

COMMERCIAL TRANSACTIONS IN THE DIGITAL ENVIRONMENT IN LATVIA

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Abstract. Commercial transactions in the digital environment represent the core of the digital economy. Progress in information technology opens up opportunities for commercial transactions in the digital environment, thereby raising operational productivity and the flow of goods and services to a new level. The digital transformation of commercial transactions occurred very fast owing to the COVID-19 pandemic, thereby contributing to a significant increase in the number of commercial transactions both globally and nationally that have become available to more than half of the world's population. Making digital commercial transactions is affected by a number of factors: information technology infrastructure, Internet speed, digital security, consumer skills, consumer protection and delivery logistics. The research analysed data on the population using the Internet in Latvia, the EU and the world. The research identified correlations between: the number of digital commercial transactions and the population, mobile Internet speed and the number of individuals who shopped online, the categories of goods purchased online and gender, the amounts of money spent on online purchases and the employment category. In 2020, according to Eurostat, 56% of the population of Latvia made digital commercial transactions. The figure for Latvia was 8% lower than the European Union average. A comparison of the numbers of digital commercial transactions between Latvia and the other Baltic States revealed that the figures for Latvia were mediocre. The number of transactions was higher in Latvia than in Lithuania by 2%, while Estonia experienced the largest increase in the number of digital transactions, which was 12% higher than in Latvia. The comparison indicates that it is possible to increase the number of digital commercial transactions in Latvia.

Keywords: digital, commercial transactions, indicators.

JEL code: O44

Introduction

Enterprises changed dramatically because of the expansion of use and availability of information technologies, so did the world view and the business pattern. The current business environment is global and highly competitive, yet it requires regular innovation. The current knowledge base becomes obsolete rapidly, and various digital solutions are constantly evolving. The Internet has become a matter of course, and the movement of money on the Internet is commonplace. Making commercial transactions in the digital environment involves low start-up costs, an opportunity to quickly expand markets and sales 24 hours a day, 365 days a year (Khan, 2016). To start selling on the Internet, commercial transactions could be made in two ways: 1) by creating an e-commerce site, which is an online shop for a company that sells a specific brand of goods; 2) by creating one's own online marketing platform or being a seller on it. A large number of buyers and sellers of goods meet on a marketing platform or online marketplace. An online marketplace is transaction-based business, and the business pattern is based on commission revenue from the transactions made by sellers involved in the platform. Therefore, an important prerequisite for the provider of an online marketing platform is that more buyers attract more sellers and goods (Burt et al., 2003).

The research aims to analyse commercial transactions in the digital environment in Latvia. The following specific **research tasks** were set: to give insight into the theoretical, legal and security aspects of the role of commercial transactions made in the digital environment in achieving the goals of an enterprise; to identify causal associations between dependent variables and factors affecting commercial transactions. The **research object** is commercial transactions in the digital environment. The **research subject** is commercial transactions in the digital environment in Latvia. The **novelty of the research** is

that unique data were collected and analysed and the fact that to date, information on commercial transactions in the digital environment and the potential expansion in Latvia has not been sufficiently collected and analysed. The following **research methods** were employed: content analysis for theoretical and Internet sources, the abstract method, general research methods, statistical analysis, logical construction, analysis and synthesis. To identify causal associations between dependent variables and factors affecting commercial transactions in the digital environment, the research employed a statistics online calculator. The research calculated the chi-squared and Spearman correlation coefficients. The **period of analysis**: 2019-2021. **Data sources**: specialised economic literature, research documents and scientific conference papers, the World Bank, EU regulatory documents, Eurostat, the World Trade Organization, laws of the Republic of Latvia, the Central Statistical Bureau of Latvia, eBay, Amazon, Etsy and the website ss.com. **Research limitations**: the research analysed data on B2C digital commercial transactions, i.e. legal entities supply goods or services to a natural person.

Research results and discussion

The Commercial Law of the Republic of Latvia (Part D) (2002) defines that commercial transactions are lawful transactions of a merchant, which relate to commercial activities. The terms and conditions of a transaction provide for a retail outlet that is the digital environment now in the 21st century; commercial transactions in the digital environment are developing rapidly along with e-commerce, and new forms of commerce emerge, e.g. S-commerce (Bhattacharyya, 2020), F-commerce (Kang et al., 2015), voice commerce or M-commerce (Ashraf et al., 2021). S-commerce means social media commerce, in which buying and selling is done through social media platforms. F-commerce means Facebook commerce. V-commerce is an extension of e-commerce, in which an order is processed or a query is answered in interactive mode, not using touch-sensitive smartphone icons but a personal computer's voice recognition device as an input mechanism. M-commerce is a form of e-commerce in which purchases are made using a smartphone application or a web browser on the smartphone.

