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**DIGITALIZATION
EFFICIENCY
ASSESSMENT OF
THE TRADE
ENTERPRISES
ACTIVITY ON THE
BUSINESS-
ORIENTED
APPROACH BASE**

Abstract

The study purpose is theoretical and methodological aspects systematization of trade enterprises activity digitalization effectiveness assessment on the business-oriented approach base. In the research process, general scientific and special methods are used: scientific abstraction, deduction, analysis and synthesis, content analysis, systemic and critical analysis, statistical analysis, economic and mathematical modeling. It is proved that digital economy formation has necessitated the implementation of systemic transformations and

actions, called «digital transformations». The expediency of considering the digitalization process from the point of view of various scientific approaches is substantiated, their classification is presented. General trends are identified and tools are proposed on the base of conducted study results summary of the global e-commerce market development trends, as well as the markets of Ukraine, the Baltic countries and, in particular, Latvia, which have a direct effect on the business development in the online trade field. It is established that the needs of online buyers remain the same: a wide range of goods; variety of payment options; quality service; low cost and high speed of delivery. It is proved that the trade enterprises digitalization provides increased efficiency of their activity, improved service, optimization of logistics operations and costs for their implementation, expansion of the product promotion geography, price pressure reduction, added value growth, rational use of enterprise resources and its competitive advantages, reduction of the negative influence of unfavorable environmental factors. Economic and mathematical model, which is adapted to business environment changes, is proposed for the digital technologies implementation effectiveness assessing in the trade enterprises activity.

Keywords: *digital economy, digital transformation, digitalization, business-oriented approach, e-commerce, efficiency, economic and mathematical model.*

Introduction

In the global economic system, there are transformational processes associated with its digitalization, including the digitalization of business processes, which effect on the business efficiency and effectiveness increasing, radically change the management strategy not only of the enterprise, but also of the economy as a whole. One of such transformation results is digitization of trade enterprises activity, which is one of the tools for achieving the goals of sustainable development, satisfying the information needs of the participants in this process, and providing the effective formation of the enterprise's business environment. In this regard, the study of trade enterprises activity transformation process under digitalization effect has important theoretical and scientific and practical significance.

The works of such scientists as Ligonenko, Khripko & Domanskii (2018), Orekhova & Tertychnyi (2019), Dubina & Kozliancheko (2019), Savchenko, Kovalova, & Kozachyshyna (2020), Tertichny (2021), Negroponte (1995), Tapscott (1996), Williams (2021) and others are devoted to the study of the global digitalization effect on the world economy.

The problems of the electronic commerce formation, business processes digitalization and their adaptation to globalization changes are considered in the works of Horiachka (2017), Gustera (2020), Sidenko (2020), Summer & Duncan (1999), Kshetri (2007), Rivza, Kruzmetra, & P. Rivza (2020), Babics & Zvirgzdina (2022), Bikse, Lusena-Ezera, & Rivza (2021).

Despite the numerous scientific works of both foreign and domestic scientists, today a number of theoretical and practical issues of the digital technologies implementation process into the trade enterprises activity and its effectiveness assessment remain unresolved, which led to the choice of the research topic, setting its goals and objectives.

The study purpose is theoretical and methodological aspects systematization of trade enterprises activity digitalization effectiveness assessment on the business-oriented approach base.

The study objectives are summarizing the theoretical and methodological support of the issues under study and substantiation the scientific approach to the trade enterprises activity digitalization process effectiveness assessing.

Materials and Methods

The study purpose achieving and setting tasks solving grounded using general scientific and special methods of scientific knowledge: scientific abstraction, deduction, analysis and synthesis (for the essential content conceptualization of the digital economy and digital transformations, their effect on the electronic commerce development); content analysis (for study the features of the content of a large and unsystematized array of primary sources on the research problem); systematic and critical analysis of scientific approaches to the consideration of the digitalization process; statistical analysis (for determining the development trends of the global e-commerce market, as well as the markets of Ukraine, the

Baltic countries and, in particular, Latvia); economic and mathematical modeling (for assessing the digital technologies introduction effectiveness into the trade enterprises activity).

Results and Discussion

The root cause of the digital economy appearing in the middle of the twentieth century was the Internet spreading. This event in certain circles of specialists was called «Internetization». Undoubtedly, this process had significant effect on the enterprises' activity at the B2C market.

It is “Internetization” as a process of access expanding to information and the possibility of carrying out certain operations that can be the base for the “digital economy” concept in the narrow sense of the word.

In the broad sense of the word, the digital economy can be understood as a set of industries, which are associated with the emergence of new technologies and the development of robotics, that use digital platforms, new technologies, smart technologies, and so on (Savchenko, Kovalova, & Kozachyshyna, 2020).

