THEORETICAL ASPECTS OF GREENING AND DIGITALISATION OF BUSINESS PROCESSES IN ENTERPRISES: THE CASES OF UKRAINE AND LATVIA

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Abstract. *The aim of the study is to analyse the theoretical basis of greening and digital transformation of enterprise business processes. The objectives of the study are to summarize the theoretical and methodological framework for the issues investigated and substantiate the conceptual approach to the environmental and economic development of the enterprise based on the concept of green business and the implementation of the digital transformation approach.*

The scientific novelty of the study consists in further development of the theoretical foundations of greening and digital transformation of enterprise business processes, as well as in the use of the organizational and methodological approach to determine the socio-economic and eco-economic consequences of the choice of priorities for the production and consumption of environmental products. The research used general scientific and special methods: scientific abstraction, analysis and synthesis, induction and deduction, abstraction and concretization, system and comparative analysis; statistical analysis; the matrix method. It has been proved that enterprises in Latvia and Ukraine face the critical task of finding a balance between improving the existing business models of their activities based on the implementation of digital technologies, and minimizing the negative environmental impacts. It has been established that the economic system of Ukraine remains ecologically unfavourable; however, to solve this problem, measures to implement the system of circular economy and create incentives for the development of green business have been developed. The results of expert evaluations have showed that Latvia is the leader in Europe in the consumption of green energy and is the largest exporter in the ICT sector in the Baltic States.

Keywords: *business processes, concept, digital transformation, enterprise green business, greening, matrix method.*
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Introduction

In the context of growing global environmental problems and the rapid digitalisation of business, enterprises in Latvia and Ukraine face the crucial task of finding a balance between improving their existing business models through the implementation of digital technologies and minimising the

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negative environmental impacts arising from economic activities. Stakeholders' requirements for qualitative transformation of enterprises' approaches to implementation of information and communication technologies (ICT) and greening of their activities actualize the need to expand the scale of ICT implementation in the management of communication business processes, and the formation of the mechanism of greening by these enterprises is based on the concept of green business.

The works of Daly (2003), Amosha (2003), Sadchenko (2017) are devoted to the studies of economic-ecological systems. The issues of enterprise management based on the environmental approach have been developed in the scientific works by Bardasya (2015), Veklich (2012), Popova (2016), Sadekov (2002).

At the same time, the issues of defining the essence of ecologization of enterprises, establishing the nature of its impact on the external environment and the results of economic activities of economic entities remain underdeveloped in the scientific literature.

Theoretical and methodological aspects of the digitalization of business processes are devoted to the scientific work by such foreign scientists as Gupta (2018), Kroll et al. (2018), Hounshell (2018), Raymond et al. (2009), Schwab (2016).

At the same time, the problems of ICT implementation in the management processes of enterprises, improving approaches to justify and optimize decisions on the digitalization of communication business processes, and the development of an organizational and economic framework for managing communication business processes remain unresolved. At the same time, the problems of ICT implementation in enterprise management processes, improvement of approaches to the justification and optimization of solutions to digitalization of communication business processes, development of organizational and economic foundations of communication business process management remain finally unresolved. Thus, the use of modern ICTs usually requires significant costs from enterprises for their development, implementation and further maintenance and development, so many businesses do not have the financial capacity to implement them. From an economic point of view, ICT can be seen as a means of production which can freely replace enterprise personnel, transforming the organisational structure and decision-making level of enterprise management, leading to negative social changes.

The aim of the study is to analyse the theoretical basis of greening and digital transformation of enterprise business processes.

The objectives of the study are to summarize the theoretical and methodological framework for the issues investigated and substantiate the conceptual approach to the environmental and economic development of the

enterprise based on the concept of green business and the implementation of the digital transformation approach.

The scientific novelty of the research consists in further development of the theoretical foundations of greening and digitalization of business processes of the enterprise, as well as the use of the organizational and methodological approach to determine the socio-economic and environmental and economic consequences of the choice of priorities for the production and consumption of environmental products.

Research methods used: general scientific and special methods: scientific abstraction, analysis and synthesis, induction and deduction, abstraction and concretization, system and comparative analysis; statistical analysis; the matrix method.

The research period is 2021-2022.

Study results and discussion

Until recently, natural resource management was seen as a process of exploitation of natural assets with the purely pragmatic objective of satisfying the material and cultural needs of society. Rational use of natural goods was based on reason and knowledge, so nature management was also understood as a separate science, which investigates the general principles of any human activity associated with the use of natural goods or the transformation of their condition (Galushkina, 1999; Karagodov, 1998).

