

**Actual issues of modern  
development of socio-  
economic systems in terms  
of the COVID-19 pandemic**

**Scientific monograph**

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## INTRODUCTION

The entire world community, since 2019, affected by the global pandemic COVID-19. The pandemic caused by this virus, led not only to significant human losses worldwide, but also imposed significant restrictions on the socio-cultural life of the population and radically changed the trends of the global economy and the further functioning of socio-economic systems. Now, huge economic losses have been recorded, which affected almost all sectors of the national economy and the state in the short, medium and long term. However, it is important to consider individual economic development forecasts and measures developed by the governments of the world's leading countries to overcome the negative effects of the COVID-19 pandemic. This will allow to form a real vision of the possible course of economic processes that will directly affect the living standards of the population and the restoration of socio-economic systems.

To further restore the socio-economic system it is necessary to developing modern strategies and forecasts to ensure the effective functioning of economic entities through innovation, digitalization, marketing and use of competitive advantages in the consumer markets in conditions of limited resources, development promising sectors of the national economy, etc.

The *purpose* of writing this scientific monograph is to substantiate the theoretical and methodological foundations, the formation new strategies for restoring socio-economic systems and overcoming the negative consequences of the caused by the COVID-19 pandemic, taking into account changes and challenges in the modern world. The *object* of the authors' research is the process of forming new approaches, strategies and mechanisms for managing socio-economic systems in the context of the COVID-19 pandemic, eliminating the negative consequences in the activities of economic entities. The *subject* of research is socio-economic, organizational and institutional processes of formation and effective implementation of approaches, strategies and mechanisms for managing socio-economic systems; stabilization of the functioning of economic entities; introduction of innovative processes and digital technologies; implementation of best practices in the managing of socio-economic systems using world experience in various sectors of the economy caused by the COVID-19 pandemic.

## Chapter 1

# TRANSFORMATION OF MANAGEMENT OF SOCIO-ECONOMIC SYSTEMS IN TERM OF THE PANDEMIC

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## ANTI-CRISIS MANAGEMENT OF THE ENTERPRISES BASED ON CONTROLLING

Today's challenges require Ukrainian enterprises to introduce modern management concepts, in particular, anti-crisis management, which is based on completely new principles and approaches to the concepts of planning, accounting, control, and the like. At the same time, the noted concepts have been successfully applied at foreign enterprises for a long time.

It is possible to form a system of anti-crisis management that meets the requirements of an enterprise in a market economy by using the concept of controlling, the prerequisites for the emergence of which were the need for unification various aspects of management in open systems.

A number of scientific works of famous scientists are devoted to the improvement and development of controlling in enterprise management systems: K. Amrain, I. Weber, N. Danilochkina, A. Dyle, A. Karminsky, L. Kostyrko, E. Mayer, R. Mann, S. Petrenko, M. Pushkar, S. Falco, D. Khan, A. Shatokhin and others. Along with this, it should be noted that the issues of ensuring the development of anti-crisis management systems of domestic enterprises on the basis of controlling are insufficiently developed both in scientific and organizational and practical aspects and require more deep learning.

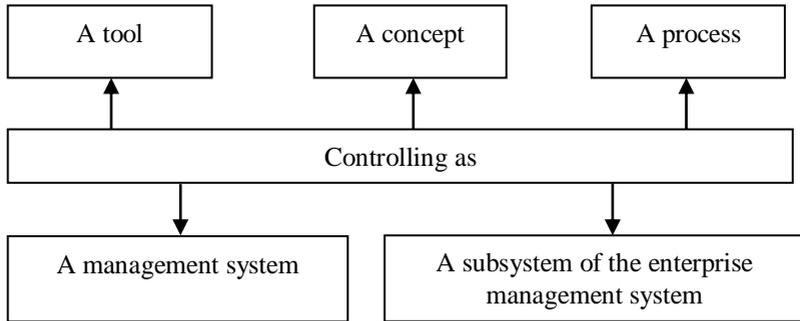
In modern conditions of the development of market relations, in particular, the consequences of the global pandemic COVID-19, a significant number of domestic enterprises are experiencing economic losses caused by the use of an insufficiently effective system anti-crisis management. Consequently, the use of controlling tools at enterprises as the basis for ensuring the implementation of the priority goals of business entities in a strategic perspective is acquiring particular relevance. Along with this, the practice of introducing controlling in the anti-crisis management system at enterprises is not widespread today. The specified makes it expedient, first of all, to clarify the conceptual apparatus in the studied plane.

Note that the multidimensional nature of the interpretation of controlling entails the absence of a unified approach to disclosing its economic essence and content. So, in modern scientific literature, you can find various approaches to the interpretation of the essence of controlling, the main of which are shown in Figure 1.1.

For example, the approach focused on treating controlling as a tool, despite its widespread distribution, is, in our opinion, too narrow, because it actually reduces the essence of controlling only to a means of achieving set goal.

In contrast, the approach that defines controlling as a concept, on the contrary, is too general, abstract in nature, providing characteristics only to the theoretical aspects of the concept under study and without taking into account its applied nature. The interpretation of controlling as a process focuses on its successive changes, flow and development over time, that is, it explores the dynamic characteristics of controlling, while it should be noted that its essence goes beyond the framework of a purely separate process.

The approach that interprets controlling as a management system is more reasonable, while it should be borne in mind that the classical definition of a system defines it as a set of subsystems (components, elements) that interact between themselves and the external environment form a qualitatively new integrity, while controlling itself is a subsystem of the enterprise management system, which is the most common approach to its definition.



**Figure 1.1 The main approaches to the definition of the concept of “controlling”**

*Source: built on the basis of [1]*

From the point of view of our research, we will consider controlling as a subsystem of the enterprise anti-crisis management system, which provides planning, organization, coordination, coordination and control of the enterprise as a whole, and its individual business units and functional divisions, the implementation of information and analytical support for the adoption of anti-crisis management decisions (primarily of a preventive nature), is aimed at using the resource potential enterprises to ensure its survival, effective functioning and sustainable development.

Thus, we fully agree with M. Khristenko, who notes that the importance of using controlling for the implementation of anti-crisis management functions is due to the high volatility of the external environment of enterprises. Growing instability in world markets increases the «risk of infection» due to financial and economic crises. Thus, in conditions of increased crisis danger, controlling

must necessarily have an anti-crisis direction [12], especially since an unreasonable managerial decision can lead not only to a loss of stability by the enterprise, but also entail a crisis situation. That is why the problem of introducing controlling into the system of anti-crisis management of an enterprise is being actualized, which is explained by the following:

- the growth of instability and unpredictability of the external environment of management, which leads to the emergence of additional requirements for the enterprise anti-crisis management system;

- a shift in attention from controlling the past to analyzing and assessing the future;

- the need to accelerate the speed of reaction and strengthen the adaptive capacity to change external and internal environment of the enterprise;

- the need to continuously monitor the transformations of the external and internal environment of enterprises;

- the urgent need to form at enterprises a system for making scientifically grounded and effective management decisions to ensure sustainable rates of enterprise development and avoid crisis situations, and the like.

Therefore, in our opinion, controlling should be considered and used in practice as an integrating, informational and controlling component of the enterprise anti-crisis management system, which will help to improve quality organization of anti-crisis management, and, in turn, is a prerequisite for ensuring sustainable development rates and increasing the efficiency of the enterprise. We believe that the introduction of the «anti-crisis controlling» subsystem into the system of anti-crisis management of the enterprise will facilitate the coordination and integration of not only anti-crisis activities at the enterprise, but also management activities in general, which will contribute to making more informed management decisions, including in the field of anti-crisis management of the enterprise .

The content of any object is fully manifested through its functions. The characteristics of the functions of anti-crisis controlling are given in Table 1.1.

No less important is also the systematization of the main elements of controlling in the system of anti-crisis management of the

enterprise. So, we fully agree with the scientists who distinguish the following as the main components of controlling: accounting, analysis, planning, coordination and control [7; 14]. Accordingly, the relationship between the main components of controlling and the enterprise anti-crisis management system can be summarized as in Figure 1.2.

*Table 1.1*

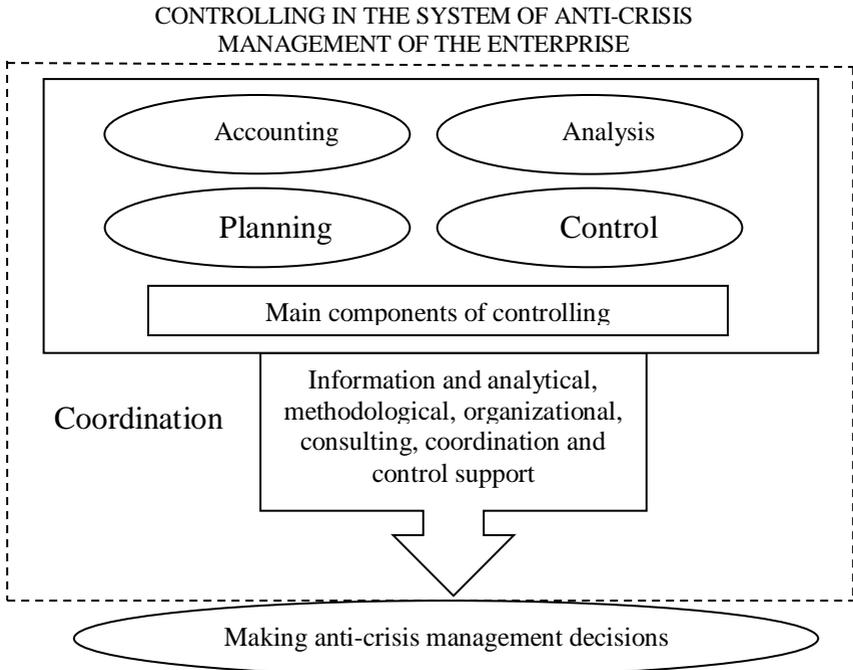
**Contents of the main functions of anti-crisis controlling**

The function	The content of the function
Information and analytical (accounting and analytical) function	Management accounting in the course of providing analytical information to managers of all levels to ensure effective anti-crisis management of the enterprise as a whole and its structural divisions; Formation of a system of priority controlled indicators and construction of a system for monitoring and analyzing deviations of key indicators; Providing information to the early warning and response system.
Coordination function	Coordination and methodological support of the processes of collecting information necessary for anti-crisis management; Matching the goal tree with the available resources, long-term plans with specific goals and anti-crisis strategy for the development of the enterprise, operational plan with strategic anti-crisis guidelines.
Control function	Development of methods and frequency of control of the system of controlled indicators; Determination of factors influencing the deviation of the actual values of the control indicators from the planned ones.
Consulting function	Service and methodological support of anti-crisis management of the enterprise to respond to changes in the external environment and minimize risks; Providing recommendations to the management and functional divisions in the process of setting targets, developing an anti-crisis strategy, forming a budget structure; Providing proposals for the implementation of measures to prevent the crisis minimize its consequences, etc.

*Source: built by the authors taking into account [12; 15]*

From Figure 1.2 it can be seen that such an element of anti-crisis controlling as coordination is a connecting link with its other elements, due to the need to ensure the effective implementation of those by anti-crisis controlling the main functions that we have

considered in Table 1.1 for the purpose of continuous information and analytical (accounting and analytical), methodological, organizational, consulting, coordination and control support for making managerial decisions.



**Figure 1.2 Interrelation of controlling components with the anti-crisis management system**

*Source: built on the basis of [7; 14]*

So controlling, as an integrated subsystem of anti-crisis management, makes it possible not only to prepare a decision, but also provides control over its implementation with the help of appropriate management tools provides information support in the orientation of the enterprise to the final result. That is, by combining into a single whole accounting, control, planning and analysis, controlling, in the anti-crisis management system, connects all these functions together, integrates and coordinates them [5]. Since in our case the effectiveness of controlling is determined as a whole by the

effectiveness of anti-crisis management (since controlling is its subsystem), controlling can be considered as a feedback on the control of the process adoption and implementation of anti-crisis management decisions [14]. Thus, in this interpretation, anti-crisis controlling can be considered as a system of self-regulation.

Along with this, the role of controlling in the process of making anti-crisis management decisions at an enterprise can be characterized through its goal and objectives. At the same time, it is possible to single out both the basic goal of anti-crisis controlling and supporting goals.

