The percentage distribution (frequency) was estimated as well. Statistical data analysis was carried out using SPSS version 14.

2. Results and discussion

This research expands the findings of other researches, since there is a lack of researches analysing the Internet business creation opportunities and problems and revealing the factors affecting the Internet business creation. As noted by Hoag (2005) and McKelvey (2001), the Internet entrepreneurship is perceived as a concept using a global network in order to record innovation processes. The Internet business is created in a small-scale enterprise, the activity of which contributes to the Internet marketplace innovation. On the basis of McCarthy (2000), Raffo and others, (2000), Strazdienė (2009), Gibb, Nelson (1996), Rea and others (1997), Galloway and others, (2005), Drucker, (1985) and Henry (2003) Timmons (2003), various personality traits peculiar to business persons were analysed. Business people could be defined as people who have the following personality traits: a high level of intrinsic motivation, the need to pursue goals and the tendency to control the situation. Furthermore, psychological factors are of key importance to business people as well. Initiative should be one of key personality traits, which could help them motivate subordinates and "label" them as energetic persons. Other traits are critical thinking and assessment, since when organizing one's own business or teamwork it is necessary to regularly gather information, analyse it objectively, observe/discern opportunities, assess alternative solutions, make decisions and implement innovations. The research results revealed that the major part of the research participants defined entrepreneurship as a personal ability to convert ideas into activities and related entrepreneurship to creativity, seeking innovation, readiness to risk and the ability to plan and manage projects in order to pursue fixed goals.

3. Theoretical aspect of entrepreneurship

Entrepreneurship and the Internet. The concept of entrepreneurship was first used in the 17th century. Some scientists consider it as your own business. In the 20th century Joseph Schumpeter, an economist, admitted that entrepreneurship was related to innovation and changes. He considered entrepreneurship as "the creative destruction force". Peter Drucker (1909-2005), a business expert, described an entrepreneur as a person searching for changes, reacting to them and looking for new opportunities. Those changes started with the invention of a typewriter and moved towards the computer and internet. Recently, numerous economists support the opinion that entrepreneurship is an integral part fostering economic growth and employment opportunities. In the developing world a successful small-scale business is kind of a primary engine in the spheres of workplace creation, revenue growth and poverty reduction. Therefore, the government support towards entrepreneurship is the key strategy of economic development.

Entrepreneurship is related to the ability to discover new opportunities, the ability to self-realization and the economic or social value creation. Entrepreneurship is a qualitative social feature, which determines the ability of a person or society to create and develop business and innovation. Entrepreneurship is related to a personal motivation focused on discovering and exploiting opportunities, creating a new added value and developing a successful business. Recently, a major factor determining economic development is the application of technologies and innovative ideas in business processes. Knowledge, creativity and competence in a global economy are not less important than the amount of capital. In less than 10 years Google and Microsoft became the most powerful companies. As market is becoming more global, a local

market is losing its significance for the implementation of business ideas. Therefore, new information technologies may emerge in distant regions that are open to innovation. For example, Skype - a free internet call service, which is popular all over the world, emerged in Estonia.

Table 1. Definition of Entrepreneurship Concepts

Author	Entrepreneurship definition
Krueger et al. (2000)	Entrepreneurial activity can be predicted more accurately by studying 'intention' rather than 'personality traits', 'demographic characteristics' or 'situational factors'. The theory of planned behaviour contends that intentions are a function of three sets of factors: attitudes, subjective norms, and perceived behavioural control.
Porter (1990)	Entrepreneurship is "at the heart of national advantage"
Wennekers, Thurik (1999)	Entrepreneurship is the manifest ability and willingness of individuals, on their own, in teams, within and outside existing organizations to perceive and create new economic opportunities (new products, new production methods, new organizational schemes, and new product–market combinations), and to introduce their ideas to the market in 20 The Impact of Entrepreneurship on Economic Growth 565 the face of uncertainty and other obstacles by making decisions on location, form and the use of resources and institutions
Lumpkin, Shrader, Hills (1998)	Entrepreneurship describes the process of value creation through the identification and exploitation of opportunities, e.g. through developing new products, seeking new markets, or both.
Reynolds (2005).	Entrepreneurship –the entrepreneurial function- can be conceptualized as the discovery of opportunities and the subsequent creation of new economic activity, often via the creation of a new organization.
Schumpeterian (1947)	Entrepreneurship is the creation of technologically dynamic, high-value added, high growth firms, with which this volume as a whole is mainly concerned -- is intimately linked to creativity and defined in this broad fashion.
Miller (1983)	Entrepreneurial behaviour is seen as behaviour that manages to combine innovation, risk-taking and pro activeness.
Shah, Tripsas (2007)	User entrepreneurship is the commercialization of a new product or service by an individual or group of individuals who are also users of that product or service.'
Kuratko, Hodgetts (2004)	Entrepreneurship is a dynamic process of vision, change, and creation. It requires an application of energy and passion towards the creation and implementation of new ideas and creative solutions. Essential ingredients include the willingness to take calculated risks ¾ in terms of time, equity, or career; the ability to formulate an effective venture team; the creative skill to marshall needed resources; and the fundamental skill of building a solid business plan; and finally, the vision to recognize the opportunity where others see chaos, contradiction, and confusion.

Santhi, Kumar (2011)	Entrepreneurship is the act of being an entrepreneur, which can be defined as "one who undertakes innovations, finance and business acumen in an effort to transform innovations into economic goods"
Schoonhoven, Romanelli, (2001)	Entrepreneurial activity arises, rather, from the collective activity of entrepreneurs and others, such as venture capitalists, lawyers, and industry professionals, who together actively create and sustain legitimate market space for new products, services, and technologies."
Hoag (2005)."	Media entrepreneurship is "the creation and ownership of a small enterprise or organization whose activity adds at least one voice or innovation to the media marketplace.
Shane (2000)	Entrepreneurship is "the interaction between individuals and those opportunities."
McKelvey (2001)	Internet entrepreneurship as a concept that uses a global network in order to capture the potentially worldwide distributed nature of innovation processes involving knowledge-intensive products in the modern economy.
Rivetti, Migliacci (2015)	Entrepreneurial motives are certainly not of a financial nature. The realization of a high quality product, in the theatre, usually do not ensure significant economic returns; this happens instead for more Commercial products, designed in order to capture the broadest public as possible.
Pather (2015)	Entrepreneurship is one of the most important driving forces of regional development. Factors enhancing sustainability of entrepreneurial activities are being elaborated by scientists, policy makers, market participants and other stakeholders.

Encouraging entrepreneurship is particularly important to face challenges related to alarmingly high youth unemployment rates in most of the EU Member States. Entrepreneurship and self-employment offer pathways for young people to emerge from unemployment. In this context, special attention is paid to the social entrepreneurship model, which is embedded in the real economy, close to people and to local communities, and primarily aimed at contributing to the general good of society. For an entrepreneur it is important to understand the entrepreneurial process dynamics through an understanding of the values, characteristics and actions of the entrepreneur over time. Nassif, Ghobril, da Silva (2010) stated that Bygrave (2004) propose a model that highlights the personal attributes and environmental factors that influence the venture at each stage. Bygrave (2004) shows that the entrepreneurial process as a set of stages and events that follow one another. These stages are: the idea or conception of the business, the event that triggers the operations, implementation and growth. According to Bygrave (2004, p. 5), "as with most human behaviour, entrepreneurial traits are shaped by personal attributes and environment".

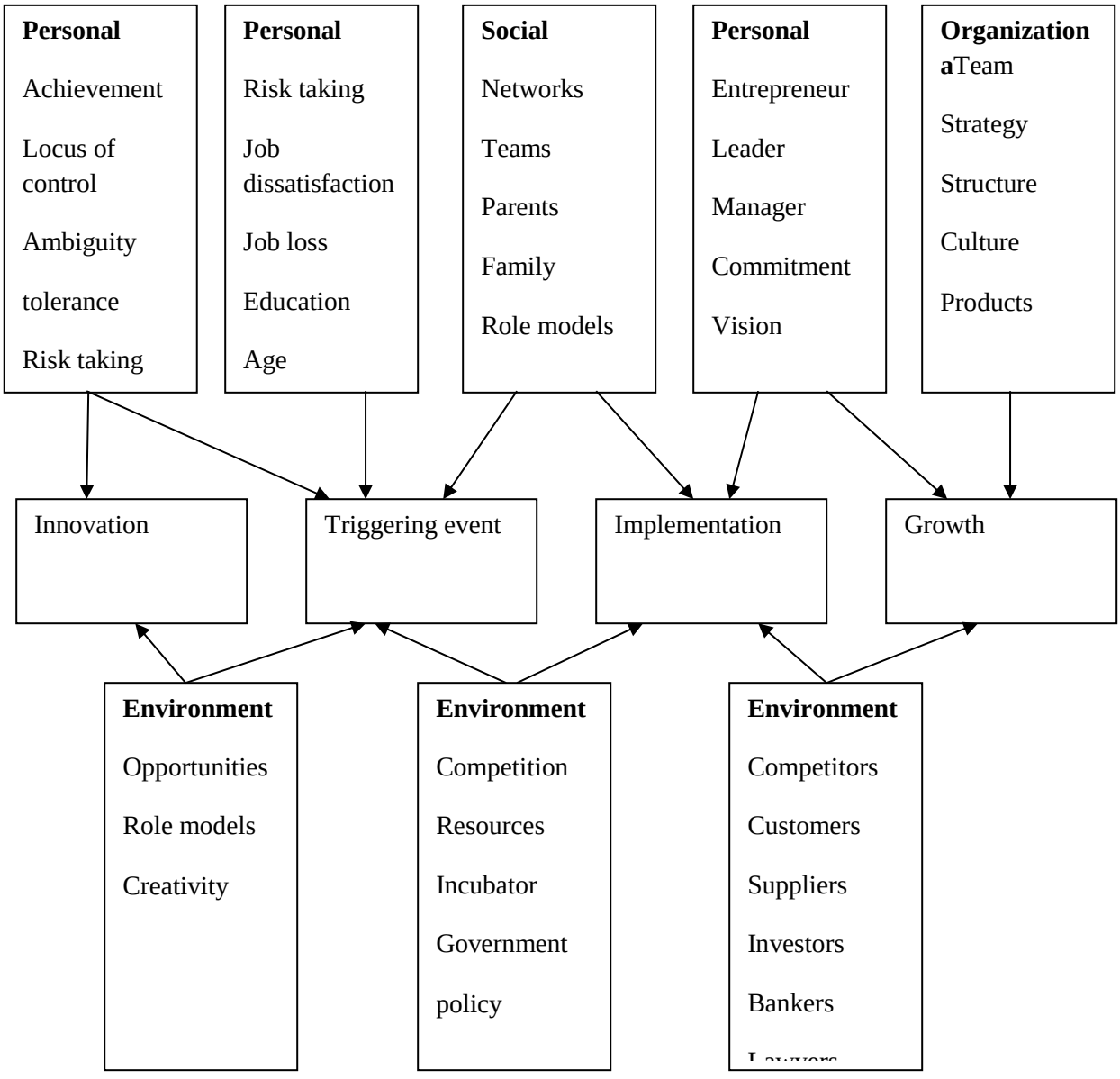

Fig.1. Model of the Entrepreneurial Process
Source: Bygrave (2004). The entrepreneurial process. In Bygrave & Zacharakis (Eds.). The portable MBA in entrepreneurship (p. 3). Hoboken: John Wiley & Sons.

Business expert Drucker (1909-2005) describing the entrepreneur as someone who actually searches for change, responds to it, and exploits change as an opportunity. A quick look at changes in communications—from typewriters to personal computers to the Internet—illustrates these ideas. Internet is a burgeoning phenomenon that characterizes many professional and non-professional environments in the world today and brings new opportunities of interaction to entrepreneurship. People have used many different means to communicate with each other. Everyday internet is giving new interpretations to the significance of computer information technology to teaching and learning in the 21st century. When thinking about entrepreneurship in internet asking some questions: Who can become an entrepreneur? There is no one definitive profile. Successful entrepreneurs come in various ages, income levels, gender, and race. They differ in education and experience. But the research indicates that most successful entrepreneurs share certain personal attributes, including: creativity, dedication, determination, flexibility, leadership, passion, self-confidence, and smarts. Entrepreneurs of different ages can create complementary teams as well. Optimism and a "can-do" spirit characterize youth, while age brings experience and realism. In 1994, for example, Andreessen, a young computer scientist with an innovative idea and Clark, the founder and chairman of Silicon Graphics created Netscape Navigator, the Internet-browsing computer software that transformed personal computing.

Why is entrepreneurship in internet beneficial to an economy? How can governments encourage entrepreneurship, and, with it, economic growth? Entrepreneurs create new businesses, generating jobs for themselves and those they employ. In many cases, entrepreneurial activity increases competition and, with technological or operational changes, it can increase productivity as well. Entrepreneurs have ideas to test, and some knowledge and competence to run the business, but they also need complementary resources to produce and deliver their goods or services (Teece, 1987). They get knowledge, and access to distribution channels through their social networks. Entrepreneurs are also linked to people and organizations that interact among themselves, and these contacts can widen the availability of resources that sustain a new firm (Hansen, 1995). Networks have several useful properties for entrepreneurs. The first property is size. Entrepreneurs can increase networks to get crucial information and other resources from knowledgeable others. The second is positioning. Entrepreneurs position themselves within a social network to shorten the path to knowledgeable others to get what they need (Burt, 1992). The third is a relationship structure. Social contacts may be related to the entrepreneur or to each other through several types of relations or interactions.

As stated Morgan-Thomas & Reuber (2013) Amazon, Google, eBay and Facebook are well-known examples of the accelerated internationalisation that can accompany a dominant online firm. Their spectacular rise from obscurity to the top of global rankings with market valuations in billions (Financial Times 2009) rescales what is normally meant by "international entrepreneurship" or "born global". Collectivley, they highlight both the entrepreneurial opportunities afforded by ICTs and the continuing importance of internationalisation in facilitating business growth. Reuber, Fischer (2010) stated that despite the increasing numbers of businesses that are currently using the internet to pursue international opportunities, and the latent potential for such activity from rising internet adoption levels, the IE literature has paid limited attention to the phenomenon. Kende (2015) agrees that the most important impact of the Internet for entrepreneurs is the creation of a whole new segment of internet startups, which are able to target a global market of nearly 3 billion Internet users while incurring low distribution costs. The largest of these startups, including Google and Facebook, are now taking their place among the most powerful companies in the world. Google provides a classic example of the benefits of Silicon Valley as an innovation-fostering cluster. Founders Page and Brin met as students at Stanford University in 1995, where they started Google two years later. They developed a new type of search engine during their academic research and ran it on the Stanford servers until it overwhelmed the campus network. As stated Lai (2010), the story of Alibaba demonstrates a credible example of how a mall start-up company can eventually make it big in the global economy through the Internet. Alibaba has successfully transformed itself over the years adapting to the changes in and demands of online businessto-business (B2B) commerce.