The interaction and structural relationship of society, production relations, the environment within the existence of the technogenic system "production - consumption" (Lukyanikhin & Petrushenko, 2004), the functioning of which is based on the simple exploitation of natural factors (artificial disturbance of the natural environment), is caused by the complexity and diversity of the process of natural factors use in the process of human productive activity.

Scientific papers (Arbidane, 2022; Vashchenko, 1998; Degtyareva et al., 2014; Korotkov, 1998; Melnyk, 1999; Morozov, 1997; Prigozhin, 1986) point out that the paradigm of socio-economic development based on a technocratic and consumer attitude towards nature is the main reason for the imminent irreversible destruction of the biosphere, destruction of the ozone layer, increased climate instability, impoverishment of flora and fauna. According to Gerasymchuk (2000), it is the growth of anthropogenic load on the biosphere in the process of social development that determines a sharp aggravation of the environmental situation on a global scale, bringing humanity to a critical limit in its interaction with nature.

Stadnitskyi (2003) also believes that anthropogenic pollution of the environment is one of the major global problems in the development of the

world as a whole and of individual countries. Negative effects of anthropogenic pollution, which until the middle of the last century were often considered insignificant "external effects" that can be neglected when choosing optimal technologies or justifying the directions of economic development, have increased to one of the greatest threats to the welfare and security of mankind. The author also insists that the reduction of anthropogenic pollution of society's environment faces almost no technological or technical difficulties. In his opinion, solving this problem is a purely economic task, the difficulty of which is mainly due to the excessive cost of implementing measures to improve the environmental safety of production. Therefore, under present conditions, maximum attention should be paid to the optimal use of limited resources that can be allocated for environmental purposes.

Scherbak (2000) believes that the technological progress of mankind still consists of a number of cycles of resource use and exhaustion, each of which involves the successive passage of certain stages:

1. assimilation (creation) and expansion of the up to now unused ("non-existing") natural resource base;
2. depletion of the used natural resource base and, as a consequence, deterioration of the conditions of society's existence in the environment, search for reserves to restore or replace the resource base;
3. replacement of the outdated resource and environmental base by the newest sources of natural resources (as well as the emergence of new, as a rule, more acute and complex environmental and resource problems).

The intensification of environmental activities not only at the macro level but also at the regional and entrepreneurial levels is of great importance for ensuring socio-economic development today. Thus, according to Maslovskaya (2002), the general orientation of the national strategy of transition to the principles of sustainable development makes the territorial regulation of environmental management especially relevant. The regions become a kind of core of economic, social and environmental arrangement of geo-economic space, as well as the sphere of mobilization for this purpose of material, labour, financial and intellectual resources (Adámek, 2015; Artis, 2011; Bilotserkivets, 2009; Vovk, 2009; Kamarianaki & Gallo, 2011; Kubatko, 2017; Maslov, 2005; National Report…, 1992). It is at the regional level that it becomes advisable and possible to balance the structure and scale of production with the structure and size of the integral natural resource potential, as well as the establishment of high-priority environmental priorities of its use.

The generalization of scientific approaches to the study of economic and environmental activities and the regularities of the process of development and environmental and economic development of the enterprise (Geets, 2000; Chumak & Ivanyenko, 2003; European Commission, 2021) allows us to distinguish socio-psychological, organizational and structural, technical, technological, financial, commercial, communication, information and functional components of their provision.

According to the authors, ensuring the development of an enterprise on the basis of the green business concept is its top environmental priority.

In our view, the implementation of sustainable enterprise development requires new forms of financial cooperation and new ways of financing projects. In doing so, the green industry or green sectors of the economy are designed to materialise new sources of growth associated with the efficient use of natural resources and eco-efficient technologies into environmental products and services, and hence into the value added and income of companies engaged in these activities. Facilitating their development and "greening" traditional "brown technologies" and business models is central to government strategies for transitioning to a greener economy.

The shift globally to technologies and practices that are less environmentally damaging has been recognised as vital for ensuring humanity's continued development, and the adoption and implementation of environmental regulations, the removal of environmentally harmful subsidies for resource use, and increased prices for energy and raw materials have stimulated technological innovation in industries aimed at reducing their negative impacts, dubbed green business, with companies becoming known as green enterprises or environmentally responsible businesses. These businesses appeared in all sectors of the economy and subsequently became known as the "green goods and services sector" or "green business".

The ideology of green business fits well with the need to improve the environment while ensuring economic development at the same time.

"Green" or ecological business is a multi-sectoral area of business activity, which can provide not only environmental but also significant economic benefits on a national scale. As an economic agent, a source of employment and a key factor of economic and social well-being, this sector cannot remain unchanged.

