

RIGA TECHNICAL UNIVERSITY
Faculty of Engineering Economics and Management
Institute of Production and Entrepreneurship
Department of Management

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**USE OF ELECTRONIC ENVIRONMENT IN
ENTREPRENEURSHIP DEVELOPMENT**

Summary of Doctoral Thesis

Sector: Management Science
Subsector: Entrepreneurship Management

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THE DOCTORAL THESIS
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SCIENCES, IN THE SUB-SECTOR OF ENTREPRENEURSHIP MANAGEMENT AT
RIGA TECHNICAL UNIVERSITY

The Doctoral Thesis has been developed at the RTU FEEM Management Department. The defence of the Doctoral Dissertation will take place at the open meeting of the Promotion Council "P-09", RTU Faculty of Engineering Economics and Management on the 27th of December, 2013, Kalnciema Street 6, Riga at 10:00 a.m., room 309.

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CONFIRMATION

Hereby I confirm that I have developed the present Doctoral Thesis, which has been submitted for review at the Riga Technical University for obtaining the doctoral degree of economics. The Doctoral Thesis has not been submitted for obtaining a scientific degree at any other university.

Deniss Ščeuļovs _____

_____, _____ 2013

The Doctoral Thesis has been written in the Latvian language and it contains an introduction, 4 parts, conclusions and suggestions, a list of used sources, 24 appendices, 26 figures, 40 tables, a total of 164 pages, excluding annexes. The list of sources contains 232 entries.

The Doctoral Thesis and its summary can be examined at the Riga Technical University, Academic Library, at 10 Ķīpsalas Street.

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GENERAL DESCRIPTION OF THE THESIS

Balanced development is the aim of any company, ensuring the company's existence in a long-term, all the while promoting the growth of the sector and economy. In Latvia and in other European Union countries, the numeric majority of companies are micro, small, and medium enterprises (SME), furthermore, due to the lack of resources, small companies find it difficult to develop on the global market. Small and medium enterprises must choose methods of product development and market promotion that are different from big companies' methods, choosing only those tools from the available tools for company development and increasing competitiveness that are most suitable for the particular company's needs and peculiarities.

The rapid electronic environment development over the last decade has fostered the e-market growth and has provided companies with opportunities that they previously did not have. By employing advantages offered by the e-environment, entrepreneurs can ensure expedient and effective communication with the target audience, by promoting products on the global market. The performed scientific studies show that proper and skilful use of modern technologies can contribute to significant development of companies.

Growth of technologies occurs rapidly and the electronic environment continuously develops and improves along with it. The rapid development rate and growth cause challenges in research – due to the dynamic nature of the environment and due to deficiency (lack) of study methods. General “e-zation” is taking place the world over, promoting re-structuring of business models and a change of the overall paradigm. Stratification is taking place in society, forming two simultaneously existing social groups: those, who are actively using the advantages offered by the e-environment and information technologies, and those, who are not exploiting the said advantages (“e-outcasts”). Both groups include also managers and employees of small and medium companies. Scientists expect that the increasing progress of technologies will lead to a bigger gap between technology users – the expert users and amateurs. Thus, it is necessary to introduce training opportunities for entrepreneurs concerning matters of technological use literacy.

EU development directives aimed at lifelong learning promote continuous growth of people of all walks of life targeted at combining formal and informal education. Within the European Union, a new approach to developing knowledge, skills, and competencies is used ever more extensively, by employing self-education methodologies for employers and employees alike. Along with development of technologies and stratification of society's

e-skills, it is useful to seek new approaches within the context of lifelong learning, which could simultaneously foster personal development and effective use of entrepreneurship resources.

Up to now, no unequivocal studies have been performed about the use of the electronic environment in ensuring development of micro, small, and medium enterprises. Ph. Kotler, D. Tapscott, P. Drucker, and J. A. Pearce maintain that two parallel markets exist and are developing – the traditional and the electronic environment. The electronic environment is used for various needs – for trade, marketing, advertisement, studies, communication, training, etc. Simultaneously, there is an opinion claiming that in future, the majority of transactions will be performed on the electronic market, hence advancing the dominant position of the e-environment in achieving entrepreneurship competitiveness.

The electronic environment already now offers companies practically all the necessary marketing and communication tools for ensuring company development by creating competitive advantages, nevertheless, not all companies can employ the opportunities rendered by the e-environment, in order to increase company competitiveness and productivity.

The aim of the Doctoral Thesis is to study the theoretical aspects of interaction between the entrepreneurship development and electronic environment, and, based on the performed theoretical and empirical studies, to develop a methodology for ensuring company development, using the electronic environment.

To achieve the aim of the Doctoral Thesis, the following tasks have been set forth:

- to perform an analysis of the electronic environment on the global scale and in Latvia;
- to study the entrepreneurship environment and to determine the opportunities of development of Latvian companies, by using the e-environment and e-tools;
- to determine the e-environment impact on development of micro and small enterprises, the factors affecting their competitiveness, and categorize the factors;
- to determine and categorize factors affecting entrepreneurship in e-environment;
- to identify and categorize e-environment tools for ensuring entrepreneurship development;
- to develop a methodology based on scientific studies and practical experience for ensuring entrepreneurship development and increasing competitiveness with the help of the e-environment in Latvia;

- to determine the main indicative parameters for evaluating the use of e-environment for company development, perform approbation of these parameters.

The study object

The study *object* is the e-environment and micro, small, and medium enterprises and their development.

The study subject

The study *subject* is ways of ensuring development of micro, small, and medium enterprises, by using the e-environment.

Hypothesis

The use of the electronic environment can help micro, small, and medium enterprises compensate for the lacking resources and ensure increased competitiveness and more rapid development of enterprises.

Theses proposed for presentation

- The development of companies is affected by various factors, including proper use of resources and entrepreneurship environment. By grouping and categorizing the factors affecting entrepreneurship development, it is possible to employ entrepreneurship resources more effectively and to ensure entrepreneurship development and enhance company competitiveness.
- Managers of micro, small, and medium enterprises have insufficient knowledge of e-environment tools, moreover, the skills of company employees in applying the tools for the purposes of entrepreneurship are weak. This fact affects the company development.
- By identifying the e-environment factors that affect the SME operations in the e-environment, each company can be offered relevant solutions for operating in this environment, taking into account the specifics of their activity.

Study methods

The theoretical and methodological groundwork of the study is formed of scientific articles, monographs, regulatory enactments and researches, conference materials, internet

resources, expert opinions published in Latvia and abroad, as well as the author's performed study about the use of e-environment in entrepreneurship analysis and a comparison. In development of the Doctoral Thesis, generally accepted qualitative and quantitative data analysis methods of the economic science were employed, among them, statistical data processing, data grouping, inductive-deductive data analysis methods. The scientific study employs surveying, observation, focus group study method, lexicographical analysis, as well as comparative, analytical, and graphical methods, which are used by the author to compare and analyse facts and assess solutions to specific issues. *Microsoft Excel* and *SPSS* programs were used for processing and analysing the study results. The author of the Doctoral Thesis uses tables and figures created with *Microsoft Office* to ensure visual clarity of the study.

Theoretical and Methodological Foundation of the Thesis

The theoretical and methodological foundation of the thesis consists of theoretical and practical cognitions in the fields of economics, management science, and electronic environment by foreign authors R. Abrams, I. Ballon, J. Battelee, H. Breitner, J. Donneley, P. Drucker, L. Dublin, R. Fathudinov (*P. Фатхымдинов*), P. Fisk, F. Fry, K. Grewlich, R. Hausmann, Ch. Hill, M. Kaftan, I. Kirzner, J. Kay, F. Keller, Ph. Kotler, E. Loudon, A. Marshall, R. Meier, M. Mescon, W. Moriz, G. Moore, N. Nantel, M. Porter, D. Post, D. Rodrik, A. Smith, A. Thompson, E. Reilly, V. Roldugin (*B. Ролдугин*), D. Stokes, D. Tapscott, V. Venkatesh, T. Wilson and by Latvian authors V. Abizāre, A. Baums, J. Caune, E. Gaile-Sarkane, U. Ķinis, L. Leikuma, I. Liepa, A. Plotkāns, I. Vilks, A. Skuja and others.

The informative basis of the thesis is formed of scientific writings, international publications, methodological literature, reports and publications of researches by national and foreign authorities. The empirical basis of the thesis consists of information and statistical data summaries published by Central Statistical Bureau of the Republic of Latvia and by *Eurostat*, press publications, researches, and other information available in electronic media as regards the study topic.

The study period and limitations

When studying the historical development of e-environment, the period from 1992 until the end of 2012 is predominantly considered, moreover, the e-environment development in the world is divided into several stages, which are being analysed in the thesis. When

analysing the entrepreneurship tendencies in Latvia, the period covered in the study is from 2007 until 2012. The author's performed empirical study period is from May 2010 until 2012.

When analysing the entrepreneurship environment in Latvia, the author of the Doctoral Thesis focused on studies about micro, small, and medium enterprises. The Doctoral Thesis does not go into a detailed study of guidelines and matters concerning e-commerce, but rather studies the electronic environment and its tools. As the Latvian language lacks relevant terminology, the author employs wording and international terms introduced during the development of the Doctoral Thesis by giving an explanation of the concept in the original language in parentheses.

For determining the entrepreneurship development and competitiveness growth, the author in the thesis employs only non-financial indicators.