Abilities, skills and personality traits of a business person Labour productivity of a business person most frequently depends on his personality traits. According to the personality trait theories, personal characteristics are comparatively stable and recurring in various situations. Scientists when investigating entrepreneurial skills and traits usually consider why some individuals are more entrepreneurial than others. Scientific literature highlights the following entrepreneurial skills: initiative, self-confidence, critical thinking, striving for perfection, creativity, independence and steadfastness in seeking goals. Numerous scientists discuss the abilities and personality traits peculiar to the entrepreneurial personality (McCarthy, 2000, Strazdienė, 2009), as well as discern the abilities necessary for establishing a business enterprise or working in an organization (Gibb, Nelson, 1996; Galloway, Anderson, Wilson, 2005, Strazdienė, 2009). According to the majority of scientists, people of the business world show initiative, search for opportunities and impact the environment rather than respond to changes (Drucker, 1985). As noted by Henry, Hill, Leitch (2003), those individuals are constantly seeking for short-term gains and tend to compete with each other. Timmons, Spinelli (2003) when generalizing personality traits highlighted in psychological literature, discerned key acquired characteristics that are of utmost importance to an entrepreneur: the ultimate liability, perseverance, seeking for perfection, goal orientation and opportunities, initiative, responsibility, correct belief, a sense of humour, searching for feedback, controlling the situation, tolerance for uncertainty, stress and vagueness, risk-taking and risk-sharing, a higher position and rank are not relevant, respectability and reliability, non-procrastination and patience, learning form mistakes, the ability to build a team and inspire personalities.

Over many years, various personality traits peculiar to businessmen were investigated. Some researchers highlighted orientations character-based personality traits, including a high level of intrinsic motivation, pursuing fixed goals and the ability to control situations. However, most frequently scientific literature emphasized the impact of psychological characteristics on the people of the business world. According to scientists, *initiative* should be one of major characteristics of people in business, which could help them motivate subordinates and "label" businessmen as energetic persons. Other traits - *critical thinking and assessment*; when organizing one's own business or collective work it is necessary to regularly collect information, analyse it objectively, observe/discern opportunities, assess alternative solutions, make decisions and implement innovations. Risk - taking behaviour is defined as responding to challenges in uncertain situations that require solutions. As stated by Henry, Hill, Leitch (2003), risk - taking is the key trait that distinguishes people of the business world from other individuals. It should be admitted that business persons tend to take moderate (reasonable) risks in the situations, which involve a certain degree of risk or might be profitable. Numerous scientists (Drucker, 1985, Timmons, Spinelli, 2003, Koh, 1996, Strazdienė, 2009) investigated *creativity and innovation*, key traits of an entrepreneur. According to the scientists, people in business have unconventional thinking, they are not afraid to face challenges and are flexible in solving complex problems. Therefore, business persons should have unconventional thinking in taking solutions of different types. However, some scientists admit that the entrepreneurial personality should be *optimistic and self-confident*, since this helps solve complex situations. He should also have *leadership* skills, provide new ideas, respond quickly to complex situations and take appropriate solutions. People of the business world should remain *steadfast* in most unexpected situations, which helps them achieve fixed goals. As stated by Cromie (2000), people of the business world appreciate individualism and freedom other than individuals of different spheres of activity, they do not like to observe rules and fixed social standards. According to other scientists (Kirby, 2004), people in business have a strongly expressed intuition and rational thinking. Considering the above mentioned theories, it should be noted that these individuals give priority to intuition, which is based on general understanding and constructive problem solving rather than analytical approach based on the attention to detail and rules observance.

After generalizing the research data it should be admitted that major factors determining success in the business world are these: initiative, self-confidence, critical thinking, searching for perfection, risk taking, creativity, controlling the situation, innovation, independence, perseverance, goal seeking and leadership. People of the business world should be creative, take new solutions, estimate the existing situation, foresee possible changes, allocate the sources of their own and of individuals working in their team; on the other hand, entrepreneurship is

considered as an emerging opportunity to create something from nothing. This requires quick thinking, initiative, creativity, quick response to changes, searching for changes and converting them to benefits.

4. Analysis of the research results

Entrepreneurship concepts: research participants' attitudes. Entrepreneurship concept is inseparable from business and the concept of entrepreneur. Therefore, entrepreneurship is usually defined as the abilities necessary to establish and develop business considering not only certain personality traits but also skills and competences necessary for carrying out business activities. According to most scientists (McCarthy, 2000, Strazdienė, 2009), starting and managing a business requires certain personality traits and subject-specific skills, such as creative thinking, risk taking, initiative, independence, management skills and other exceptional and unique qualities and personality traits necessary for people of the business world. Strazdienė (2009), after generalizing the attitudes of foreign scientists, admits that entrepreneurship is an individual's own way of thinking, a set of technical, social, professional and personal competences covering personality traits, abilities and knowledge that are necessary for creating and self-improvement.
The research results revealed that the major part of the research participants (N= 56 (74.7 percent) defined entrepreneurship as *a personal ability to convert ideas into activities* and they related entrepreneurship to *personal creativity, seeking innovation, readiness to risk and the ability to plan and manage projects in order to pursue fixed goals.* The research found out that a small proportion of the research participants (N=10 (13.3 percent) defined entrepreneurship as *profit seeking through carrying out economic activities and creating capital for business owners.* It was identified that the smallest proportion of the research participants defined entrepreneurship as *the attitude of a young person, his skills and knowledge that allow him to discern the opportunity to create added value (social and economic value) and all the factors oriented towards this opportunity* (N=8 (10.7 percent), as well as *personal and subject-specific potential of an individual guaranteeing* innovative *and active activities in a rapidly changing environment* (N=1 (1.3 percent).

The assessment of the study process organization aimed at training specialists ready to create the Internet business: the research participants' attitude. In this rapidly changing society the existing situation fosters educational institutions to more flexibly respond to the environmental and society's needs and develop entrepreneurial skills considering economic, technological and social changes. In the world of rapid changes professional knowledge and skills are as important as general competences. Professional development should be in line with the development/self-development of certain skills and abilities. In order to identify the research participants' attitudes on which study methods could foster entrepreneurship, they were provided with the 4 point agree-disagree scale, where 1 = disagree and 4 = completely agree. The generalized research results are provided in Figure 2 Table 2 (see below).

According to the respondents, entrepreneurial skills could be fostered by *group discussions* (M=3.22) and using *group work activities* (M=3.12). Respondents admitted that the Internet entrepreneurship could be fostered in *seminars* (M=3.2) (see Figure 2).

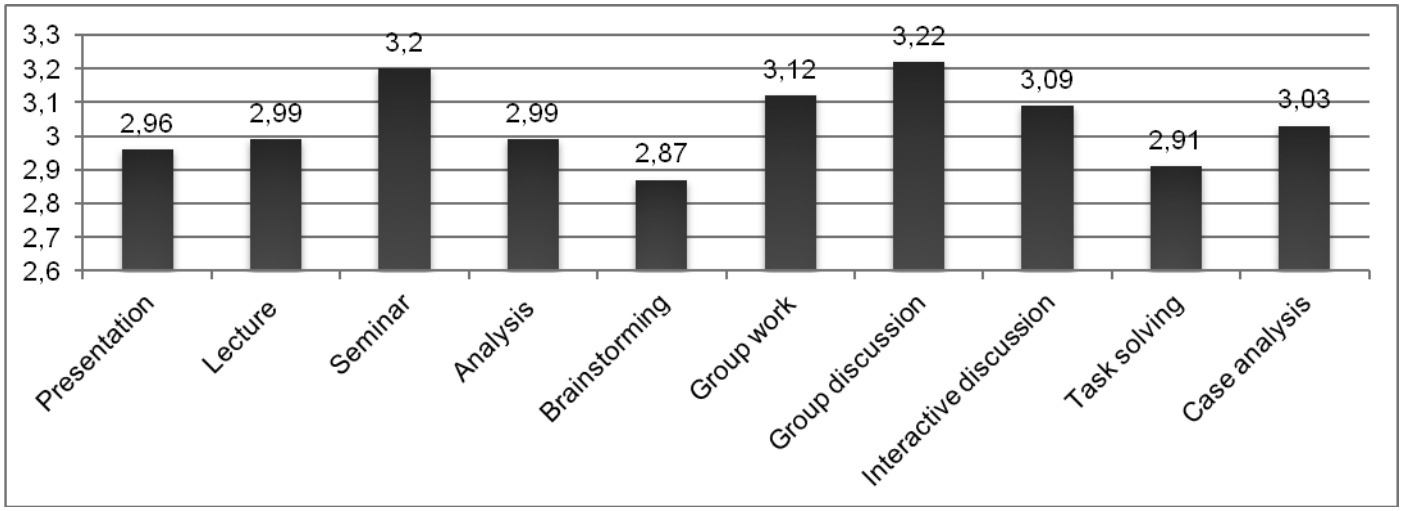

Fig.2. The Assessment of Teaching/learning Methods Fostering the Internet Entrepreneurship (average values)

The performed detailed analysis, regarding the application of teaching methods fostering the Internet business, shows that the majority of the research participants agree or completely agree that such teaching/learning methods as *group work* (agree (38 (50.0 percent, respectively)) and completely agree (26 (34.2 percent)), *group discussion* (agree (40 (52.6 percent)) and completely agree (28 (36.8 percent)), while *seminar* (agree (36 (48 percent)) and completely agree (28 (37.3 percent)) foster the Internet entrepreneurship to a great extent. Lower indicators were obtained when assessing the following methods: *work presentation* (agree (41 (53.9 percent)) and completely agree (17 (22.4 percent)), *lecture* (agree (40 (53.3 percent)) and completely agree (18 (24 percent)), while *interactive discussion* (agree (33 (43.4 percent)) and completely agree (26 (34.2 percent)), which should foster the Internet entrepreneurship. The research results show that such methods as *brainstorming and task solving* less foster the Internet entrepreneurship in the study process. A similar situation emerged when assessing the methods of *case analysis* and *analysis*, the application of which in the study process fosters the Internet entrepreneurship to a lesser degree (see Table 2).

Table 2. The Assessment of Teaching/Learning Methods Fostering the Internet Entrepreneurship, Number of People (percentage)

Teaching/learning methods	Completely agree	Agree	Neither agree nor disagree	Disagree
Presentation	17 (22.4)	41 (53.9)	16 (21.1)	2 (2.6)
Lecture	18 (24)	40 (53.3)	15 (20)	2 (2.7)
Seminar	28 (37.3)	36 (48)	9 (12)	2 (2.7)
Analysis	21 (27.6)	37 (48.7)	14 (18.4)	4 (5.3)
Brainstorming	22 (29.3)	26 (34.7)	22 (29.3)	5 (6.7)
Group work	26 (34.2)	38 (50)	7 (9.2)	5 (6.6)
Group discussion	28 (36.8)	40 (52.6)	5 (6.6)	3 (3.9)
Interactive discussion	26 (34.2)	33 (43.4)	15 (19.7)	2 (2.6)
Task solving	18 (23.7)	37 (48.7)	17 (22.4)	4 (5.3)
Case analysis	24 (31.6)	32 (42.1)	18 (23.7)	2 (2.6)

After carrying out the statistical data analysis of the teaching/learning methods that foster the Internet entrepreneurship, the assessment variables were identified in the group of individuals planning to establish the Internet business and those who were not planning to establish it. After estimating the Student's t – test, it was found out that significantly higher average indicators (see Table 3) in terms of statistics were of those individuals who were planning to establish the Internet business in the scales of *brainstorming* (M=2.98, SD=0.91), *group discussion*

(M=3.34, SD=0.71), *interactive discussion* (M=3.29, SD=0.67) and *task solving* (M=3,02, SD=0,81), since these methods were assessed by those respondents who were not planning to establish the Internet business (respectively: *brainstorming* (M=2.43, SD=0.94), *group discussion* (M=2.86, SD=0.77), *interactive discussion* (M=2.5, SD=0.94) and *task solving* (M=2.43, SD=0.85)). When assessing other teaching/learning methods, fostering the Internet entrepreneurship, significant differences in the groups of respondents planning to establish the Internet business and those who were not planning to establish it were not identified (see Table 3).

Table 3. The Assessment of Teaching/Learning Methods Fostering the Internet Entrepreneurship in the Group of Respondents Planning to Establish the Internet Business and Those Who Were Not Planning to Establish It (M, SD)

Teaching/learning methods	Planning to establish the Internet business		Not planning to establish the Internet business		t	p
	M	SD	M	SD		
Presentation	3.03	0.72	2.79	0.8	1.137	0.259
Lecture	3.05	0.78	2.79	0.58	1.194	0.237
Seminar	3.24	0.78	3.0	0.68	1.064	0.291
Analysis	3.07	0.83	2.71	0.83	1.437	0.155
Brainstorming	2.98	0.91	2.43	0.94	2.037	**0.045**
Group work	3.22	0.79	2.79	0.97	1.769	0.081
Group discussion	3.34	0.71	2.86	0.77	2.247	**0.028**
Interactive discussion	3.29	0.67	2.5	0.94	3.643	**0.001**
Task solving	3.02	0.8	2.43	0.85	2.448	**0.017**
Case analysis	3.05	0.82	3.0	0.88	0.206	0.837

Seeking to find out the opinion of respondents on what measures could help develop entrepreneurial skills in higher school learners, the 5 point agree-disagree scale was provided, where 1 = completely disagree; 5 = completely agree. The generalized research results are provided in Figure 3 Table 4.

As evident from the research results (see Figure 3), entrepreneurial skills in higher school learners can be encouraged by practices carried out in business enterprises (M=4.4) and the ability to cooperate with experienced entrepreneurs (M=4.35). As stated by the research participants, seminars with practical task performance (M=4.07) and the experience of teachers (M=4.04) could contribute to the entrepreneurial skills development.

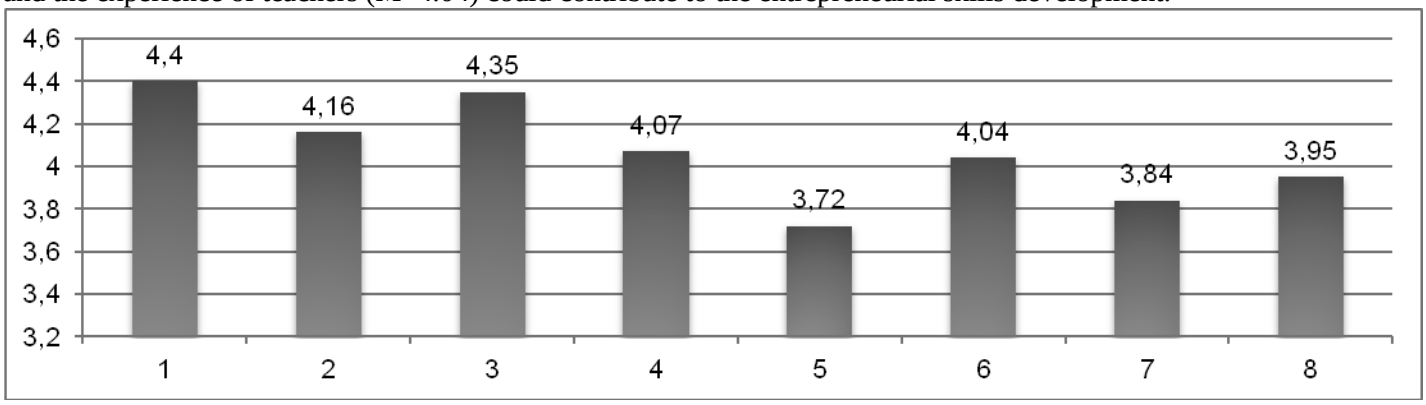

Fig.3. The Assessment of Techniques Aimed at the Entrepreneurial Skills Development in Higher School Learners (Average Values)

Note:

1. Practice in business enterprises
2. Participation in project work
3. Cooperation with experienced entrepreneurs
4. Seminars and practicals
5. Theoretical experience of teachers
6. Practical experience of teachers
7. Scientific conferences for students
8. Studies by the ERASMUS + programme

A more detailed analysis of techniques aimed at fostering the entrepreneurial skills in higher school learners showed (see Table 4) that the majority of the research participants admitted that key techniques that help develop entrepreneurial skills are these: practice in business enterprises (respectively: completely agree (38 (50.7 percent)) while agree (29 (38.7 percent)). A similar situation was identified when assessing cooperation with experienced entrepreneurs (respectively, completely agree (33 (44 percent)), while agree (35 (46.7 percent), the fostering of which, in the respondents' opinion, could help develop entrepreneurial skills. However, it should be noted that according to the responses of almost half of respondents, entrepreneurial skills could be fostered by seminars and practicals (completely agree: 21 (28 percent, respectively)) and agree (39 (52 percent)), as well as practical experience of teachers (completely agree (19 (25.7 percent)) and agree (39 (52.7 percent)). As evident form the research results, theoretical experience of teachers and studies by the ERASMUS + programme to a lesser degree help develop entrepreneurial skills in higher school learners.