Ukraine's economic system remains environmentally unfriendly. Ukraine is among the world's top consumers of natural resources - energy, water, minerals - per unit of GDP. In January 2022 the Ministry of Environmental Protection and Natural Resources of Ukraine in cooperation with other government agencies developed measures to introduce a circular economy system and create incentives for green business development.

To date, green business offers solutions to some of society's most pressing environmental problems:

- design and construction of energy-efficient buildings;
- recycling and safe waste management;
- renewable energy development;
- wastewater treatment;
- production of organic products (Marushevsky & Hickman, 2017).

Environmental, social and corporate governance (ESG) aspects are being introduced into the activities of Latvian enterprises. These are relatively new parameters of the societal paradigm, and it should be noted that sustainability is becoming an inherent core value that motivates businesses to be more careful about their impact on the environment, employees and society.

According to Swedbank's 2021 survey on changing public attitudes towards sustainability, among so-called early adopters, or trendsetters (mainly young, socially active people who are the first to use a new product, innovation or technology and become an example to others), 78% of those surveyed believed that sustainability should be at the heart of modern business.

According to those surveyed (a sample of 1,009 people aged 18 to 64), the main criteria for a sustainable business include:

- investment in digitalisation of business processes (48% of the respondents);
- environmental safety and reducing environmental pollution (46% of the respondents)
- production and sale of environmentally friendly products (38% of the respondents) (Latvia Business Guide 2021/2022.).

The results of expert studies confirm that Latvia not only leads in Europe in terms of green energy consumption, not only has developed food production and marketing systems but also is the largest ICT exporter in the Baltic States - the turnover in this area amounts to more than 4 billion euros (Latvia Business Guide 2021/2022.).

The issue of digital transformation is quite complex and broad in content, because problems of technological development in one sphere cause problems in other spheres. The first step towards the implementation and diffusion of digital technologies is the awareness of the need for change in the imperative due to the inevitability of a digital breakthrough, which allows the enterprise to strengthen its position in the market and significantly increases the value of innovative products (Global Center…, 2015).

Digitalization of processes is relevant not only at the level of individual enterprises: entire industries choose this development path for themselves

as the only opportunity to meet the rapidly changing conditions of the world around them.

Customers are some of the main drivers of digitalisation, many of whom have already started to transform their operations. By customer experience, we mean not only interaction with external customers but also internal customers. Digital transformation of processes optimises the work of employees in the company, thus increasing the productivity of every team member. Digitalisation technologies enable the most personalised interaction that most customers prefer. Digital channels of communication, omnichannel, artificial intelligence and robotization are giving more time to the really important and complex tasks.

Digitalisation of business encourages innovative ways of enterprise development, in particular:

1. Cloud technologies allow multiple teams to work on a single project simultaneously and use company resources efficiently.
2. Using the Mobile First strategy, enterprises receive and monetize mobile traffic, which has already caught up with that from stationary devices.

Ready-made solutions save time on tasks. Various programs, extensions and connectors optimize enterprise operations and require minimal time for their implementation and adaptation.

Consequently, the demands placed on businesses in Ukraine and Latvia by the digitalisation and globalisation of global markets make it necessary to introduce new and effective digital business solutions (including green solutions) to improve their competitiveness.

It should be noted that the possible socio-economic and ecological-economic consequences of different priorities in the approaches to the production and consumption of ecological products, as well as the need for ecological regulation of production are illustrated by the "benefit-loss" matrix (Fig. 1).

If the cost of improving the environmental quality parameters of products increases in proportion to the increase in the level of environmental friendliness and, accordingly, the price increases, there is no contradiction between the environmental and economic interests of the customer (consumer) and the producer. In this case, the price does not induce the producer to improve quality.