To make digital commercial transactions, in many countries the development of the digital environment is especially fostered through adopting legal acts and designing strategic development policies, and financial resources are invested in the digital environment in the national and local government and business sectors. National performance in this field is regularly analysed so that the government can identify the situation and take measures to contribute to the quality of life for individuals and the performance of businesses through the digital economy. The OECD Going Digital Project has analysed the latest developments in the digital economy of Latvia, reviewed national public policies related to digitalization and made recommendations for increasing policy coherence in this area. Based on the OECD report Going Digital Integrated Policy Framework, the research examined trends in the use of digital technologies between individuals and businesses. Among the OECD countries, according to the report, the population of Latvia were still moderate Internet users, while businesspersons lagged behind in terms of use of digital solutions in commercial transactions; therefore, it was recommended to increase the use of digital content by enterprises through providing government support to a small number of SMEs in industries with low ICT use as well as advice on management to help the enterprises to achieve higher digitalization levels (OECD, 2020).

In the EU Member States, statistics on digital progress have been collected since 2014, and annual reports as well as Digital Economy and Society Index (DESI) reports show the digital progress in the Member States. In 2021, Latvia ranked 17th among the EU-27 Member States. Latvia was a leader in broadband coverage and well prepared for the introduction of 5G. Its main advantages were the improved

high-speed broadband coverage at 93%, while the EU average was 87%, and 39% households in Latvia had subscribed to at least 100 Mb/s broadband service, compared with the EU average of 34%. Latvia had almost full 4G coverage at 99.9%. However, the digital gap persisted despite significant investment in middle-mile connections in rural areas. Due to a lack of economic activity in rural areas, there has been no private investment in the viability of last-mile connections; therefore, public funding is needed to provide fast Internet access in rural areas. A comparison of the situation in Latvia with that in other EU Member States and in the EU as a whole revealed that enterprises in Latvia were able to make more use of digital opportunities for digital commercial transactions. The country ranked 23rd in terms of technology integration in the SME sector. In Latvia, however, 18% SMEs used cloud services, only 9% used big data, only 19% were engaged in social media activities, only 11% sold their products online and only 7% earned revenue through digital commercial transactions. In Latvia, digital skills were below the EU average, with more than half of the population still lacking basic digital skills (DESI, 2021).

The already adopted policy documents that directly affect the digital feasibility of commercial transactions in Latvia were examined to perform an analysis of the role of commercial transactions made in the digital environment in achieving the goals of an enterprise, incl. an analysis of the legal and security aspects. Currently in Latvia, the latest and approved policy documents are the Digital Transformation Guidelines for 2021-2027 that aim to create a society, an economy and public administration that purposefully uses current opportunities and creates new ones for the application of digital technologies as well as the infrastructure created, thereby contributing to the quality of life for every individual and society as a whole and the competitiveness of the national economy. One of the priorities related to the digitalization of commercial activities is as follows: by 2027, businesspersons need to implement the digital transformation purposefully and introduce and fully exploit digital solutions. There is also a need to create high-quality digital products and services to enter international markets and supply chains. The guidelines envisage the development of digital skills in businesspersons (at the level of the workforce and management) as factors promoting business efficiency (Draft Digital Transformation..., 2020). To make digital commercial transactions, it is required to have a secure digital environment. The Cyber Security Strategy of Latvia for 2019-2021 has been developed; the priorities in implementing the strategy relate to risk management, resilience, public awareness and the need to balance digital security with openness, prosperity and human rights. In 2010, Latvia adopted the Law on the Security of Information Technologies (2010) (IT Security Law), which serves as the main legal document governing digital security.

The recent breakthrough in information technology has led to new trends, e.g. the use of mobile platforms for business, cloud computing, the use of technology for big data processing etc. The advanced technologies and emerging platforms give enterprises many opportunities. Enterprises need to change their current business pattern, transforming it into a new one. Almost any business environment is known to be in transition or in equilibrium. According to Singh (2019), it is very important for enterprises to follow the current changes in the field of competition and respond to the transition in a timely manner, or to aggressively anticipate consumer demographic changes, emerging technologies and potential new products and services and use them to transform their business.

Next, the research examined the factors affecting digital commercial transactions and identified correlations between: the number of digital commercial transactions and the population, mobile Internet speed and the number of individuals who shopped online, the categories of goods purchased online and gender, the amounts of money spent on online purchases and the employment category.