Table 4. The Assessment of Techniques Aimed at Entrepreneurial Skills Development in Higher School Learners, Number of Persons (Percentage)

Techniques that help develop entrepreneurial skills	Completely agree	Agree	Neither agree nor disagree	Disagree	Completely disagree
Practice in business enterprises	38 (50.7)	29 (38.7)	8 (10.7)	-	-
Participation in project work	24 (32)	40 (53.3)	10 (13.3)	1 (1.3)	-
Cooperation with experienced entrepreneurs	33 (44)	35 (46.7)	7 (9.3)	-	-
Seminars and practicals	21 (28)	39 (52)	14 (18.7)	1 (1.3)	-
Theoretical experience of teachers	10 (13.3)	38 (50.7)	23 (30.7)	4 (5.3)	-
Practical experience of teachers	19 (25.7)	39 (52.7)	16 (21.6)	-	-
Scientific conferences for students	15 (20)	33 (44)	27 (36)	-	-
Studies by the ERASMUS + programme	23 (30.7)	30 (40)	18 (24)	3 (4)	1 (1.3)

The assessment of the elements of the Internet entrepreneurship. The research was aimed at finding out what principles, regarding the Internet business, were prevalent in the research participants. In order to identify the Internet entrepreneurship, respondents were provided with the 5 point Likert scale (agree-disagree), where 1 = completely disagree, 5 = completely agree. The research results demonstrate that the majority of respondents assert that the Internet entrepreneurship depends on such elements as *activeness* (M=4.51), *receptivity to the internet innovation* (M=4.47) and *the ability to take solutions (M=4.46).* As seen from the research results, such features as *theoretical knowledge on the Internet business* (M=3.88), *the art of communication on the Internet* (M=3.91) and the *lifestyle based on an individual's own planning* (M=3.99) were assessed with the lowest average values (see Figure 4).

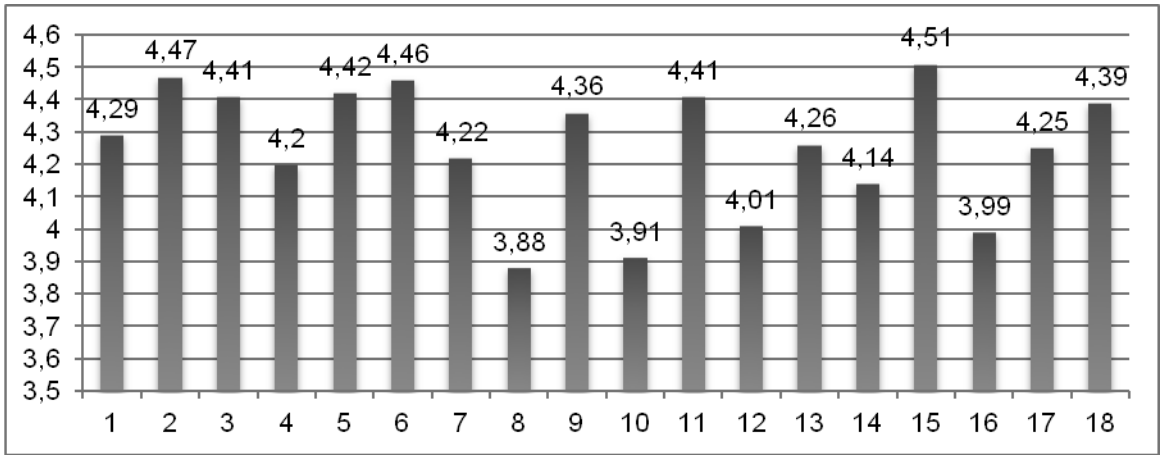

Fig.4. The Assessment the Internet Entrepreneurship Elements (Average Value)

Note:

1. Good knowledge on the Internet and social networks
2. Receptivity to the Internet innovation
3. Ability to attract and bring people together for common activities
4. Time planning
5. Forecasting, predicting the future, intuition
6. Ability to take decisions
7. Well thought-out risk
8. Theoretical knowledge on the Internet
9. Good computer literacy
10. The art of communication on the Internet
11. Logical thinking
12. Critical attitude
13. Ability "to sell" oneself
14. Positive thinking
15. Active action
16. Lifestyle based on an individual's own planning
17. Self-realization
18. Management skills

The obtained analysis revealed the assessment variables of the elements of the Internet entrepreneurship in the group of individuals planning to establish the Internet business and those who were not planning to establish it (see Table 5). As evident from the research results, most elements of the Internet entrepreneurship were assessed almost equally by individuals planning to establish the Internet business and those who were not planning to establish it. However, after estimating the Student's t test, a statistical data analysis showed that the average values of individuals planning to establish the Internet business were significantly higher in these scales: *good knowledge on the Internet and social networks* (M=4.42, SD=0.7), *receptivity to the Internet innovation* (M=4.56, SD=0.6), *the ability to attract and bring people together for common activities* (M=4.51, SD=0.68) and *logical thinking* (M=4.47, SD=0.6), because these characteristics were assessed by those participants who were not planning to establish the Internet business (respectively: *good knowledge on the Internet and social networks* (M=3.86, SD=0.95), *receptivity to the Internet innovation* (M=4.14, SD=0.66), *the ability to attract and bring people together for common activities* (M=4.07, SD=0.92), *logical thinking* (M=4.06, SD=1.14)). After estimating the Student's *t*-criterion, it was identified that statistically significant (t=-1.905, p=0.005) average variables demonstrate that individuals who were not planning to establish the Internet business provided higher indicators in the scale of *management skills* (M=4.34, SD=0.54) compared to those who were planning to establish it, while in the latter group lower indicators were provided in the scale of *management skills* (M=4.34, SD=0.54). As evident from the research results, respondents who were planning to establish the Internet business provided higher indicators in the scales of the following elements of the Internet entrepreneurship: *the ability to take solutions, theoretical knowledge on the Internet, time planning, forecasting, predicting the future, intuition, the art of communication on the Internet, positive thinking and active action,* since these elements were assessed by those who were not planning to start the Internet business; however, their indicators did not differ significantly (see Table 5).

Table 5. The Assessment of Elements of the Internet Entrepreneurship in the Group of Respondents Planning to Establish the Internet Business and Those Who Were Not Planning to Establish It (M, SD)

Element of the Internet entrepreneurship	Planning to establish the Internet business		Not planning to establish the Internet business		t	p
	V	SN	V	SN		
Good knowledge on the Internet and social networks	4.42	0.7	3.86	0.95	2.535	**0.013**
Receptivity to the Internet innovation	4.56	0.6	4.14	0.66	2.304	**0.024**
The ability to attract and bring people together for common activities	4.51	0.68	4.07	0.92	2.018	**0.047**
Time planning	4.22	0.79	4.07	0.73	0.643	0.522
Forecasting, predicting the future, intuition	4.49	0.7	4.14	1.03	1.205	0.246
The ability to take decisions	4.49	0.65	4.36	0.84	0.654	0.515
Well thought-out risk	4.2	0.74	4.36	0.63	-0.719	0.475
Theoretical knowledge on the Internet	3.92	0.9	3.79	0.8	0.495	0.622
Good computer literacy	4.37	0.67	4.36	0.74	0.078	0.938
The art of communication on the Internet	4.0	0.85	3.57	1.02	1.632	0.107
Logical thinking	4.47	0.6	4.06	1.14	1.862	**0.05**
Critical attitude	4.0	0.79	4.0	0.96	0.001	0.999
The ability "to sell" oneself	4.27	0.81	4.29	0.73	-0.062	0.951
Positive thinking	4.19	0.78	3.93	0.83	1.103	0.274
Active action	4.56	0.57	4.36	0.63	1.176	0.241
Lifestyle based on an individual's own planning	4.0	0.83	4.0	0.68	0.001	0.999
Self-realization	4.24	0.68	4.29	0.73	-0.237	0.813
Management skills	4.34	0.54	4.64	0.5	-1.905	**0.005**

The assessment of skills and personality traits peculiar to a business person. In the era of accelerated technological progress as well as the development of small-scale, large-scale and the Internet business, the specialists of specific personality traits, skills and abilities are in great demand. Recently, the most successful individuals are those who have exceptional abilities, including entrepreneurial skills. Entrepreneurship is the way of thinking, personality traits, technical and management skills that allow to apply the obtained knowledge in practice and establish one's own business. Technical skills include written and verbal communication, the ability to handle different computer programmes, use information sources and posses organizational skills. Entrepreneurial skills cover personal abilities, problem solving and taking suitable decisions, negotiating, working in a team, planning. Most scientists (McCarthy, 2000, Cromie, 2000, Kirby, 2004, Strazdienė, 2009) discern particular traits and abilities peculiar to businessmen and highlight these traits: creativity, risk taking, initiative, innovation, intuition, independence and other unique traits and abilities that are of utmost importance to people of the business world. Therefore, the business environment requires specific qualities and traits that should exist in people in business: perseverance, responsibility, independence, creativity, activeness, the ability to compete, etc. In order to identify which personality traits, abilities and features should be present in businessmen the research participants were provided with the 5 point agree-disagree scale, where 1 = completely disagree; 5 = completely agree.

After analysing the research results it was identified that according to the research participants' opinion, the traits of major importance were these: *activeness* (M=4.66), *communication* (M=4.64) and *diligence* (M=4.63). As noted by the research participants, a business person should be *motivated* (M=4.72) and *responsible* (M=4.71). It was found out that the highest average values were in the scales of abilities and skills related to maintaining relationships, activeness in pursuing goals, a high level of personal motivation and responsibility for task performance. However, the research results show that people of the business world should show *initiative* (M=4.59), *be creative* (M=4.58), *persistent* (M=4.59), *capable to create and develop business* (M=4.59) and *make appropriate decisions* (M=4.57). The above mentioned skills, abilities and personality traits are of utmost importance for establishing and developing business. As seen from the research results, a smaller number of respondents related such traits, abilities and skills as *the ability to create workplaces* (M=3.97), *tolerance* (M=4.09) and *profit seeking* (M=4.21) to characteristics peculiar for people in business; the latter abilities, skills and personality traits were assessed by lower average values (see Table 6).

Table 6. The Assessment of Abilities, Skills and Personality Traits Peculiar to Business People (Average Values, (Standard Deviations)

Abilities, skills and personality traits of business people	Average value (standard deviation)	Abilities, skills and personality traits of business people	Average value (standard deviation)
Persistent	4.59 (0.52)	Having certain skills	4.34 (0.7)
Motivated	4.72 (0.45)	Diligent	4.63 (0.56)
Responsible	4.71 (0.51)	Conscientious	4.49 (0.58)
Tolerant	4.09 (0.82)	Implementing ideas in the market	4.39 (0.67)
Creating workplaces	3.97 (0.94)	Profit seeking	4.21 (0.78)
Showing initiative	4.59 (0.52)	Able to compete	4.41 (0.77)
Energetic	4.53 (0.58)	Able to sell himself and his ideas	4.49 (0.64)
Independent	4.42 (0.68)	Able to create and develop business	4.59 (0.55)
Communicable	4.64 (0.56)	Impetuous	4.36 (0.69)
Active	4.66 (0.5)	Able to make decisions	4.57 (0.55)
Observing the situation	4.34 (0.66)	Leadership	4.53 (0.62)
Creative	4.58 (0.62)	Able to assess risk	4.55 (0.58)
Innovative	4.54 (0.62)		

After carrying out a detailed analysis of personality traits, abilities and skills of a business person, it was found out that according to the research participants, a business person is *motivated* (completely agree (55 (72.4 percent)) and agree (21 (27.6 percent)), *persistent* (completely agree (46 (60.5 percent)) and agree (29 (38.2 percent)), *showing initiative* (completely agree (46 (60.5 percent)) and agree (29 (38.2 percent)) and *active* (completely agree (51 (67.1 percent)) and agree (24 (31.6 percent)) (see Table 7). Whereas, the *ability to create workplaces* (completely agree (24 (32 percent)), agree (31 (41.3 percent)), *impetuousness* (completely agree (36 (48.6 percent)) and agree (29 (39.2 percent)), *tolerance* (completely agree (27 (36.0 percent)) and agree (30 (40.0 percent), while *profit seeking* (completely agree (32 (42.7 percent)) and agree (27 (36.0 percent)) are among the lowest average values of traits, abilities and skills that should have a business person. Average values of abilities, skills and personality traits of business people are provided in Table 7.