Currently, the digital economy is economic activity, which is based on digital and electronic technologies, and includes electronic business and commerce, as well as the goods and services that they produce.

The following e-business models are considered in the materials of the European Commission of the ESPRIT project: e-shop, e-catalog, e-auction, e-shopping center, virtual community, virtual development center, information broker, business operations provider, business operations integrator.

The digital economy formation has necessitated systemic transformations and actions called “digital transformations”.

The “digital transformation” concept includes many terms with different interpretations. Key terms that have a similar sound in English, but are radically different in content (Ligonenko, Khripko, & Domanskii, 2018):

– digitization is the information transformation “from physical media to digital”. Within digitization there is no changes in the quality and content of information, it simply turns into an electronic form for further processing in digital format, which allows improving

existing business processes by adding to them information in digital format;

- digitalization is, first of all, the creation of a new product in digital form. Therefore, the key difference between digitalization is the creation of a new innovative product with new functionality and consumer properties. And if digitization is primarily aimed at improving existing business models and changing business processes, digitalization allows obtaining significant breakthrough in the business and new competitive advantages.

In our opinion, consideration of the digitalization process is advisable from the point of view of scientific approaches, among which are:

- information approach where digitalization is considered as a set of information resources (data processing), human resources (knowledge, abilities) that arise due to the introduction of information and communication technologies;

- process approach where digitalization acts as a way to use new technologies for business operations, new flows of information and data which are created with use of information and computer technologies;

- structural approach where digitalization is considered as a way of transformational transformations in the economy: the digitization process, the analog data conversion into digital form;

- business-oriented approach where digitalization is considered as an opportunity to create new business models (network business, e-commerce) in order to benefit from the use of new advanced technologies that process a large information flow (Dubyna & Kozliancheko, 2019).

Business digitalization involves changing communications, business ideas, business models, business functions of companies, rethinking business approaches to production, supply, sales of products (works, services), marketing activity and management decision-making and leads to their deep intellectualization, robotization, informatization, increasing digital technologies and innovations.

We will use the business-oriented approach for setting goals and objectives solving in this study.

E-commerce is an important part of the digital business

transformation process.

In the world over the past five years, the annual growth rate of e-commerce was approximately 20%.

The COVID-19 pandemic has had significant effect on the e-commerce development. Despite the fact that due to the global pandemic, the total volume of retail sales in the world decreased by 3,0% to 23,839 trillion of US dollars, the volume of online commerce increased by 27,6% in 2020 and amounted to 4,280 trillion of US dollars (Chevalier, 2022).

According to analysts, by 2040, 95% of all purchases in the world will be made online.

According to the independent expert and analytical center BRDO, in 2019 Ukraine became the second among European countries in terms of the growth rate of the e-commerce market. In 2021, domestic consumers made purchases worth \$4 billion of US dollars, and this is the third more than in 2020 (Dimura, 2022).

In 2020, the following was bought more often in Ukraine: clothes, shoes, accessories (4,6 million orders); appliances and electronics (4,4 million orders); food (4,1 million orders); goods for home and garden (4 million orders); cosmetics and perfumery (2,8 million orders).

It should be noted that in 2019-2021 the main factors, which hinder the dynamic development of the e-commerce market in Ukraine were the impossibility of its regulation due to the emerging legislative framework and the non-compliance of many online stores with the rules and standards of e-commerce.

Today, during the full-scale war in Ukraine, the pre-war sales of only two categories of goods have recovered – pet supplies, household and hygiene goods (Yarova, 2022). However, there is a trend in the growth of goods sales that satisfy the basic needs of consumers – food, mostly baby food; pharmaceutical products; clothes and shoes. Currently, the choice of online store depends on two factors: the buyer location; the line number of the search query in Google.

According to the results of the study of e-commerce development trends in the Baltic States, conducted by SEB Bank, in 2020 its share in retail trade exceeded 10%. In turn, according to analysts' forecasts, by 2024 in the Baltic States the share of e-commerce will

grow to 12% and will be about 30% of the growth in retail trade, that is, in absolute terms, the volume will increase by 1,2 billion euros, reaching 3 billion euros.

In Latvia in 2020, online grocery retail and ready-to-eat food delivery led the way according to online sales growth, where volumes tripled compared to 2019.

It should be noted that for the period of 2020 – 2022 there is a steady trend towards increasing in the number of online stores, which offer goods and services in the digital environment: Depo, RIMI, food manufacturer Orkla Latvija and the Latvian green pharmaceutical enterprise Silvanols are actively implementing the product sales digitalization (Crusts, 2021).