The Internet is widely used in Latvia. According to a study conducted by the World Bank approximately 86.14% of the population in Latvia used the Internet in 2019. In 2021, the number of Internet users in

Latvia has increased by an average of 0.7%-points, which exceeded the average for the European Union (World Data, 2019). An analysis of increases from the base year for Latvia and the EU reveals that the number of Internet users in Latvia has increased by 78.9%, 61.3% in the European Union and 46.1% globally over the period. However, even more extensive research has been conducted by researchers from Datareportal.com (Kemp, 2021) who found that in January 2021, 88.9% of the population in Latvia used the Internet, which was 35 thou. users more than the same month a year ago. The average mobile Internet speed was 33.32 Mbps, while the average fixed Internet speed was 120.40 Mbps. An analysis of Internet speed across countries revealed that Latvia ranked 66th in terms of average mobile Internet speed and 32nd in terms of fixed Internet speed in the world (Speedtest.net, 2021).

It is also important to identify a causal association between the number of digital commercial transactions made and the population shopping online. A Spearman correlation analysis was performed to identify an association between mobile Internet speed and the percentage of the population who made Internet purchases in the EU Member States in 2020. The following hypotheses were put forward:

- H_0 : $\rho=0$ mobile Internet speed and the percentage of the population who shop online are not reliably related variables;
- H_1 : $\rho \neq 0$ mobile Internet speed and the percentage of the population who shop online are reliably related variables.

Calculations done using an online calculator (Social Science Statistics) showed that the Spearman correlation coefficient was $r_s = 0.5289$, while the p-value was $0.00222 < \alpha = 0.01$, which meant that H_0 needed to be rejected and H_1 needed to be accepted, and at $P=0.99$ mobile Internet speed and the percentage of the population who made purchases online were reliably related variables. Based on the correlation analysis, it could be projected that an increase in mobile Internet speed will increase the percentage of the population making digital commercial transactions. The correlation between the variables is consistent with the findings made by other researchers: with progress in technology, the waiting time for completing digital commercial transactions tends to decrease, and if a digital order takes too long to process, the user looks for another website to purchase the product (Katz et al., 1991; Zona, 1991; Hoxmeier et al., 2000). In addition, users tend to perceive the elapsed waiting time as being longer than it really is (Hornik, 1984).

To identify the digital feasibility of commercial transactions, the Internet usage habits of the population were examined, thereby indicating the digital transformation of commercial transactions. In approximately 60% cases, the Internet was used via computers and in 38% cases via smartphones (Kemp, 2021). This indicator is very important for enterprises intending to increase their competitiveness through digital commercial transactions. It indicates which devices enterprises need to place focus on to customize their digital business solutions.

In the world, the average age of the population using the digital environment and making digital commercial transactions tends to increase. In 2020 in Latvia, however, individuals aged 16 to 24 still made purchases on the Internet most frequently. A correlation between various categories of goods bought online and the age of the population shopping online were identified and a chi-square test was performed based on Central Statistical Bureau (CSB) data. The following hypotheses were put forward:

- H_0 – online shopper age groups and the categories of goods purchased online are not related variables;
- H_1 – online shopper age groups and the categories of goods purchased online are related variables.

Calculations done using an online calculator (MathIsFun) showed that the chi-square value = 96.56, while the p-value = 0.01943 < $\alpha = 0.05$, which meant that H_0 needed to be rejected and H_1 needed to be accepted, and at $P=0.95$ age groups and the categories of goods purchased online were related variables. This indicates that the audience of young people is important for digital commercial transactions in Latvia.

An analysis of gender differences in making digital commercial transactions revealed that women were more likely to shop online for most of the categories of goods. Exceptions were electronics, vehicles and sporting goods. Based on CSB data, a contingency analysis was performed using a chi-square test to determine whether gender and the categories of goods purchased online in Latvia were related variables. The following hypotheses were put forward:

- H_0 – gender and the categories of goods purchased online are not related variables;
- H_1 – gender and the categories of goods purchased online are related variables.

Calculations done using an online calculator (MathIsFun) showed that the chi-square value = 42.76, while the p-value = 0.000094 < $\alpha = 0.01$, which meant that H_0 needed to be rejected and H_1 needed to be accepted, and at $P=0.99$ gender and the categories of goods purchased online were related variables. According to the data and correlation calculations, enterprises need to tailor their advertisements to specific audiences, depending on the product they market, to foster digital commercial transactions. In Latvia, the most popular categories of goods purchased online were very similar to those purchased globally. An analysis of global data on online purchases revealed that categories such as electronics, clothing, sporting goods and household goods were also on the list of the most purchased goods. Tickets to events purchased online were not on the global list, yet the proportion of commercial transactions made to purchase electronics was larger globally than nationally (Komonov, 2019).