Table 7. The Assessment of Abilities, Skills and Personality Traits Peculiar to Business People (Number of Persons (Percentage)

Abilities, skills and personality traits of business people	Completely agree	Agree	Neither agree nor disagree	Disagree	Completely disagree
Persistent	46 (60.5)	29 (38.2)	1 (1.3)	-	-
Motivated	55 (72.4)	21 (27.6)	-	-	-
Responsible	55 (73.3)	18 (24)	2 (2.7)	-	-
Tolerant	27 (36)	30 (40)	16 (21.3)	2 (2.7)	-
Creating workplaces	24 (32)	31 (41.3)	16 (21.3)	2 (2.7)	2 (2.7)
Showing initiative	46 (60.5)	29 (38.2)	1 (1.3)	-	-
Energetic	43 (56.6)	30 (39.5)	3 (3.9)	-	-
Independent	40 (52.6)	28 (36.8)	8 (10.5)	-	-
Communicable	52 (68.4)	21 (27.6)	3 (3.9)	-	-
Active	51 (67.1)	24 (31.6)	1 (1.3)	-	-
Observing the situation	34 (44.7)	34 (44.7)	8 (10.5)	-	-
Creative	48 (63.2)	25 (32.9)	2 (2.6)	1 (1.3)	-
Innovative	45 (59.2)	28 (36.8)	2(2.6)	1 (1.3)	-
Having certain skills	35 (46.1)	33 (43.4)	7 (9.2)	1 (1.3)	-
Diligent	51 (67.1)	22 (28.9)	3 (3.9)	-	-
Conscientious	40 (52.6)	33 (43.4)	3 (3.9)	-	-
Implementing ideas in the market	38 (50)	30 (39.5)	8 (10.5)	-	-
Profit seeking	32 (42.7)	27 (36)	16 (21.3)	-	-
Able to compete	41 (53.9)	27 (35.5)	3 (9.2)	-	1 (1.3)
Able to sell himself and his ideas	43 (56.6)	27 (35.5)	6 (7.9)	-	-
Able to create and develop business	46 (62.2)	26 (35.1)	2 (2.7)	-	-
Impetuous	36 (48.6)	29 (39.2)	9 (12.2)	-	-
Able to make decisions	44 (59.5)	28 (37.8)	2 (2.7)	-	-
Leadership	44 (59.5)	25 (33.8)	5 (6.8)	-	-
Able to assess risk	43 (58.9)	27 (37)	3 (4.1)	-	-

A comparative analysis of abilities and personality traits peculiar to a business person on the basis of gender aspects shows that most personality traits and abilities were assessed almost equally by males and females (see Table 8). However, after estimating the Student's t – test, a statistical data analysis demonstrated that average values of females in the scales of *initiative* (M=4.73, SD=0.45), *activeness* (M=4.8, SD=0.41) and *energy* (M=4.7, SD=0.46) are higher compared to the male indicators in the following scales (respectively: *initiative* (M=4.41, SD=0.56), *activeness* (M=4.47, SD=0.57) and *energy* (M=4.28, SD=0.63)). A statistical data analysis showed that female respondents assessed the following traits with higher points: *responsibility* (M=4.84, SD=0.37), *communicability* (M=4.77, SD=0.48), *creativity* (M=4.7, SD=0.59) compared to male respondents assessment (respectively: *responsibility* (M=4.52, SD=0.63), *communicability* (M=4.47, SD=0.62) and *creativity* (M=4.41, SD=0.61)). Furthermore, female respondents discerned abilities that are peculiar to a business person: *the ability to create workplaces* (M=4.27, SD=0.76), *observing the situation* (M=4.55, SD=0.55) and *taking appropriate solutions* (M=4.67, SD=0.52), compared to the results of male respondents who got significantly lower average values (see Table 8) (respectively: *the ability to create workplaces* (M=3.55, SD=1.03), *observe the situation* (M=4.06, SD=0.72) and *take appropriate solutions* (M=4.42, SD=0.56)). The obtained results show that female respondents, contrary to male respondents, admit that a business person should show initiative, be energetic, active, creative, responsible and able to create workplaces, observe the situation and take appropriate solutions to problems. When assessing other abilities, skills and personality traits peculiar to a business person, the average values in male and female groups did not differ significantly in terms of statistics (see Table 8), which allows us assert that the assessment of abilities, skills and personality traits of a business person provided by male and female respondents, is almost the same.

Table 8. The Assessment of Abilities, Skills and Personality Traits Peculiar to Business People Considering Responses of Male and Female Participants (Average Values, (Standard Deviations)

Abilities, skills and personality traits of business people	Males		Females			
	M	SD	M	SD	t	p
Persistent	4.5	0.51	4.66	0.53	-1.321	0.191
Motivated	4.63	0.49	4.8	0.41	-1.6	0.115
Responsible	4.52	0.63	4.84	0.37	-2.589	**0.013**
Tolerant	3.9	0.94	4.23	0.71	-1.697	0.094
Creating workplaces	3.55	1.03	4.27	0.76	-3.514	**0.001**
Showing initiative	4.41	0.56	4.73	0.45	-2.674	**0.01**
Energetic	4.28	0.63	4.7	0.46	-3.208	**0.02**
Independent	4.31	0.74	4.5	0.63	-1.193	0.237
Communicable	4.47	0.62	4.77	0.48	-2.317	**0.024**
Active	4.47	0.57	4.8	0.41	-2.778	**0.008**
Observing the situation	4.06	0.72	4.55	0.55	-3.333	**0.001**
Creative	4.41	0.61	4.7	0.59	-2.13	**0.036**
Innovative	4.56	0.5	4.52	0.7	0.274	0.785
Having certain skills	4.28	0.73	4.39	0.69	-0.641	0.524
Diligent	4.5	0.62	4.73	0.5	-1.705	0.094
Conscientious	4.38	0.61	4.57	0.55	-1.451	0.151
Implementing ideas in the market	4.31	0.64	4.45	0.7	-0.905	0.368
Profit seeking	4.23	0.8	4.2	0.76	0.116	0.908
Able to compete	4.41	0.67	4.41	0.84	-0.016	0.987
Able to sell himself and his ideas	4.44	0.62	4.52	0.66	-0.568	0.572
Able to create and develop business	4.52	0.57	4.65	0.53	-1.049	0.298
Impetuous	4.23	0.72	4.47	0.67	-1.479	0.144
Able to make decisions	4.42	0.56	4.67	0.52	-2.005	**0.049**
Leadership	4.45	0.51	4.58	0.7	-0.881	0.381
Able to assess risk	4.47	0.57	4.6	0.58	-1.003	0.319

Entrepreneurship problems of young people and the Internet entrepreneurship fostering techniques: the respondents' attitude. In order to identify the attitude of the research participants towards the Internet business creation fostering techniques and measures and indicate key entrepreneurship problems faced by young people, the research participants were provided with open questions. After obtaining the data, the research participants' responses were analysed considering the criteria regarding the intensity of comments and words and the accuracy of responses. The obtained responses reveal the respondents' attitudes and opinions when assessing the Internet entrepreneurship fostering techniques and entrepreneurship problems faced by young people. The analysis of responses to direct questions is based on interpretation, therefore the discernment of categories was a creative process aimed at decoding the meaning of responses.

When analysing the Internet entrepreneurship fostering techniques the following recurrent categories were discerned: *Trainings and their organization; Financial support; Application of motivational techniques; Information dissemination.*

Encouragement, favourable conditions and financial support are very important aspects related to finding one's own place in life and the market. When investigating on what could encourage young people to establish the Internet business and foster the Internet entrepreneurship techniques, the responses of research participants were analysed and interpreted with regard to their personal experiences and attitudes. Analysis of open questions revealed that respondents were convinced that trainings, seminars and competitions were techniques fostering the Internet entrepreneurship. When analysing on what techniques could foster young people the Internet entrepreneurship creation, the obtained responses highlighted the following features: purposeful learning, expanding knowledge, participating in trainings and seminars, financial support, sharing success stories and participating in various projects related to the Internet business, which would ensure higher living standards to those who would emerge into the world of business. Considering the research results it should be noted that young people were seeking for self-improvement, were interested in innovation, professional development, participation in trainings, courses and seminars, financial support, such as tax incentives, monetary support for establishing business, participation in competitions related to entrepreneurial ideas, the opportunity to participate in projects, share experiences and discuss success stories, which could motivate them to create the Internet business. However, as stated by respondents, one of the Internet entrepreneurship creation fostering techniques could be more information on the desired business sphere, articles on entrepreneurship, information dissemination on business opportunities in Lithuania, introducing young people to the Internet entrepreneurship opportunities and financial support and sharing experiences with experienced entrepreneurs.

When analysing the key Internet entrepreneurship creation problems the following recurrent categories were discerned: *Problems related to personality traits (motivation, the lack of boldness, the fear of risk, etc.); Difficulties related to the lack of knowledge and skills; External factors (scarce funding, the lack of support, etc.).*

The response results showed that respondents mentioned different reasons encumbering the Internet business creation. It is evident that the main obstacles for establishing the Internet business are these: the lack of motivation and self-confidence, laziness and passiveness. Furthermore, part of respondents asserted that difficulties for the Internet business creation could emerge due to the lack of ideas, boldness, desire, the fear of taking risk and making mistakes, the lack of a clear goal setting, the knowledge and skills. However, results of numerous researches show that a social environment and existing factors encumber the creation of a private business. This was confirmed by the research results, which showed that responses related to the environmental factors were most frequently among negative ones. According to the research participants' opinion, young people who want to establish the Internet business face financial difficulties and the lack of initial capital and funds; young people need a starting point and guidance of an experienced entrepreneur. On the other hand, respondents think that the lack of information on business and the shortage of theory and practice are key factors hindering a successful process of the Internet business creation. However, it should be admitted that the research participants were prone to highlight those difficulties that were related to personality traits rather than external factors.

After analysing the difficulties affecting the creation of one's own business it was identified that the environmental and external factors, as well as personality traits were of equal importance. The research participants related the difficulties emerging when creating the Internet business to personality traits, the lack of motivation and initiative, the fear to risk, the lack of self-confidence and knowledge. However, the difficulties emerging in creating the Internet business could be related to social factors hindering the implementation of personal goals and aspirations.

Conclusions

It was found out that a major part of the research participants related entrepreneurship to creativity, seeking innovation, readiness to risk and the ability the to plan and manage projects in order to pursue fixed goals.

The research results showed that entrepreneurship in higher school learners could be fostered by practices in business enterprises, the ability to cooperate with experienced entrepreneurs, seminars and practicals, practical experiences of teachers and also by participating in discussions, and group and team work activities.

It was found out that activeness and receptivity to the Internet innovation, as well as the ability to make decisions were key elements of the Internet entrepreneurship creation, whereas theoretical knowledge on the Internet business and the art of communication on the Internet were the elements of minor importance.

The research results demonstrated that personal activeness, communicability, diligence, responsibility and a high level of motivation are the traits of major importance, since they are the features that each businessman should possess. According to the research participants, a business person should be active, showing initiative, persistent, able to create and develop business and make appropriate decisions.

When comparing the assessment indicators regarding personality traits, abilities and skills of a business person, it was identified that female respondents assessed the following traits with significantly higher points compared to male respondents: initiative, energy, responsibility, communicability, creativity, the ability to create workplaces, observe situations and take appropriate solutions.

The research results showed that trainings, seminars, competitions related to business, financial/monetary support, motivation, sharing success stories, experiences of professional entrepreneurs, participation in various projects and information dissemination on entrepreneurship are key Internet entrepreneurship creation fostering techniques.

It was found out that major difficulties emerging in creating the Internet business are these: the lack of motivation and self-confidence, the fear of risk, passiveness, the lack of ideas, boldness, knowledge and skills. According to the research participants, young people who want to establish the Internet business face financial difficulties and they lack the initial capital and funding; young people need to have kind of a starting point and guidance of experienced entrepreneurs.

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THE INVESTIGATION OF HUMAN CAPITAL AND INVESTMENTS INTO HUMAN CAPITAL: LITHUANIA IN THE CONTEXT OF THE EU

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Abstract. The emergence of knowledge-based world economy has increased the demand of highly skilled labour force. On the other hand, the labour force is impacted by the level of education and the investments into education and contributes to the competitiveness of the country. The paper aims to analyse human capital and investments into human capital. Specifically we focus on high education and effectiveness of investments into high education. The investigation revealed that the focus on R&D in Lithuania is seen as insufficient and thus, diminishes competitiveness of the country in the international context. The assessment of investments into high education let us conclude that investments are beneficial to the State in the long-term period. The insights into the development of future investigations are suggested.

Keywords: investments, human capital, return on investments, high education, R&D.

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1. Introduction

The emergence of knowledge-based world economy has increased the demand of highly skilled labour force. On the other hand, the labour force is impacted by the level of education and the investments into education. Thus, a number of scientific investigations aimed to distinguish the role of education in the country's economy. Scientific researches and reports of World Bank, grounded on the international experience, in particular from Asia, revealed the relationship between education and competitiveness of developing countries (Saint 2015). Thus, competitiveness of the country is defined by the development of effective human capital. The positive effect of education at the individual level is justified by a number of various studies (Altonji 2012). The higher earnings of

university graduates as well as other non-financial benefits are seen as the main outcomes of investments into high education.

The paper aims to analyse human capital and investments into human capital. Specifically we focus on high education and effectiveness of investments into high education. Thus, the paper is structured as follows. First, grounded on the prevailing scientific literature, we analyse the concepts of human capital and investments into human capital. Secondly, the factors of high education and benefits of high education are analysed. Thirdly, based on statistical data, investments into high education in Lithuania and the EU are analysed. Fourthly, the investments into education in Lithuania are assessed.

2. The concept of human capital and investments into human capital

In the context of the science development and the changes of surrounding environment new definitions, theories and approaches towards different issues have been suggested. The growing interest of the scientists related to the human capital and investments into human capital demonstrate the significance of the accumulation of human capital. Notably, human capital can be assessed both qualitatively and quantitatively. While qualitative approach aims to measure excellence and knowledge, contributing to the work effectiveness, quantitative approach aims to measure the number of individuals and working hours (Matiušaitytė, Šarkiūnaitė 2003). On the other hand, human capital is influenced by varius factors and is interrelated to the investments into human capital. The history of society‘s development demonstrate the close relationship between education and the level of economy development. The researchers conclude that successful development of economy depends on investments into high education (Gižienė, Markauskienė 2012, Lankauskienė 2014; Tarábková, L. 2014). Thus, the comprehensive investigation of both human capital and investments into human capital has to be analysed.

Scientific researches adopted various approaches and suggested different concepts of human capital. The scholars provided different definitions and explanations of human capital, emphasizing knowledge, skills and abilities. For instance, the notion that human capital comprises knowledge, skills, and competences and attributes, facilitating individual, social and economic well-being, appears in the scientific literature (OECD 2007). Nureyev (2010) assumes that human capital comprises innate and acquired skills, specialised and general knowledge, health, experience, motivation, contributing to the work efficiency and the higher earnings, the improved work culture and the abilities to apply acquired knowledge and skills in appropriate time and place. Human capital is supposed to be resource of knowledge, skills, experience and health, required for higher incomes in the form of the earnings (Potelienė, Tamašauskienė 2014). The scholars, investigating human capital, adopted the wide and narrow approaches. While the narrow approach to human capital emphasizes education, the wide approach to human capital emphasizes investments into education and preparation of individuals for labour market (Korsakienė et al. 2011; Korsakienė, Tunčikienė 2014; Korsakienė, Diskienė 2015). The aim to systemise definitions of human capital let us reveal that he main aspects comprise knowledge accumulated through education and work experience, leading to higher incomes and rate of return in the future. The main elements of human capital, representing skills and attributes of individuals are presented in Figure 1.

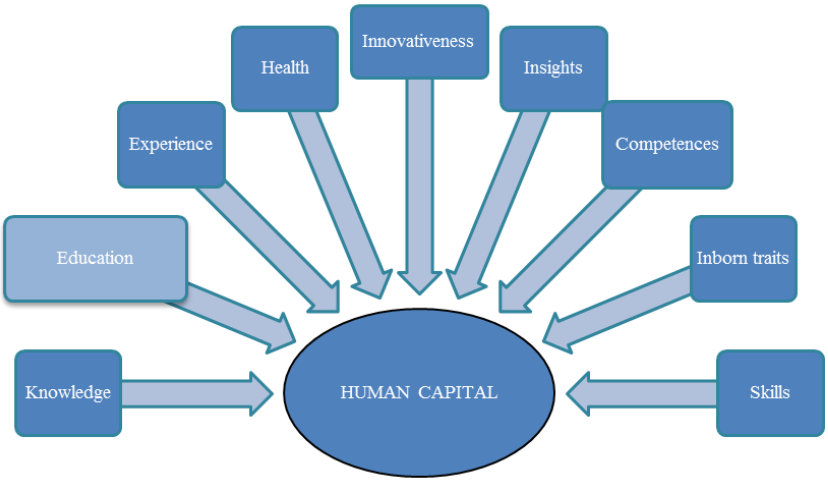


Fig. 1. The elements of human capital

Source: Developed by the authors

Investments into high education are seen as the advanced mean, leading to the improvement of life quality and providing various opportunities and capabilities for effective self-realization of individuals. Thus, the system of country's education is seen as the most significant in evaluation of the potential of country's economy development (Hazelkorn, Huisman 2008). According to Ashenfelter *et al.* (2003), the theory of human capital assumes education as the current investments in exchange for the better future. Hence, human capital is formed by the investments of the government, employers' and individuals (Fig. 2).