The scientific novelties of the doctoral theses are:

1. Lexicographical analysis of the electronic environment concept in Latvian was performed for a more accurate explanation of the concept, which serves as the grounds for further studies about the electronic environment.
2. Based on a comprehensive analysis of enterprise development and competitiveness, factors related to the use of e-environment affecting entrepreneurship competitiveness are determined and categorized.
3. E-environment factors affecting enterprise development are identified and categorized. Communication e-environment factors and tools fostering company marketing, presence, recognisability, and identification in the e-environment are identified and categorized.
4. Based on an in-depth analysis of the electronic environment, competitiveness, and Latvian entrepreneurship environment, as well as on the author's conducted study on the use of e-environment tools in Latvian companies, methodology has been developed for the first time in Latvia for ensuring development and enhancing competitiveness through the use of the electronic environment.
5. A study of fields of application of the e-environment has been performed by determining the communication e-environment factors and tools that foster marketing, presence, recognisability, and identification of a company in the e-environment.

Practical approbation of Doctoral Thesis study results

The Doctoral Thesis study results have been used in the following scientific projects, in which the author has participated as a contractor:

1. RTU Fundamental and Applied Research Project No. FLPP-2009/25 “Application methodology of SWOT analysis for elaboration of sustainable development strategy of small and medium size enterprises” (2009).
2. Leonardo da Vinci Innovation Transfer Project No. LLP-LdV-TOI-2008-LT-0021-P7 “Sustainability and social responsibility through learning in SME (SOCIALSME)” (2008 – 2010).
3. Lifelong learning programme Leonardo da Vinci Innovation Transfer Project No. 2011-1-PT1-LEO05-08605 “Employability and Skills Anticipation Policies: a Social ROI Approach” (2011 – 2013).

Scientific publications

1. Ščeuļovs D., Magidenko A. Svītrkodēšana un tās ekonomiskā nozīme. „49. RTU Studentu zinātniskās un tehniskās konferences materiāli. – Rīga: RTU, 2008. – 43.lpp.
2. Ščeuļovs D., Gaile-Sarkane E. Sociālie interneta tīkli un portāli – uzņēmējdarbības instruments// *Ekonomika un uzņēmējdarbība. 3.sērija. 19.sējums. – Rīga: RTU Izdevniecība, 2009. – 117.–126.lpp.*
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5. Ščeuļovs D. *New concept for e-commerce: following requirments of generations. I International Conference New Directions in Economics. - Cracow: Cracow University of Economics, 2009. – pp.23–31.*
6. Ščeuļovs D., Gaile-Sarkane E. *Electronic tools for company's presence, identification and marketing in e-environment: theory and practice// Economics and Management – 2012. Nr.15. – pp.775–782.*
7. Щеулов Д., Гайле-Саркане Э. *Значение социальных интернет-сетей в предпринимательской деятельности для повышения конкурентоспособности// Management & Sustainable Development – 2010. – Volume 26. Nr.2. – c.133–139.*
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11. Ščeuļovs D., Gaile-Sarkane E. *Competitive advantage for small and medium enterprises// Business, Management and Education 2010: Contemporary Issues Conference proceedings*. - Viļņa: VGTU, 2010. – pp.1–10. (CD).
12. Ščeuļovs D. Latvijas ražošanas mazo uzņēmumu mārketinga stratēģijas tirgus globalizācijas apstākļos// *Starptautiskās zinātniskās konferences „Sabiedrība un kultūra” rakstu krājums*. - Liepāja: LIEPU, 2010. – 406.–412.lpp.
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37. Ščeuļovs D., Gaile-Sarkane E. *Why are Entrepreneurs are Resistant to E-tools?// World Academy of Science, Engineering and Technology. Issue 78. – Toronto: WASET, 2013. – pp. 730-737.*

The results of the Doctoral Thesis have been presented in the following international scientific conferences:

1. Daugavpils University, 52nd International Scientific Conference, 14 April 2010, Daugavpils, Latvia.
2. 15th International Scientific Conference “Economics and Management – 2010 (ICEM-2010)”, 22 April 2010, Riga, Latvia.
3. Liepaja University, 13th International Scientific Conference. Society and culture “Chaos and harmony”, 2—30 April 2010, Liepaja, Latvia.
4. 6th International Scientific Conference “Business and Management – 2010”, 13–14 May 2010, Vilnius, Lithuania.
5. 51st RTU FEEMA, Scientific Conference of Economics and Entrepreneurship *SCEE'2010*, 15 October 2010, Riga, Latvia.
6. International Conference BMRA 2010, 14–16 October 2010, Vilnius, Lithuania.
7. Business, Management and Education 2010, 18 November 2010, Vilnius, Lithuania.
8. International Conference of Students' Scientific Associations “New Directions in Economics II”, 9–10 December 2010, Krakow, Poland.
9. Daugavpils University, 53rd International Scientific Conference, 13–15 April 2011, Daugavpils, Latvia.
10. 16th International Scientific Conference “Economics and Management – 2011 (ICEM-2011), 27–29 April, Brno, Czech Republic.

11. Mycolas Romeris University International Scientific Conference “Practice and Research in Private and Public Sector - 11”, 5 May 2011, Vilnius, Lithuania.
12. University of Latvia International Scientific Conference: “Current Issues in Management of Business and Society Development – 2011”, 5–7 May 2011, Riga, Latvia.
13. University of Liepaja 14th International Scientific Conference “Society and culture: Borders and New Horizons”, 19–20 May 2011, Liepaja, Latvia.
14. International Scientific Conference “Customer as Change Driving Force” BMRA 2011, 20–21 October, Kaunas, Lithuania.
15. Mycolas Romeris University 1st International Scientific Conference “Whither Our Economics”, 16–17 November 2011.
16. 2011 International Conference on Business Intelligence and Financial Engineering (ICBIFE 2011), 12–13 December 2011, Hong Kong, China.
17. The International Scientific Conference “Economics and Management – 2012”, 29–30 March, Tallinn, Estonia.
18. Mycolas Romeris University International Scientific Conference Practice and Research in Public and Private Sector – 2012, 26–27 April 2012, Vilnius, Lithuania.
19. The 7th International Scientific Conference Business and Management 2012, 10–11 May 2012, Vilnius, Lithuania.
20. IX All-Russian Scientific and Practical Conference with International Participation, 24–25 May 2012, St. Petersburg, Russia.
21. The 16th World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI 2012), 17–20 July 2012, Orlando, USA.
22. RTU 53rd International Scientific Conference, 11–12 October 2012, Riga, Latvia.
23. International Conference of World Academy of Science, Engineering and Technology (WASET), 20–23 June 2013, Toronto, Canada.

Scope and Contents of the Paper

The Doctoral Thesis has been prepared in Latvian and consists of an introduction, account of contents, conclusions and suggestions, used source list, and appendices. It consists of 164 pages, excluding appendices. The paper includes 26 figures, 40 tables, and 24 appendices explaining and illustrating the study contents. During the thesis development, 232 various sources of information in Latvian, English, German, and Russian have been used enumerated on the source list.

The account of contents consists of four parts.

1. Versatility of electronic environment tools and their suitability for ensuring development of enterprises.
2. Impact of the electronic environment on entrepreneurship development.
3. The use of electronic environment for ensuring development of enterprises in Latvia.
4. Methodology for promoting versatile use of the electronic environment in companies of Latvia.

The first part deals with an analysis of elements characterizing the electronic environment, along with an analysis of peculiarities of e-market, as well as offers a description of its participants. The essence of the electronic environment concept and explanations are analysed, lexicographic analysis of the concept is performed. External and internal factors of the electronic environment are considered. This section describes the e-market participants of Latvia, their habits and behavioural aspects, elements of the communication process in the e-environment are studied. It provides a description of e-learning types and opportunities, as well as their application for entrepreneurship needs. Aspects of adaptation of technologies in companies are considered. The author has also performed a division of electronic environment elements for entrepreneurship needs to perform an in-depth analysis of e-environment tools that are used or that could be used by companies.

The second part analyses the impact of electronic environment on entrepreneurship development. The author has analysed the theoretical aspects of interaction between the e-environment and entrepreneurship. As the e-environment develops, changes have occurred on the market – the e-market continues rapid development, entrepreneurship models, consumer behaviour and values change and new ones take shape, etc. The use of technologies, incl., information technologies, bear an important role in the modern business. Thus, the author has studied the role of information and communication technologies (ICT) and their impact on entrepreneurship within the context of competitiveness and development. E-environment is analysed as a factor of entrepreneurship development and a factor affecting competitiveness, as well as a value of an important component of modern business models.

In the third part, the author has summarised and analysed the results for the study on the use of e-environment tools for the needs of Latvian SME entrepreneurship. Factors have been

identified determining the application of e-environment tools in entrepreneurship. The obtained study results serve as the grounds for developing a methodology.

In the fourth part, a methodology has been developed and approbated for company development, using electronic environment tools and electronic environment on the local and global market.

In the conclusion, the author has drawn a number of conclusions and proposed suggestions for further scientific and practical development of the topic in Latvia.

ACCOUNT OF CONTENTS OF THE DOCTORAL THESIS

In order to provide a clear layout of the results achieved with the Doctoral Thesis, the author offers a logical scheme portraying the parts of the thesis, as well as the main study activities and elaborations (see Figure 1).

