FACTORS CONTRIBUTING TO THE REGIONAL DEVELOPMENT OF E-COMMERCE IN LATVIA

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Abstract. E-commerce contributes to the improvement of communications between the company, producers, distributors and customers. However, it should be noted that success in e-commerce depends upon determining effective factors in e-commerce. There is a set of effective inside organisational and outside organisational factors in e-commerce which should be taken into consideration during the development of e-commerce.

According to the recent results of DESI Index, Latvia lags behind the EU average on integration of digital technology by businesses. Despite excellent connectivity and good digital public services, Latvian SMEs do not use effectively online selling, social media, cloud computing and big data possibilities. At the same time, it is recognised nationally that e-commerce provides good opportunities to develop business, including in the regions. Taking into account the before-mentioned, the aim of the paper is to analyse the factors contribution to the development of e-commerce in the regions in Latvia.

Main results of the research: in general, factor groups "Technological development" and "Social factors (human skills)" were assessed the highest among Latvian entrepreneurs. Such individual factors as desire to develop, employee knowledge, and managerial attitude, technological development in the world, and managerial knowledge and existence of financial resources in the company were evaluated the highest in terms of effect on usage of e-commerce in the business. In case of regional cross-cut, in Kurzeme, Riga and Latgale regions entrepreneurs are rather in favour of technological development factors affecting the usage of e-commerce, while entrepreneurs in Zemgale and Vidzeme regions think that social factors affect the development of e-commerce the most.

Key words: e-commerce, regions, Latvia, regional development.

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Introduction

In order to ensure development, companies and organisations have to find a way to be competitive. According to Almousa (2013), "e-commerce is expected to be one of the important keys to the success and growth in the current competitive business environment". E-commerce is regarded as an appropriate strategy for marketing, selling and integrating online services which can play a significant role in identifying, obtaining and maintaining customers (Choshin and Ghaffari, 2017). In addition, e-commerce, which plays an outstanding role in global economic affairs (Feizollahi, Shirmohammadi, Kahreh, & Kaherh, 2014). Furthermore, e-commerce has produced fundamental changes in business view in terms of better production and better relationship between customers and producers (Yang, Pang, Liu, Yen, & Tarn, 2015).

Numerous studies have addressed the issues why SMEs do not use e-commerce possibilities (Dahbi and Benmoussa, 2019). Concerning organisational factors such aspects as CEO/ Managers attitude (Abdul Hameed & Counsell, 2012), lack of top-management support, limitation of employees' IS knowledge (Zaied, 2012) were examined. As regards technological factors, studies are focused on lack of IT/ e-commerce infrastructure (Lawrence et al, 2010). At the same time, customers are concerned by language and content barriers as well as lack of secure payment infrastructure (Lawrence et al., 2010). In addition, customer and supplier pressure is considered as a barrier to e-commerce adoption (Rahayu & Day, 2015) as well as government regulations (Wresch & Fraser, 2011). Recent study of Dahbi and Benmoussa (2019) showed that the technological and

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financial factors are the most influential ones in context of barriers to e-commerce adoption among SMEs.

Dyerson et al. offers following classification of factors affecting e-commerce development for SMEs:

- Scientific factors: this class of factors includes the executive managers' knowledge and experiences, employees' expertise, customers' perceptions and awareness;
- Environmental factors: this group of factors includes markets, rules of government, producers and customers;
- Human factors: this category is related to the accessibility and application of internal resources and the number of specialist employees;
- Technical factors: this class of fasters includes technology, costs and security (Dyerson, Harindranath, & Barnes, 2009).

Another barriers for domestic and cross-border e-commerce from the point of view of customers are highlighted by Gefen (2000), Gomez-Herrera et al. (2014), Cardona, et al. (2015), Valarezo et al. (2018) and PayPal (2019): little familiarity and trust in the vendor, crossing language barriers, need of a secure way to pay, cost-efficiency of parcel delivery, and costs shown in different currency, among others.

In case of Latvia, according to the DESI Index 2019, only 10 % of SMEs in Latvia sell online, slightly less than in 2017 and below the EU average of 17%. The percentage of SMEs selling cross-border remains below the EU average (only 5 % of total SMEs, against 8 % in the EU as a whole) and only an average of 5 % of SMEs turnover comes from the online segment. Only 13 % of enterprises use social media, while 8 % use big data (European Commission, 2020).

Research question: What are the main factors that contribute to the development of e-commerce in the region of Latvia?

Taking into account the before-mentioned, the aim of the paper is to analyse the factors contribution to the development of e-commerce in the regions in Latvia.

Tasks are formulated as follows:

- 1) to review scientific background and empirical research on factors contribution to the development of e-commerce;
- 2) to analyse the factors that enhance the development of e-commerce in regions of Latvia;
- 3) to provide recommendations to regional enterprises on development of e-commerce.