In addition, according to the Central Statistical Bureau of Latvia, in 2020 62,8% of the population made purchases online, which is 9% more than in 2019 (Stavro, 2021).

According to the survey of 1,000 Latvian residents aged 18 to 74 years, conducted in January 2022 by the research company Norstat, 70% of respondents noted that they feel safer buying goods online without visiting stores. For 47% of respondents, the main factor during buying in an online store is convenience, for 7% it is a wide range (Šablinskas, 2022).

Thus, summarizing the results of the study of the global e-commerce market development trends, as well as the markets of Ukraine, the Baltic countries and, in particular, Latvia, the following general trends can be distinguished:

- short-term forecasts;
- automation;
- constant accounting and control of communication with customers;
- the effect of being on the Internet, which according to feelings closes to offline stores;
- developed customer service;
- omnichannel models of customer migration from offline to online (and vice versa), their development;
- analytical tools of the activity and capabilities of companies;
- new technologies and training;
- self-determination and identification of the company at the market;

- measurability of tools and indices;
- new level business relations (offline events as a premium component of communication).

In our opinion, it is advisable to use the following tools that have direct effect on the business development in the field of online trade:

- promotion in social networks, through e-mail, native advertising and publications in the media;
- online webinars, conferences and other events;
- video content on YouTube and other services;
- digital, performance, marketing;
- direct marketing and SEO;
- cooperation with influencers;
- email newsletters.

It should also be noted that the needs of online shoppers remain the same: a wide range of products; variety of payment options; quality service; low cost and fast delivery

The introduction of digital technologies into the activity of enterprises, operating at the B2C market has actualized the need to develop a scientific approach to assessing the effectiveness of the digitalization process, which is adapted to business environment changes.

It should be noted that most studies are devoted to assessing the effect of digital technologies and ICT on the macroeconomic indices of a country or a group of countries on the base of economic and mathematical modeling.

We propose to use the Brynjolfsson & Hitt model (Brynjolfsson & Hitt, 2003) for assessing the effectiveness of the digital technologies introduction into trade enterprises activity.

In general, the Brynjolfsson & Hitt model looks like this:

$$Q = A(i, j, t) K^{\beta_k} L^{\beta_l} C^{\beta_c}, \quad (5.1)$$

where: Q – added gross value of the enterprise;

K – cost of the enterprise capital;

C – cost of enterprise digitalization;

L – labor productivity;

t – time variable (studying period);

i – index reflecting the analyzed enterprise number;

j – enterprise economic activity type;

A – variable that reflects the difference in the volume of added value creation between enterprises over the study period, which is not related to changes in the input resources use (K, C, L);

β – elasticity parameters (capital, digitalization, labor productivity).

During the analysis it is necessary to move from the actual values to their level, for which the logarithm of formula (5.1) is performed. For ease notation, logarithmic variables are marked with lowercase letters (that is, $\log K$ is in the form k), and indices denoting enterprises (i), time (t), and industry (j) are excluded, except when it is really required:

$$q = a(i, j, t) \beta_k k \beta_L l \beta_C c. \quad (5.2)$$

In the proposed model, the data are reduced to a comparable form and adjusted according to the price indices. There is also the possibility of error due to inaccurate statistical data, although it is assumed that correct statistical information will be used.

Comparing the change in the values of indices a, q, l over time, it is possible to conclude that:

1) cost of the enterprise's activity digitalization significantly correlates with the growth of labor productivity; with study period increasing this relationship increases as well, which can be explained by the adaptation of enterprise's organizational structure to new technologies;

2) enterprise's investments into the digitalization of its activity provide increasing the volumes of value added creation.

It should be noted that the proposed model allows comparing the goals, which are set by the enterprise with its capabilities, thereby preventing the risk of losing investments.

Conclusions

The studies of the theoretical basis of trade enterprises activity transformation process under the influence of digitalization, the main trends of the global e-commerce market development, as well as markets in Ukraine and Latvia, made it possible to identify common trends and propose tools that affect the efficiency of doing business.

Trade enterprises' business processes digitalization as a component of their business model provides increasing goods sales efficiency, improving service, optimizing logistics operations and costs for their implementation, expansion of goods promotion geography, reduction of price pressure, sales revenue growth, rational use of enterprise resources and its competitive advantages, reducing the negative effect of adverse environmental factors.

For assessing digital technologies introduction effectiveness into trade enterprises activity we propose to use the Brynjolfsson & Hitt model, which allows concluding that enterprise's investments into digitalization of its activity provide increasing volumes of added value creation.

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