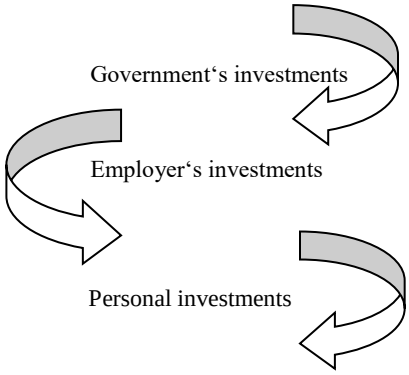


Fig. 2. The investments into human capital formation

Source: Ashenfelter et al. 2003

Notably, costs incurred while investing into high education comprise a loss of personal incomes, expenditure to educational means required for the development process, expenditure to courses required for the increase of qualification. However, these costs are compensated by the increased incomes in the future. These investments improve abilities, skills and knowledge. Thus, the investments increase the effectiveness of human capital and facilitate the accumulation of human capital (Li *et al*. 2009). To conclude, the investments despite their origin, i.e. employers', personal or government's contribute to the return and the development of human capital (Fig. 3).
While investing into human capital various costs are incurred. These costs are related to the development processes such as the courses of qualification, loss of income and the means of education. The accumulation of human capital contributes to the development of abilities, provides new knowledge, skills, develops new attributes of individuals and provides more opportunities in the labour market. These investments assure return in the future and incurred costs are compensated by the acknowledgment, self-realization and increased incomes of individuals.

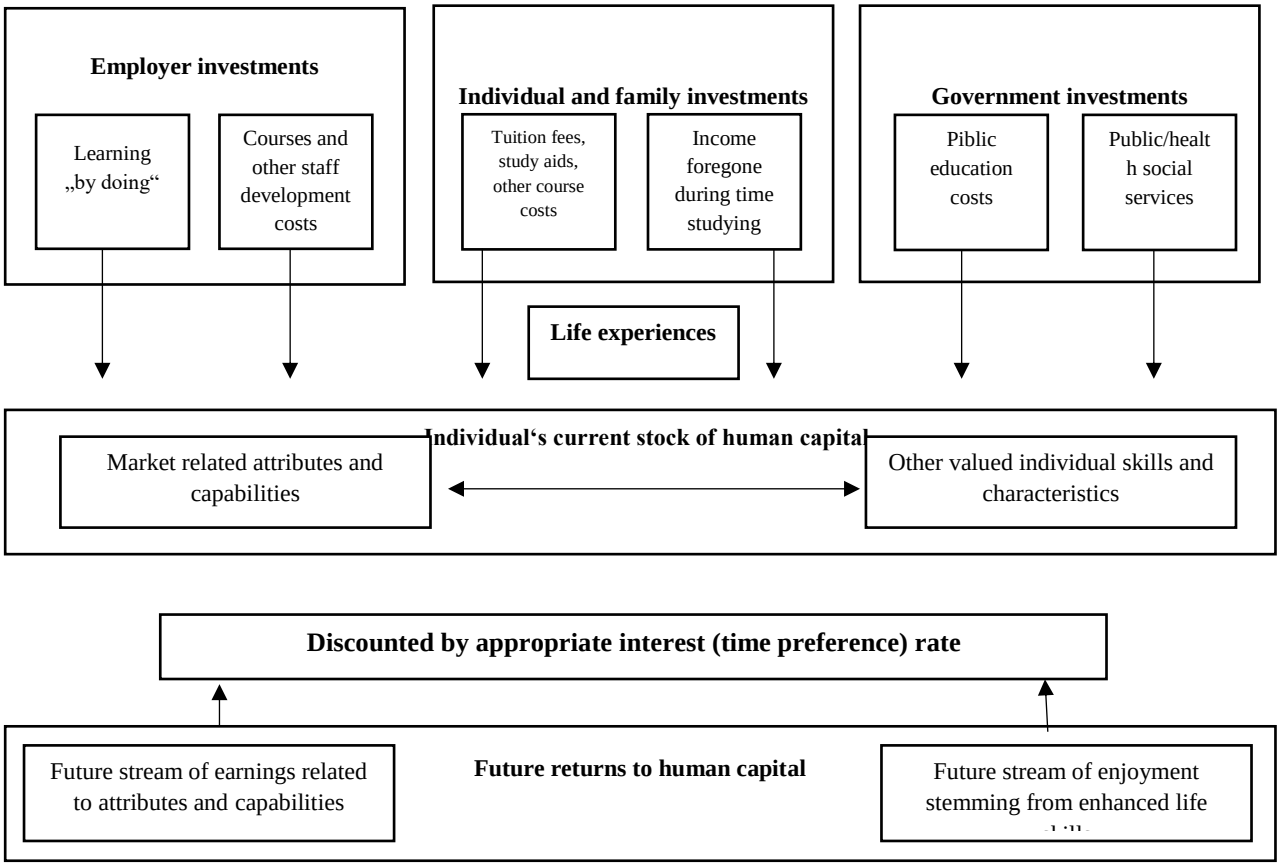


Fig. 3. The influence of investments on human capital

Source: Stroombergern et al. 2003

To conclude, the investments into human capital and specifically to the high education comprise the increase of skills and abilities and the increase of the level of human capital in all society (Pargaru *et al*. 2009).

3. Investments into human capital in the context of high education

In the context of globalisation Lithuania is exposed to various challenges, changing economic, cultural and social life of the country. Notably, globalisation influenced high education and Lithuania has to actively participate in the implementation of the EU education strategy. The interaction of science and education reinforces competitiveness of country's economy and leads to the higher qualification of individuals and the lower unemployment rate (Gižienė, Barkauskas 2010).

Currently the economy is based on knowledge, innovations and improved technologies and thus, the quality of high education and the investments into human capital have become the main factors of economy progress. Scientific literature distinguishes six main factors, impacting education of qualified individuals (Fig. 4)

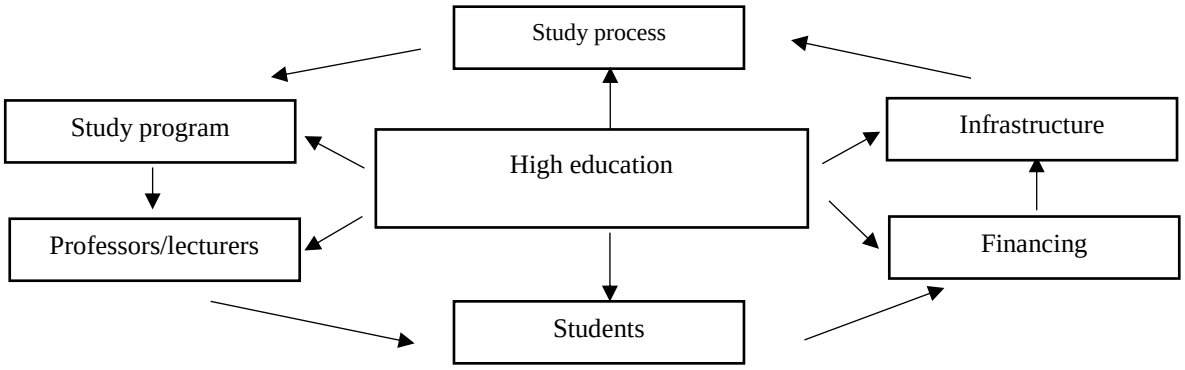


Fig. 4. The factors of high education
Source: Gižienė, Barkauskas 2010

The significance of investments into human capital has been investigated by the scientists since mid-XX century. The scholars assume that investments are the main factor of economy growth, impacting the development of new technologies. Thus, the relationship between economy growth and investments into human capital has been observed. The development of technologies encourages the demand of human capital and higher investments into high education assure higher future earnings, training and development (Narayan, Smyth 2007). The growth of economy and development of country depends on the investments into high education and improves life quality of inhabitants and competitiveness of country (Mansur *et al.* 2010). Scientific investigations confirm that high education leads to increased incomes of individuals. On the other hand, acknowledgment, life quality, self-realisation, moral motivation and self-esteem of individuals are seen as the most important factors despite the financial benefits (Gižienė, Vasiliauskaitė 2007). Considering the fact that the individual adapts better to various changes in the market and the probability that individual may become unemployed decreases, high education is beneficial for the learner, his/her family and other people. The scholars comment that in various foreign countries 66-80 percent of all personal incomes are influenced by education and the growth of qualified individuals influences the economy growth (Seniūnaitė 2002). To conclude, the benefits of investments to high education are received by both the individual and society (Table 1).

Table 1. The benefits of high education from the perspective of the individual and society

The benefits of individual		**The benefits of society**	
Economic	**Social**	**Economic**	**Social**
The growth of incomes due to the growth of work compensation	The higher possibilities to be employed and advanced work places	The growth of incomes before taxes	The improvement of international relationships
The growth of retirement pension due to higher work compensation	The satisfaction due to development processes	The growth of economy	The growth of knowledge-based economy and implementation of innovations
The decrease of unemployment risk	Better adaptation in the labour market in the time of changes	Additional incomes	The development of democratic relationships

Source: developed by the authors

The educated individual is able to apply knowledge in real life, to implement different processes and faster adapts to the fast changing market, innovations and new requirements. The resources devoted to human capital, to the development and the creativity of the potential of human capital influence benefits and incomes, assuring life quality. Scientific investigations confirm the long term effect of the investments into high education. For instance, McMahon (2007) distinguishes several objectives leading to the positive impact of high education to GDP per capita and the rate of earnings: the influence to health, impacting lower mortality rate, longer work life expectancy rate of individuals and general rate of health in the society. The effectiveness of the investments to high education is defined by the lower crime rate, the diminishment of poverty and social exclusion and the number of new technologies and research and development (R&D). From the perspective of fiscal policy the investments into education influence

incomes before taxes (Gupta et al. 2002; Gižienė, Markauskienė 2012). Woessmann and Schuetz (2006) confirmed that the level of education increases earnings and leads to the higher taxes and incomes of the State. Considering the fact that incomes before taxes comprise considerable part of the State budget, the positive impact to the society has been observed.

4. Investments into high education in the context of the EU

The development of high education, performance of scientific researches, and development of lifelong learning depend on the country's economy and financing policy. Notably, countries have to focus on the development of innovations. Thus, public expenditure comprises a substantial part and contributes to the sustainability of high education. On the other hand, aiming to assure quality of high education, private financing has to be combined together with the financing of government (European Commission 2011). The investments into education, learning and lifelong learning are the main priorities defined in the strategy "Europe 2020". The development of human capital influence innovations, scientific researches and contributes to the diminishment of youth unemployment and the growth of employment rate. Thus, the qualified people assure prosperity of the society and contribute to the development of knowledge based economy (European Commission 2011). Notably, R&D is necessary to the development and growth of knowledge based economy. Thus, R&D is one of the main targets defined in the EU strategy. The capacity of R&D leads to the higher competitiveness of country in the international context, contributes to the development of new products and services and increases opportunities of the companies to earn higher profits. Aiming to encourage R&D in Lithuania, the investments provided by the government has to be increased. The government's share of total spending on R&D and education let us compare Lithuania in the context of the EU (Fig. 7).

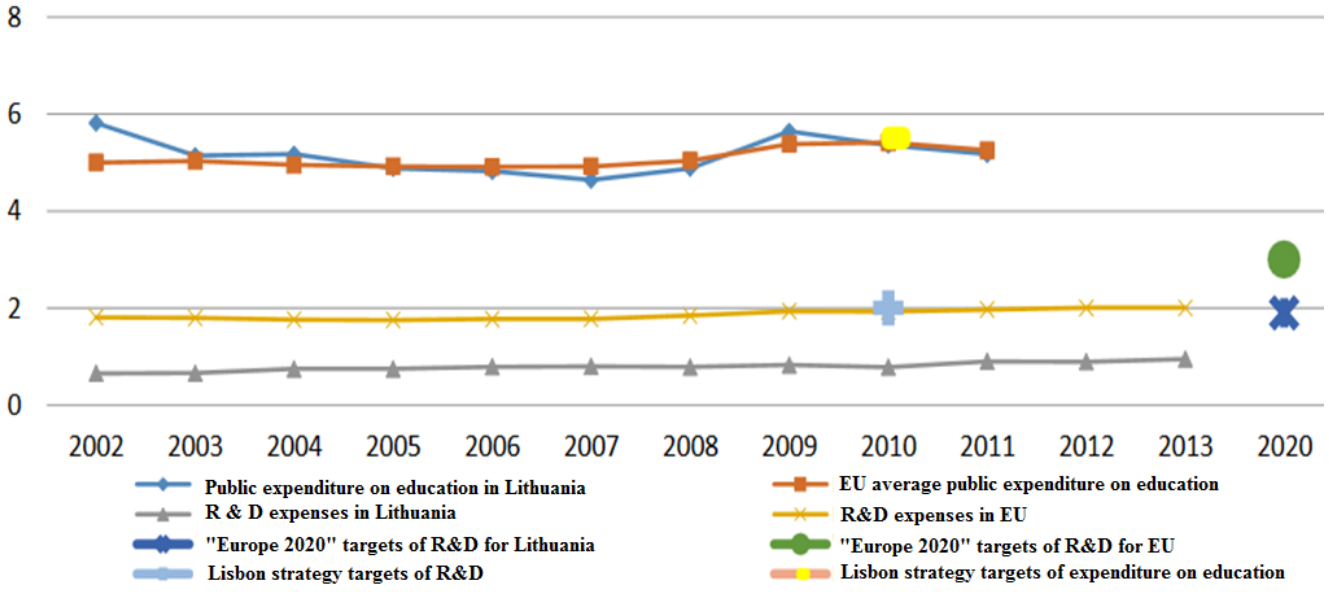


Fig. 7. Average expenditure on R&D and education (% GDP)
Source: Statistics Lithuania

Considering the fact that the focus of the EU is put on education, the targets of R&D and innovations were defined in both Lisbon strategy and the strategy „Europe 2020". Lisbon strategy defined that the average expenditure on R&D in the EU had to comprise 2% of GDP in 2010. However, Lithuania lagged behind the EU and the achieved indicator was about 0.78% in 2010. Meanwhile, the EU average was about 1.93%. The strategy "Europe 2020" defined the target to be reached for Lithuania by the year 2020 – 1.9%. The target to be reached for the EU should

be 3% of GDP. Notably, the indicator of Lithuania was about 0.95% of GDP in 2014 and was below the EU average, which made about 2.01% (the investments of the EU structural funds for the development of human capital in 2013). These observations let us conclude that the EU reached the targets defined in the Lisbon strategy. Meanwhile, the indicator of Lithuania is considerably lower and the amount of expenditure in comparison to GDP has been growing slower. Lithuania significantly lags behind the EU average and the targets of the strategy are not achieved. Thus, the inappropriate focus on R&D and the development of technologies in the country negatively influence country's competitive advantage in comparison to other countries. These trends diminish the potential and the pace of integration of economy. Notably, Lithuania's public expenditure on education is seen as favourable in comparison to expenditure on R&D (European Commission 2013). Figure 7 let us observe that in the investigated period Lithuania's public expenditure on education fluctuated and comprised about 5% of country's GDP. The indicator of the EU was very similar in the observed period. Meanwhile, the indicator of Lithuania was higher than the EU average in 2004 and in 2009.