In order to achieve the aim, following research methods have been used: scientific literature studies, statistical data analysis, survey.

Delimitations of the research: the subject of the research is SMEs that represent all regions of Latvia (Riga, Kurzeme, Zemgale, Vidzeme, Latgale).

Main information sources: primary data: business survey; secondary data: scientific literature, published studies, political planning documents and normative legal acts, as well as official statistical databases.

Novelty and topicality of the research includes assessment of various factors by Latvian entrepreneurs analysed in the regional cut.

Research results and discussion

In order to analyse the use of e-commerce opportunities by Latvian entrepreneurs, a survey of entrepreneurs on factors contributing to the development of e-commerce was developed. The aim of

the survey was to find out what factors influence the use of e-commerce in Latvian companies, incl. how these factors vary depending on the region in which the company operates. The survey was conducted from November 2019 to January 2020. In total, 77 companies participated in the survey representing all regions of Latvia as well as various sectors of national economy.

The survey was conducted electronically using an e-platform tool *WebropolSurveys*.

In order to ensure the representativeness of the survey results, a sample of companies was created, which could represent the general population - Latvian companies in general. To ensure this, the following criteria were put forward:

- 1) Type of business activity;
- 2) Number of employees in the company;
- 3) Place of incorporation (regional cut: Riga, Zemgale, Kurzeme, Latgale and Vidzeme regions).

The survey was developed on the basis of the results of an expert survey on the impact of various factors on the use of e-commerce in the commercial activities of Latvian companies, organised by the authors in March 2019 (Rivza et. al, 2019).

1. Factor groups affecting the development of e-commerce for regional SMEs in Latvia

First, the entrepreneurs were asked about the importance of corresponding factor groups that influence e-commerce development (see Fig. 1). In general, the factor groups "Technological development" and "Social factors (human skills)" were assessed the highest. Respondents admitted that factor group "Legislation" do not have significant impact on development of e-commerce. In case of regional cross-cut, in Kurzeme, Riga and Latgale regions entrepreneurs are rather in favour of technological development factors affecting the usage of e-commerce, while entrepreneurs in Zemgale and Vidzeme regions think that social factors affect the development of e-commerce the most. Initial comparison of results shows that among the regions there are mostly differences in the assessment of the factor groups "Social factors" and "Legislation".

Source: business survey, number of respondents - 77; research period: November 2019 - January 2020

Fig. 1. Answers to the question "Please rank the groups of impact factors in order of importance (1 is the most important) that most influence e-commerce development" – regional cut

In order to analyse if there are difference among the regions in assessment of factor groups, the F test on sample variations was conducted. Its results showed that in all cases the F value was less than the critical F value. This means that the null hypothesis of cannot be rejected at significance level $\alpha = 0.05$ and the variations in the sample (distribution of entrepreneurs by regions) are equal to the overall enterprise sample.

Next, a t test was performed on the mean of the two samples, namely, the null hypothesis (H_0) was put forward that the mean of the two samples (ratings of the entrepreneurs of the respective region against the total ratings) for each group of factors is equal at the significance level $\alpha = 0.05$ (Tab. 1).

Table 1

**Results of t-Test Two-Sample Assuming Equal Variances
 (group of factors) by regional cut**

Factor group	t statistical value	t critical value	Result
Rīga			
Economic factors	0.742	1.980	Ho cannot be rejected
Public policy	0.692	1.981	Ho cannot be rejected
Technological development	0.051	1.980	Ho cannot be rejected
Social factors	0.322	1.980	Ho cannot be rejected
Legislation	0.630	1.980	Ho cannot be rejected
Kurzeme			
Economic factors	0.038	1.989	Ho cannot be rejected
Public policy	0.616	1.989	Ho cannot be rejected
Technological development	0.819	1.988	Ho cannot be rejected
Social factors	1.445	1.988	Ho cannot be rejected
Legislation	0.070	1.989	Ho cannot be rejected
Vidzeme			
Economic factors	0.326	1.988	Ho cannot be rejected
Public policy	1.063	1.989	Ho cannot be rejected
Technological development	0.951	1.988	Ho cannot be rejected
Social factors	1.671	1.988	Ho cannot be rejected
Legislation	1.840	1.988	Ho cannot be rejected
Latgale			
Economic factors	1.778	1.989	Ho cannot be rejected
Public policy	0.332	1.989	Ho cannot be rejected
Technological development	0.290	1.988	Ho cannot be rejected
Social factors	0.126	1.989	Ho cannot be rejected
Legislation	3.460	1.989	Reject the H ₀
Zemgale			
Economic factors	0.419	1.988	Ho cannot be rejected
Public policy	0.269	1.988	Ho cannot be rejected
Technological development	0.476	1.988	Ho cannot be rejected
Social factors	0.158	1.988	Ho cannot be rejected
Legislation	0.331	1.988	Ho cannot be rejected

Source: business survey, number of respondents - 77; research period: November 2019 - January 2020

The results of the t test showed that only in case of Latgale region the factor group "Legislation" statistically differs from overall ratings, it means that entrepreneurs in Latgale region indicated that factor group "Legislation" is the least important factor that affects the development of e-commerce.