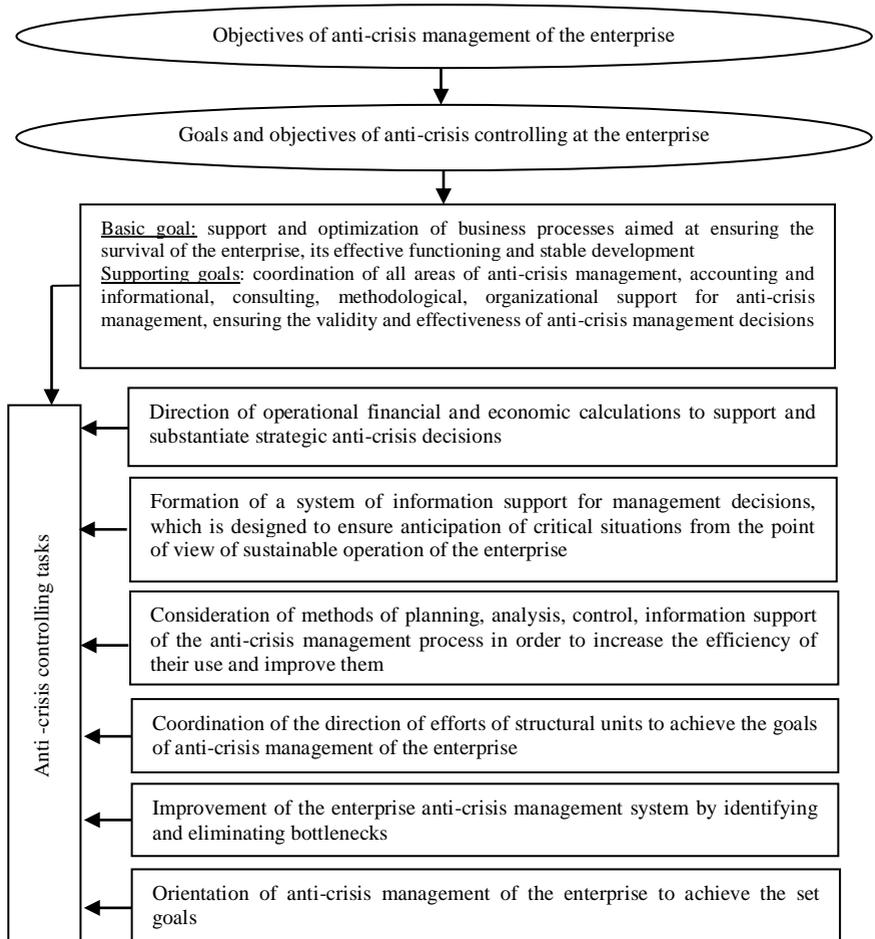
The basic goal of anti-crisis controlling is to support and optimize business processes aimed at ensuring the survival of the enterprise, its effective functioning and sustainable development (minimizing current costs, maximizing net profit, accelerating business activity, increasing profitability, effective risk management, replenishment and efficient use of financial resources, expanding the range of products, works, services ,diversification of activities, etc.).

The supporting goals of controlling in the anti-crisis management system are to coordinate all areas of anti-crisis management, accounting and information, consulting, methodological, organizational support of anti-crisis management, ensuring the validity and effectiveness of anti-crisis management decisions that are made. The listed goals are supportive, since they are aimed at the fullest possible implementation of the basic goal of anti-crisis management of the enterprise. The relationship between the goals and objectives of anti-crisis controlling to concretize its role in the course of making anti-crisis management decisions of the enterprise are shown in Figure 1.3.

It should be noted that the decision-making process in the process of anti-crisis management of the enterprise has a certain stage.

In general, the stages include: substantiation of the expediency of making a decision in the field of anti-crisis management; the formation of alternative options for the implementation of the specified solution; evaluation of each of the formed alternatives implementation of management decisions; selection of the most effective alternative for the implementation of management decisions; implementation of the chosen solution; control over the progress of implementation of the adopted decision. At the same

time, controlling is an integral part of each of the designated stages of decision-making in the process of anti-crisis management of an enterprise. Along with this, at each stage, it has an independent meaning.



**Figure 1.3 Interrelation of goals and objectives of anti-crisis controlling for the purpose of anti-crisis management of the enterprise**

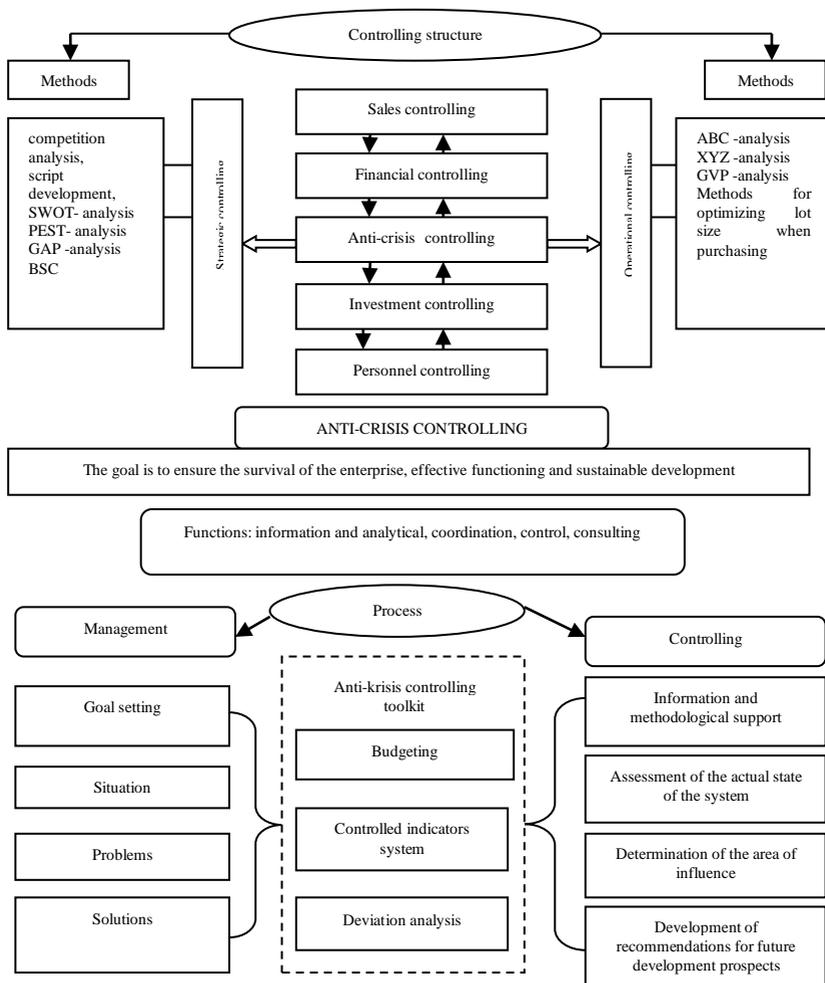
*Source: built on the basis of [9; 10]*

In the face of risk, anti-crisis controlling should assess not only the effect of each possible option for anti-crisis actions, but also the likelihood of obtaining this effect. Therefore, controlling, as a subsystem of decision-making support in the anti-crisis management system, must take into account risk preferences, which depend on many factors, such as the anti-crisis strategy of the enterprise, its financial position and the like. The tasks of anti-crisis controlling become even more complicated in conditions of uncertainty, because the head (anti-crisis manager) needs to make corrections for the incompleteness of information [3].

Therefore, we believe that anti-crisis controlling should be considered as (Figure 1.4):

- a process-oriented element of the enterprise's anti-crisis management system, aimed at providing instrumental, organizational, methodological, consulting and information support of anti-crisis management in the formation of an anti-crisis strategy and building an early warning and response system at the enterprise;
- the basic integration element of the enterprise anti-crisis management system, which is an integral part of the main business processes and plays a significant role in the development, support and effective implementation of strategic and tactical decisions aimed at ensuring the survival of the enterprise, its effective functioning and sustainable development.

Implementation of the anti-crisis controlling model determines the feasibility of developing and practical use of appropriate tools and organizational and methodological approaches to its integration into the system of anti-crisis management of the enterprise. At the same time, the use of a set of control indicators as a tool for anti-crisis controlling allows us to optimize the processes of assessment, control and monitoring of the implementation of the established goals of the enterprise. This makes it possible to present anti-crisis strategies in the form of specific measurable indicators, ensures the formalization of the processes of strategic and operational anti-crisis management; ensure alignment of the objectives of the various functional divisions of the enterprise; agree on strategic and operational development plans; monitor and analyze deviations, formalize the results of assessing the level of implementation of long-term development goals of the enterprise.

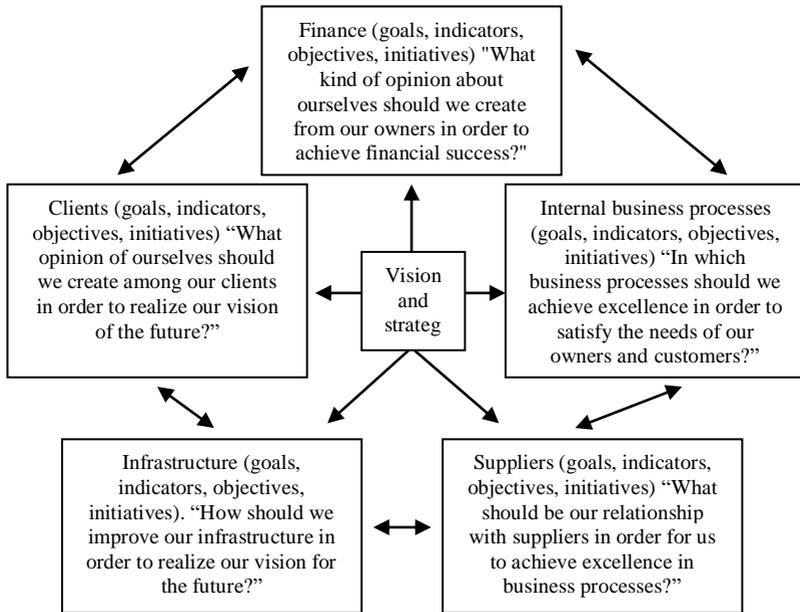


**Figure 1.4 Anti-crisis controlling as an integration element of a process-oriented anti-crisis enterprise management system**

*Source: built on the basis of [2; 4, 8]*

Therefore, the system of benchmarks is a toolkit for strategic and operational anti-crisis controlling. It provides an opportunity to detail the anti-crisis strategy of the enterprise in the form of a system of interrelated indicators that comprehensively characterize the movement of the enterprise towards sustainable development. At the

same time, we believe that it is the balanced scorecard (BSC) that most fully and comprehensively meets the requirements for the anti-crisis controlling scorecard at domestic enterprises. When forming BSC as a tool of anti-crisis controlling in domestic business entities, a modified BSC model can be used (Figure 1.5).



**Figure 1.5 Balanced Scorecard Model as an Anti-Crisis Controlling Tool at Domestic Enterprises**

*Source: built on the basis of [4; 6; 11]*

As you can see, shown in Figure 1.5, the BSC model assumes the selection of the “Suppliers” and “Infrastructure” projections as separate perspectives, within which the main indicators will be formed that characterize the relationship of the enterprise with suppliers, and determine measures in the field of formation and development of infrastructure and improvement of the material and technical base of enterprises.

At the same time, the following list of BSC indicators for domestic enterprises can be cited as part of their introduction of

controlling into the anti-crisis management system:

1. Perspective “Finance”: the level of expenses for the sale of products (goods, works, services); return on assets and equity; discounts on tax payments; net sales income by major segments; profitability of sales; economic added value; profit (profitability of sales) of key types of products (goods, works, services); return on investment in the development of new technologies; indicators of financial stability, liquidity, business activity.

2. Perspective “Clients”: market share; indicators of customer price perception and service perception; profit from sales to regular customers; share of regular customers, customer satisfaction index; the fate of the sale of key products (goods, works, services); customer perception indicators (image) return rate (percentage of complaints) share of repeat customers.

3. Perspective “Infrastructure”: indicators of the efficiency of using fixed assets and intangible assets; the level of expenses for wages, professional development; the level of costs for the development of the system of subsidiary plots; condition coefficients material and technical base of the enterprise; labor force movement rates; staff satisfaction index; staff qualification indicators; capital-labor ratio, capital productivity.

4. Perspective “Internal business processes”: the level of expenses for individual operations; the level of purchase prices; labor productivity; average time of customer service; lead time; the ratio of availability of the types of products required by the client (goods, works, services); the breadth of the range of key types of products (goods, works, services); the ratio of the availability of key types of products (goods) in the warehouse.