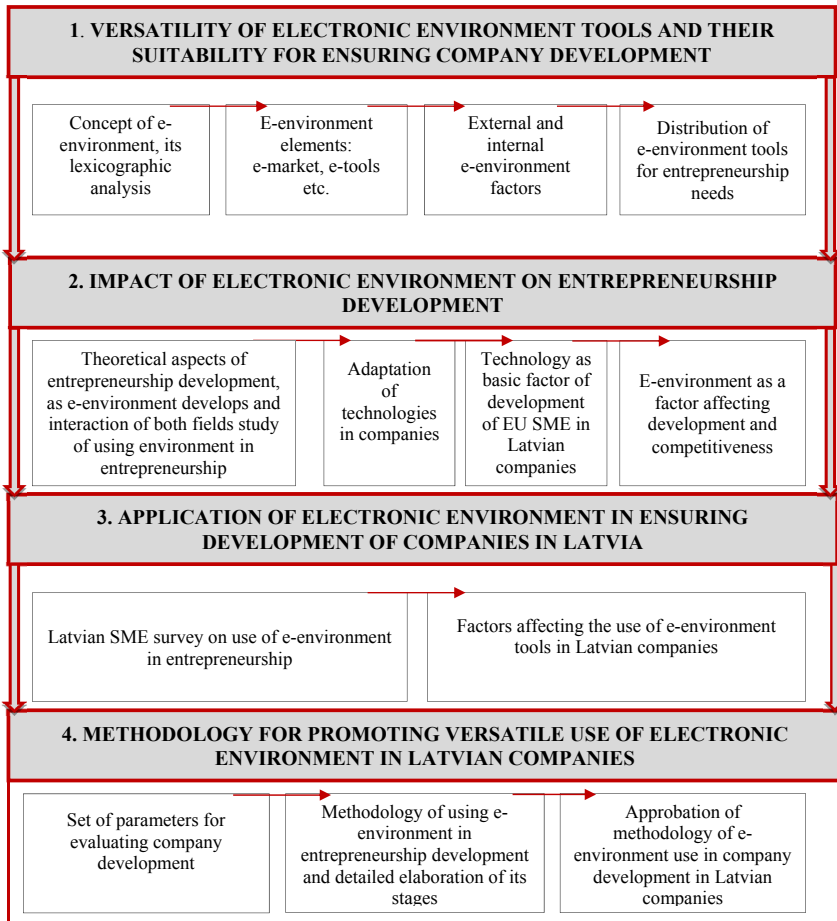


Fig. 1. Logical scheme of the Doctoral Thesis [the author's original work]

The first part of the Doctoral Thesis “Versatility of electronic environment tools and their suitability for ensuring company development” includes an in-depth analysis of the electronic environment, its elements, external and internal factors of the e-environment, versatility of e-environment tools. It deals with the theoretical aspects of adaptation of technologies in companies. Within the thesis, participants of the European Union and Latvian e-market have been studied along with aspects of e-market buyer loyalty. The aim of the aforementioned studies is to analyse in detail the opportunities, advantages, deficiencies of e-environment, determine their applicability for use in entrepreneurship from the viewpoint of the option of replacing, supplementing, and/or compensating company resources in micro, small, and medium (SME) enterprises in Latvia.

Having analysed the concept *electronic environment*, the author of the Doctoral Thesis has reached a conclusion that neither scientific writings nor official information sources or other type of sources include the definition of electronic environment, and among specialists, the opinions about the meaning of the concept differ and at times are even contradictory.

To understand the concept *electronic environment* and to shape his own opinion about the meaning of the concept, a lexicographic analysis of the concept *electronic environment* has been performed within the Doctoral Thesis, by studying mutually linked concepts from differing fields of science.

The Doctoral Thesis includes an in-detail study of the meaning of the concept *cyberspace*, by evaluating it in the context with the concept *electronic environment*, as a result of which lexicographic presentation of the concept is obtained, and it is schematically portrayed in Figure 2.

This analysis, as well as the results of the study by the author of the Doctoral Thesis regarding the electronic environment allow expressing an opinion that the cyberspace and electronic environment are synonymous concepts. The thesis results show that the difference between the concepts is embedded in their use: the concept *electronic environment* is broadly used in the society, but, in effect, when talking about the electronic environment, the concept *cyberspace* is used by a narrower range of experts. The author offers using also such name as cyber-environment, which combines both concepts. The essence of the cyberspace and electronic environment in the thesis is expressed also using mathematical equations confirming mutual interaction of these concepts.

The study results have been approbated in focus groups and scientific publications.

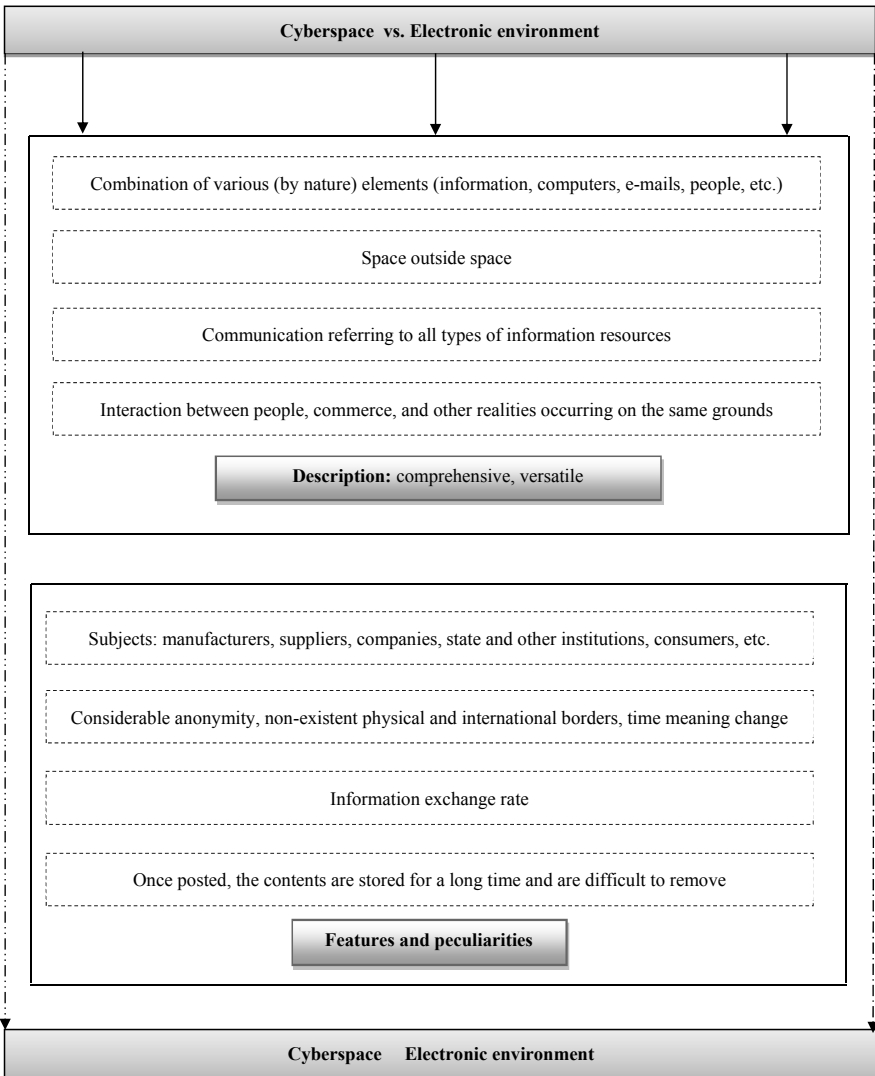


Figure 2. Lexicographic presentation of the concept *electronic environment* [the author's original work]

The factors of internal and external e-environment affect the company activities in two ways: positively – promote creation of a competitive advantage and ensure the opportunity to increase the sales volume, owing to the e-environment; negatively – the factors

can be manifested as a threat – cause a situation that enfeebles a company's competitiveness and generates obstacles for entrepreneurship.

Adaptation of technologies is one of the obstacles in development of a company. Therefore, it is important to correctly adapt technologies in a society. One of the fields that is developing dynamically, is the creation of new technologies, incl. information technologies. This development is demanded by consumers, manufacturers, and the society in general. Therefore, it is important to evaluate sustainability of technologies and suitability for the set goals, which are achieved with implementation of technologies. For these purposes, specialists are employing various technology adaptation models.

Electronic environment consists of several elements, among them the e-market, e-environment tools, etc.

The *e-market* is characterised by industrial and technological convergence, disappearance of physical boundaries, changes in consumer and retailer demands, smart and creative industry competition, etc. Nowadays, it is difficult for a company to figure out how to position itself, how to distinguish between a competitor and a collaboration partner (even though sometimes these statuses overlap). The market changes and keeps changing.¹

There are people of various *consumer* age groups among the electronic market participants (see Table 1) representing various generations, however younger people prevail. Each generation has its own experience and habits in using the e-market. Therefore knowledge about peculiarities and e-market behaviour of different generations is important in entrepreneurship, in order to successfully operate on the electronic market, as well as to understand the changes and challenges expected in the future of e-commerce.

Table 1

Five consumer generations ^{2 3}

Name of generation	Period of generation (years)	Generation age range in 2012 (years)	Proportion of the generation in the world population (mill. people)	Proportion of the generation in the world population (%)
Pre-Boom	before 1946	68–83+	372 970 123	5
Baby Boom	1946–1964	48–66	1 120 262 322	16
Generation X	1965–1976	36–47	1 404 359 285	20

¹ Fisks P. Mārketinga ģenijs. – Rīga: Jāņa Rozes apgāds, 2009. – 12. lpp.

² Šteulovs D., Gaile-Sarkane E. New Concept for E-Commerce: Following Requirements of Generations //

³ 1st International Conference of Students' Scientific Associations "New Directions in Economics" Materials. – Cracow: Uniwersytet Ekonomiczny w Krakowie, 2009. – pp. 26-27.

³ United States Census Bureau: International Data Base World Population by Age and Sex / Online source. - <http://www.census.gov/population/international/data/idb/worldpop.php>

Continuing of Table 1

NET (Y) generation	1977–1997	15–35	2 285 553 981	33
NEXT generation	1998 – up to now	14 – up to now	1 840 179 188	26
World population			7 023 324 899	100

The companies form another intrinsic part of the electronic market. There are differing opinions among specialists and entrepreneurs as regards the Latvian electronic market. There are those, who believe that signs of rapid development are visible in the market. Many entrepreneurs are of the opinion that if a company nowadays is not where their clients are, namely, in social media, it can suffer considerable losses.