Lisbon strategy defined the targets of education, i.e. 5.5% of GDP to be reached in 2010. While the EU average was 5.41%., the indicator of Lithuania was 5.36 in 2010. Thus, we can conclude that both the indicators of Lithuania and the EU were closer to the targets of the strategy and the amount of expenditure in comparison to GDP was stable. The financing of Lithuanian education system is seen as sufficient and the integration processes are at the appropriate level (Ministry of Education and Science 2013).

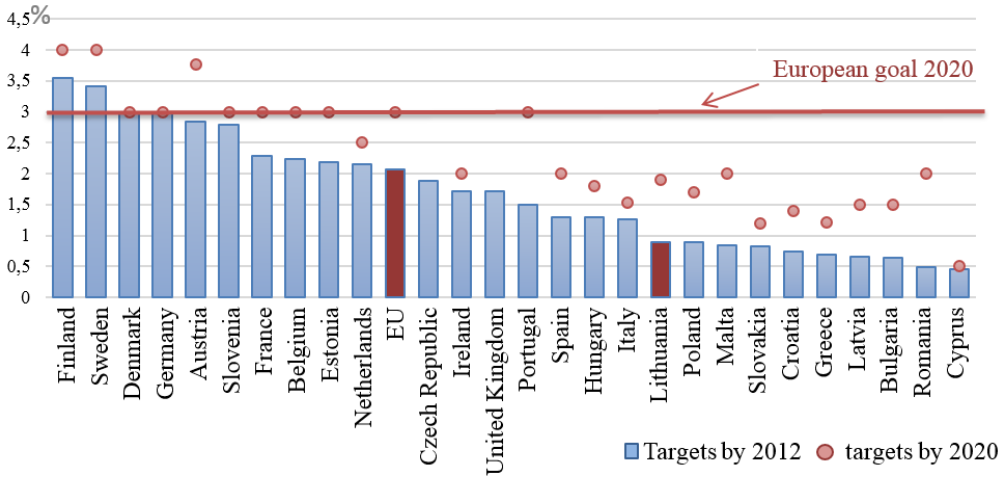


Fig. 8. Targets of R&D to be reached by 2020 (% of GDP)

Source: European Commission 2012

Figure 8 represents the targets of the EU countries defined in 2012. Some countries such as Finland and Sweden have adopted the highest targets – 4% of GDP and are seen as successful. Meanwhile, Cyprus defined the lowest target – 0.67% of GDP. Some countries such as Germany and Denmark are very close to the defined targets. For instance, Italy defined less ambitious targets – 1.53 of GDP. Meanwhile, Romania, Portugal, Malta and Lithuania lag behind defined targets. These observations let us conclude, that larger economies are tended to invest more into R&D. On the other hand, weaker economies, aiming to achieve the EU average, are seen as the disadvantageous and require more investments. Statistical data let us define the groups of countries:

- The member States, which achieved defined targets or are very close to the defined targets such as Slovenia, Cyprus, Denmark and Germany. This group comprise countries with very high R&D intensity (Denmark and Germany) and very low R&D intensity (Cyprus). These countries defined lower targets in comparison to the national context and are defined as less ambitious.

- The member States, which are tended towards the achievement of targets. Considering the progress in 2007-2012, this group comprise such countries as Estonia, Hungary, Ireland, Poland, Slovakia and Belgium.
- The member States which require the increase of the R&D intensity, aiming to achieve defined targets: Austria, Finland, France, Italy, the Netherlands and Spain.
- The member States which require significant increase of the R&D intensity, aiming to achieve defined targets: Bulgaria, Greece, Latvia, Lithuania, Malta and Romania.
- The member States which has to change decreasing trends of the R&D intensity: Sweden, Portugal and Croatia.
- The member States which has not defined the targets of the R&D intensity: UK and Czech Republic.

Insufficient level of high education restricts the opportunities of countries to become competitive and productive. The performance of R&D influence the qualification of personnel, the number of investments, the opportunities to integrate knowledge into study processes, the opportunities to achieve both financial and non-financial objectives. Thus, the strong base of R&D helps to develop young researchers, to increase human capital, to update related activities and expand the performance of science (European Commission 2012).

The strategy "Europe 2020" defined the targets for a number of high education graduates (Strategy "Europe 2020" targets 2015). The plan comprises shorter period of studies at high education institutions and to increase the share of people aged 30-34 year with high education by 40%. Table 2 provides comparison of Lithuania and the EU considering different age groups.

Table 2. The shares of people with secondary education, high education and school dropout rates in Lithuania and the EU

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Lithuania									
The share of people aged 20-24 with secondary education (%)	72,4	72,7	72,3	73,4	73,4	74,6	74,9	74,9	73,2
The share of people aged 30-34 year with high education (%)	39,4	36,4	39,9	40,4	43,8	45,7	48,6	51,3	53,3
School dropout rate of people aged 18-24 year (%)	8,8	7,8	7,5	8,7	7,9	7,4	6,5	6,3	5,9
The EU									

The share of people aged 20-24 with secondary education (%)	65,2	65,3	65,3	65,2	64,9	64,9	64,8	64,8	65,2
The share of people aged 30-34 year with high education (%)	29	30,1	31,2	32,3	33,8	34,8	36	37,1	37,9
School dropout rate of people aged 18-24 year (%)	15,3	14,9	14,6	14,2	13,9	13,4	12,7	11,9	11,2

Source: Statistics Lithuania

Considering the share of people aged 20-24 year with secondary education, Lithuania is ahead of a number of the EU countries. For instance, Lithuania was 10th out of 28 the EU countries considering the share of people aged 20-24 year with secondary education in 2014. Figure 9 provides the shares of people with high education and the targets of countries by the year 2020.

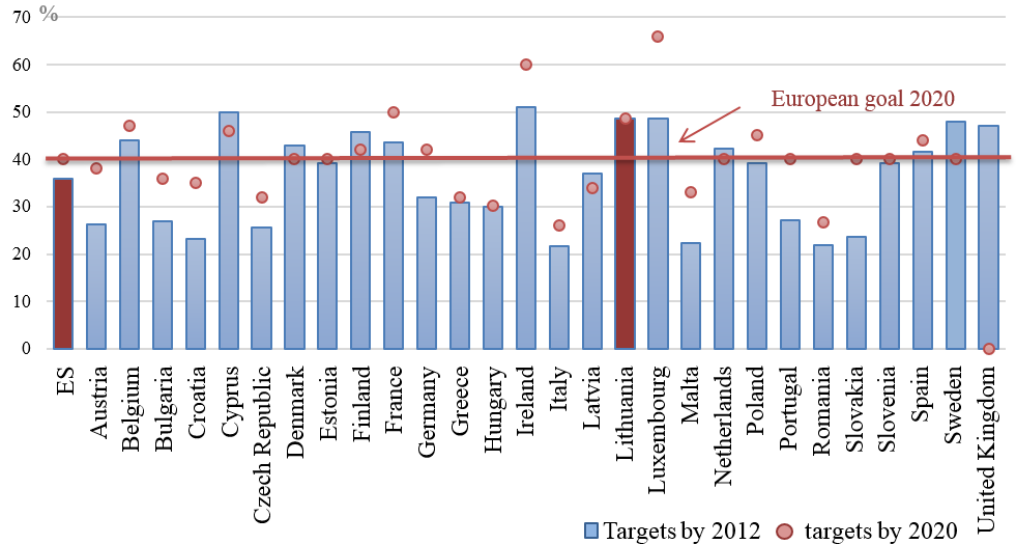


Fig. 9. The shares of people with high education and the targets of the EU countries by the year 2020

Source: European Commission 2012

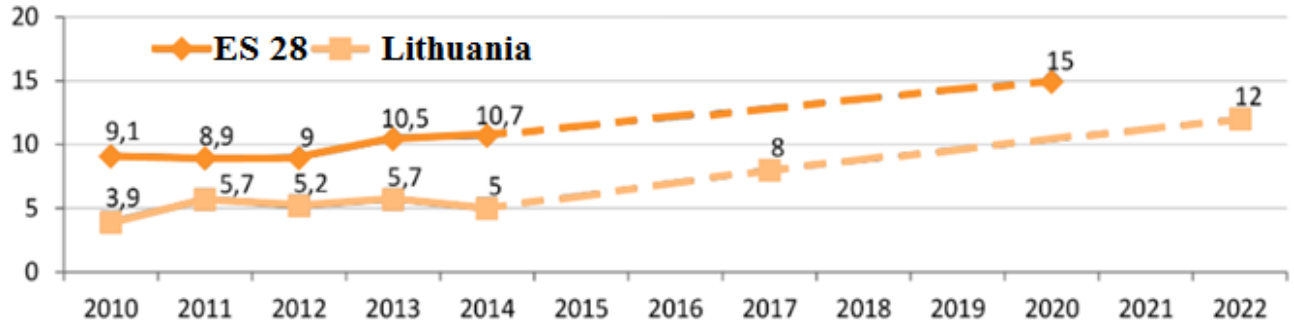
Considering the level of education, the groups of the countries can be defined:

- The member States which are below the 40% target. These countries are seen as less progressive or haven't demonstrated the appropriate progress in recent years. For instance, in Bulgaria the share of people with high education comprise 26.9% and the change rate in the period of 2009-2012 was negative – 1.21%. Thus, the possibilities to achieve national target (36%) are low.
- The member States which are below the 40% target. These countries are seen as very progressive in recent years. The following changes can be traced: in Malta (2.1%), in Czech Republic (13.5%), in Italy (21.7%) and in Poland (39.1%). Notably, Estonia defined the similar target to the EU; however the target lagged behind by 40% in 2012.

- The member States which are above the 40% target. These countries lost the pace in the last few years. The group comprises such countries as Ireland and France which defined very ambitious national targets. However, the targets went' achieved.
- The member State countries which are above the 40% target and progress in the last few years (Luxemburg, Sweden, UK and Lithuania). These countries achieved the national targets (UK hasn't defined national target).

Notably, the skills of lifelong learning are another target of the strategy "Europe 2020". The long-life studies are interrelated with the development of abilities, the development and the adaptation to new technologies and the changes of the market. Aiming to involve more people into life-long process, especially low qualified people, the target was defined to involve at least 15% of adults into life-long activities by the year 2020.

The data provided in Figure 10 let us conclude that the indicator of life-long learning in Lithuania comprise 5-6% and the EU average – more than 10%. Considering current context of Lithuania and the opportunities, the targets of adults education in strategic documents are lower that the EU average. The targets are to achieve 8% by 2017



and 12% by the year 2020 of all people aged 25-64.

Fig. 10. Life-long learning

Source: The strategy „Europe 2020"

Considering the level of adults' education and its significance in the participation of long-life learning activities, Lithuania maintains the opportunities to develop adults' education. On the other hand, this indicator doesn't reach the EU average, what let us conclude that Lithuania is not able to catch these opportunities. The share of people with the lowest education is the smallest among the EU countries and comprises 6.6%. In Czech Republic, Slovakia, Estonia and Poland the share is below 10%. Meanwhile, in some South European countries the share of people without secondary education comprises more than 40% (Spain, Italy) or is close to 60% (Malta, Portugal) (Fig. 11).

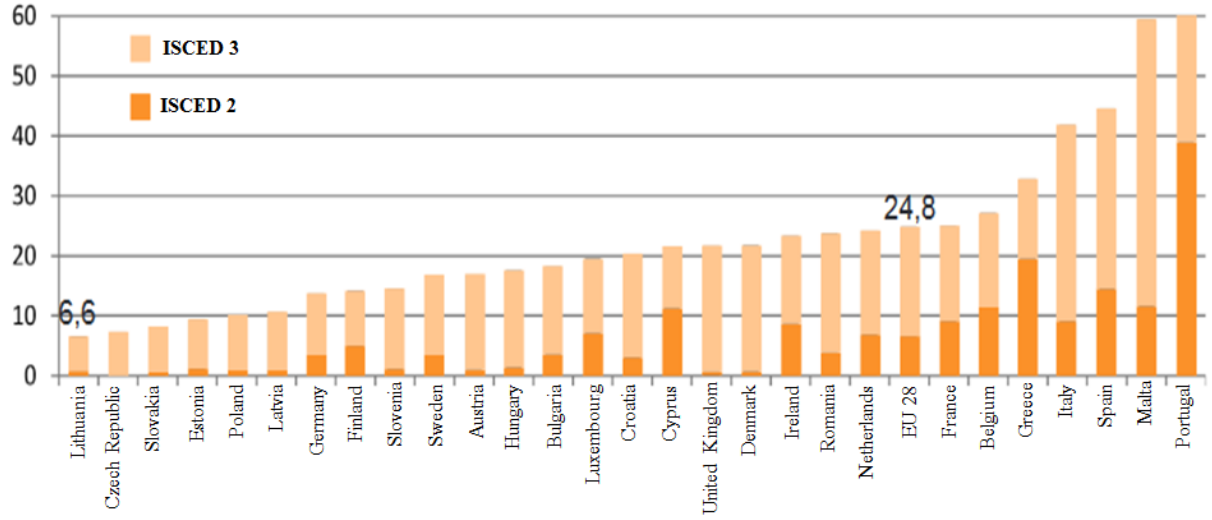


Fig. 11. The level of adults'education in the EU countries

Source: Eurostat

Statistical data provided in the Eurostat let us conclude that the participation in the programs of life-long learning is impacted by the obtained formal education, status of employment, professional category and age. The individuals with the lowest qualification or without qualification and unemployed people are tended to be passive in the education processes.

5. The assessment of investments into high education: a case of Lithuania

The studies confirm that public spending in education is justified by the social rate of return (Gupta et al. 2002). Meanwhile, economic return can be measured by the assessment of the relationship between compensation level and education. Hence the effectiveness of investments into human capital remains the issue requiring further investigation. The investments into human capital are beneficial to the individual and the society. Thus, the benefit is distinguished to the private and public (BIS research 2013). For instance, Glaeser et al. (2004) stated that the investments into human capital led to the democracy in South Korea and Taiwan.
Notably, various methods assessing the effectiveness of private and public investments into education are applied by foreign and Lithuanian scientist. The most popular methods applied in the scientific works are provided in Table 3.

Table 3. The assessment methods of investments

The model	Calculation	Description
The model of Luca	$y = Ak^{\alpha}(uh)1 - \alpha(ha)^{\gamma}$	y - productivity, A – exogenous constant k – physical capital, u – the share of time for production/product, h – the representative of human capital, ha – the average of human capital in economy
The model of Romer	$Y = H_Y^{\alpha} L^{\beta} \int_0^A X(i)^{1-\alpha-\beta} di,$	Hy – human capital employed excluding R&D; L – labor force.
The model of W. McMahon	$y_t = \alpha_1 S_{t-20} + \alpha_{i2} D_{i,t-10} + \varepsilon_1$	y – the growth of GDP per capita;

		S –the ratio of investments into human capital and the earnings of individual; D – the investments into physical capital, e1,e2, e3 – interference.
The model of G. Psacharopoulos	Inner Return Rate for individual=$\frac{\bar{W}_u - \bar{W}_s}{5(\bar{W}_s + c_u)}$	Wu – the earnings of a university graduate; Ws – the earnings of secondary school graduates, Cu – direct costs of university education

Source: Gižienė, Vasiliauskaitė 2007; Gižienė, Markauskiene 2012

The method developed by Psacharopoulos (1995) assessing the investments into high education, is seen as the most common method applied in scientific literature. The method aims to assess inner return rate for individual. The method belongs to the group of methods defined as costs-benefit analysis. Aiming to estimate inner return rate (IRR), the "pessimistic" scenario has been selected. Thus, the assumptions have been made:

- The earnings of university graduates increases 10% per year in five years period. The assumption was justified considering the growth of minimal earnings in last four years.
- Discount rate is 3.5%. The assumption was justified considering the data of 2014 when the interest rate was 2.5-3.5%.
- Despite the fact that work age of men and women is different, we assume that work age is equal to 43 years. Thus, people aged 19-62 are active in labour market.