5. Perspective “Suppliers”: the fate of agreements with the provision of discounts; indicators of achievement of the purchase price discount; average delivery time; satisfaction of suppliers with joint work; the number of alternative suppliers for individual commodity groups; the proportion of losses upon receipt of purchases; supplier reliability level; rating of the supplier (quality, price, delivery time).

Note that the above list of indicators within individual projections of the balanced system makes it possible to supplement financial indicators in anti-crisis controlling with non-financial ones. Their

assessment requires information that is of a qualitative nature. Accordingly, in the given system, qualitative indicators should be used, first of all, to obtain information about those areas of the enterprise's functioning, on which the implementation of goals directly or indirectly depends anti-crisis management.

Further, we consider it expedient to consider the main models reflecting possible options for implementing anti-crisis management of an enterprise on the basis of controlling, proposed by A.A. Tsiporenko [13], which can be used by domestic business entities.

1. The cost minimization model assumes that the formation and maintenance of competitive advantages is directly dependent on the maximum possible reduction in operating costs in each functional unit and for each the direction of the enterprise. When using this model, it should be borne in mind that an attempt to reduce the level of operating costs in the corresponding functional unit (in a certain area of activity) may cause their growth in another unit (in others direction). So the logistics department can achieve significant savings by purchasing cheaper, but lower quality raw materials, which will lead to unnecessary costs when processing in production units.

In this case, the efforts of anti-crisis controlling are aimed at preventing the loss of competitiveness (and, accordingly, the emergence of a crisis situation) as a result of an unreasonable increase in current expenses due to inconsistency actions of the functional units of the enterprise, and due to the fact that excessive savings cannot provide the necessary and sufficient consumer characteristics at the relevant links of the value chain at the enterprise.

2. The differentiation model assumes that the company's competitive advantages are ensured by creating and offering in the target market a higher value (uniqueness) for the corresponding types of products (works, services). At the same time, distinctive characteristics can be present both in the product itself (product differentiation) and in after-sales service (service differentiation) or in customer service (personnel differentiation). It should also be remembered that significant competitive advantages can be generated through the creation of an enterprise brand (image differentiation).

When using this model, it should be borne in mind that anti-crisis controlling alone cannot reveal the degree of uniqueness for the target market of the corresponding links in the value chain, so it will be aimed at assessing and control of costs (planned and actual) in order to prevent a situation when the costs of ensuring the desired differentiated characteristics of the enterprise's products become so significant that they cannot be recouped at the expense of the price that consumers are willing to pay for the specified characteristics.

3. The model “differentiation – low costs” (“optimal costs”) assumes that the achievement and maintenance of low costs is ensured in parallel with the implementation of differentiation in certain links of the value chain. Thus, this model represents a certain compromise between the strategy of low costs and the differentiation of the enterprise's products, however, it is more atypical, since most often such coordination is within the limits of functioning enterprise is impossible [13].

Despite the fact that a significant number of foreign enterprises successfully combine low cost of products and high quality (first of all, Japanese car manufacturers), it should be noted that for Ukrainian enterprises that have chosen with such a strategy for achieving competitive advantages, there are significant risks of being “stuck halfway”, since in this case a very high efficiency of production and implementation of innovations is required for many domestic enterprises is a problem. Therefore, in order to prevent the emergence of crisis situations for each specific enterprise, a thorough assessment should be made of whether it is possible to achieve certain conditions for ensuring specific benefits in the course of current activities enterprises or in the future this is the task of controlling when using the specified model.

**Conclusions.** Summarizing the above, we can conclude that in the modern economy, the problem of introducing controlling into the anti-crisis management system of domestic enterprises, the purpose of which is the use of resource the potential of an enterprise to ensure its survival, effective functioning and sustainable development.

Therefore, controlling should be viewed as a process-oriented element of the enterprise anti-crisis management system, aimed at providing instrumental, organizational, methodological, consulting and informational support of anti-crisis management in the formation

of an anti-crisis strategy and building an early warning and response system at the enterprise, as well as the basic integration element of the anti-crisis management system of the enterprise.

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**TRANSFORMATION OF  
FUNCTIONS AND SOCIAL  
RESPONSIBILITY OF  
TRADE IN PANDEMIC  
CONDITIONS**

The need to carry out economic activities in a pandemic has brought to the fore the task of adapting it, especially for businesses of trade and services that have directly felt both the socio-economic consequences of the pandemic's own spread and the risks associated with quarantine restrictions. Secondary effects of quarantine restrictions and low consumer demand amid deteriorating consumer sentiment deepened the decline in the production of consumer goods, including food, and led to a sharp decline in retail sales (Melynk, Mitsenko, Turyanskyy, Mishchuk, Godunko, 2020).

One of the forms of trade in rural areas of Ukraine is trade in the system of consumer cooperation. We emphasize three points: (1) the existence of collective property, on the basis of which the joint business is conducted; (2) the democratic nature of the association, the existence of conditions under which each cooperator can control how the possibilities of his property are realized, to form an idea of the state of economic activity, profits and expenses, opportunities and prospects; (3) the social orientation of cooperation.

The special principles of cooperative trade, which distinguish it from other economic and public associations, are: voluntariness and social orientation; democratic character; economic prospects; autonomy and equality; education, advanced training, information; integration cooperation (Lashch, 2019).

Cooperative trade is a special type of trade activity, characterized by the following qualitative features: unity of property rights and management: members of consumer cooperatives are directly involved in managing the activities of consumer societies, mainly trade; economic independence and legal independence: cooperative trade enterprises independently solve all issues of activity, based on economic feasibility and market conditions; interference in their activities by public authorities is limited by law; profit target; local

market (mainly rural areas), opportunities for significant influence on price formation and meeting the demand of rural residents; regularity: the activities of cooperative trade entities are regular; risky nature: cooperative trade entities are liable for management decisions, take measures to prevent risky events; social responsibility: cooperative trade actors must act in the public interest and contribute to solving social problems in rural areas, meet the needs of shareholders and, thus, implement the social mission of consumer cooperation. Cooperative trade plays an important role in the economy of regions and the state as a whole, cooperative trade entities operate exclusively in the legislative field, complying with relevant laws, create jobs for rural residents, provide them with income, act as the main filler of rural budgets (in 2020 more than UAH 1.3 billion in taxes and payments) (“Indicators”, 2020).

The role and place of cooperative trade in the national economy is best manifested in its inherent functions, which it is called to perform. First of all, these are functions inherent in all types of trade activities (Table 1.2).

Mazaraki, Lagutin, Gerasimenko (2016) among the functions of domestic trade distinguishes economic (realization of value and ensuring changes in the form of value), organizational and economic (bringing consumer goods from production to consumption), social (providing buyers (consumers) with a proper range of quality products at affordable prices). Dmytrenko (2015) distinguishes 5 main socio-economic functions (realization of consumer value, meeting the needs of consumers in goods and services, promotion in material form, the implementation of links between sectors of the economy and regions of Ukraine, the function of active influence of trade on production and consumption), which is divided into primary (key) and secondary (additional). Burak (2014) distinguishes 2 functions of trade – productive (bringing goods from producer to consumer) and unproductive (change of forms of value). The first function characterizes trade as a branch of the economy, and the second – as a form of commodity exchange. Napadovska (2006) believe that in addition to the main function – sales (sales) of goods to consumers – trade performs a number of ancillary functions: studying consumer demand, ensuring storage of goods, product range formation, product advertising, warranty service.

Table 1.2

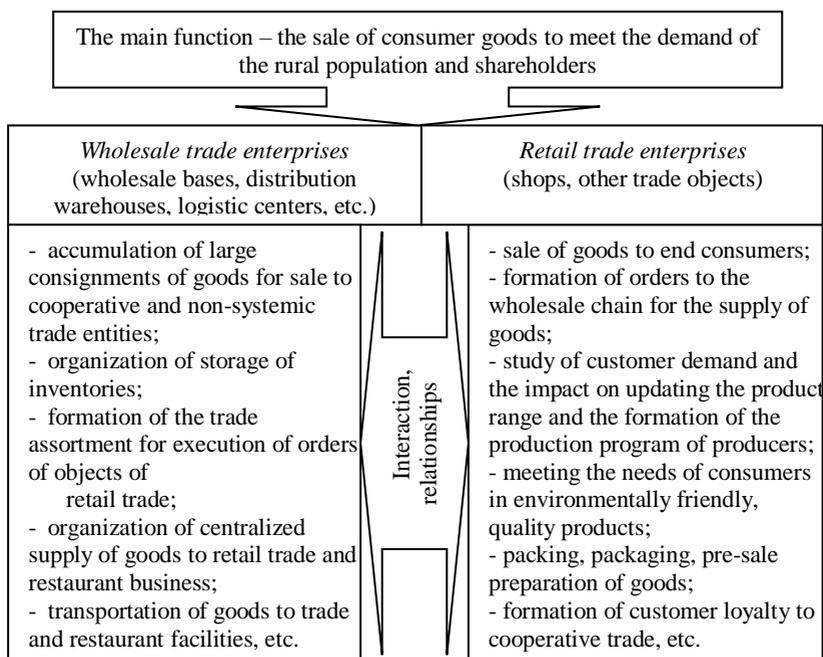
**General functions of cooperative trade**

Functions	Mazaraki, Lagutin, Gerasimenko, 2016	Apopyi, Balaban, 2014	Vlasova, Grosul, Krasnokutskaya, 2015	Dmytrenko, 2015	Burak, 2014	Napadovska, 2006	Vynogradska, 2005
Realization of the produced consumer value	+	+	+	+		+	+
Meeting the needs of consumers in goods and services	+	+		+			
Bringing goods from the sphere of production to the sphere of consumption	+	+		+	+		+
Making connections between sectors of the national economy and regions of the country		+		+			
Active influence on production and consumption		+		+			+
Changing the forms of value from commodity to money, the realization of the market value of goods	+		+		+		

Of course, the main function of cooperative trade is the sale of specific goods as consumer values needed to meet the needs of members of society within the total share of social product that they get in the distribution process (Figure 1.6).

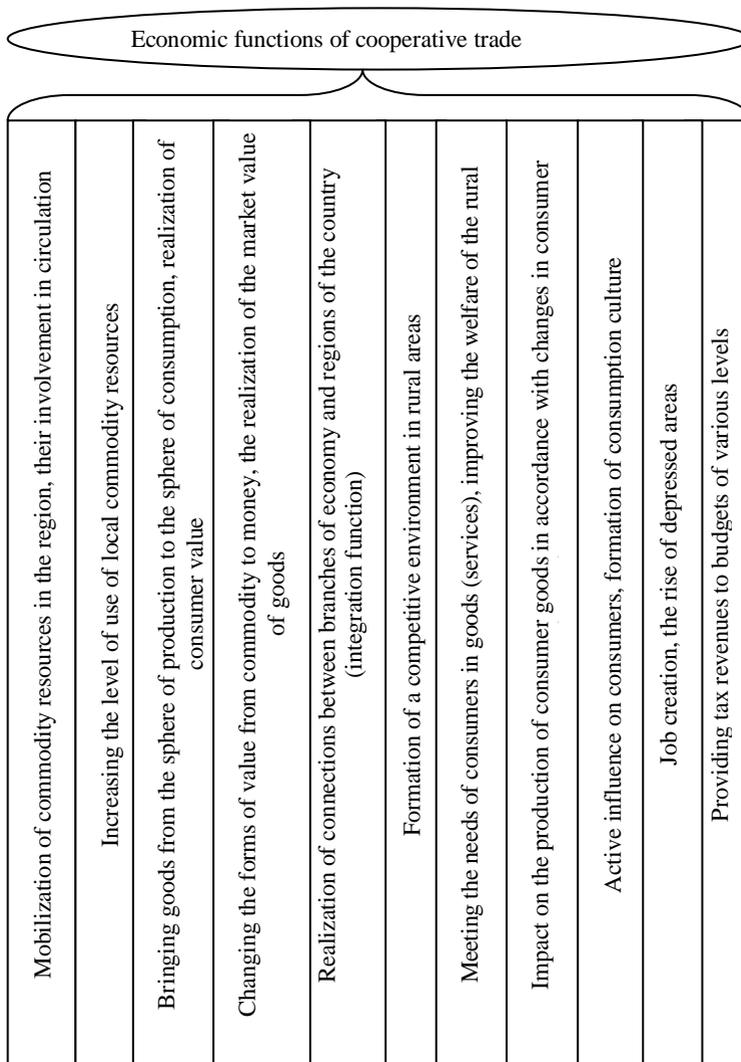
Since the product itself combines value and social consumer value, which meets the need for the product, there is a concrete and abstract work. Abstract labor creates the value of goods, and concrete labor – consumer value. In this regard, first, there is the satisfaction of individual needs, which take the form of effective demand of individual consumers through the exchange of goods for money, ie the sale of goods (sale of manufactured products as consumer value). This function includes the study of consumer demand, advertising of goods, the impact on suppliers to produce the necessary goods, the formation of the product range, taking into account the

characteristics of public demand. Secondly, there is a change in the forms of value, ie the costs of social labor are reimbursed due to the sale of manufactured goods as values. This function includes the following operations: setting prices for goods, cash transactions, checking the correctness of payment for goods, accounting, and so on. Another important function of trade is to bring goods from the sphere of production to the sphere of consumption. Its implementation requires the presence of effective channels of promotion, trade objects of modern formats, the development of electronic commerce.