It is interesting that only a half of companies that on a daily basis use internet have a website: for instance, in 2009, there were 86.8 % of internet companies-internet users (from the total number of Latvian companies) – only 42.1 % had websites; in 2010 this proportion was 90.6 % and 48.4 %; in 2011 – 92.2 % and 53.4%. Only nearly one third (23.3 % – in 2009, 25.6 % – in 2010, and 38.1 % – in 2011) of all employees in companies using a computer with an internet connection are regularly using the internet.

A company's activity (a company's internal environment) is linked to various aspects. It is assumed to consider that changes in the external environment determine the company's needs for changes. Nevertheless, the company's internal environment can cause changes in the company as well.⁴ The author believes that at the foundation of a company's changes is the creation of a company's competitive advantage, insofar as it refers to all activities of a company.

Internal and external electronic environment factors

Due to the specific nature of the e-environment, factors differ from those of the classic environment. Its *external e-environment factors* consist of external factors of a traditional environment and specific e-market factors. However, a company's *internal e-environment factors* are mainly linked to technologies, know-how, e-marketing, e-commerce, e-entrepreneurship, etc.

The factors of internal and external e-environment affect the company activities in two ways: positively – promote creation of a competitive advantage and ensure the opportunity to increase the sales volume, owing to the e-environment; negatively – the factors can be manifested as a threat – cause a situation that enfeebls a company's competitiveness and generates obstacles for entrepreneurship.

⁴ Siliņš A. Inovatīva domāšana. - Rīga: SIA "Lietišķās informācijas dienests", 2007. - 56.lpp.

Based on an analysis of scientific literature, as well as on studies depicted in a number of scientific publications regarding e-environment issues by the author of the Doctoral Thesis, as well as based on information provided in Sub-sections 1.3.1.1 and 1.3.1.2 of the Doctoral Thesis, the author has developed categorization of the said factors. In categorization, external and internal e-environment factors are divided into two major groups – factors affecting the company positively and those affecting negatively. Internal and external e-environment factors indicate to that the application of the e-environment gives the entrepreneurship a strong potential fostering competitiveness and helping companies create new competitive advantages. At the same time, the e-environment demands specific knowledge and skill from management and employees to be continuously improved and developed, because the e-environment is dynamic and constantly evolving.

A summary of the said factors indicates to the leading role of consumers in the modern-day market relationship. If previously a company was “hunting for” consumers, now, the consumer has become “the hunter”.⁵ Companies have shifted from “produce-sell” philosophy to “understand-produce-sell” philosophy.⁶ Companies should be looking more at consumers’ value functions and try to satisfy the clients’ needs in a more convenient way, by reducing the time and energy that consumers are using for finding, ordering, and receiving goods.

Aspects of customer loyalty in the electronic market

Historically, several approaches have formed towards client loyalty. Up until the 1970-ties, the behavioural loyalty approach prevailed, perceiving loyalty as a function of the overall purchasing ability, as a function of buying frequency (type) or function of the buying probability. The said approaches rather looked at brand loyalty from the result viewpoint (repeated purchase behaviour) rather than from the viewpoint of causes, until Day introduced the two-dimensional approach of brand loyalty determining that loyalty must be expressed in both – the behavioural and attitudinal – criteria.⁷ Kotler also links client loyalty to their trust in the brand, and he believes that a brand creates a certain totality of expectations. The brand value results from how well the client’s expectations are met⁸. Pine and Gilmore believe that client loyalty can be created by developing the skill of building a company’s marketing

⁵ Саттон Д., Кляйн Т. Новая наука маркетинга. - Санкт-Петербург: ЗАО Издательский дом «Питер», 2004. - с. 72.

⁶ Фатхутдинов Р. Стратегический маркетинг. - Санкт-Петербург: ООО «Питер Пресс», 2008. - с. 174.

⁷ Day G. Creating a Superior Customer-Relating Capability, 2003. / Online source. –<http://www.e-books.com>

⁸ Kotlers F. 10 Mārketinga grēki. - Rīga, Jumava, 2006. - 75.-78.lpp.

experience⁹. Today's studies look at and emphasize the psychological factor of loyalty (more attitudinal and emotional)¹⁰. The author of the Doctoral Thesis concurs with the cited authors' opinions and considered theories regarding client loyalty and believes that a company must use more approaches to achieve a better result, namely, increased client loyalty towards a company.

The conducted studies prove that employee loyalty towards a company, where they work, forms the bedrock of successful development of a 21st century company. Without employee loyalty, a company would find it difficult or even practically impossible to gain trust of clients. This aspect is particularly important in "digital" economy. In "digital" economy, activities are motivated more with the will to achieve results rather than with investments.

It must be concluded that loyalty of both sides – the clients and the employees – is important for a company's management, as it affects the company's success on the market and in the battle with competition. The author believes that four main loyalty-affecting, mutually interacting elements exist in the electronic environment (see Figure 3).

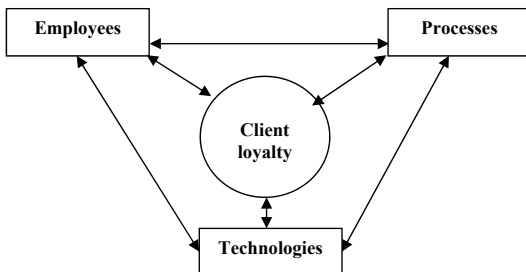


Figure 3. Client loyalty platform in the e-environment [the author's original work]

In line with how Ph. Kotler has developed an operations system, market supply, and other platforms¹¹ and based on his theory and previously described studies and opinion leaders in e-environment matters, the author recommends developing a client loyalty platform in the

⁹ Pine B.J. II, Gilmore J. The Experience Economy: Work Is Theatre & Every Business a Stage. - Boston: Harvard Business School Press, 1999, pp. 120-123.

¹⁰ Pine B.J. II, Gilmore J. The Experience Economy: Work Is Theatre & Every Business a Stage. - Boston: Harvard Business School Press, 1999, p. 12-13.

¹¹ Kotler Ph., Jain D., Maesincee S. Marketing Moves: A New Approach to Profits, Growth, and Renewal. - Harvard: Harvard Business School Publishing Corporation, 2000. - p. 117, p.79, p.150.

electronic environment, the basic elements of which are employees, processes, technologies, and indicators.

Based on prior studies and having analysing e-environment tools, the author of the thesis proposes grouping them as follows: e-environment tools of company’s marketing communication; e-environment tools of confirming and identifying presence; recognisability e-environment tools. Based on an analysis of e-environment tools, the author has developed a proportional distribution of a company’s e-environment tools (see Figure 4).

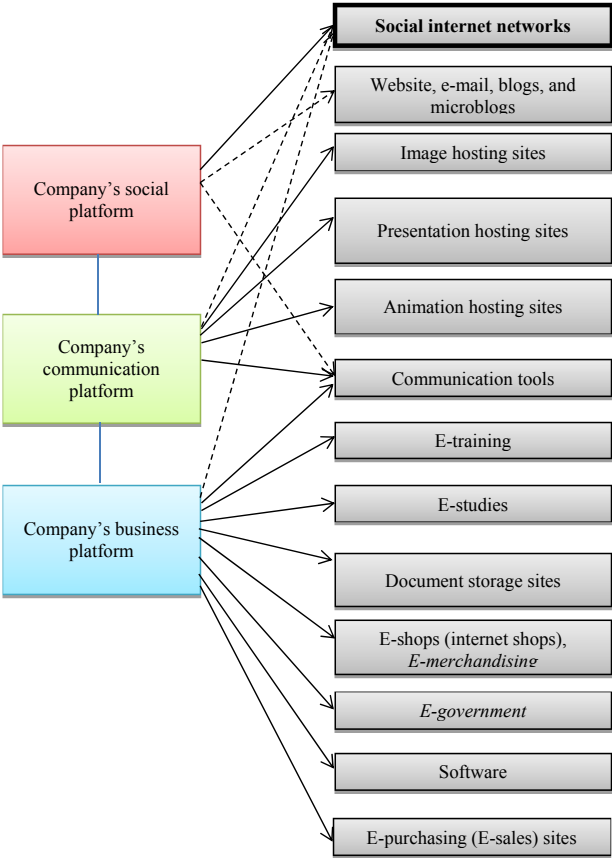


Figure 4. Conceptual framework: Proportionate distribution of company’s e-environment tools [the author’s original work]

As can be seen from the figure, the author refers *social internet networks* to all three platforms of a company's e-environment tools. Nowadays, social internet networks have become more than just sites for gathering and communication. Owing to modern technologies, mobile internet has become ever more popular. The use of mobile internet fosters the use of social internet networks for various aims, including entrepreneurship. Representatives of Latvian mobile operators point out that the users employ mobile internet also for obtaining information, entertainment, studying, online purchases, online banking, and reading daily news.¹²

To find out what e-environment tools, what way, and for what purposes are used by companies in their daily work; what are the barriers for availability of various tools, etc., the author in the third part of the Doctoral Thesis has conducted a study and has performed a survey of companies and entrepreneurs, as well as has processed the results in SPSS 20 environment with the aim to determine the main factors affecting the use of e-environment.

In the second part of the Doctoral Thesis “Impact of the electronic environment on entrepreneurship development”, the author analyses the impact of the e-environment on entrepreneurship development. The study is dedicated to evaluating entrepreneurship development, as the e-environment dominance in the market increases, as well as to interaction of both fields. The Doctoral Thesis deals with the sector of information and communications technologies (ICT) as the result of e-environment development. This part analyses and describes the role of the ICT sector on modern entrepreneurship and e-environment processes. The work gives an account of theoretical aspects of technologies adaptation in companies, as well as of technologies as the grounds of SME development in the European Union. The e-environment is analysed in this context as a factor affecting entrepreneurship development and competitiveness. The value concept and the value role in a company's development are considered. The Doctoral Thesis shows that value is a component of a modern company's business model and it is simultaneously a component of a business model in the e-environment.