Tables 4 and 5 provide the data related to the public spending and earnings of the individual in 2014.

Table 4. The public spending per one student in 2014

Public spending	
The direct costs per one student	3300
Minimal earnings per one year	300 x 12=3600
Unpaid income taxes (15%) per one year	(300-166) x 0,15 x 12=241,20
Unpaid social security insurance tax and compulsary health insurance tax, 9 %	((300 x 0,06) + (300 x 0,03)) x 12=324
Total:	**7465,2**

Source: Statistics Lithuania

Considering the data of Statistics Lithuania in 2014, direct costs per one student was 330 EUR, minimal annual earnings – 3600 EUR and unpaid taxes comprised 565.20 EUR.

Table 5. The increase of earnings of university graduates

The earnings in 2014		10% per 5 years	10% per 5 years	10% per 5 years	10% per 5 years	10% per 5 years	10% per 5 years	10% per 5 years
Average earnings	580	638	701,8	771,98	849,18	934,10	1027,51	1130,26
Incomes before taxes	491	562,48	642,87	731,29	828,57	934,1	1027,51	1130,26
Tax exempt incomes	89	75,52	58,93	40,69	20,61	-	-	-
Income taxes, 15 %	(491 x 0,15) x 12=883,80	1012,464	1157,166	1316,322	1491,426	1681,38	1849,518	2034,468
Social security insurance tax and compulsary health insurance tax, 9 %	((580 x 0,06) + (580 x 0,03) x 12=626,40	689,04	757,944	833,74	917,11	1008,83	1109,71	1220,68
Total:	**1510,2**	**1701,504**	**1915,11**	**2150,062**	**2408,536**	**2690,21**	**2959,228**	**3255,148**

Source: Statistics Lithuania

The average earnings were equal to 580EUR in the analysed period. Considering tax exempt incomes and taxes, the pessimistic scenario let us conclude that benefits of the government from the university graduate are 1510.20 EUR. Table 6 provides information related to the cash flows, generated every five years due to the growth of the individual earnings.

Table 6. The cash flow of individual in the period of working age

Years	**Cash flow**	**Years**	**Cash flow**	**Years**	**Cash flow**	**Years**	**Cash flow**
19	-7465,2	**31**	1701,504	**43**	2408,536	**55**	2959,23
20	-7465,2	**32**	1701,504	**44**	2408,536	**56**	2959,23
21	-7465,2	**33**	1915,11	**45**	2408,536	**57**	2959,23
22	-7465,2	**34**	1915,11	**46**	2408,536	**58**	3255,15
23	1510,2	**35**	1915,11	**47**	2408,536	**59**	3255,15
24	1510,2	**36**	1915,11	**48**	2690,21	**60**	3255,15
25	1510,2	**37**	1915,11	**49**	2690,21	**61**	3255,15
26	1510,2	**38**	2150,062	**50**	2690,21	**62**	3255,15
27	1510,2	**39**	2150,062	**51**	2690,21	IRR 4%	
28	1701,504	**40**	2150,062	**52**	2690,21		
29	1701,504	**41**	2150,062	**53**	2959,23		
30	1701,504	**42**	2150,062	**54**	2959,23		

Source: developed by the authors

Calculated IRR let us conclude, that the value of IRR is higher than discount rate (4%>3.5%). Thus, the investments into high education are beneficial to the State. The obtained data, related to the other the EU States are provided in Figure 6.

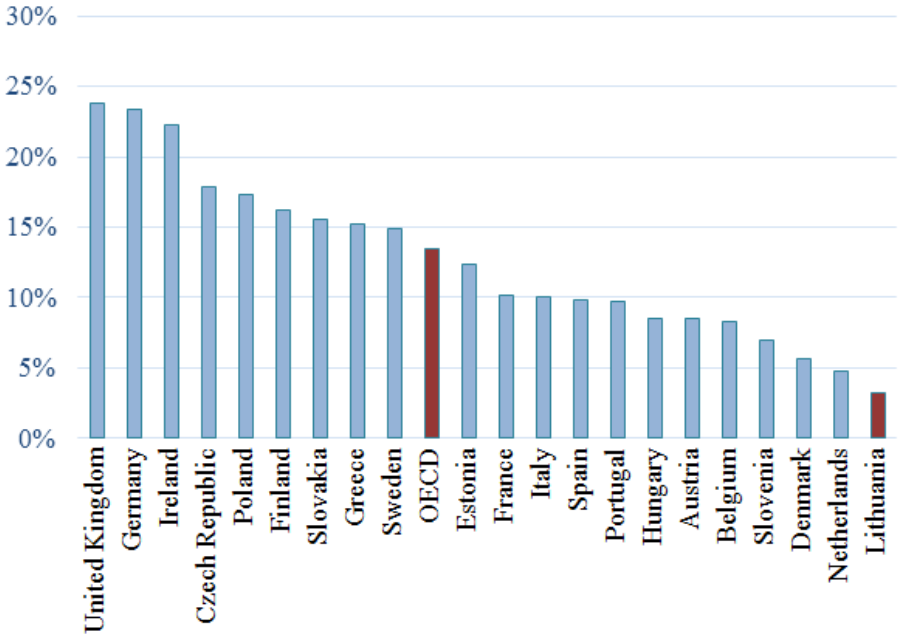


Fig. 6. The return rate of investments into high education in the EU

Source: OECD 2014

Notably, the return rate of Lithuania is lower than the OECD average (13%). Therefore, the considerable efforts of the government have to be increased.

Conclusions

1. The comparative analysis of the scientific literature let us observe, that human capital comprises knowledge, abilities and competencies, leading to the personal, social and economic well-being. Human capital depends on the factors such as the level of education at the both individual's and the country's level. Education depends on the investments into high education of both the government and the individual. The higher the share of the investments assigned to the education, the higher the value of human capital. Therefore, the competitiveness and innovativeness of the country, the lower unemployment and higher employment rates are observed.
2. To conclude, the level of education in Lithuania is higher than the target defined in the strategy "Europe 2020". On the other hand, the focus on R&D in Lithuania is seen as insufficient ad thus, diminishes competitiveness of the country in the international context.
3. Scientific literature distinguishes various approaches towards the assessment of the investments into high education. The application of IRR method let us reveal that the value of IRR is higher than discount rate (4%>3.5%). Thus, the investments into high education are beneficial to the State in the long-term period. On the other hand, the research considered one method what has to be assumed as the limitation of the current investigation.
4. The obtained data let us suggest putting emphasis on the level of education in Lithuania and the demand of the labour market. Aiming to increase the competitiveness of the country and the employment of qualified individuals, the investments into R&D have to be increased.

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KNOWLEDGE APPLIANCE PROCESS: THEORETICAL AND PRACTICAL EVALUATION ASPECTS

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Abstract. The importance of knowledge appliance process is based on the fact that it is related to effective appliance of existing knowledge to solve problems, manage business processes and knowledge about adequate working environment appliance creation. Knowledge appliance process is described as knowledge management implementation stage when knowledge is transformed into specific organizational results. Organizations in order to implement effectively and coordinate the knowledge appliance process often encounter problems of psychological, functional type or loss of knowledge value. To solve this type of problems knowledge appliance process is used, in which it is important not only to know about internal and external knowledge, where is knowledge, who has this knowledge but also to apply existing knowledge to complete work functions and to create value of organization. To solve these problems effective knowledge appliance process is necessary, during which new or existing knowledge has to be suitable to use and apply to increase working performance. In order to implement effectively the knowledge appliance process for organizations, it is necessary to assess this process efficiency affecting factors. The article looks into theoretical evaluation aspects of knowledge appliance process, which are practically evaluated by the example of pre-school education model example. Research methods are scientific literature analysis, survey, expert and multiple criteria evaluation.

Keywords: knowledge, knowledge appliance, evaluation

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JEL Classifications: M1, O1

1. Introduction

In order to control effectively knowledge, it is necessary to know essential knowledge management components well: processes, methods, measures and their peculiarities, which can be examined in theoretical and practical aspects. Theoretical aspect is expertise about knowledge management components: processes, methods, measures and their combinations. Practical aspect is practical implementation of knowledge process management, excluding the importance of every process in the chain of knowledge value, problematic areas, current issues of evaluation and examples of good practice. Knowledge management in transformation context is an effective measure to increase the efficiency of public management institutions and business organizations activity. Knowledge management is a purposeful and systematic management of knowledge processes, methods, measures, with full extent of knowledge potential for achieving goals, solving problems and making effective decisions. Knowledge management is analyzed in systematic approach, achieved through procedural knowledge management model, which comprises the cycle of processes and shapes the chain of knowledge value creation. Knowledge management model consists of these processes: knowledge goals formation, identification, acquisition, development, distribution, appliance, preservation, evaluation (Raudeliūnienė 2012).

The importance of knowledge appliance process is based on the fact that it is a process related to effective appliance of existing knowledge to solve problems, manage processes and creation of suitable working environment for knowledge appliance. Process of knowledge appliance is described as knowledge management implementation phase, when knowledge is transformed into specific organizational results.

Trying to achieve the increase of innovation level in Lithuania it is very important to evaluate current innovation level and how information technologies are applied in pre-school education institutions. During research it was found out that information technologies in pre-school education institutions are not widely applied and often encounters psychological, social and functional character or knowledge value loss problems.

Psychological and social problems are associated with the blockage by employees for new knowledge appliance process, because they are afraid of showing their existent knowledge gaps, to lose one's position as a specialist in a certain area. Also often employees express distrust about external knowledge and that is why they are not motivated to implement this knowledge in their work.

Functional problems are associated with the fact that employees, performing daily routine functions in a conventional (automatic) way, are convinced that there is no more effective way to complete a function or procedure and therefore pay not enough attention to the new procedures.

Often organizations are faced with the problem of losing the value of knowledge, when existent knowledge is not used in the work environment or applied ineffectively. To solve these problems effective knowledge appliance process is necessary, during which new or existing knowledge has to be suitable to use and apply to increase working performance.

In order to implement effectively the knowledge appliance process for organizations, it is necessary to assess this process complexly. The aim of the article is to identify the factors affecting the efficiency of knowledge appliance process in pre-school education institutions. Research methods are scientific literature analysis, survey, expert and multiple criteria evaluation.

2. Theoretical aspects of knowledge appliance process

To summarize various scientific opinions it can be said that knowledge appliance process is related to the implementation of knowledge management as the knowledge appliance process is carried out when organization has already formed knowledge objectives, identified gaps in knowledge and taken decisions related to the acquisition of knowledge and development.

Therefore, knowledge appliance process is one of the most important knowledge management processes, since the effectiveness of organization's staff employment, fluency of internal processes, the quality of consumer needs satisfaction and organization's value creation depends on the effectiveness of this process.

Scientists define different components of knowledge appliance process. According to K. Dalkir (2011) knowledge appliance process is everything that has been captured, coded, shared and put to actual use (Dalkir 2011). It can be said that scientists defining the knowledge appliance process often distinguish keywords such as adaptation, problem solving and benefit (Table 1).

Table 1. Definitions of knowledge appliance process

Author, year	Definition
Gartner 2015	Appliance of existing knowledge in business decisions and increase of business development opportunities.
Atkočiūnienė 2014	Efficient use of organization's existing knowledge.
Hai 2012	The appliance of the dimensions and structures (from simple to complex), which exist in a complex space and interact with each other to solve the problems.
Allameh *et al.* 2012	The use of acquired knowledge in practice.
Saufi *et al.* 2012	One groups of people knowledge realization and grouping.
Bera *et al.* 2011	Effective use of organizational know-how to the benefit of the company.
O'Dell *et al.* 2011	The process when knowledge is arranged in specific forms and adapted to solve specific problems.
Smith *et al.* 2011	The process for decision making, solving problems and at the same time to lead, coordinate organization's participants.
Probst *et al.* 2006	Knowledge management process implementation phase, when knowledge is transformed into concrete activity results.
Becerra-Fernandez *et al.* 2004, 2010	Knowledge management phase, when daily processes in organization are performed saving costs .

Source: created by authors

G. Probst, S. Raub, K. Romhardt (2006) believe that knowledge is also regarded as the knowledge management process implementation phase, whereas knowledge is transformed into concrete activity results. Scientists offer variety of ways and means how to use knowledge:
- info centers, where information can be found in one place and in different forms, and the employee has the opportunity to actively participate in the creation and management of an information center;
- training in the workplace, where workers easier use of new knowledge that can be applied directly to working life;
- documents that are attractive in their form and content of interest (graphs, summaries, etc.);
- working conditions, taking into account the necessary equipment at workplace in order to use knowledge and when exists a shorter physical distance to the necessary sources of knowledge.

According to K. Sandkuhl (2009), organizations often experience success in opting for a network approach. The essence of this approach is that the more workers will be included in knowledge appliance process, the more knowledge will be valued and workers themselves will be strongly motivated to apply and share knowledge.

Many scientific studies have highlighted that the main reason for people in the organization to use knowledge is the value of the knowledge (expected utility of knowledge) and user-friendly knowledge base, infrastructure, which is easy to use, the possibility simultaneously using knowledge also to create knowledge, saving time, emotional costs (Raudeliūnienė, Radvilaitė 2014).

In the scientific literature, factors affecting the efficiency of knowledge appliance process are variously categorized and classified in terms of content, for example, according to the psychological, functional and social aspects, groups of the resources (factors related with the organization's target orientation, human, knowledge content, technological, financial) and etc. (Table 2).

Factors affecting the efficiency of knowledge appliance process can be grouped in terms of content according to the organization's resources groups when factors occur within the organization's employee motivation and ability to rationally take advantage of the information and knowledge, organizational, technological and financial infrastructure of knowledge appliance to perform work activities (Chlivickas, Raudeliūnienė, 2007; Chlivickas, Raudeliūnienė, 2008; Chlivickas *et al.* 2011; Raudeliūnienė 2012; Raudeliūnienė *et al.* 2012(a); Raudeliūnienė *et al.* 2012(b); Raudeliūnienė, Jaskytė 2014; Raudeliūnienė, Račinskaja 2014).

Factors affecting the knowledge appliance process are associated with such groups of organization's resources:
- factors related to the organization's target orientation: organizational structure, objectives, culture and networks;
- factors of human resources evaluation: motivation of employees, competence;
- factors of knowledge content evaluation: the quality of knowledge, the value of knowledge, the level of knowledge adaptability, knowledge presentation, knowledge appliance process duration, location;
- factors of technological resources evaluation: technology infrastructure and base to use knowledge methods and tools;
- factors of financial resources evaluation: profitability, investment costs, the net sales gain, the cost of knowledge and technology appliance, funding sources, and other techniques.