**Figure 1.6 The place of cooperative trade in the movement of trade flows from producers to consumers**

Systematization of general and specific (related to the peculiarities of cooperative ownership and management) functions of cooperative trade allows us to distinguish three types – economic (Figure 1.7), political and social.



**Figure 1.7 The main economic functions of cooperative trade**

Rural areas, where cooperative trade facilities mainly operate, have their own specifics due to:

1) features of historical settlement (tendency to reduce the number of rural settlements and the population in them, low density and mobility of the rural population, rapid aging of the rural

population and labor migration of people of working age);

2) features of employment (small number of enterprises and entrepreneurs per 1000 population; significant unemployment rate; focus on employment in agriculture; the predominance of low-mechanized, seasonal, low-paid agricultural labor);

3) features of meeting the needs for goods and services (the spread of in-kind wages, a significant gap in the amount of wages of agricultural labor and labor in other sectors of the economy, the focus of demand to meet the primary physiological needs due to limited solvency, meeting food needs through their production in personal farms, low level of public services needed by people at the place of residence (Mitsenko, Godunko, Tymkiv, 2019).

At the heart of consumer cooperation are the interests of shareholders, who are both its users (employees) and consumers. The number of members of consumer societies in 2020 amounted to 111.8 thousand people (“Indicators”, 2020). Currently, the system employs 17.4 thousand people (Table 1.3).

*Table 1.3*

**Dynamics of the number of employees of consumer cooperatives of Ukraine and their average monthly salary in 2010, 2015, 2020**

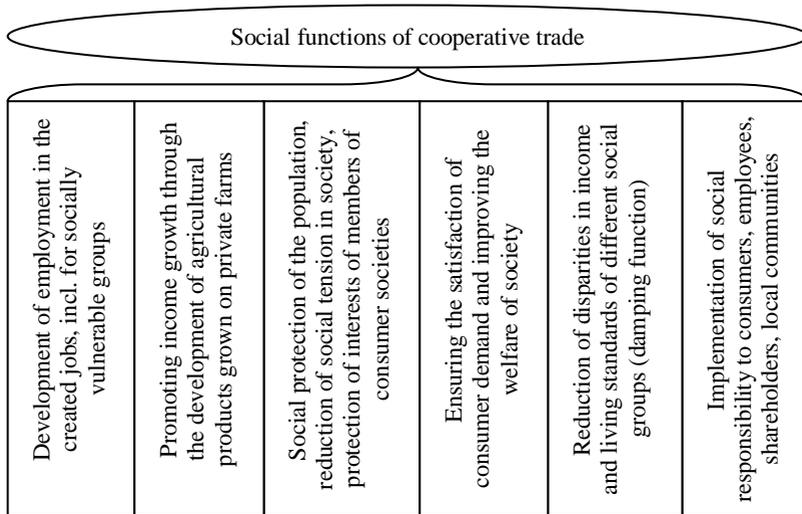
Indexes	Years			2020 in % to 2010
	2010	2015	2020	
Number of employees of enterprises and organizations of consumer cooperation, thousand people	58.4	26.1	17.4	29.8
Average monthly salary in a consumer cooperative, UAH	1423	2384	6132	4.3 times
The ratio of average monthly wages in consumer cooperatives and agriculture	0.97	0.72	0.63	-0.34

*Source: “Indicators”, 2020*

The negative trend of reducing the number of employees is associated with both objective (impact of the financial and economic crisis, the development of competitive shadow business, inflation) and subjective factors (unreasonable reduction of cooperative activities, low level of management, lack of modern technologies labor and management, lack of adaptation mechanisms, etc.). At the same time, there is a lag in wages in the cooperative sector from similar indicators in agriculture: in 2020, the ratio of average

monthly wages in consumer cooperatives and agriculture was the lowest and amounted to 0.63, which indicates a low level of motivation for productive labor in trade consumer cooperation.

Therefore, the social functions of cooperative trade in rural areas are important (Figure 1.8).



**Figure 1.8 The main social functions of cooperative trade**

Among the political functions of trade of consumer cooperation we can single out the formation of political views of a certain stratum of society and participation in the legislative process as part of integration structures.

Rusnak (2019) emphasizes that consumer cooperation as a socially oriented system aims to strengthen responsibility for the socio-economic living conditions of the rural population. The main strategic direction of its activity is the fight against poverty and for improving the quality of life of the rural population. Mechanisms for implementing this strategy are manifested in areas that correspond to the components of sustainable development of rural areas.

A critical analysis of the effects of the economic crisis caused by the pandemic showed that significant quarantine restrictions applied mainly to retailers in shopping and entertainment centers, whose activities were subject to quarantine restrictions. Instead, consumer cooperatives, which were small in size and specialized mainly in

food trade, continued to operate during lockdown periods and tightening quarantine restrictions. At the same time, their activities acquired a pronounced social character, as they were carried out in compliance with quarantine requirements for staff (all staff – in protective masks and gloves), and customer service (the number of visitors in the trading hall was limited, routes for customers were determined, ventilation, sanitation of premises and equipment, etc.), and on the organization of supply of trade facilities in rural areas (providing sufficient commodity resources to cover the hectic demand for food). The social responsibility of trade enterprises, which became the centers of livelihoods of rural residents, was significantly intensified.

Summarizing the realities of socially responsible activities of cooperative trade, the main of them are social, labor, economic and environmental areas (Table 1.4).

Solving the problems of rural development requires intensification of social responsibility of trade cooperatives both in the narrow sense (before employees, shareholders, the state) and in the broad sense (before the rural population, rural communities).

Given the importance of the functions performed by cooperative trade in rural areas, it is important to maintain cooperative trade and give it a new impetus in development. In our opinion, such areas may be:

- network approach to the development of cooperative trade, which will ensure the acquisition of competitive advantages through a single management center and a single corporate strategy, economies of scale, advantages in risk sharing and pooling of resources to ensure the positive changes needed by the market (Lisitsa, Misyukevich, Mikhailenko, 2020);

- introduction of the concept of logistics for the organization of supply of the cooperative network and optimization of operating costs: logistic management, ensuring the physical movement of the goods to the buyer on the basis of a logistical approach, connects producer, transport and consumer into a single mobile coordinated economic system;

- active digitalization, development of e-commerce and services for delivery of goods to consumers, cooperation with other business entities on the principle of “shop + online store + delivery service”.

Table 1.4

**Directions of realization of social responsibility of cooperative trade**

Direction of implementation	Characteristic of direction
Economic responsibility	<ul style="list-style-type: none"> <li>- creating conditions for ensuring financial stability and development of cooperative trade entities, ensuring their profitability;</li> <li>- coordination of interests of trade subjects of consumer cooperation, workers, the state;</li> <li>- timeliness and completeness of payment of taxes and other mandatory payments, settlements with shareholders and counterparties;</li> <li>- participation of employees (shareholders) in the management and distribution of profits;</li> </ul>
Social responsibility	<ul style="list-style-type: none"> <li>- cooperation with local communities and local governments on the creation of new jobs, maintenance and development of social infrastructure in rural areas, support for vulnerable groups;</li> <li>- support for educational and anti-epidemic initiatives;</li> <li>- support of cultural-educational, sports-mass, patriotic events, volunteer movement, national traditions;</li> <li>- ensuring high quality of goods and services, introduction of a quality assessment system at all stages of a single supply chain;</li> <li>- information openness and conscientious advertising of goods;</li> <li>- maintaining the image of a socially responsible system, initiating charitable and social actions;</li> </ul>
Labor responsibility	<ul style="list-style-type: none"> <li>- creation of social conditions for productive work and human development;</li> <li>- substantiation of forms and wage systems, provision of social guarantees to employees;</li> <li>- timely and full payment of wages, compensation and incentive payments, social benefits;</li> <li>- control over observance of labor legislation;</li> <li>- pension and social insurance;</li> <li>- raising the professional level and qualification of employees in cooperative educational institutions;</li> <li>- prevention of occupational diseases, health measures, sanatorium treatment;</li> <li>- ensuring decent and safe working conditions, constant monitoring of labor protection and safety at work;</li> <li>- formation of employee loyalty to consumer cooperation;</li> </ul>
Environmental responsibility	<ul style="list-style-type: none"> <li>- introduction of environmental management in the activities of trade entities;</li> <li>- identification of environmental threats, development of environmental policy of consumer cooperation and programs for its implementation;</li> <li>- maintaining the image of the manufacturer of environmentally friendly products under the brand;</li> <li>- monitoring the effectiveness of expenditures on environmental measures.</li> </ul>

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**PROBLEMS OF  
MANAGEMENT  
AND  
DEVELOPMENT  
DIRECTIONS OF  
RESTAURANT  
BUSINESS DURING  
THE PANDEMIC**

In recent years, before the crisis caused by the coronavirus pandemic, the restaurant business developed quite dynamically and grew faster. Unfortunately, the threat of COVID19 infection and quarantine restrictions around the world have changed the realities and activities of all enterprises to a greater or lesser extent.

The COVID 19 epidemic and the taking of sanitary measures to contain it in Ukraine have expanded the list of factors that have significantly changed and limited the development of restaurant businesses around the world. The introduction of state restrictions on the activities of the restaurant business has caused a wave effect in related industries, such as food production, alcoholic beverages, wine and beer production, food and beverage supply, fisheries, agriculture [1; 2]. This is mainly due to the fact that the restaurant business is a key part of the food sector, by its nature and purpose is a natural, socio-economic system and is part of the intersectoral regional cluster, actively influences the development of all sectors of the food sector. [3]

The service sector, in particular catering establishments, is one of the sectors most affected by the severe quarantine restrictions caused by the spread of COVID-19. The most significant losses from the introduction of restrictive measures in March 2020 were suffered by the restaurant business, which faced the need to cover the costs of staff, territory, security, utilities in a significant reduction in profits due to the ban on visiting restaurants in the first months of quarantine.

Today, restaurant businesses have to make every effort to stay afloat and survive. Due to the situation in the world caused by the

coronavirus pandemic, most restaurateurs suffered heavy losses, and some were forced to close their establishments. Almost all institutions were forced to transform their activities. In such realities, first of all, the question of flexibility and speed of reaction of restaurant business enterprises arises, which envisages the introduction of new areas of work in the conditions of strict quarantine and the introduction of new current trends in the conditions of adaptive quarantine. The new reality created by COVID 19 is forcing restaurant businesses to develop new creative mechanisms not only to maintain viability but also to develop measures that could allow them to adapt to the new realities of the external environment.