¹² Igaune S. Sociālie tīkli – mobilā interneta „putukrējums”// Dienas Bizness. - 2012. gada 23. jūlijs. - 12.lpp.

Theoretical aspects of entrepreneurship development as the e-environment develops, and of interaction of both fields

Extensive availability of internet in early 1990-ties irreversibly affected the further development of business the world over. The rapid internet development was followed by growth of the e-environment and related fields (IT, e-market, e-marketing, e-commerce, etc.).

Over a period of eighteen years, the number of internet users in the world has increased from 16 mill. people in 1995 up to 2749 mill. people in 2013 (data as of 03.2013).¹³ In Latvia, internet started taking shape around 1992. In 2000, there were around 150 000 people who used internet in Latvia in 2000,¹⁴ whereas in early 2013, the number of internet users of Latvia has grown to 1.277 mill. people¹⁵.

Development of internet and information technologies directly affected entrepreneurship, as a new type of entrepreneurship emerged – electronic entrepreneurship, including e-commerce.

Consumers have an important role in modern-day business models. Firstly, owing to market development and general progress, consumer values have changed (desire to receive individual attitude; the types and rate of buying and payment processes; beliefs, opinions, and expectations as regards product prices, and other; individual shopping experience and habits, etc.). Secondly, owing thanks to information resources, mainly the internet, the consumer can quickly obtain a big information amount about the product of interest. Thirdly, in the new e-business models, the consumer and the seller can quickly generate feedback about a product.

Regardless of extensive availability of the e-environment and its elements, there are entrepreneurship sectors (spheres) in Latvia, which actively use the e-environment, as well as those, in which the use of e-environment is not particularly widespread.

The use of e-environment tools in Latvian enterprises differed also depending on the company's size. Thus, in big companies of Latvia, the parameters of using such e-environment tools as a computer, internet, and a website were better than in small or medium enterprises. Companies with 10 to 49 employees use the e-environment tools least.

Among Latvian companies, there are few of those that use internet for selling goods. According to the data of the Central Statistical Bureau of the Republic of Latvia for the year 2012, only 9.1 % of Latvian companies performed e-sales and only 23.6 % of companies have

¹³ Internet World Stats: History and Growth of the Internet from 1995 till Today / Online source. -

<http://www.internetworldstats.com/emarketing.htm>

¹⁴ Internet World Stats: Latvia Internet Usage Stats and Telecom Report / Online source. -

<http://www.internetworldstats.com/eu/lv.htm>

¹⁵ Latvijas Interneta asociācija: Statistika / Online source. - <http://lia.lv/statistika>

performed e-purchases. Automated data exchange is ensured only in 53 % of Latvian companies.

Regardless of rapid development of the e-environment on a global scale and extensive use thereof in entrepreneurship, the Latvian companies are not employing the e-environment and its tools for entrepreneurship purposes to a sufficient extent.

The author assumes that one of the important reasons that affects and is closely related to the use of the e-environment is the aspects of technology adaptation. The e-environment consists of and interacts with various technology elements (internet, devices, software, etc.), which, for their part, are related to various continuously developing technologies, including information, production etc. technologies.

The information and communication technologies (ICT) sector as a result of e-environment development

The ICT sector has developed as a result of ICT development and it is rapidly and dynamically developing across the globe. Companies of the sector are operating in ICT production, ICT wholesale, rendering ICT services (software issue; telecommunications; computer programming; consulting and related activities; data processing, maintenance, and related activities; operation of internet portals; repairs of computers, peripheral devices, and communication equipment, etc.)¹⁶. The number of ICT companies in Latvia is increasing each year, along with the number of employees working at these companies, as well as their turnover.

The ICT sector development on a world scale is not uniform; thus, for instance, rapid development of the sector is observed in the Asia region. Whereas, the total growth rate in the European Union for some ICT sector fields (such as, in telecommunications) has slowed down.¹⁷

In growth of the ICT sector companies, the author draws attention to the phenomenon that some global ICT companies (e.g., *Siemens AG, SAP AG, Oracle, Itella Information, Apple, Microsoft, Nokia, Samsung, Intel, Google* etc.) have such a great importance in various processes and spheres of today's world that one can talk of their impact

¹⁶ LR Centrālā statistikas pārvalde: Informācijas un komunikācijas tehnoloģiju (IKT) sektors / Online source. - <http://www.csb.gov.lv/statistikas-temas/termini/informacijas-un-komunikacijas-tehnologiju-ikt-sektors-35416.html>

¹⁷ Latvijas Interneta asociācija: Telekomunikāciju tirgus sadrumstalotība ved pie tehnoloģiskās atpalicības (2006-2012) / Online source. - http://lia.lv/aktualitates/57/_infografika_telekomunikaciju_tirgus_sadrumstalotiba_ved_pie_tehnologiskas_atpalibas_20062012/

on the electronic environment processes rather than the other way around. Often, global ICT companies and company groups constitute an important part of the gross domestic product and are important players in micro- and macroeconomic processes, sometimes even the lead players.

ICT companies are developers and producers of new products – devices, equipment, software, information and telecommunications technologies, etc. Thus, aspects of technology adaptation are topical in these companies, because, firstly, the company profit depends on the rate of adaptation of innovations on the market and in the society in general. Secondly, adaptation of technologies helps the ICT companies improve and enhance the existing technologies and products, as well as find out the market demands and requirements for products.

Adaptation of technologies in companies

Time is required for introducing and adapting the new technologies. This time is necessary to prepare a company for introducing new technologies – to streamline and improve the company's processes affected by the new technologies, to train employees, as well as carry out testing and other activities related to new technologies in the company.

It is exactly the differing experience of adaptation of technologies in companies that, according to the author, could be the explanation to why some companies are actively employing the e-environment for entrepreneurial needs and some do not or use it to a lesser extent.

Value – a constituent element in modern business models

There are several well-known and popular value theories, such as, the five forces model¹⁸, shareholder value model¹⁹, as well as the “value map” theory, intended for analysing the economic gain for consumers,²⁰ etc.

Various theories were developed many years ago, when the electronic market was not yet developed, and hence are suitable for the conventional market. Due to this reason, the author of the Doctoral Thesis suggests that companies use the Alexander Osterwalder's value

¹⁸ Porter M.E. The Five Competitive Forces That Shape Strategy// Harvard business Review, January 2008.

¹⁹ Fruhan W.E. Jr., "The NPV Model of Strategy - The Shareholder Value Model," in Financial Strategy: Studies in the Creation, Transfer, and Destruction of Shareholder Value. – Homewood: Irwin, 1979. – 124 p.

²⁰ Kambil A., Ginsberg A., Bloch M. Rethinking Value Propositions. Working Paper// NYU Centre of Research of Information Systems, 1997.

proposition concept or the approach that is a constituent element of the author's developed business model canvas).²¹

The Osterwalder's business model was formed based on Freeman's stakeholder theory.²² The model is adapted to today's market needs and conditions, and the importance of the electronic environment, i.e. of the electronic market, in entrepreneurship is taken into account. Osterwalder distinguishes between "value proposition" and "elementary value proposition", which is an element of value proposition.

The author wishes to draw attention to Osterwalder's "value life cycle" consisting of five stages: value creation, appropriation, consumption, renewal, and transfer.

All life cycle stages are linked to value consumption, using the electronic environment: value creation (based on information and communication technologies (ICT) – adaptation of various products for the needs of an individual consumer, e.g., personal computer, footwear, etc. Value appropriation – "a single click purchase" at an internet shop. Value consumption – listening to music, watching a movie, etc. Value renewal – various software updates, value transfer – disposal of old computers and other machinery, handing over unnecessary books and equipment for further use, etc.

Upon adding together the study results and the analysed models, it can be seen that the information and communication technologies (in the Osterwalder's model) or the information communication technology (described in the Doctoral Thesis) bear great importance in creating value for consumers and that they undoubtedly affect the company's image. Nevertheless, several studies show that many Latvian SMEs do not employ ICT and therefore the most suitable way should be sought for how to involve ICT in elaborating business development models.

The value concept is broadly used in various business models, including e-business models. The value is at the basis of several business models.

During the process of analysis of theoretical aspects of competitiveness, the author has found out that it is manifested on several levels. Depending to the level, there are also factors that affect competitiveness and creation of competitive advantage. The author believes that it is not possible to define strict borders between the levels of competitiveness, as they may overlap and they are mutually dependent on each other.

²¹ Business Model Foundry: The Business Model Canvas/ Online source. - <http://www.businessmodelgeneration.com/canvas>

²² Freeman R. Edward Strategic Management: A stakeholder approach. - Boston: Pitman, 1984. – 276 p.

In the thesis, the author has categorized the factors affecting competitiveness, by starting from a position in which various competitiveness levels are in a continuous and uninterrupted process of interaction. There is no strict border not just between the levels, but also between the factors, because the external factors affecting competitiveness of the sector are simultaneously also internal factors affecting competitiveness of the country and are similar to the company level.

When analysing the entrepreneurship environment of Latvia (including the theoretical aspects – statistical information and other data, survey results, the introduced categorization of Latvian companies, as well as the opinions by the leaders of the economic thought and specialist about competitiveness and creation of a competitive advantage), the author of the Doctoral Thesis assumes that a distinction between three levels or approaches can be made, on the grounds of which the company’s competitive advantage is formed (see Fig. 5).