2. Factors affecting the use of e-commerce for regional SMEs in Latvia

Next, the analysis was conducted on individual factors. Table 2 illustrates the evaluation of entrepreneurs for individual factors that affect the use of e-commerce in their business. Overall results showed that, half of the companies considered the following factors to be very important (rating "9") for the use of e-commerce: mobile network coverage, employee skills, managerial attitude, willingness to develop, employee knowledge, managerial knowledge. The highest average scores are for the following factors: desire to develop (8.16), employee knowledge (8.12), managerial attitude (7.99), technological development in the world (7.96), and managerial knowledge (7.87) and existence of financial resources in the company (7.82).

According to the surveyed companies, the least important factors in the development of e-commerce are the leader of non-governmental organisations (average rating - 4.25), the activity of non-governmental organisations (4.63), the leader in the municipality (4.73), and local government policy (4.75).

In order to identify, if overall results statistically differ among the regions, at first step those factors (for regions) which scores differ by 20% from average scores were selected.

Table 2

Answers to the question "Please rate on a scale of 1 (not significant) to 9 (very important), factors that you think affect the use of e-commerce in your business" – regional cut

Factor	Riga	Kurzeme	Vidzeme	Latgale	Zemgale
Development of telecommunications network	7.1	6.1	8.3	8.1	7.9
Cellular network coverage	7.3	7.1	8.2	8.6	8.2
Employees' skills	7.9	5.9	9.1	8.3	7.2
Manager's skills	7.7	5.6	8.2	8.4	6.8
Manager's attitude	8.0	6.3	9.0	8.9	7.7
Creative atmosphere in the company	7.5	5.6	8.7	6.9	6.8
Competitors' activities	7.6	4.8	7.3	7.5	6.8
Positive success stories	6.5	5.8	6.9	7.8	5.8
State aid	5.4	7.4	8.8	7.1	7.0
Business environment in the country	6.8	7.6	7.9	7.0	7.5
Activities of non-governmental organisations	4.8	3.0	5.1	3.9	5.3
Availability of EU funds	5.2	7.0	6.9	7.3	5.7
EU policy	5.1	4.6	5.8	4.1	5.4
Local government policy	5.2	4.4	3.7	3.3	3.8
Existence of financial resources in the company	7.8	6.3	8.6	8.5	8.1
Desire to develop	8.4	6.4	8.8	9.0	7.4
Training opportunity for employee	7.7	5.9	8.6	8.3	7.0
Leader of the company	7.1	6.3	8.0	8.8	7.7
Leader of the municipality	5.4	3.4	4.1	4.3	4.0
Leader of the country	5.1	4.0	4.9	4.0	4.3
Leader of non-governmental organisations	4.7	3.5	4.3	3.3	3.9
Global market trends	8.0	6.5	7.6	7.8	7.3
Technology development in the world	8.2	6.9	8.3	8.1	7.5
Knowledge of employees	8.3	6.1	9.0	8.4	7.7
Manager's knowledge	7.9	6.9	8.7	8.4	7.4
Taxation policy	5.9	5.5	7.3	7.4	7.2
E-commerce legislation	7.2	6.9	8.4	8.5	7.5
Investment opportunities	6.9	6.3	8.4	8.4	6.9

* marked average scores that are at least 20% higher (in light grey) or lower (in dark grey) than the average in the sample overall

Source: business survey, number of respondents - 77; research period: November 2019 - January 2020

Entrepreneurs of Kurzeme and Latgale expressed the most different evaluations of the factors influencing e-commerce. The opinions of entrepreneurs in Riga and Zemgale were not so different from the opinions of Latvian entrepreneurs on the importance of factors in the development of e-commerce.

As second step, in order to find out whether there are significant differences between the surveyed entrepreneurs' assessment of the importance of certain factors in the development of e-commerce in the regional section, a F test on sample variations was first performed. Its results showed that in all cases the F value was less than the critical F value. This means that the null hypothesis of equal variations in the samples cannot be rejected at significance level $\alpha = 0.05$ and the variations in the samples (distribution of entrepreneurs by regions) are the same.