*Table 1.5*

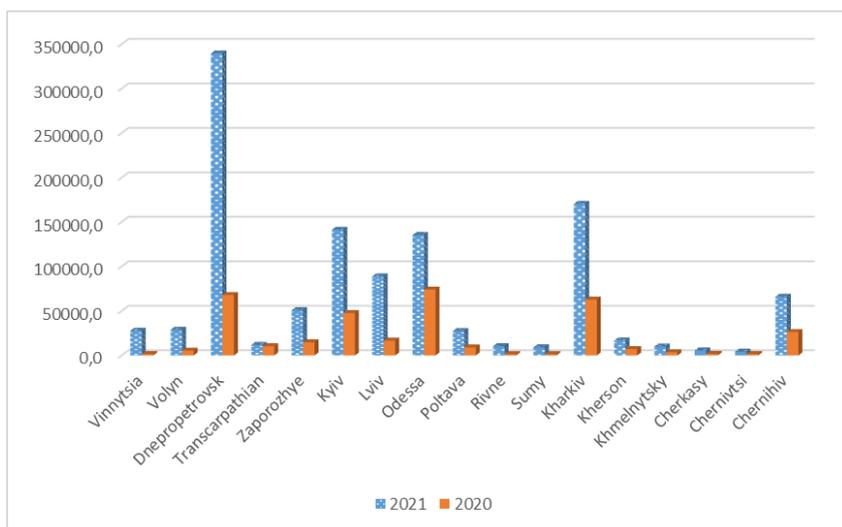
**Dynamics of change in the volume of services sold by type of economic activity number 56, according to the Classification of economic activities in Ukraine - Food and beverage activities in the regions of Ukraine for the second quarter of 2020-2021**

Name of the region	Volume of sold services, UAH thousand		Dynamics of change in the volume of sold services, %
	II qw. 2021	II qw 2020	II qw. 2021/ 2020
Vynnytsia	27827,1	1581,0	1660,1
Volyn	28921,4	5450,3	430,6
Dnepropetrovsk	339532,5	67936,8	399,8
Transcarpathian	11907,1	10443,9	14,0
Zaporozhye	50916,6	14780,8	244,5
Kyiv	141263,0	47605,5	196,7
Lviv	88934,9	16682,7	433,1
Odessa	135546,9	74005,9	83,2
Poltava	27479,0	9060,5	203,3
Rivne	10395,5	1426,0	629,0
Sumy	9164,6	1444,8	534,3
Kharkiv	170549,4	62856,4	171,3
Kherson	16882,9	7188,8	-
Khmelnysky	10083,0	3677,1	174,2
Cherkasy	5630,9	1837,8	206,4
Chernivtsi	4354,7	1594,5	173,1
Chernihiv	65965,4	26379,1	150,1

*Source: formed by the author according to the State Statistics Service of Ukraine, some regions are excluded from the list due to the fact that the data were not published in order to ensure compliance with the requirements of the Law of Ukraine "On State Statistics" as the confidentiality of information*

After analyzing these Tables, we can conclude that there is a resumption of activities and the provision of food and beverage services. This is due to the easing of quarantine restrictions and vaccination of the population.

This area has faced many problems due to COVID-19 infection and innovations that have been introduced into our lives. However, it would be a mistake to assume that the gastrosphere is in a state of stagnation. On the contrary, the new reality requires quick and bold solutions that restaurateurs and cafe owners are ready to offer. In connection with the pandemic and the current situation in the world, the first thing for each of us now is to take care of their health and the health of relatives. This trend is implemented by many companies, including the restaurant business, putting in the first place the idea of safe consumption with maximum benefit for the guest.



**Figure 1.9 Dynamics of change in the volume of sold services (Food and beverage activities) in the regions of Ukraine for the second quarter of 2020-2021**

The pandemic caused by COVID-19 affected various categories of restaurants, from small to large hotel and restaurant complexes. As it turned out, more stable are those companies that already have a

reputation in this market of services, skills and experience to adapt to new working conditions and offer a new range of additional services.

With the introduction of lockdown, many establishments continued to work on food delivery, which helped them “stay afloat”. Sets of food and delivery have not lost their popularity in 2021. Consumers follow the trend of eating at home, enjoying a wide selection of takeaway dishes and sets of dinners in restaurants that can be prepared at home. Virtual kitchens, which offer only delivery, have already found a response among consumers and will be a starting point for restaurateurs to check the demand for their food before opening your own project.

The changes that COVID-19 has made in the gastronomic industry have become quite strong. People began to care more about their health, it directly affected the diet. The coronavirus pandemic has become a driver of the market for health products and services, as well as changed the basic habits of food consumption. The restaurant business in Ukraine will revive, however, if the owners of establishments do not catch up with modern marketing trends, it will be difficult for them to keep a guest. Consumers are quite “spoiled” by the offer and constantly demand nourishment not only of the stomach, but also the mood with new impressions. Therefore, just delicious cuisine will no longer be enough.

Consider all available ways to overcome the effects of strict quarantine in the restaurant business. The main direction is to start working on takeaway and on the terms of address delivery [4]. To do this, businesses must have the appropriate code to carry out such economic activities. Also, if the institution decides to carry out the delivery on its own, it will be necessary to review the staff list of the company and make changes there if necessary. For example, if the company has not previously practiced food delivery and plans to do it yourself, it is necessary to add the positions of couriers and change the list of positions of the institution according to the situation. In order not to lay off some employees, they can be transferred to new positions if desired. If necessary, additional training and instruction is provided. During the operation of the institution in the mode of address delivery, it will be advisable to use the services of an SMM specialist and a marketer. In this situation, there is a need to buy vehicles such as mopeds, cars, etc., depending on the financial

capabilities of the entrepreneur. It is necessary to carefully consider the packaging of products, as well as to establish the supply of disposable packaging and everything necessary for targeted food delivery. If the company plans to deliver products using existing services, it must enter into a service agreement with the relevant delivery service. All these actions encourage a careful study of the terms of civil law contracts, or appeal to a reliable and highly qualified specialist in this field.

Another way for catering establishments to survive during severe quarantine is to convert them into a food retail store. In this case, the institution has the right to prepare and sell its takeaway dishes, sell sets of food with a recipe and so on. To do this, you also need to take care of entering the appropriate code in the registration card of the business entity in accordance with applicable law, otherwise it will be illegal to carry out such economic activities. If the institution occupies its area on lease, you need to carefully analyze the relevant agreement on the intended use of the premises.

Then, no later than 10 days before the start of food retail, it is necessary to submit an application for registration of facilities to the State Service of Ukraine for Food Safety and Consumer Protection. If the establishment, converted into a store, plans to sell alcoholic beverages, it will need to make additional changes to the current license and to the registration certificate of the registrar of settlement operations. In this area of activity, as in courier delivery, it is necessary to take care of compliance with labor legislation, namely, it is necessary to carry out mandatory transfer of employees of the restaurant business to other positions. In the future, the owners of a converted cafe or restaurant in the newly formed store will be painstaking work on the conclusion of supply contracts and other appropriate documents in the event that there is a desire to sell their ready meals through trade in the store. The proposed alternative ways of re-profiling the restaurant business for the period of strict quarantine are not easy, but they are very necessary to stay working in the future in the catering market. It is difficult only at first, if you implement it for the first time, but then it will be a reliable “airbag” for various contingencies.

The analysis of the above reflects the difficult times that catering establishments are currently going through, but the proposed

alternative ways give restaurant business owners hope for a positive solution to the current situation. Probably, any crisis should be considered as a new opportunity, there is no delay, it is necessary to accept the new reality as quickly as possible and take appropriate steps.

In order to preserve their image, retain regular customers and a general presence in the restaurant business, a significant number of companies have reengineered the main business processes with an emphasis on the format of targeted delivery.

Therefore, today the issues of transformation of the restaurant business and the development of innovative solutions come to the fore to preserve the business. Of course, innovations bring about great transformations, sometimes changes that change the way of life or even the worldview of the whole society. Innovations in the restaurant business should be no less progressive than in other areas of human management, as well as be aimed at solving existing problems. In addition, they should help the consumer to open new opportunities, create comfortable service conditions that can't only become a calling card of the restaurant business, to distinguish it from other restaurants, but also to set a new vector of development.

Information technology has introduced new creative solutions into the lives of people and businesses in various spheres of economic activity, including restaurants. Today, restaurant businesses are rethinking their business in terms of the Internet and its new culture and opportunities. The growing pace of modern life is becoming more mobile (users of mobile devices have ample opportunities to purchase restaurant products through convenient applications). The promising dominance of information and communication technologies creates not only the possibility of maintaining viability during the global fight against the pandemic, but also new prospects for the development of restaurant business enterprises through the introduction of alternative innovative solutions. Mobile applications in virtual objects have led to the emergence of creative directions for the development of restaurant businesses and their approach to consumers. Today, the consumer can order culinary meals without leaving home, work or in other various situations that limit the appropriate time to visit the restaurant business. Interactive technologies allow the consumer to

watch how culinary dishes are prepared through a webcam in the kitchen. So, Michelin-starred chef Massimo Bottura stayed at home for the time of quarantine and launched a culinary show “Kitchen Quarantine” on Instagram. Several times a week, he and his family prepare dinner and share culinary experiences. Many people who are forced to stay at home are interested to see the experience of the Michelin boss.[7]

The specificity of the modern restaurant business is that the number of offers from catering establishments is growing faster than customer demand, so attracting new guests to a restaurant is a top priority for many managers and owners. This issue is most acute in a crisis.

The chronic lack of funds for advertising leads to the need to carefully think over and plan any marketing activity, because you always want the money invested in promotion to pay off as efficiently as possible.

In this sense, the position of foreign scientists deserves attention, who in the study of social marketing [9] emphasize the importance of mobile applications in the development of restaurant businesses. The researchers note that “the growth of mobile applications in virtual objects is due to many advantages, among which the dominant ones are ease of market penetration, reaching more people, direct interaction between the client and the restaurant business, elimination of intermediaries and geographical barriers. and the ability to optimize the costs of both the consumer and the restaurant business”[8]. By adding a unique identifier and the ability to connect to the Internet for restaurant businesses, there is a unique opportunity to improve inventory management, increase its efficiency, track inventory movements and increase customer satisfaction. Such advantages are provided by the use of RFID technologies (Radio Frequency Identification, which means “radio frequency identification”), ie technologies for automatic contactless identification of objects using a radio frequency communication channel [9, p. 405].

More efficient service means increasing customer loyalty and expanding opportunities to increase profits. The information obtained during the use of RFID tags can have advantages in terms of inventory tracking, analysis of the popularity of restaurant products,

creating the opportunity to improve the menu. Tracking table service can help you develop more efficient ways to take orders, serve customers, and increase your satisfaction. Tracking employees, on the other hand, can help reduce punctuality issues and increase productivity. Restaurateurs should also focus on the internet marketing tool that promotes the restaurant product, the restaurant business itself and its brand through the use of social media, the content of which is created or updated through the efforts of owners and visitors, namely social media marketing ( Social Media Marketing, SMM) notes that the implementation of effective SMM is an important factor in the successful promotion of a brand, product or company in the market, aimed at attracting more and more supporters, expanding the target audience, developing, improving and protecting the company's reputation through the formation of consumer loyalty to the brand. Today, the social media audience is compared to the television audience, but is more focused and responsive. The work of social media is that they reach the target group of users through direct and covert interaction [4]. Among the popular platforms used by consumers are not only the popular “Facebook”, “Instagram” and “Twitter”, but also the social Internet service and photo hosting “Pinterest”, the business social network “LinkedIn”, microblogging services “Tumblr” and “Flickr”, video hosting “YouTube” and “Vimeo”, new formats for placing video files “Coub”, “Vine”, as well as individual messengers “WhatsApp”, “Viber” and “Telegram” [5, p. 114]

Also nowadays people are limited in inheritance, but quite actively follow the blogger. That is why Influence Marketing is probably the most effective promotion tool right now. It is only important to work with him competently. In the restaurant industry, it's a bit easier: a blogger can come to a restaurant, taste food, feel the atmosphere, talk to the waiters and make up his mind. To capture the target audience, you can invite bloggers, give them deposits (for 2 people at once, because someone has to take pictures of your blogger) and, of course, warn the staff of the hall about the visit of the blogger.

Social networks have become an integral part of our life for a long time, therefore, it is impossible to forgive to ignore this channel of communication with the target audience. Only by knowing “by

sight” your clients, you will be able to establish permanent relations with them. First on social networks, and then in a restaurant.

It’s not difficult to do this, but promoting restaurant pages will require imagination, perseverance and patience from you. They are the ones who will help you create a community that will start bringing additional income to your restaurant.

The best way to engage your subscribers and engage with them is to use brand journalism. Brand journalism is an inside look at a product and service that allows you to arouse the curiosity of the target audience and encourage them to take any action. To put it simply, this is a story about a restaurant “with a human face”. Stories from the life of employees, interviews with a chef, hostess, waiter or courier, exclusive videos illustrating the cooking process, photographs revealing the secrets of the internal cuisine to guests - all this will create content that is unique and interesting for guests. The goal of brand journalism is to provide an enhanced user experience on the basis of which a potential client can make a certain decision. Regular reports about employees and guests of the restaurant will create a favorable image of the establishment in the eyes of readers.