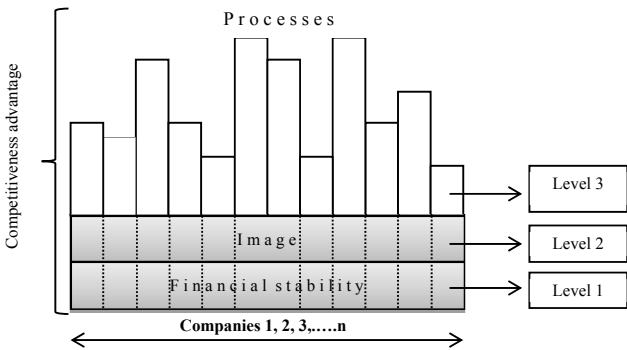


Fig. 5. Levels of forming a competitive advantage [the author’s original work]

The author of the Doctoral Thesis believes that there are three basic approaches (levels or elements) to creating a competitive advantage.

The first level, on which a competitive advantage is based, is a company’s financial stability. An assumption has been put forth that only a financially stable company can be a competitive one.

The second level is a company’s image and brand recognition. It is schematically shown in the figure as another basis for a competitive advantage. For all companies, the first and the second level are shown equivalent as the basis of a competitive advantage. This way, the author of the Doctoral Thesis has strived to schematically depict that, upon abstracting

from various conditions; all companies can theoretically be at the same situation on both levels.

According to the author, the third level is the crucial one, related to various processes taking place in the company – production, logistics, management, sales, product distribution, marketing etc., because it is the arrangement and procedural approach of companies that foster the creation and development of competitive advantages. It is specifically this level, according to the Doctoral Thesis author, in which the intensity of using the e-environment has a significant role. Active use of the e-environment helps and relieves implementation and arrangement of several processes. Participation on the e-market and the use of several e-environment tools fosters the increase of the third competitive advantage level or element proportion, which for its part positively affects the overall competitive advantage of the company.

The author of the Doctoral Thesis concludes that only a company fulfilling all three conditions can be competitive: the company must be financially stable and recognizable, and its internal processes are to a greater or lesser extent arranged. It is assumed in the thesis, that several restrictions and obstacles affect SME competitiveness and the creation of a competitive advantage. One of such restrictions is the limited availability of financial resources. The author believes that this deficiency can be compensated with the electronic environment. Many electronic environment tools are available free of charge or at a minor fee. Moreover, e-environment tools provide extensive opportunities to implement various activities that are related to creating a competitive advantage, and hence – increasing competitiveness.

Technologies as the basis of development of the European Union SMEs

At the company level, competitiveness refers to an increase of the added value of production and creation of jobs (or a market share and profitability).²³ Technologies (including Research and Development or R&D) and innovations are often regarded as the most important factors in developing competitiveness of companies, sectors, and countries.²⁴

Even though interaction (the link) between R&D, high technologies manufacturers between innovation and competitiveness is proven, little attention is currently paid to the role of knowledge-intensive service (KIS) sectors in ensuring the overall competitiveness

²³Clark J., Ken G. (1998), Innovation and competitiveness: a review, Technology Analysis & Strategic Management. 10 (3) - pp. - 363-395.

²⁴ Clarysse, B., Moray N. A process study of entrepreneurial team formation: The case of a research-based spin-off// Journal of Business Venturing. Nr.19, 2004. – pp. 55-79

development. Companies of the sector are acting as innovation-drivers, intermediaries, or the source. The increasing role of services and the link to the manufacturing sector points to that an increase in productivity of the KIS sector can serve as an additional source of European growth. Innovations, R&D, and knowledge-intensity are usually regarded as an important driver for SME productivity, development, and competitiveness. It is believed that the knowledge generation has a significant role in this process (a generation, which is a component of the knowledge society).²⁵

In Latvia, little attention is still paid to such factors of SME development as innovations, knowledge, and technologies, which also affect the macroeconomic results of a country. Moreover, parameters of Latvia (also Lithuania and Estonia) regarding the impact of technologies and knowledge-intensity to company productivity and employment are below the EU average.²⁶

Technologies in the EU annual report refer to various types of technologies, including information technologies (IT). The service sector dominates in the overall structure of Latvian economy, therefore in the context of Latvia, the intensity of technologies and knowledge to a great extent can be referred to the IT use in service companies. This assumption of the author points to the fact that companies should know how to adequately use IT, including the e-environment.

Latvia has the highest proportion of low technologies companies of SMEs in the Baltic States, moreover, this parameter in Latvia is much lower than the EU average. At the same time, the level of high technologies companies is equal to the EU average, which points to a positive future potential. Upon having analysed the data, it must be concluded that it is necessary to reduce the number of low and medium low technologies companies in Latvia, simultaneously increasing the number of companies that are broadly applying technologies in their entrepreneurship.

As it has been mentioned before, the use of technologies has a direct link to the SME development and hence – to the development of the country as a whole. As a confirmation for this assumption – the Estonian example with the highest share of technologically developed companies in comparison with Latvia and Lithuania, and simultaneously the biggest employment and gross added value increase among the Baltic States.

²⁵ EU SMEs in 2012: at the crossroads. Annual report on small and medium-sized enterprises in the EU, 2011/12/ Online source. - http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/files/supporting-documents/2012/annual-report_en.pdf

²⁶ EU SMEs in 2012: at the crossroads. Annual report on small and medium-sized enterprises in the EU, 2011/12/ Online source. - http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/performance-review/files/supporting-documents/2012/annual-report_en.pdf, - pp. 34-35.

Guidelines on the *EU Small Business Act* confirm the increasing importance of information technologies and hence – that of the electronic environment in company development. Thus, it is necessary to perform an in-depth and regular examination of these fields in the context of entrepreneurship.

Business models in the e-environment

The e-business model is based on mutual integration of key flows and values and implementation thereof between e-market participants, through the use of the e-environment. Three main e-business model elements and integrity can be distinguished: *flows, participants, value*. The term *e-business model* describes a broad spectrum of informal and formal models, which may be used in companies to depict various business aspects, such as operational processes, organisational structures, and financial forecasts.

In studying various business model concepts, the Doctoral Thesis author has come to a conclusion that both business model types (taxonomic and conceptual) can be applied to the Latvian SMEs, however the conceptual business models would still be primary. It is related to the fact that there are many niche and narrow profile companies in Latvia. Moreover, the majority of companies is operating only on the local market and depend on fluctuations of domestic demand.

The conceptual business models enable companies to more broadly analyse the current condition and to evaluate the already existing business. By employing this analysis, companies can develop new business development directions or improve the existing ones, because a modern market demands that companies change and are aware of their global condition. Entering the global market allows companies to reduce their dependency on local market fluctuations.

Taxonomic models, for their part, can serve as a specific type of entrepreneurship. For instance, when developing the conceptual business model, companies will answer the question “How to develop further on?”, but the taxonomic model will allow answering the question “What to do in order to develop?”

Based on the author’s performed study about the use of e-environment in Latvian companies, having studied value formation theories, having analysed the types and theories of business models, as well as taking into account the aim of the Doctoral Thesis, the author has drawn a conclusion that the most suitable course of action for achieving the Doctoral Thesis

would be to base further development on the Osterwalder's Business Model Canvas.²⁷ *Forbes* has referred to this business model canvas as a simple instrument for creating innovative business models.²⁸ The model is based on active use of the e-environment in entrepreneurship. There are nine stakeholder groups at the basis of the model. Meanwhile, reciprocal and effective interaction and communication between the stakeholders promotes a company's competitiveness. The use of ICT promotes communication; moreover ICT is at the basis of the first stage "value creation" of the value life cycle. At the same time, value is an intrinsic part of a competitive advantage. It can be concluded that a competitive advantage depends on effective communication with stakeholders. The study performed within the Doctoral Thesis framework concerning competitiveness of Latvian companies (see Sub-section 1.2.3.1, including Figure 1.8) shows that it is the use of communications networks, being a constituent element of competitiveness of Latvian companies, that the companies are using the least. Thus, the author of the Doctoral Thesis assumes that by increasing communication of the stakeholders, the competitiveness of Latvian companies will also increase.

In the third part of the Doctoral Thesis "The use of electronic environment for ensuring development of enterprises in Latvia", the author has conducted a study on the use of the e-environment by Latvian SMEs in entrepreneurship. The aim of the study is to establish which e-environment tools are used by companies, what is the intensity of their use, and what are the companies' skills in using them.

Time of the survey: May 2012 – October. Sample base – an internet survey created on an online e-survey site www.visidati.lv, as well as by posting an announcement with a call to participate in a survey in social networks – www.linkedin.com, www.facebook.lv, www.skype.com, www.draugiem.lv. The database of SIA *Lursoft* was also used. Overall, the survey was sent to 2100 Latvian companies, 1600 of which were SMEs. The call to fill in the questionnaire was sent to Latvian company managers and leading employees. The questionnaires were sent out twice, and a part of companies were called by phone and asked

²⁷Business Model Foundry: The Business Model Canvas / Online source.-

<http://www.businessmodelgeneration.com/canvas>

²⁸Forbes: Business Model Canvas: A Simple Tool For Designing Innovative Business Models / Online source. - <http://www.forbes.com/sites/tedgreenwald/2012/01/31/business-model-canvas-a-simple-tool-for-designing-innovative-business-models>

to fill in the questionnaires. Filled-in questionnaires with answers to all questions were received from 526 companies. The author has processed and analysed the obtained data in SPSS 20 environment.²⁹

As a result of processing the answers in SPSS. 20 and factor analysis and interpretation, ten factors affecting the use of e-environment in the respondent companies were elucidated.