Table 2. Efficiency evaluation factors of knowledge appliance process

Group of factors	Evaluation factors of knowledge appliance process
Assignment by psychological, functional and social dimension (Poonkundran 2009; Sandkuhl 2009; Evangelista *et al.* 2010; Shijaku 2010; Turner, Minonne 2010; Woolliscroft *et al.* 2012; Hasanzadeh, Mahaleh 2013)	
Group of psychological factors	Mutual cooperation between the members of organization, training, motivation of members, favorable working conditions, evaluation of importance of the members.
Group of functional factors	Implementation of innovations, novelties, technological and technical resources, the possibilities of external cooperation, computerized system.
Group of social factors	Staff training intensity, communication, management of documents relevant to the work.
Assignment by groups of resources (Chlivickas, Raudeliūnienė, 2007; Chlivickas, Raudeliūnienė, 2008; Chlivickas *et al.* 2011; Raudeliūnienė 2012; Raudeliūnienė *et al.* 2012(a); Raudeliūnienė *et al.* 2012(b); Raudeliūnienė, Jaskytė 2014; Raudeliūnienė, Račinskaja 2014)	
Group of factors related to organization's target orientation	Organizational management structure, objectives, culture and networks.
Group of human factors	Employee motivation to apply knowledge (material, recognition, self-expression, social, safety factors), the value of knowledge, workers' approach to innovations, competence.
Group of knowledge content factors	Knowledge quality and value of the knowledge, level of knowledge adaptability, knowledge presentation, and knowledge appliance process duration, location.
Group of technological factors	Technology infrastructure and base to use knowledge, knowledge appliance methods, techniques and tools.
Group of financial factors	Operating profitability, investment costs, the net sales gain, the cost, of knowledge and technology appliance financing sources and techniques.

Source: Raudeliūnienė, Radvilaitė 2014

The most controversially assessed factors related to the group of human resources are the motivation and competence of organization's employees. In terms of content, the groups of factors affecting motivation can be divided into (Raudeliūnienė, Jaskytė 2014; Raudeliūnienė, Račinskaja 2014; Raudeliūnienė, Radvilaitė 2014): material, recognition, self-expression, social and safety factors.

Another important factor affecting the efficiency of knowledge appliance process is the competence of personnel. Many scholars considered competence concept, stressing that human resource competence is complicated and complex phenomenon.

Summarizing the factors affecting the competence and analyzed by various researchers, also on the basis of empirical studies of 2012 (Raudeliūnienė *et al.* 2013), four groups of factors in terms of content can be distinguished:
- personal competence factors: a sense of duty, professionalism, flexibility of mind, emotional stability, efficiency, knowledge, empathy;
- moral competence factors: honesty, responsibility, respect, honor, influence on others, being as an example, tolerance;
- managerial competence factors: decision-making, planning, leadership, teamwork, analytical thinking, initiative and creativity;
- professional competence factors: professional knowledge, knowledge integrity, the military posture, modern warfare basics, physical fitness.

Summing up the results of research it can be said that knowledge appliance process evaluation has the complexity and variety of factors, so in order to evaluate systematically the efficiency of knowledge appliance process, was suggested to assess it by psychological, functional and social aspects.

As knowledge appliance process is characterized by the complexity of the evaluation and a variety of factors, so for the survey there was selected multiple criteria evaluation method, which belongs to a group of decision-making, create preconditions for a comprehensive assessment of knowledge appliance process, and make decisions related to process improvement. Since the influence of individual criterion describing the research object is uneven for analyzed phenomenon, it is very important to determine the significance of the indicators applying multiple criteria evaluation (Podvezko 2008). The most common is the scale of criterion weights in the range [0, 1] (Ginevičius *et al.* 2005), which will be used to determine the significance evaluating factors of knowledge appliance process.

3. The practical evaluation aspects of knowledge appliance process in pre-school education institutions

Pre-school education is an informal education, designed to help a child satisfy natural, cultural as well as ethnic, social and cognitive needs. This education is for children from birth to 6 years old, i.e. until the child begins to attend general education school.

In Lithuania, pre-school education is not compulsory and is only given on the request of parents. Pre-school education can be taken in different places: it can be at home/family or pre-school education institution. General education schools, freelance teachers and all other education providers can provide pre-school education. Pre-school education institutions in Lithuania may be public, municipal and private.

State and local government pre-school education institutions are financed by the state and municipality budgets, by pre-school basket principle, where all education process is financed, and parents pay only for nutrition.

Partially financed education is also possible - parents have to pay for a part of it. In private pre-school education institutions, parents pay for everything: education process, care and nutrition. A part of it is financed by the state, but it a very small part of financial resources.

During 2010-2015 the total number of pre-school education institutions were gradually increased (Fig. 1). In turn, there is noticeable decline in pre-school institutions separation in rural areas. This is strongly influenced by the rural population getting down and parents choice to send their children to the education institutions in the cities.

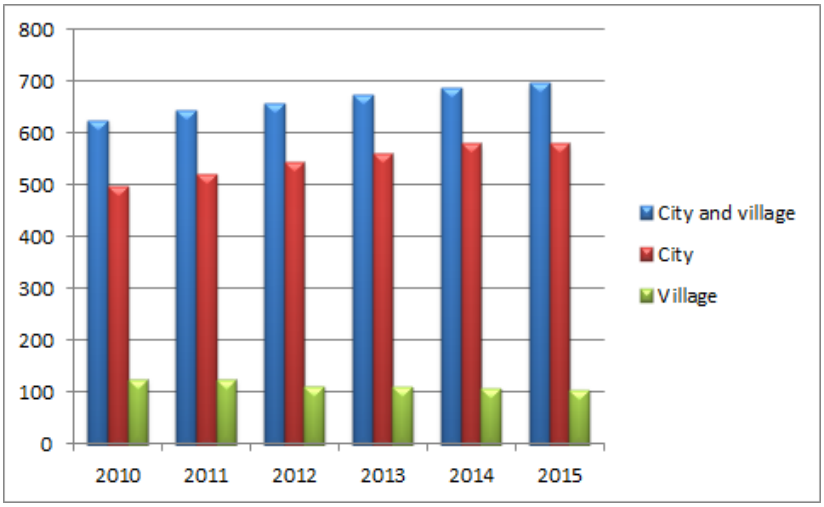

Fig.1. Number of pre-school education institutions (2010–2015)
Source: Lithuanian Statistics Department www.stat.gov.lt

According to statistics, the use of information technologies in pre-school educations institutions is increasing (Fig. 2) and a variety of innovative solutions such as centralized electronic admission to pre-school institutions, electronic diary, secure e-kindergarten projects, which are directly related to the staff training about information technologies are continuously implemented. However, from the point of view of the staff there is still a resistance to use information technologies in the workplace.

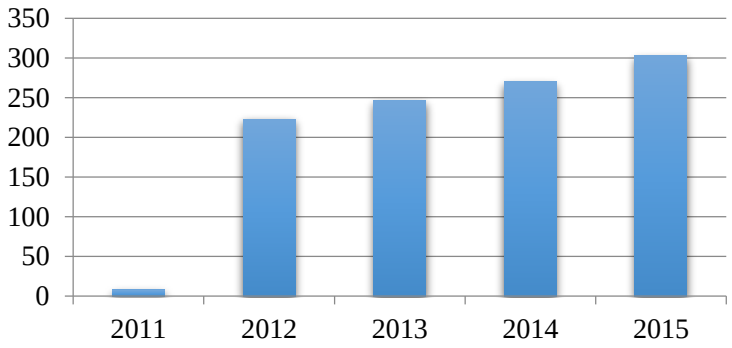

Fig.2. Dynamics of pre-school education institutions which have started to use the electronic registration and attendance sheets
Source: Data of electronic diary www.manodienynas.lt

JSC "National Education Center", which implements the solutions of information technologies for pre-school education institutions, conducted a survey of all local educational representatives in 2014. The results showed that the main reasons why it is difficult to implement information technology solutions in pre-school education is the

lack of financial investment, lack of computer equipment, additional work training the staff, shortage of specialists and employees, who would be able to work with information technologies.

In order to assess properly the factors affecting the efficiency of knowledge appliance process through the year of 2015 the survey, which included 258 workers of pre-school institutions was carried out. At the same time, expert evaluation with the representatives of municipal education departments (7 experts) who are directly related to the work and maintenance of pre-school education institutions was carried out.

Evaluating the age of respondents, their average age was 34 years, the youngest person who answered - 24 years old, the oldest - 58 years old.

53 percent of respondents are the heads of pre-school institutions and the remaining 47 percent – employees, who monitor institutions' databases, work with information technology solutions.

The survey results showed that an average number of children in pre-school institutions is 67 while average of employees who are directly involved in the educational process is only 7. This figure also includes the head of the institution. According to the results, 10 children are assigned to 1 employee.

The evaluation of information technology resources in institutions is really interesting. In average, one institution has 3 computers (in survey the minimum number of computers was 1, the maximum - 10).

Respondents were asked to assess the importance of knowledge appliance process in pre-school education institutions, where 68 percent of respondents said that the importance of this process is significant, the rest (30 percent) said that importance of the process is average, and 2 percent did not understand the importance of knowledge appliance process.

Respondents were asked to indicate what are the most significant factors affecting the efficiency of knowledge appliance process in the scale [0, 1]: 72 percent of respondents said that the three groups of factors determines the knowledge appliance process (psychological, functional, social), 28 percent respondents identified only psychological and social factors (Table 3).

Summarizing the results of survey, it can be said that staff evaluation, novelties and competences have the greatest impact on knowledge appliance process in pre-school education institutions. Both the staff evaluation and novelties directly depend on the heads of institutions or even higher units – the municipal education departments. At the same time, competence is associated with employees, their attitude and capabilities to acquire competencies. Respondents were asked to identify the problems encountered in knowledge appliance process implementing information technologies and respondents indicated problematic areas such as: negative attitudes of employees towards changes; not enough financial resources allocated to pre-school education institutions; lack of information resources; shortage of young, qualified personell; lack of computer equipment; lack of motivation; lack of communication between managers and employees; lack of training; excessive workload.

Table 3. Evaluation factors of knowledge appliance process efficiency based on the results of survey

Factors group	Factors	Significance
Psychological factors	Training	0,24
	Motivation program	0,18
	Decent working conditions	0,18
	Organizations environment	0,12
	Employee evaluation	0,28
Functional factors	Innovations	0,22
	Novelties	0,28
	Technological resources	0,22
	Implementation of external cooperation opportunities	0,17
	Computer systems	0,11
Social factors	Communication	0,25
	Employee training	0,33
	Competences	0,42

Source: created by Authors according to survey results (2015)

In 2015 was carried out the expert evaluation, which included seven experts i.e. the heads and senior specialists of municipalities education departments in Vilnius, Klaipeda, Jonava, Radviliskis, Ukmerge, Elektrenai and Silale districts.

Experts pointed out that the most significant group of factors affecting the efficiency of knowledge appliance process are psychological factors (0,41), less important are social factors (0,34) and functional factors (0,25) (Table 4).

In the group of psychological factors, the most significant factors are motivation program, training and evaluation of employees. In the group of functional factors, experts distinguish innovations, thanks to which most of the processes in institutions are optimized and implemented more effectively. Technological resources and computer systems evaluation is similar. The implementation of external cooperation opportunities is measured as the factor having the lowest impact on the knowledge appliance process. When we talk about social factors, the most significant factors in the group are the competence and employee training and less important factor is communication. Pre-school education institutions are often faced with a lack of competence and that has been singled out as one of the knowledge appliance process problematic areas. Employee training has a direct impact on the competences, as it increases the competences.

Experts have identified one of the main problems in pre-school education institutions with regard to knowledge appliance process - the lack of qualified personnel when employees fail to implement the knowledge that they have been provided with during the training, so there is a need for additional training directly related to additional financial resources. Another problematic area is the attitude of elder workers and their resistance to changes related to the implementation of information technologies. In order to implement effectively knowledge appliance process in pre-school education institutions, the following recommendations related to decision-making in problematic areas have been presented. In order to increase the number of qualified personnel in pre-school education institutions is proposed to perform stricter selection procedures of employees, where not only professional competences would be considered but also the computer literacy. In order to reduce the resistance of employees, more time for staff training is recommended and also communicating and justifying the benefits of information technologies in working

life illustrating with the best practices. Each pre-school education institution must be given the opportunity for external cooperation with Lithuanian education institutions, which prepare pre-school teachers and always take them for practice. It is recommended to organize meetings with the heads of pre-school education institutions at least once a month (now they are held 2 - 4 times per year).

Table 4. Knowledge appliance process efficiency factors based on expert evaluation

Group of factors	Factors	Significance
Psychological factors (0,41)	Training	0,24
	Motivation program	0,18
	Decent working conditions	0,18
	Organizations environment	0,12
	Employee evaluation	0,28
Functional factors (0,25)	Innovations	0,22
	Technological resources	0,22
	External cooperation opportunities implementation	0,17
	Computer systems	0,11
Social factors (0,34)	Communication	0,25
	Employee training	0,33
	Competences	0,42

Source: created by Authors according to the expert evaluation results (2015)

During the meetings should be discussed the problems faced by institutions and their solutions. At the same time on a quarterly basis must be organized and joint meetings with the entire pre-school personnel. Employees of municipal education departments who are involved in the coordination process of pre-school education institutions should also take part in these meetings. There should also be presented (highlighted) the opinion of employees on the current situation in the institutions, the need for changes, discussed already pre-made and answered surveys – their results.

Fallowing the recommendations, knowledge appliance process in pre-school education institutions would be implemented more effectively and pre-school environment would become more sophisticated and attractive to the public.

Conclusions

Knowledge appliance process is related to the effective appliance of existing knowledge to solve problems, to manage the process of organization and creation of suitable working environment for knowledge appliance. Knowledge appliance process is described as knowledge management implementation stage, when knowledge is transformed into specific organizational results.

In order to implement effectively knowledge into the process of pre-school education institutions, it is necessary to identify the factors affecting the efficiency of knowledge appliance process. Such methods as literature analysis, survey, expert and multiple criteria evaluation were applied to make the research.

In literature, factors affecting the efficiency of knowledge appliance process are variously categorized and classified in terms of content, for example, according to the psychological, functional and social aspects, groups of resources (with the organization's target orientation related factors, human, knowledge content, technological, financial) and etc. It was chosen for research to classify the factors of knowledge appliance process by psychological, functional and social aspects.

Summing up the results of survey, expert and multiple criteria evaluation, the greatest impact on efficiency evaluation of knowledge appliance process in pre-school education institutions has psychological and social factors. Survey results show that employee evaluation and training (the group of psychological factors) have the greatest impact on knowledge appliance process in pre-school education institutions, meanwhile in the group of functional factors – novelties, innovations and technological resources, in the group of social factors – the competences and training of employees. Experts distinguish significant psychological factors such as motivation program, employee evaluation, and training, from the group of functional factors they distinguish innovations and computer systems, and the most significant factors in the group of social factors are competences and training of employees.

Surveys of pre-school education institutions' employees and expert interviews revealed the main problems faced by pre-school institutions in order to implement effectively the knowledge appliance process: lack of qualified personnel, the excess of elder employees, negative approach to information technologies, lack of competence and information technology resources. To solve the highlighted problems further solutions were offered: to perform stricter selection procedures with regard to employees computer literacy; more time should be given for employees training and communicating and justifying the benefits of information technologies in working life; pre-school education institutions should be given opportunities for external cooperation with Lithuanian education institutions which prepare pre-school teachers and always take them for practice.

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