Among the wide range of sources that affect both the development of the restaurant business and the variability of quality and range of restaurant services, an important place is occupied by the consumer of services. In this regard, social, biological and psychological uniqueness, intellectual ability, as well as the information base, image and lifestyle of the consumer are the main value orientations. All this actually explains the high degree of individualization of restaurant services. Restaurants, cafes, bakeries and other enterprises in this area in the fight against the pandemic are forced to change the format of work with customers. The paper considers the key problems, changes and limitations in the development of restaurant business enterprises during the coronavirus pandemic. The main types of innovations for business protection are described.

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**STATE AND  
CORPORATE  
CITIZENSHIP**

The work continues the presentation of the results of the author's research, which began with the publication of the text "Socially-oriented economy and social state as a need for organic development" in the collective monograph "New trends in the economic systems management in the context of modern global challenges" [1]. **The purpose of the text** is to characterize the features: both mutual benefits and contradictions – in the relationship between national states and supranational activities of subjects of social (in particular, economic) activity. So, on the one hand, the expansion of the field of interests of international structures, on the other hand, the active participation of the state not only in regulation, but also in economic life itself ("sinks into the baseline") complicates the interweaving of forms of loyalty. In particular, the question of the priority of individual goals is becoming more acute. The additional significance of the topic is associated with the peculiarities of the period of forced transformations at the turn of the epochs, as well as the strengthening of the social sound of the information sphere. So, issues of relationships (in particular, at the humanitarian level) can directly affect the state and dynamics of the very fabric of sociality.

**The methodological substantiation of the material is based** on the unity of the concrete-historical and abstract-logical approaches.

Ideas of corporate citizenship include some kind of declaration of engagement with the local community. However, as a matter of priority, they reflect the goals and specificity of the interests of both the corresponding transnational company and the state of the parent structure. At the same time, ideas about the normative, desirable, and necessary for foreign corporations, foreign public organizations, and non-resident individuals naturally differ from the "autochthonous". And the "dissolution" of deliberately impersonal power in ubiquitous network structures allows us to eat away at the social fabric from within, coinciding with actions for the transition from the ecumene

of sovereign nation states to the world-economic integrity of supranational spider-corporations.

The changes, that have begun, are inevitable and obvious. But the forms and results of transformations are not obvious and probabilistic: everything will be determined in the confrontation of many forces, when, in addition to regularities, chances will affect. As you know, along with other factors, systemic dependence is always based on purposeful stupidity of the masses of people, as well as various forms of their bribery: material and spiritual. Of course, the financial sector will be a manifestation of general advances; but among the probable scenarios, it is possible to reproduce in a new way the situation of flexible bimetallism – with floating exchange rates of the nuclei of different cultural and civilizational worlds.

Of course, no private improvement in the public environment by nation states can compete with the financial flows to bribe specialists at the disposal of the lobbyists of the “big figure” and the “Washington swamp”, backed by the printing press of the Federal Reserve System. In addition, in transnational companies, the requirements for selection and for career and official movements are strikingly different: there can be no talk of democracy and accountability to the people. We must not forget about the priority of making a profit for business structures. Therefore, it is quite natural for the ardent participation of various “banana companies” in coups and “colour revolutions”, so convincingly described by many (suffice it to recall the works of O’Henry) and regularly occurring in classical forms in Latin America.

The ecumene is transforming [2-5]. Sociality is something that is directly focused on the reproduction of a person as a person in the unity of the three principles of biological, socio-economic and spiritual and psychological. The lack of demand for an individual is not compensated for by the use of labour: labour itself is both an effective way of socializing a person and a method of exchanging abilities. The place of sociality in the development of post-Soviet social relations is special. Firstly, the global community of the economy is acquiring a social dominant of development, when it is necessary to approach the economy without fail with ideological, moral and geopolitical standards. Secondly, the interconnections of the Soviet society were predominantly social, and not of a

commercial nature. Thirdly, with an increase in the maturity of any society, the influence of general social mechanisms of cultural regulation grows in it. Fourthly, the stereotypes of economic behaviour itself are radically changing. Finally, fifthly, the former “work” ethics disappears: if for labour as such, activity and attitude interact primarily externally, then for creativity social relations are the meaning and support of activity. As a result, for the analysis of social transformations, economic relations, which are fundamentally different from production ones, are beginning to play an increasingly important role. Economic relations are far from systemic, more superficial, subjective, dynamic, and influenced by a much larger number of various factors. The market romanticism of the power solutions of Modernity with its expectation of a quick linearly simple leap into the global system of connections is being replaced by more realistic ideas, including an understanding of the need to alternate breakthroughs and retreats in transformation. Nothing has been decided yet. The smallest shocks at the point of bifurcation, the arrangement of people, the influence of regions, the ability of political forces, and awareness of the specifics of a new era can also influence the future. On the crest of modernization, the balance is especially precarious, a balance of forces, sectors, and structures – in politics, economics, and the social sphere – is especially necessary.

The urgent challenge of history is reflected in different ways in the perception of the elites and peoples of different countries. Focused on innovative development: social and scientific and technical – actively create their own models of the future. Those who are frozen in political and economic collapse are hacking the identity of their own achievements, using the accumulated instrumental power (primarily financial and speculative, naval, information and propaganda) to prolong their dominance. Nowadays, the public organization and political regimes of the West (led by the United States) have exhausted the potential of their historical development and are on the verge of cardinal transformations. Naturally, the current social fabric has become so fused with their bodies that attempts to change it are extremely painful. And convulsions of agony cause attempts at frantic aggression, when rational means are used with extreme cruelty to achieve completely irrational desires. At the moment, the direction of the overflow of their diktat into the

power of corporations has prevailed, which also captivates with its namelessness (hence, irresponsibility). Making money on wars and coups, the United States is a parasite on them (trying to drag chestnuts out of the fire mainly by someone else's hands). But information, trade and financial means form the same topical directions of influence, as well as the force itself. And the role of foreign agents – distributors of the virus of self-destruction – can become one of the most decisive. And now the increasingly anonymous power of the “nameless fathers” of the United States is simultaneously trying to destroy social alternatives both inside and outside of its federation. Moreover, the massive arrival of top managers – lobbyists of the “big figure” to key positions added their characteristics to the previously formed layers of bureaucrats of the “Washington swamp”, militarists of the military-industrial complex and representatives of the clans of “fat cats”. In addition, the network-centric nature of communications unprecedentedly simplifies the work for an external host; the degradation of entire sectors of their own economies in the countries of the world semi-periphery condemns university teachers and science to training specialists for external consumption or retraining after training. On the one hand, participation in labour should guarantee material well-being and ensure a high social status. On the other hand, only personal labour, individual participation in general creativity, and can be a factor of differentiation in welfare and prestige.

At the same time, the essence of creativity is by no means reduced to generic (essentially animal) standards such as “plant a tree, build a house, and raise a child”: taking care of housing, offspring, and food, and so on characteristic of animals. The point is in the pro-social development and realization of the unique giftedness of everyone, which integrates the life of a person and a people. The task, of course, is not regression, but ascent, in particular, through filling the basic, natural-biological level with high social and spiritual meanings, not in simplification, but in the ascent of life forms. At the same time, the moral and spiritual imperative of goal-setting directly opposes degradation and chaos: both in the structuring of the sacred and in everyday reality. Accordingly, the provision of forms of development of the basic value-sense complexes of cultural and civilizational worlds adequate to the era is

a condition for the productive development of the essential forces of a person, the harmonious deployment and implementation of the complex of his talents in creativity. Sovereignty and identity as the protection of their views on life, their worldview, their meanings and values, their socio-cultural stylistics is the need for organic development. At the same time, the productive capital itself is visibly formed around the creative possibilities and intellectual potential of a person, their organization and use. Actually, attracting knowledgeable, talented creators with high potential or experience is the most important area of competition. Ensuring sovereignty requires updating the resource and methodological bases of endogenous development and emphasizing the latest technical and technological structures of deep processing while increasing the weight of intellectually intensive creativity. And it is advisable at the regulatory level to fix a ban on the careers of government officials or managers in state corporations for those financed from abroad.

Accordingly, a radical activation of the scientific and intellectual potential is required, therefore, the real priority of the educational, scientific and industrial complex. The level of realization of the totality of human rights (socio-cultural, economic, political and others), the quality of his life, the possibilities of creative initiative and self-expression are the fundamental gains of social development, integral features of progress. At the same time, the state is obliged to ensure the highest possible social standards of life and conditions for creativity (in particular, by organizing the solution, together with territorial communities, of routine material, everyday issues), preventing the wasting of abilities in the senseless cockroach races of consumerism / money-grubbing. Moreover, the state should not coerce the population, but should provide the best conditions for socially acceptable development and implementation of the makings. At the same time, ideas about society and the state of common prosperity (well-being) are today associated with value-sense complexes not of idleness and consumerism, but of creation and creative search. This focuses on active support not for various social dependents and their servants, but for creativity with the priority of human rights and freedoms; social justice, that is, social equality of people in rights and opportunities; solidarity, understood as an expression of the community of humanity and sympathy for the

victims of injustice. For this, in particular, it is necessary to free a person from the executive routine and everyday fuss for more active participation in creativity and preparation (primarily educational) for it. The reliability of the stability of the cultural and civilizational world largely depends on the original forms of the unity of adaptation (passive and active) and continuity that he has grown and applied; preservation and augmentation of the previously achieved. The balance of preserving and developing identity requires flexible reflection of transformations in the value-sense complexes of society. A series of crises clearly confirmed the need for the existence of the state as a form of ensuring integration and protecting interests, and strengthening the social orientation of the state course [6-9].

For this, in particular, it is necessary to free a person from the executive routine and everyday fuss for more active participation in creativity and preparation (primarily educational) for it. The reliability of the stability of the cultural and civilizational world largely depends on the original forms of the unity of adaptation (passive and active) and continuity that he has grown and applied; preservation and augmentation of the previously achieved. The balance of preserving and developing identity requires flexible reflection of transformations in the value-sense complexes of society. A series of crises clearly confirmed the need for the existence of the state as a form of ensuring integration and protecting interests, and strengthening the social orientation of the state course. However, not only topical, but also fundamental processes demand the potential of the state. At the same time, a radical change in production, in particular, is by no means a focus on the “invisible hand of the market” in pricing, correlation of supply and demand, but a transition to marketing research and calculations; the growth of interdependence in technological chains and the like – all this requires adequate transformations in public communications, first of all, decisive democratization and humanization of the system-forming relations of labour, ownership and management, fixing public ownership of natural resources, ensuring a developed system of social protection, raising the level of social guarantees.

The impact of the pandemic (following the “reconnaissance” of the variety of influenza: “bird”, “swine”, etc.) once again convincingly showed: the countries of imperialism do not seek and

cannot not only support any other states, but also provide social (in particular, social and medical) protection of their own population. If the purpose is medical, educational, etc. subsystems is to make a profit, then the life of a particular person is assessed precisely from these positions. Moreover, the appalling differentiation in disease and mortality along class and even racial lines has shown the growth of real segregation in a society organized along capitalist patterns. Again, while sucking the juices from the entire ecumene (and when the epidemic came, it also affected the dragging of doctors, personal protective equipment, medicines, etc. from everywhere and by any means), the Western countries showed an extremely contradictory course regarding recommendations to the population, and the latter quickly slipped into the destruction of shops, etc. It is no coincidence that socialist China was able to both regionally localize the spread of the disease, effectively put a barrier to it, and lend a helping hand to other peoples. Among the countries that were the first to come to the rescue and amazed with the quality of internal mobilization (and therefore a low mortality rate) are exclusively socialist and have passed the socialist stage of the state. For the legitimate protection of the interests of their peoples by national states, the role of not only spiritual creativity, but also the level of general culture and education, and therefore social pedagogy (covering family, religious, pre-school and post-school education), inevitably increases, in particular, based on the public institution of mentoring). Actually, as you know, the protection of human rights and freedoms (not only at home, but throughout the world) was, among other things, subordinate to the Communist Project. The countries of imperialism were forced in response to spend money on their image attractiveness, with a certain shift in emphasis towards the pathologization of social (in particular, economic) life. This is natural: the boom of transformed-irrational forms is one of the consequences of the overripe nature of relations, which, in turn, is included in the restructuring of the entire structuring of life on the basis of human depreciation for the sake of profit and pleasure.