Taking into account the obtained variables and correlation quotients, the author has performed their interpretation and has created factor classification:

1. company managers' and management's understanding of the types of use of e-tools;
2. understanding of communications tools and their use in entrepreneurship;
3. understanding of e-business models (*the author's remark*: taking into account the variables in this factor, as well as correlation quotients, it can be concluded that companies have no clear understanding of the meaning of e-business models. This factor explains answers given to question 10 of the survey);
4. company's communication with the stakeholders in online mode;
5. company's website, which is a tool of sales and marketing (*the author's remark*: companies have these tools, but have no understanding of the aims that the tools are intended for and how to use them);
6. the use of e-environment tools in market and consumer studies (*the author's remark*: companies are informed of the existence of such tools, but are not aware of how they could be used);
7. understanding of state-offered services (*the author's remark*: the factor is affected not only by weak use of the business tools, but deficiencies of several *e-government* tools, which encumber their use);
8. acceptance of e-environment tools among employees;
9. versatility of e-environment tools in a company;
10. use of state e-services for business and private needs.

Based on the study results, the author concludes that overall companies are using e-environment tools. There is an apparent lack of information and poor knowledge of entrepreneurs regarding the use of e-environment tools in entrepreneurship. A positive conclusion – the SMEs understand that with e-environment tools, insufficient or missing resources can be replaced/supplemented. Companies also are willing to gain knowledge and

²⁹ Jansons V., Kozlovskis K. Ekonomiskā prognozēšana SPSS 20 vidē. Mācību grāmata. – Rīga: RTU Izdevniecība, 2012. – 547 lpp.

learn how to use e-environment tools for entrepreneurship needs. Several answers point to managers' and employees' partial acceptance of e-environment tools, which is a hindrance for comprehensive use thereof. Factor No. 8 is very important, indicating to acceptance of information technologies, referred to by the author in Section 2.2.

In order to help the SME managers properly use e-environment tools, in the fourth part of the Doctoral Thesis “Methodology for promoting versatile use of the electronic environment in companies of Latvia” methodology has been elaborated for using e-tools in order to increase company competitiveness. The author’s proposed methodology was approbated in three Latvian enterprises.

Entrepreneurs can also use the complex approach for competitiveness analysis and identifying company's competitiveness. Various indicative assessment systems may be used for assessment, for instance, Key Performance Indicators.³⁰ There are several systems that can be used for measuring competitiveness and that contain qualitative and quantitative indicators. For instance, Performance Measurement Matrix.³¹ The matrix includes internal and external factors that are not related to costs. With indicators of the Results and Determinants Matrix³², a company can measure the efficiency of using resources, product quality, innovative activity, as well as competitiveness. The expanded balanced indicator system or the Balanced Scorecard (BSC)³³ allows assessing the level of satisfaction of stakeholders, company's value proposal, etc. Engagement of stakeholders can be measured with the Business Model Canvas³⁴. This model can be used for determining the stakeholder groups and for assessing each group in order to choose indicators.

Based on sources of scientific writings, proposed methodology task, as well as on his own assumption that a competitive company is a financially sound one, the Doctoral Thesis author offers 26 non-financial indicators for measuring competitiveness. It is assumed in the

³⁰ Parmenter D. Key Performance Indicators. – Hoboken: John Wiley & Sons, 2007. – 236 p.

³¹ Neely A., Mills J., Platts K., Richards H., Gregory M., Bourne M., Kennerley M. Performance measurement system design: developing and testing a process-based approach// International Journal of Operations & Production Management Emerald . – 2000. - Vol. – 20. - Iss.10. – pp. 1119 – 1145.

³² Pun K.F., White A.S. A performance measurement paradigm for integrating strategy formulation: A review of systems and frameworks// International Journal of Management Reviews Volume 7, Issue 1, pages 49–71, March 2005. DOI: 10.1111/j.1468-2370.2005.00106.x.

³³ Cooper D. R., Schindler, P. S. Business Research Methods, 6th edition. Boston: McGraw-Hill, 1998. – 703 p.

³⁴ Business Model Foundry: The Business Model Canvas/ Online source.-
<http://www.businessmodelgeneration.com/canvas>

Doctoral Thesis that a company is financially sound. Therefore, only non-financial indicators are considered for determining effectiveness (increase of competitiveness).

The elaborated methodology consists of seven stages, as well as an implementation and control stage (see Fig. 5).

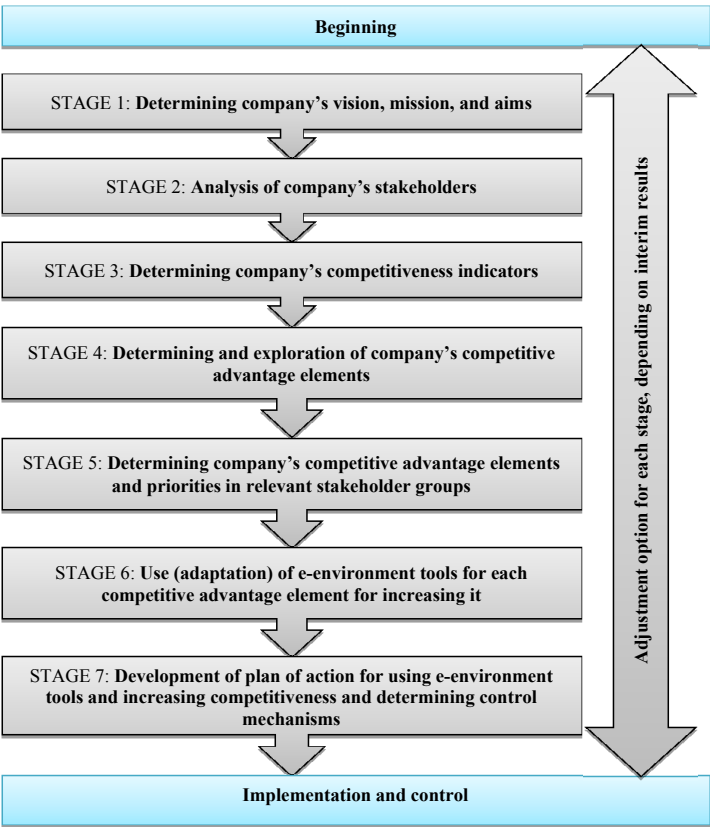


Fig. 5. Conceptual framework of methodology [the author's original work]

STAGE 1: Determining the company's vision, mission, and aims

Companies must determine/specify the vision and mission. Depending on it, the company must set the aim that it wants to achieve in the upcoming 1–3 years in order to

increase its competitiveness. Based on these aims, the company's action plan will be developed.

For setting forth the aims, the Doctoral Thesis author recommends using the acronym **SMART**^{35 36}, which is an indicator used in project management and strategic planning during the phase of defining the aims, as well as to evaluate the pre-defined aims.

Thus, the aims must be: **Specific, Measurable, Attainable, Relevant, Timely**. In scientific literature, one can come across an extended acronym as well, including also the following criteria – **Evaluate, Re-evaluate, and Satisfactory (SMARTERS)**.

It is recommended for companies to assess the company's size according to the developed company categorization available in Appendix 1 of the Doctoral Thesis (see Table 1.4 of Appendix 1).

STAGE 2: Analysis of company's stakeholders

In this stage, the company must perform a stakeholder analysis. Based on conclusions made in Sub-section 1.4.1.1, stakeholders are determined, using the Osterwalder's Business Model Canvas.³⁷ The business model canvas consists of the following stakeholder groups: key partners, key activities, value proposition, customer relationship, customer segments, key resources, channels.

To evaluate the company's collaboration with each of the stakeholder groups, a company may create a graph similar to "the competition polygon". Collaboration with each stakeholder group can be assessed on a scale independently created by the company, for instance, from 1 (the lowest evaluation) to 5 (the highest evaluation). The Doctoral Thesis author recommends SMEs to use the SWOT matrix to analyse each stakeholder group in detail.

STAGE 3: Determining company's competitiveness indicators

According to the aims set forth in the first stage, the company may choose indicators (see Section 4.1 of the Doctoral Thesis), with the help of which the results to be achieved are further assessed and controlled. During the process, the company may change the indicators

³⁵ Drucker P.F. The Practice of Management, 1954. - New York: Harper. – 404 p.

³⁶ Doran G. T. There's a S.M.A.R.T. way to write management's goals and objectives// Management Review. 1981. – Vol.70. – Iss.11. – pp. 35-36.

³⁷ Osterwalder A., Pigneur Y. Business Model Generation. – Hoboken: John Wiley & Sons, 2009. – 279 p.

or choose other ones, as well as replace them depending on interim results and various adjustments in processes.

STAGE 4: Determining and exploration of company's competitive advantage elements

When assessing the existing business model of the company and based on the set aims, the company must choose competitive advantage elements, with the help of which competitive advantage/-s of the company will be generated, which will then promote an increase of the company's competitiveness. When choosing the competitive advantage elements, the company must be aware of the available resources and costs, priorities, market demands, peculiarities of the entrepreneurship sphere, as well as other factors. The competitive advantage elements offered by the Doctoral Thesis author are described in Sub-section 1.1.3.1 of the Doctoral Thesis.

STAGE 5: Determining company's competitive advantage elements and priorities in the relevant stakeholder groups

After the company's competitive advantage elements are selected, based on the analysis performed in stage 2, the company must arrange the selected elements according to the stakeholder groups. In this stage, it is important for the company to determine the priority stakeholder groups. For this purpose, the company can employ the benchmarking principles. The author of the Doctoral Thesis recommends that companies use also the decision matrix.³⁸
³⁹ The matrix helps arranging all elements clearly and in a structured way and to see and analyse the overall situation, as well as to consider and evaluate several combinations.

Upon completing stage 5, the company will obtain answers to the question "which elements are the most important for the specific stakeholder group?" Having obtained specific answers, the company can plan specific e-environment tools for each competitive advantage element.