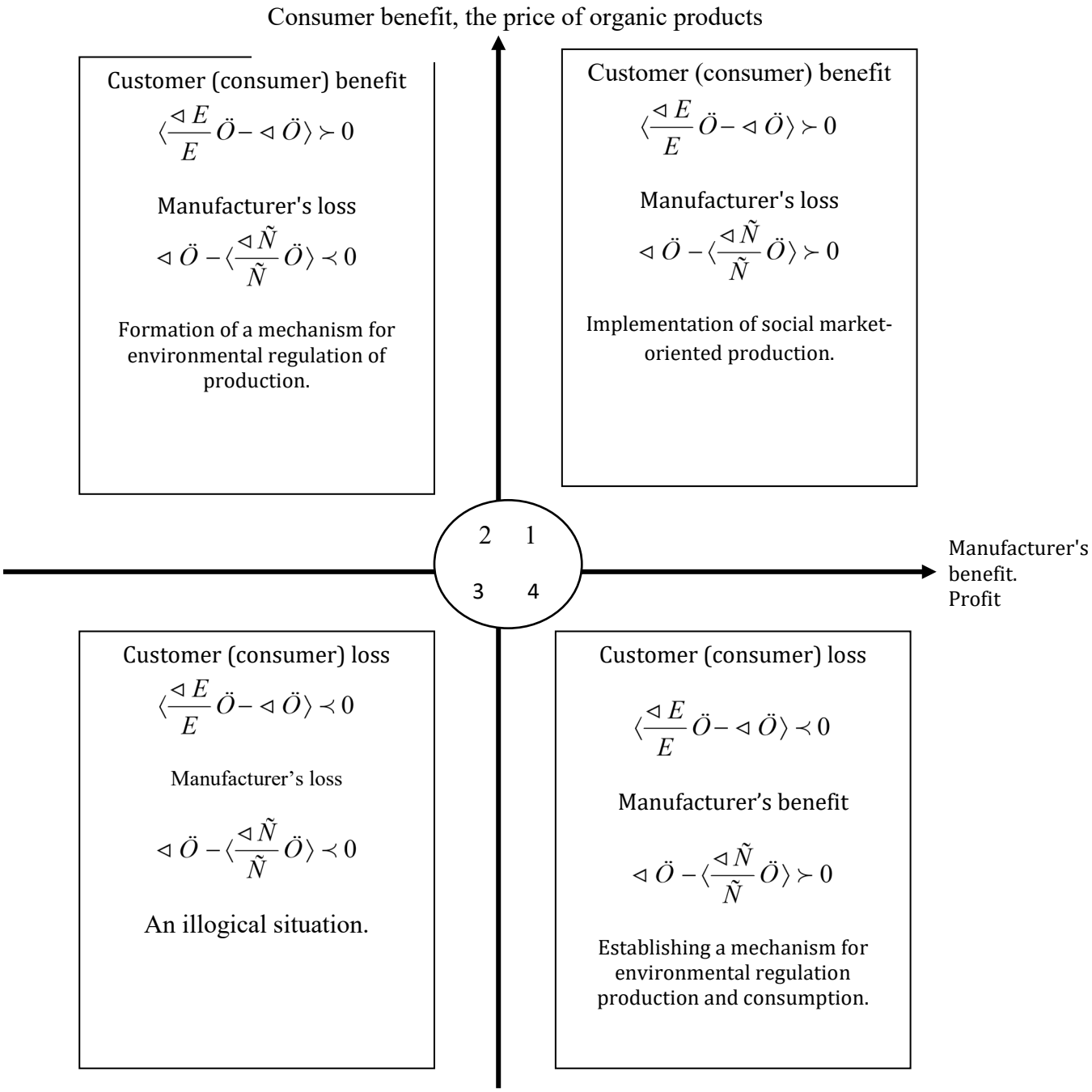

Fig.1. Producer-customer benefit-loss matrix (for a consumer) of environmental products (developed by the authors based on the "buyer-seller" matrix by Ansoff,1993)

The demand for environmentally friendly products is constrained. In this case, it is possible to set a new price (C + Δ C) where the relative increase in price is less than the relative increase in environmental (quality) performance $(\frac{\triangleleft E}{E})$ and higher than the relative increase in cost of production $(\frac{\triangleleft C}{C})$.

This approach can be represented as:

$$\frac{\triangleleft \ddot{I}}{\ddot{I}} \geq \frac{\triangleleft \AA}{\AA} \succ \frac{\triangleleft \ddot{O}}{\ddot{O}} \succ \frac{\triangleleft \tilde{N}}{\tilde{N}} \quad (1)$$

where $\frac{\triangleleft \ddot{I}}{\ddot{I}}$ – relative reduction of external environmental costs.

The given relationship between product quality (eco-friendliness), price and cost is also the best from the point of view of the socio-environmental interests of society as a whole.

The price in this case stimulates an increase in the ecological quality of the product and the demand for it.

In line with the increasing environmental friendliness of new products, external environmental costs (environmental-economic damages) decrease with respect to both the individual consumer and society as a whole.

Let's consider the conditions for reconciling the economic and environmental interests of the producer and the client (consumer). If the price for products of improved environmental quality for an individual consumer were set in proportion to the increase in quality level, i.e.: $\frac{\triangleleft \ddot{O}}{\ddot{O}} = \frac{\triangleleft \AA}{\AA}$, then $\triangleleft \ddot{O}_{\aa} = \frac{\triangleleft \AA}{\AA} * \ddot{O}$,

where ΔC_e – the price increase from an increase in environmental quality by ΔE.