Sustainable development presupposes a stable base culture. It turns out to be the backbone of self-preservation of the people when global shifts take place: not only one type of development is replaced by another, but the very nature of the transformations changes

dramatically. We not only move away from the previous foundation – we say goodbye to the uniqueness of the foundation in general. Choice, his freedom and responsibility for him become a permanent state. Transition here is both an element of a moment of concentrated transformation and a fundamental characteristic of the new era as a whole. That is why it is incredibly difficult to reveal the facts of the new era: they are diverse and overshadowed by the totality of the figures of the previous dominant tendencies. The habit of uniformity (the agrarian structure or the modernist imposition of the will to progress) also affects. From these positions, the interpretation of the experienced events is objective only taking into account the historical memory and the characteristics of the social culture of the ethnos. The nature of social changes during the transition from one cycle to another can vary significantly. This is how Westernization, accelerated development, catch-up model and other options for modernization are delimited as a movement from traditional to modern society, from agricultural to industrial production. In the case of a transition to innovative-synergistic, post-informational structures, we should talk about (hyper)modernization. At the same time, it is necessary to distinguish between general cycles of the existence of civilizations from specific cycles of modernization. Naturally, the current attempt at transformation inherits a lot from previous cycles, but also brings in something of its own. With any modernization, a social rift takes place not only between social groups, but also in individual consciousness. Each carries an inorganic nature. An unjustified oversimplification is the habit of modelling the reactions of a social community in the intertime, based on the assumption of confrontation exclusively between the strata of society: representatives of various political forces. When there is a combination of pre-, post- and strictly industrial elements, the inorganic nature of life increases.

Each (local, regional, national) economic system receives the opportunity and the burden of choosing development according to its own laws – up to the rejection of progress in general. For untrained people and societies, Post-globalization is a tragedy. And mortal fatigue and the breakdowns of the unprepared are natural and frequent phenomena. Accordingly, the importance of both socio-historical fasteners and the organization of projects of integrating and

motivating modernization from above is naturally growing. The cultural and historical diversity of the world has increased. Structuring by the socio-economic principle is complemented by the ethno-cultural one. This means that the social system acquires the qualities of a non-systemic social community. If the first strives for integrity, then the second is devoid of it, remaining conglomerate, and mosaic. The first presupposes the inequality of parts and a strict hierarchy of organizations, the second presupposes the alignment, intrinsic value and harmony of elements, the absence of a predetermined scale and standard. In the first, a person appears primarily as a person, in the second – as an individual. But if everyone can change their class affiliation and economic position if they wish, then ethno-cultural certainty and the spiritual and psychological component turn out to be an immutable given. As a result, social formations themselves become special types of objects, created not by atoms-ingredients, but by connections that have a probabilistic, stochastic nature. Their determination is often not causal, but synchronous. Causality is by no means a necessary attribute of nature. With the strengthening of ethno-cultural and spiritual-psychological principles, this situation is acquiring more and more importance. Moreover, under the dominance of the attributes of the social system, obvious social inequality and the clarity of the hierarchy of relations “centre – semi-periphery – periphery” remain (although here, too, they lose their polarity and economism). The centre is being formed into several “breakthrough zones”, and the periphery is characterized not so much by the production of outgoing forms of labour organization as by the marginalized masses. There is a relationship between the centre and the periphery, but there is no explicit form of them themselves as specific structural levels. Fragments initiated by the dominant attributes of a non-systemic social community do not bear signs of inequality and hierarchies, but include institutionalization based on typicality and traditions. Here, the regions are equivalent, self-valuable and ranked: for example, Western Christian, Eastern Christian, Islamic, Indo-Buddhist, Confucian-Buddhist.

Leadership groups of the West and the East revealed their principles, priorities and values, set the line between the “high” and “downstream” worlds. The degrading part of the periphery is the

object of manipulation, not the subject of history. The potential difference accumulates in the semi-peripheral zone and on the edge of the worlds. Here are the possibilities for unexpected mutations. The universality achieved by capital in the era of industrialism (modernism) has retained niches for reproduction on a different basis. Peoples caught in a “turbulent vortex” are distinguished not so much by the level of efficiency as by the exoticism of their social structure and political organization. But it is easier to return to the historical stream under modernism than to leave it on your own path. Another thing is post-globalism with its pluralism of models, stages and paths of development and cultivated diversity. In this situation, the role of non-economic factors in evolution is growing, progress is carried out not so much in stages, but synchronously, habitual class antagonisms are often subordinated, supplemented and replaced by others: social, ethnic, religious. Hundreds of civilizations, socio-cultural stylistics, brought together in cultural worlds coexist in the world. Their fates are determined by the strength of the initial impulses, geopolitical circumstances (external challenge, the presence of allies, etc.), and the quality of management. Accordingly, fluctuations in a soft social system have lower amplitude and a higher frequency than in a rigid one. At the same time, the unifying principle is either inside or outside the ethnos itself, its state.

The onset of the post-global era is reflected in the complex nature of changes: both the post-globalization of the objective state and the post-globalism of awareness of what is happening. On the one hand, the world order was based on the international division of labour and world flows of capital, goods and services, in particular – the globalization of information and, accordingly, ideas about living standards, incl. education, health care, etc. Many of the signs of supranational interaction that have emerged are irreversible. The reproduction of the ecumene firmly linked the cultural and civilizational worlds, the form of which was the ratio of competition and partnership / cooperation with one or another degree of complementarity or, on the contrary, hostility. On the other hand, there is a growing understanding of the value of one’s identity and the direct dependence of the quality of socio-economic growth on the reality of sovereignty and the quality of socialization [6-8]. Meanwhile, the new era sharply increases the likelihood of new

waves of massive threats. Moreover, the determinants of pathogenicity are variable and combinable, which expands the prospects for targeted selection of certain traits. World transformations demonstrate once again: each of the subjects of history has its own combination of advantages and disadvantages.

Of course, the process of transformation itself can occur with greater or lesser excesses. Today, the tendencies towards regionalization, towards the struggle for global leadership and towards increased personal control on the basis of digitalization interact and overlap. It is strategically important that the transformations do not become a rejection of the achievements and achievements of the past, but strengthen and expand the resource and methodological base of life and development of everyone precisely with the integration of creative potentials, including domestic models of both modernity and tradition. The organic combination of continuity and development is the most important condition for protecting the identity of the post-Soviet space, which highlights the role of both leaders and institutions. It is imperative that the field of social and individual creativity increases, and the quality and duration of life increase. For society, both of a separate cultural and civilizational world and of an ecumene, it is important to have a variety of worldviews, searches, approaches, as long as it does not undermine the foundations of its existence. Fruitful defense of historical memory while understanding the world-historical process as continuous and constant requires teaching the population to think, act, and create: independently and in a team.

At the same time, it is already obvious: total privatization did not at all lead to the emergence of an effective owner. Moreover, the seizure of the previously public property often led to predatory exploitation, the emergence of monopoly rent (in particular, from the ownership of natural resources), a sharp unearned stratification of the population, the surrender of the fundamental interests of their cultural and civilizational world for the sake of condescending recognition by the West and the transfer of everything dear there: capital, real estate, family, etc. The devaluation of the achievements (including those deservedly included in the gold fund of the entire ecumene) of their own countries while obsequious servility to the Basque global imperialism correlated with the erosion of real

sovereignty. Attempts to match the expensive and ineffective Western medical, educational, etc. systems were rapidly destroyed by the rich legacy of socialism.

**Thus**, the endless series of crises clearly confirmed the need for the existence of the state as a form of ensuring integration and protection of interests, and strengthening the social orientation of the state course. However, not only topical, but also fundamental processes demand the potential of the state. So, moving to the core of public interest the maximum expansion of the area of pro-social development and the realization of purely individual combinations of creative talents of the population requires the release of a person by the state from documenting minor troubles of a routine nature, as well as state guarantees for the provision of high-quality and affordable education, health care, and so on. And the role of corporations – an instrument in the arsenal of the ecumene development – should not interfere with the strategic goals and legitimate interests of peoples and states. At the same time, for Ukraine, the problematic nature of modernization doubles: changes in proportion to the transforming world have chronologically superimposed on the fundamental shifts of socio-economic layers within the country. “Keeping up with modernization” brings an opportunity to “learn from the experience of others”, not to do “idle moves”. But here also lies the potential of conceptual and economic chaos, the non-conformism of the rebels of the “death of the gods” situation. Outwardly, the range of decisions made is wide enough. Internally, however, the choice is often predetermined by social heritage, historical traditions, the proportion and place of the active part of the population (“passionaries”). Moreover, the very rootedness, the strength of the reforms, and therefore the future of the people – in accordance with the ongoing shifts, the expectations of the population, in the ability to integrate the people in the face of a historical chance, in the practical realization of spiritual liberation and creativity.

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## Chapter 2

# MODERN METHODS OF DIAGNOSING THE RESOURCE POTENTIAL OF SOCIO-ECONOMIC SYSTEMS IN TERM OF THE PANDEMIC

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**METHODOLOGICAL  
RESEARCH**

**FRAMEWORK OF  
CHINA LOGISTICS  
INFRASTRUCTURE  
AND FUTURE  
TRANSPORTATION  
MARKET  
CHALLENGES**

### Introduction

Connectivity has significantly improved in China, especially in the past two decades, which was made possible by large-scale infrastructure investment. Since the mid-1990s, infrastructure investment has been regarded as a major policy priority by the Chinese central government and has been emphasized throughout the successive Five-Year Plans. On the one hand, infrastructure investment is necessary to support China's rapid economic growth, which has generated an increasing demand for infrastructure. China has seen steep economic growth since the economic reforms started in 1978. Along with the increase in GDP, China has experienced a rapid expansion of the transport network. According to many authors (Fan, Bai, & Pan, 2004; Lou, 2003; Zhang, 2009), the transport network growth has been one of the major engines of China's economic growth. Transport infrastructures include roads, railways, ports, airports and waterways and typically, these infrastructures have been financed, built, owned and operated by the governments at the various levels (Newell, Chau, & Wong, 2009; World Bank, 1994). The question how these investments can be managed effectively and equitably is a critical problem of the various (central

and provincial) governments. One of the main challenges China still faces is the unequal development among Chinese regions. China's economic activities have for a long time been mainly concentrated in its eastern areas, such as the Yangtze River Delta (e.g. in the provinces of Zhejiang, Jiangsu Province and Shanghai City), the Pearl River Delta (e.g. in Guangdong Province) and the Bohai Baky Region (e.g. Beijing, Tianjin, Southern Liaoning Province and Shandong Province) (Tan & Yang, 2009; Zhang & Sun, 2008).

### **Background of literature analysis**

Infrastructure is a component of the territorial structure of national economy, which is formed by the transport, communications, trade, energy and water management system, as well as dwellings, schools, objects of health protection, culture, sports and other objects for care of inhabitants and their arrangement in any territory (Saeima, 2010). Russian researches Rudneva and Kudryavtsev believe that transport infrastructure is a regional transport infrastructure capital, i.e. "a certain type of capital demonstrating the specific social character, manifested in transport infrastructure ability to bring to the region the benefits with not only economic, but also with socio-cultural characteristics, and conditioning the synergistic effect of its implementation" (Rudneva and Kudryavtsev, 2013). Infrastructure is a complex field with so many different components under it; but all of them can be categorized into two main types of infrastructures. They are the hard and the soft infrastructure. This approach allows identifying the factors and conditions that affect the transport infrastructure development; in the future, it can assist In determination of the range of measurement indicators and characterization of the transport infrastructure development. It is generally assumed that the logistics infrastructure which conditions the effective performance of the logistics processes comprises "technical means, manners to handle them and systems of how to use them" (Grzelakowski, 2014)