To analyse the situation regarding making digital commercial transactions, it is necessary to identify the strength of the correlation between the categories of goods purchased online and the levels of education. Based on CBS data and the correlation analysis, it could be concluded that across almost all the categories of goods, individuals with higher education purchased more goods online. This could be explained by the fact that the population with a higher level of education earn higher incomes. However, it is noteworthy that individuals with primary or no education, as well as those with secondary education, were more likely to buy computers, tablets and mobile phones online. When implementing the digital transformation of commercial transactions, businesspersons need to consider the proportion of the population representing young individuals who may make digital commercial transactions with parental permission.

CSB data were used and a chi-square test was performed to identify whether the levels of education and the categories of goods purchased online were related variables. The following hypotheses were put forward:

- H_0 – the education level and the categories of goods purchased online are not related variables;
- H_1 – the education level and the categories of goods purchased online are related variables.

Data categories with percentage values less than 5, e.g. music in physical formats and movies or serials in physical formats, were selected to give the test a higher degree of reliability. Calculations done using an online calculator (MathIsFun) showed that the chi-square value = 26.94, while the p-value = 0.3071 > $\alpha = 0.01$, which meant that H_0 needed to be rejected and H_1 needed to be accepted, and at $P=0.99$ the education level and the categories of goods purchased online were not related variables. For this reason, it is not advisable for enterprises to focus on a segment of population with a certain level of education when designing a strategy for marketing goods online.

An analysis of the frequency of making digital commercial transactions, based on CSB data, revealed that most of the population made such transactions at least once or twice a year, 31% indicated that it was at least 3-5 times a year, while 14% admitted that it was more than 6 times a year. As regards the average amounts of money spent on online purchases, most often it was up to EUR 50, while 3% of the population spent on average more than EUR 500. A chi-square test was performed to identify whether the employment category and the average amount of money spent on online purchases in the last 3 months were related variables. The following hypotheses were put forward:

- H_0 – the employment category and the average amount of money spent on online purchases are not related variables;
- H_1 – the employment category and the average amount of money spent on online purchases are related variables.

To give the test a higher degree of reliability, data categories with percentage values less than 5 were excluded, i.e. the amount of money spent on online purchases above EUR 499 and the category "Unknown". Calculations done using an online calculator (MathIsFun, [s.a.]) showed that the chi-square value = 9.54, while the p-value = 0.3892 > $\alpha = 0.01$, which meant that H_0 could not be rejected, and at $P=0.99$ the employment category and the average amount of money spent on online purchases in the last 3 months were not related variables. Sellers who want to make digital commercial transactions need to consider customer feedback on the transactions that have already been made, as well as identify the reasons why digital commercial transactions are not made by customers. According to the CSB, the most common problem was long delivery times or receipt of damaged or incorrect goods. Of the 40% of the population who had not made digital commercial transactions, 80% indicated that they had not done it because of the habit of shopping in person, and this habit was typical of the elderly. Concerns about payment security and privacy had deterred a small proportion of the population or 11% from shopping online (Central Statistical Bureau, 2019).

Conclusions, proposals, recommendations

- 1) According to the summary of theoretical findings, the digital feasibility of commercial transactions requires a supportive government policy, advanced technological resources, prosperous and educated individuals and enterprises and a complete legal framework. Making commercial transactions in the digital environment involves low start-up costs, as well as an opportunity to quickly expand markets and sales.
- 2) In Latvia, digital commercial transactions have been recognized as a significant component of commercial transactions; national policy documents of various levels have been drawn up, a legal framework for digital commercial transactions has been adopted, recommendations have been developed for businesspersons to know what tax and register requirements need to be met for making digital commercial transactions.
- 3) A comparison of the situation in Latvia with that in other EU Member States and in the EU as a whole revealed that enterprises in Latvia were able to make more use of digital opportunities for digital commercial transactions. The country ranked 23rd in terms of technology integration in the SME sector. In Latvia, however, 18% SMEs used cloud services, only 9% used big data, only 19% were engaged in social media activities, only 11% sold their products online and only 7% earned revenue through digital commercial transactions.

- 4) An analysis of Internet speed across countries revealed that Latvia ranked 66th in terms of average mobile Internet speed and 32nd in terms of fixed Internet speed in the world, which enables commercial transactions to be made digitally and fit into the global market for goods and services.
- 5) The strengths of correlations identified based on CSB data allowed concluding the following: in Latvia, the audience of young people is important for digital commercial transactions; enterprises need to tailor their advertisements to specific audiences, depending on the product they market, to foster digital commercial transactions; it is not advisable for enterprises to focus on a segment of population with a certain level of education when designing a strategy for marketing goods online; the employment category and the average amount of money spent on online purchases in the last 3 months were not related variables.
- 6) Additional research studies need to be conducted to analyse the quality of digital capabilities of enterprises that affects doing business in the digital environment.

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