If the price of these products were to be set in proportion to costs, i.e.:

$$\frac{\triangleleft \ddot{O}_{\tilde{n}}}{\triangleleft \ddot{O}} = \frac{\triangleleft \tilde{N}}{\tilde{N}}, \text{ then } \triangleleft \ddot{O}_{\tilde{n}} = \frac{\triangleleft \tilde{N}}{\tilde{N}} \ddot{O},$$

where ΔC_s – price increase from the increase in costs by the amount of ΔC.

The condition for reconciling the interests of the individual consumer and the producer is as follows:

$$\Delta C_e > \Delta C > \Delta C_S \quad (2)$$

It is important to note that the producer will benefit:

$$\triangleleft \ddot{O} - \triangleleft \ddot{O}_{\tilde{n}} = \triangleleft \ddot{O} - \frac{\triangleleft \tilde{N}}{\tilde{N}} * \ddot{O}, \quad (3)$$

but the consumer's benefit will be of this kind:

$$\triangleleft \ddot{O}_{\aa} - \triangleleft \ddot{O} = \frac{\triangleleft \AA}{\AA} * \ddot{O} - \triangleleft \ddot{O}. \quad (4)$$

The total benefit to the producer and the client (consumer) is determined by the value:

$$\triangleleft \ddot{O}_{\aa} - \triangleleft \ddot{O}_{\tilde{n}} = \left(\frac{\triangleleft \AA}{\AA} - \frac{\triangleleft \tilde{N}}{\tilde{N}} \right) * \ddot{O}. \quad (5)$$

The amount of this total benefit can be divided into three parts: the benefit of the individual consumer, the benefit of the producer (enterprise) and the benefit of society (in particular the state) as a whole.

Let us consider the substantive basis of the quadrants of the matrix.

Quadrant 1 "Customer (consumer) convenience, producer benefit" meets the principles of socially oriented market economy and sustainable socio-economic development, and also reflects the system of long-term mutually beneficial buyer-producer relations, as it ensures both return on investment and satisfaction of social and environmental needs of the buyer within acceptable prices.

Quadrant 2 "Customer's (buyer's) benefit, producer's loss" corresponds to the situation where the external environmental costs of production, the lack of assessment of the positive effect of production and consumption of environmental products become the subject of environmental regulation of production from the position of stimulating the greening of the enterprise economy.

Quadrant 3 "Customer (consumer) loss, producer loss" corresponds to the situation which, in Ansoff's (1993) terminology, is called "the land of fools".

Quadrant 4 "Customer (buyer) losses, producer gains" reflects the case where the producer makes a profit from sales, but does not provide the consumer with the goods, the level of environmental quality of which would correspond to the price. This situation often occurs in industries with a low level of technological development.

However, it can occur in the production of new goods in highly developed industries based on innovative technology, where the interests of the buyer are not always taken into account.

Conclusions

Thus, based on the results of the carried out by the theoretical analysis, the conceptual approach to the ecological-economic development of the enterprise on the basis of the green business concept has been substantiated. In accordance with the current realities of the use of natural and economic resources in Ukraine and Latvia, it is determined that increasing the activity of implementation of greening economic activities provides the effectiveness of environmental and economic activities of the enterprise and the implementation of the environmental and economic development of the region.

The implementation of the digital transformation approach allows accelerated adaptation of enterprises' communication business processes to the challenges of the external environment to achieve simplification of users' work, rapid response to customer (consumer) requests, and increased productivity of all business processes of enterprises.

The implementation of the digital transformation approach enables the accelerated adaptation of communication business processes business processes to the challenges of the external environment to achieve simplified user of users, rapid response to customer (customers), higher productivity of all business processes of enterprises.

In our view, for effective greening and digital transformation of enterprise business processes and transformation of enterprise business processes, it is necessary to:

- at the macro level, the following institutional, infrastructural, ecosystem problems need to be solved: strengthening governmental policy on innovative economy development; to bring the profile, it is necessary to solve the following problems: strengthening the state policy on innovation economy development; to bring the profile legislation in Latvia and Ukraine, national, regional and sectoral strategies and programmes for environmental and digital development need to be harmonized with global challenges and programmes for environmental and digital development need to be brought in line with global challenges and eco-economic and digital opportunities; to intensify the development of the investment capital market;
- at the micro level - to implement the systematization of environmental and business processes of the enterprise according to the following criteria: impact on formation of value added of a product or service (main, auxiliary); types of management (administrative, operational, auxiliary); their role in enterprise development (market and consumer research, development of enterprise strategy and management system, formation of digital skills of personnel, its development and training), the level of customer focus.

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