Next, a t test was performed on the mean of the two samples, namely, the null hypothesis (H_0) was put forward that the mean of the two samples (the respective region's ratings against the total ratings) for each factor is equal at the significance level $\alpha = 0.05$. The results are illustrated at Table 3.

Table 3

**Results of t-Test Two-Sample Assuming Equal Variances
 (individual factors) by regional cut**

Factor	t statistical value	t critical value	Result
Kurzeme			
Employees' skills	2.176	1.989	Reject the H ₀
Manager's skills	1.772	1.989	Ho cannot be rejected
Manager's attitude	1.923	1.988	Ho cannot be rejected
Creative atmosphere in the company	1.713	1.989	Ho cannot be rejected
Competitors' activities	2.686	1.988	Reject the H ₀
Activities of non-governmental organizations	1.465	1.989	Ho cannot be rejected
Availability of EU funds	1.009	1.988	Ho cannot be rejected
Desire to develop	2.321	1.988	Reject the H ₀
Training opportunity for employee	2.101	1.988	Reject the H ₀
Leader in the municipality	1.229	1.988	Ho cannot be rejected
Knowledge of employees	2.450	1.988	Reject the H ₀
Vidzeme			
Creative atmosphere in the company	1.627	1.988	Ho cannot be rejected
State aid	2.375	1.988	Reject the H ₀
Latgale			
Positive success stories	1.328	1.988	Ho cannot be rejected
Availability of EU funds	1.247	1.988	Ho cannot be rejected
Local government policy	1.218	1.989	Ho cannot be rejected
Leader of the company	1.442	1.988	Ho cannot be rejected
Leader of non-governmental organizations	0.873	1.989	Ho cannot be rejected

Source: business survey, number of respondents - 77; research period: November 2019 - January 2020

As can be seen in Table 3, significant differences in the regional breakdown for entrepreneurs are due to the following factors:

- Employees' skills (for Kurzeme entrepreneurs);
- Competitors' activities (for Kurzeme entrepreneurs);
- Willingness to develop (for Kurzeme entrepreneurs);
- Training opportunity for employees (for Kurzeme entrepreneurs);
- Knowledge of employees (for Kurzeme entrepreneurs);
- State aid (for Vidzeme entrepreneurs).

In other cases, the assessment of the importance of e-commerce factors in different regions of Latvia does not differ significantly from the overall assessment.

To sum up, for Riga entrepreneurs the most important factors regarding usage of e-commerce are desire to develop (average score – 8.4), knowledge of employees (8.3), technology development in the world (8.2), manager's attitude (8.0) and global market trends (8.0). At the same time, Kurzeme entrepreneurs assessed factors lower. The most important factors for them are business environment in the country (average score – 7.6), state aid (7.4), cellular network coverage (7.1) and availability of EU funds (7.0). Regarding Vidzeme entrepreneurs, the most important factors regarding usage of e-commerce are knowledge of employees (average score - 9.0), manager's attitude (9.0), desire to develop (8.8), manager's knowledge (8.7), and creative atmosphere in the company (8.7). As concerns Latgale entrepreneurs, the most important factors are desire to develop (average score – 9.0), manager's attitude (8.9), leader of the company (8.8), and Cellular network coverage (8.6). Regarding Zemgale entrepreneurs, the most important factors are Cellular network coverage (average score - 8.2), existence of financial resources in the company (8.1), as well as development of telecommunications network (7.9).

Conclusions, proposals, recommendations

- 1) The literature review showed the most important factor groups that affect the use of e-commerce are technological development, organisational, legislation, and economic factors. At the same time, language and content barriers as well as lack of secure payment infrastructure are considered as significant barriers avoiding to adapt e-commerce.
- 2) Conducted survey demonstrated that, in general, factor groups "Technological development" and "Social factors (human skills)" are the most important for Latvian entrepreneurs regarding the development of the e-commerce. In case of regional cross-cut, in Kurzeme, Riga and Latgale regions entrepreneurs are rather in favour of technological development factors affecting the usage of e-commerce, while entrepreneurs in Zemgale and Vidzeme regions think that social factors affect the development of e-commerce the most.
- 3) Survey results showed that such individual factors as desire to develop, employee knowledge, and managerial attitude, technological development in the world, and managerial knowledge and existence of financial resources in the company were evaluated the highest in terms of effect on usage of e-commerce in the business.
- 4) The analysis of individual factors showed that the evaluations of Kurzeme region entrepreneurs varied the most from general evaluations. Entrepreneurs from Kurzeme region finds business environment in the country, state aid cellular network coverage and availability of EU funds the most important regarding the use of e-commerce in their business, while in the rest of Latvia the most important factors are desire to develop, technology development in the world, knowledge of employees and manager's attitude.

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