STAGE 6: Use (adaptation) of e-environment tools for each competitive advantage element for increasing it

³⁸ Tague N. R. *The Quality Toolbox*. 2nd Edition. – New York: ASQ Quality Press, 2004, pp. 219–223.

³⁹ Hammond J.S., Keeney R., Raiffa H. The Hidden Traps in Decision Making// Harvard Business Review. – 1998. – Sep-Oct. – p.11.

In this stage, the company must choose e-environment tools that are suitable for the selected competitive advantage element. Tools and elements must be evaluated taking into account their use in communication with stakeholder groups.

STAGE 7: Development of plan of action for using e-environment tools and increasing competitiveness and determining control mechanisms

The plan of action must be supplemented with indicators and terms. The company's plan of action must include also the following information: the term of validity of the plan; persons in charge of implementing the plan; criteria confirming fulfilment of a stage/the plan; performance deadlines; reporting regularity and deadlines; report form; procedure of introducing adjustments, etc.

The management must introduce control mechanisms for plan performance. They must include the ways of how proper performance of the plan's stages will be controlled, by determining the criteria, according to which the performance of each stage will be evaluated. The employee in charge of fulfilment of the entire plan must be able to supervise the plan as a whole and each element separately.

The company can implement the offered methodology independently or by engaging a consultant.

The author has carried out approbation of the methodology, by using examples of Latvian companies

Competitiveness of companies is formed based on competitive advantages. Competitive advantages contain several elements – resources, cooperation with stakeholders, brand image or recognisability, a stable market position, etc., affecting the overall competitiveness of the company (see Thesis Sub-section 1.1.3.1).

Electronic environment, including e-environment tools, is one of the core elements of a sustainable competitive advantage. By effectively using e-environment tools, companies can not only improve various entrepreneurial processes, but also improve their competitiveness. By using the author's developed methodology, companies can more effectively work with the existing e-environment tools or start activities in e-environment, analyse and enhance the existing and plan new activities in the e-environment, thereby improving operational indicators and as a result – increase the level of competitiveness.

The author uses specific case studies of Latvian companies as regards their use of e-environment tools to show how the proposed methodology can be applied, as well as how

active use of e-environment tools promotes improved operational results and hence ensures increased competitiveness.

By analysing three case studies of Latvian companies, the author shows that regular and effective e-environment use helps improve operational results. Thus, it can be maintained that a company's competitiveness also improves. Without a doubt, the e-environment is only one of the sustainable competitive advantage elements and there are also other factors affecting a company's competitiveness. Nevertheless, examples show that the e-environment is an important and intrinsic part of today's business. Moreover, proper and competent use of e-environment tools fosters SME competitiveness.

CONCLUSIONS AND SUGGESTIONS

CONCLUSIONS

During the study, the stipulated hypothesis was proved correct and it was concluded that the use of electronic environment can help micro, small, and medium enterprises compensate for the missing resources and ensure an increase of competitiveness and more rapid development. The study results are represented in the following conclusions:

1. Nowadays, two concepts are used synchronously: e-environment and cyberspace, both are synonyms, as proven by the lexicographic analysis and a focus group study. The main difference is in the use of the concepts, namely, the concept *e-environment* is used in wide circles of the society, public institutions, enterprises, consumers, etc., however, in essence, when talking of e-environment, the concept *cyberspace* is also used mainly by more narrow circles of specialists and scientists.
2. The analysis of the Latvian e-market shows that it has untapped potential, because, according to the Latvian statistical data, only 14 % of all Latvian internet users shop online on a regular basis, and the amounts spent by consumers online are insignificant. The study results show that Latvian inhabitants are active internet users, who employ various e-environment tools and advantages provided by the e-environment. Moreover, Latvian entrepreneurs see great potential in the e-market, which can promote entrepreneurial development. However, in spite of the extensive offer of e-tools that can be applied in entrepreneurship in various ways, companies use only widespread e-environment tools; this reduces their competitiveness and narrows their opportunities to actively and successfully work on the e-market.

3. The author's conducted study on the use of e-environment in entrepreneurship proved that a range of e-tools is available simultaneously, which can ensure more effective use of company's resources and development in a long-term, however entrepreneurs do not know all of them or do not know how to or do not wish to use them. By informing the small and medium company managers about the available e-tools and their use, considerable increase in competitiveness of companies can be achieved, which concurrently ensures creation of additional values for the company's clients and stakeholders, as well as promotes company's development.
4. As a result of analysis of e-tools, e-environment tools have been categorized based on their respective use in entrepreneurship; they are divided into two groups – communication e-environment tools and identification and presence confirmation tools. Tools of each group are further categorized depending on their function. The totality of e-environment tools to be used in a company constitutes what is known as the proportional division of company's e-environment tools, providing an overview of the general use of e-environment tools at the company, as well as allowing to analyse the company's level of activities on the e-market.
5. The entrepreneurship analysis in Latvia, the Baltic States, and the European Union confirmed the dominant nature of micro, small, and medium enterprises in the economy and unveiled the untapped potential of the e-environment. Creation of the added value, using the e-environment, is one of advantages of SMEs in today's global market.
6. Upon performing an in-depth analysis of company development aspects, the author concludes that a company's development is intrinsically linked to their competitiveness, and it is important for the company to know and have a grasp of, as well as to use the elements shaping their competitive advantage in their operations, among them – the electronic environment and e-tools.
7. Upon having analysed the data of the European Union member states about the use of technologies in entrepreneurship and their impact on national macroeconomic indicators, regulatory documents of the European Commission, including the *Small Business Act*, as well as reports about entrepreneurship development, it is concluded that the use of technologies (incl., information technologies) positively affects not

merely entrepreneurship and related processes, but also national macroeconomic parameters.

8. There is a range of internal and external factors affecting the activities of companies in the electronic environment. Having performed an analysis of these factors, the author categorized them, by dividing them into two major groups – positively and negatively affecting factors. One of the obstacles in development of a company is adaptation of technologies, including information technologies. Therefore, it is important for companies not only to introduce and use the new technologies, but also to adapt them, because oftentimes company managers and employees accept the e-environment tools only partially, and that is an obstacle for proper use of e-tools.
9. The performed factor analysis points to insufficient information about the use of e-environment in entrepreneurship and to poor knowledge about the use of e-environment tools in entrepreneurship. Managers and employees of Latvian SMEs are aware that e-environment tools can be used to replace/supplement the insufficient or lacking resources. The advantage of the use of e-environment tools is that no significant financial resources must be invested, because the main resources needed are time and human capital.
10. Studies show that companies have a low level of knowledge about e-environment tools, opportunities provided by them, as well as their use for entrepreneurship needs. The willingness of companies to gain knowledge and learn how to use e-environment tools for entrepreneurship needs is a positive trend; it could be a signal for educational establishments of various levels to introduce new training programmes relevant for the market demand, etc.
11. Information communication technologies (ICT) bear major significance in value creation for consumers, which definitely affects company image. However, several studies conducted by the author of the Doctoral Thesis and other scientists in the area of e-environment show that many Latvian SMEs are not using information communication technologies. Therefore, the most suitable way should be sought for integrating information technologies in elaborating small business development models.

12. As a result of the study, methodology was developed; it can serve to foster an increase in the use of e-environment tools in SMEs, all the while ensuring development of companies and increased competitiveness on local and global market. Practical approbation of methodology confirmed its usefulness. One of the main advantages of the methodology is the big number of included indicators, with the help of which entrepreneurs can ensure monitoring of development of the company.

SUGGESTIONS

Theoretical and methodological suggestions:

To the Ministry of Education of the Republic of Latvia and education establishments

- To develop new and to improve existing study programmes for increasing digital knowledge in the society at all educational levels, incl., at the highest education level, by improving entrepreneurship management programs. It is recommended to introduce requirements regarding a set digital knowledge level in professional standards.

To non-governmental organizations, training performers

- To use the author's proposed methodology for increasing competitiveness in the e-environment, by enhancing the content of lifelong learning programmes and presenting it as a new approach in training seminars intended for company managers.

To entrepreneurs

- It is recommended to study and acquire business model types, because the right choice of a business model and creation thereof fosters successful work in the electronic market. The author recommends using the main groups of two models – taxonomic and conceptual business models. Taxonomic models determine specific activities and tools for entrepreneurship and are the most likely solutions for gaining profit. Conceptual business models are broader and include also the taxonomic models. The second type is more suitable for the Latvian entrepreneurship environment, because this model enables companies to perform not just specific activities, but also to carry out an analysis of the business standing and to observe the entrepreneurship processes.
- It is recommended to examine digital knowledge at an individual level, to assess it critically, and to take the available opportunities for improving them, otherwise there

are threats of losing one's own and company's competitiveness in several fields of entrepreneurship.

- Companies must be well-informed not only about their clients and key partners, but also about all stakeholders of the entrepreneurship process; likewise, the communication process must be regularly improved and enhanced with them, because the study results confirm the importance of stakeholders in increasing competitiveness of a company. By using the author's developed methodology, companies are recommended to analyse their respective stakeholders, determine and choose indicators for measuring competitiveness, study competitive advantage elements within the context with stakeholders, identify e-environment tools; elaborate an action plan for using e-environment tools and increasing competitiveness, as well as to determine a control mechanism for controlling its performance.
- When considering development of a company, as well as entrepreneurship in general, the differing habits, behaviour and other aspects of the different stakeholder generation groups must be understood – suitable approaches can be employed in work with them.
- In business planning, it is recommended to take into account both of the main development directions based on conditions – how to earn money today (short-term) and how to earn money in future (long-term). Companies must understand that in five years the new internet user generations will become economically active and a radical change in e-business models will then be expected.

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Deniss ŠČEULOVŠ

**USE OF ELECTRONIC ENVIRONMENT IN
ENTREPRENEURSHIP DEVELOPMENT**

Summary of Doctoral Thesis

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