### **China infrastructure strategic development growth and future challenges**

The well connected expressway network was made possible by the National Trunk Highway Development Program initiated under

the Government's Ninth Five-Year Plan (1996–2000). Its stated objectives were to connect all provincial capitals and cities with an urban registered population of greater than 500,000 on a single expressway network and to construct routes between targeted centers and the border in border provinces as part of the Asian Highway Network (Faber, 2014). The average travel speed of passenger trains was only 48.3 kilometers per hour. Twenty-five percent of the locomotives were still steam engines in 1997 (Duncan, 2007b). From 1997 to 2007, China's Ministry of Railways performed several rounds of speed acceleration on existing railway lines. The project had two stages. In the first stage, train speed was increased gradually in the first four waves, namely, in 1997, 1998, 2000 and 2001. The modal shift between railway and road transport is very likely to be attributed to the introduction of high-speed rail, which is more time-efficient than road transport. With the further expansion of the high-speed rail network, it is likely that high speed rail will increase its share in passenger traffic, which puts competitive pressure on other sectors, such as the airline and road transport industries. For example, Fu et al. (2012) suggest that the high speed rail service will be competitive in terms of network connectivity, total travel time and cost efficiency, which may pose a threat to the airline industry, especially in city pairs of short to medium distance. However, it seems that the willingness to take public transit is still relatively low in cities like Beijing (Marukawa, 2016), which weakens the impact of urban rail transit in alleviating congestion and emissions in the road sector.. Major financing channels include railway construction funds, treasury bonds and budgeted funds from the central government; contributions from local governments due to the cooperative agreement between the Ministry of Railway and 31 provincial governments; bank loans from home or abroad; and strategic investors, such as power plants, coal mines, ports, and insurance groups, either public or private.<sup>3</sup> The local investment share (including investments by private firms) for railway infrastructure was between 7% and 28% in the period 2001–2009 (Wang et al. 2012). By contrast, to finance the road network, the central government encouraged province- and county-level governments to raise funds by borrowing against future toll revenues (through various special purpose vehicles because direct borrowing

by these levels of government is prohibited) (Duncan, 2007a). Toll rates are approved by provincial pricing bureaus on the recommendations of the provincial communications departments, which vary across provinces and vehicle types.<sup>4</sup> Based on the numbers in 2005, 12% of total spending on road development was funded by central government grants; 42% was funded by domestic and (to a lesser extent) international bank loans; 28% was funded by provincial government sources (including revenues from the annual road maintenance fees charged to vehicle owners); 15% was funded by local government sources; and 4% was funded by the private sector and state owned enterprises (SOEs) (Yang & Lee, 2008). The first bottleneck to PPP development in China, as discussed in Thieriot and Dominguez (2015), is the high degree of uncertainty faced by private entities when joining PPP projects. Among all the risks faced by a PPP project, survey results suggest that government-related ones were predominant, and government intervention topped the list (Ke et al., 2011). Secondly, improper risk evaluation and allocation may create barriers for the private sector to enter the PPP market. Consistent with the international common practice, the local government bears the legal and policy risks, while the commercial risks (such as planning, construction, financial, operational and management) are assumed by the private sector.<sup>9</sup> However, the process of risk assessment is complex and requires advanced technical capacity. With many local governments lacking experience in this domain, risks are often improperly evaluated and not efficiently allocated (Thieriot and Dominguez, 2015). Thirdly, the lack of grounded evaluations of selected projects may lead to failures of PPP investment. Proper project selection is a very important first step in PPP infrastructure development. A PPP project should be selected only if it brings advantages relative to the traditional government construction-and-management model (Thieriot and Dominguez, 2015). Accordingly, they may require considerable public subsidies to bring partnerships to fruition, which can complicate their implementation (ADB, 2012). The Impact on Economic Growth A handful of papers examine the impact of transport infrastructure investment in China, and most find a significantly positive impact of infrastructure investment on economic growth. Using a growth model framework, the well-cited

work by Démurger (2001) finds that infrastructure investment had a significant impact on the differences observed in growth performances across provinces from 1985–1998. Fan and Zhang (2004) suggest that rural infrastructure, such as road access, significantly impacts on the differences in non-farming rural productivity across regions in China. Oxford Economics (2011) estimates the economic footprint of the aviation sector in China. According to its estimates, aviation has a significant footprint in the Chinese economy, supporting 0.8% of China’s GDP and 4.8 million jobs (or 0.6% of the Chinese workforce). Including the sector’s contribution to the tourism industry, these figures increase to 1.0% of GDP and 6.0 million jobs (or 0.8% of the workforce). Lin (2014) finds that high-speed rail connectivity increases employment by approximately 7 percentage points. Ouyang and Peng (2015) find that the 2008 stimulus package increased China’s annual real GDP growth by approximately 3.2%, though only temporarily. However, they did not separately estimate the impact of the stimulus package devoted to infrastructure investment on economic growth. However, Banerjee et al. (2012) show that proximity to transportation networks has a moderately positive causal effect on per capita GDP levels across sectors, but that it has no effect on per capita GDP growth. The Impact on the Distribution of Economic Activities Infrastructure investment is not distributed evenly across regions. Therefore, the regions or sectors receiving more funding may benefit more than less-affected regions or sectors, which changes the distribution of economic activities within China. Qin (2015) studies the distributional impact of high-speed rail upgrades in China. She finds that counties being bypassed by the railway upgrades experienced a negative impact in terms of GDP and per capita GDP growth, which was largely due to the reduction of fixed-asset investments. Faber (2014) also documents this type of distributional effect in the National Trunk Highway System (NTHS). He finds that peripheral counties connected to the NTHS experienced a reduction in GDP growth after the connection, which was mainly driven by the reduction in industrial output growth. Baum-Snow et al. (2015) provide evidence of the impact of roads and railroads on the decentralization of Chinese cities. According to their estimates, each radial highway displaces approximately 4% of the city center’s

population to the surrounding regions, and ring roads displace an additional 20%. Each radial railroad reduces the city center's industrial GDP by approximately 20%, with ring roads displacing an additional 50%. The Impact on Poverty Reduction Several studies have discussed the impact of infrastructure investment on poverty mitigation. Fan and Chan-Kang (2005) find that the GDP return on investment in rural roads was significantly higher than that of an equivalent investment in higher-standard roads. Qin and Zhang (2016) study the impact of rural road access on poverty reduction in 17 villages in Guizhou. They find that rural roads significantly reduce poverty headcounts in the affected villages. They discuss two possible mechanisms. First, rural roads are likely to increase the level of agricultural specialization and increase the agricultural income of rural households. Second, rural roads particularly help poor households engage more in the local non-farm sector, thus increasing their nonfarm income. Even though we should acknowledge that the impact of local roads on poverty reduction is significant, poverty reduction cost-effectiveness via rural roads is not a universal solution. Before prioritizing such investments in a localized area, one must carefully establish the underlying causes of the observed poverty and from such understanding determine if and when – and in what context – investing in rural roads (upgrading and/or building new roads) is the best way to proceed (Duncan, 2007c). The Impact on Economic Integration Several papers demonstrate that infrastructure investment, as a way of reducing trade barriers and improving connectivity, produces a more integrated economy. Li et al. (2012) analyze the role of high transport costs as trade barriers among agricultural traders in China. Li and Li (2013) find that investing in roads reduces firms' inventory costs. According to their estimates, one dollar of road spending saves around two cents in inventory costs. Zheng and Kahn (2013) find that China's high-speed rail stimulates the development of second- and third-tier cities, which facilitates market integration. Bullet trains help protect the quality of life of the growing urban population by offering households and firms a wider array of location alternatives. In addition, high-speed rail is associated with increasing real estate prices in the nearby second-tier cities. Cross-border Arrangement of Infrastructure As the world's economy becomes more integrated, China has been

arranging cross-border investments in infrastructure to reduce cross-border trade barriers. The total amount of cross-border investments in infrastructure grew from \$US 4.51 billion in 2005 to \$US 39.5 billion in 2014. Plots the destination continents of China's outward foreign direct investment (FDI) in infrastructure. Countries in Asia receive the largest investment. The three top destination countries in Asia are Indonesia, Russia and Kazakhstan, accounting for 8.5%, 8.1% and 6.7%, respectively, of China's outward FDI infrastructure investment in Asia. China's investment in Africa had increased over the years, but it declined in 2014. By contrast, China's investment in Europe and North America, mostly developed economies, significantly increased in 2014. Efficiency of China's Infrastructure Investment China's infrastructure investment boom has triggered debates about the efficiency of such investments. For example, connecting any of the two provincial capitals within eight hours by high-speed rail may lead to inefficient investment since high-speed rail investment is more justifiable in relatively short travel distance (for example, for distances less than 1000 km). In China, cost benefit analysis (CBA) has been undertaken in the feasibility study before the implementation of each infrastructure project. According to the Ministry of Housing and Urban-Rural Development of the People's Republic of China (MOHURD, 2006), CBA of infrastructure projects should refer to "the Method and Parameters in the Economic Analysis of Construction Projects" (version 3), which recommends a discount rate of 8% for infrastructure projects. This is a balance between the estimated time preference rate (4.5-6%) and the estimated rate of return for social capital (9-11%). However, CBA has primarily served as a bar for project selection. The sequencing and prioritization of infrastructure projects is less subject to CBA, but more driven by local need and incentives. Shi and Huang (2014) estimate the return on infrastructure investment using province level data from China. By comparing the investment efficiency of infrastructure investment and private capital, their findings indicate that the large-scale infrastructure investment in China following the 1997 Asian Financial Crisis was efficient, as most Chinese provinces exhibited a clear shortage of infrastructure at that time. However, in 2008, most of the western provinces already exhibited an oversupply of infrastructure relative to private capital because of the "Western

Development” plan, whereas some eastern and central provinces still showed a clear shortage of infrastructure. On the other hand, it is very difficult to estimate the return on infrastructure ex ante as extra demand is derived from new infrastructures (Duranton & Turner, 2011) and is dependent on the existing infrastructure network. In addition, due to the public goods feature of infrastructure, the investment efficiency between infrastructure and private capital may not be comparable, as private capital will not be willing to initiate in infrastructure investment. Consequently, the Ministry of Transport plans to extend the charging period on all highways across the country until the local governments have paid back their debt in full.<sup>15</sup> However, high tolls may not be an appropriate solution to these financing problems, as toll increases have caused important operational problems on toll roads, the most significant of which has been substantial traffic diversion, reducing both the financial and economic rates of return. Indeed, toll rates in China are the highest in the world relative to average income (Duncan, 2007a). Therefore, a vicious cycle may exist that hinders the sustainability of infrastructure financing. To relieve the financing burden of central and local governments, policymakers have encouraged the participation of social capital in infrastructure investment in the form of PPPs. However, a prerequisite for private capital entering into the market is a reasonable financial return. Therefore, innovations in private sector participation are needed to attract private capital investments. A successful practice in the provision of urban transit infrastructure is land value capture (LVC), which captures and shares the land value appreciation during the infrastructure development process among various stakeholders, including governments, developers and property owners. There are two main categories of LVC: development-based LVC and tax- or fee-based LVC. Development-based LVC can be facilitated through direct transactions for properties whose values have increased via public regulatory decisions or infrastructure investment. Tax- or fee-based LVC is facilitated through indirect methods, such as extracting surplus from property owners, using various tax or fee instruments (for example, property taxes, betterment charges, and special assessments) (Suzuki et al., 2015). As China has not implemented a nationwide property tax scheme, the current LVC practices are

predominantly development-based. Xue and Fang (2015) summarize the successful LVC practices in the development of urban rail transit in Shenzhen. Specifically, the Shenzhen municipal government sold the land development rights of rail plus properties to the developers at a price lower than the prevailing market price. In this way, the municipality is able to realize major infrastructure projects at no out-of-pocket cost (Peterson, 2009). Overall, policymakers can capture the land value appreciation to finance infrastructure and to provide the right incentives to attract the private sector to participate in such investments. As it has transformed from a centrally planned economy to a market economy since the late 1970s with the “opening-up” policies brought forward by Deng Xiaoping, China has experienced rapid economic growth of almost 10% per annum on average (National Bureau of Statistics of China, 2009; OECD, 2010). Over the past three decades, China has regarded economic growth as a national priority to improve human welfare and eradicate poverty, while GDP as a primary economic growth indicator has been extensively used to assess the success of national or regional economic policies (Wen & Chen, 2008). National GDP increased from 455 to 39,798 billion RMB between 1980 and 2010. In the same period, per capita income rose from 463 to 29,940 RMB. Given the impressive growth performance, three globalized regional economies, those of the Pearl River Delta, the Yangtze River Delta and the Bohai Rim Bay Area, have continued to outperform all other regions in China (Fig. 1). These three regions, which together account for only 1.6% of China’s total land area, have contributed 12.3%, 27.4% and 26.3% respectively to China’s national GDP in recent years on average (Tuan, Ng et al., 2009). Capital investment (including domestic investment and foreign direct investment), international trade and capital accumulation are three key determinants for China’s rapid economic growth (Tuan et al., 2009; Whalley & Xin, 2010). These FIEs account for about 20-40% of China’s GDP in recent years and without them China’s overall GDP growth rate could have been around 3.4% points lower (Whalley & Xin, 2010). Furthermore, international trade has produced a continuously growing trade surplus since 1978. Since the mid-1980s, China has invested massively in road infrastructure. This has been demonstrated by various researchers. Li and Shum (2001) examined

the 7918 expressway projects and their impact on the accessibility of individual provinces, and similarly Jin and Wang (2004) and Wang, Jin et al. (2009) analyzed the accessibility impact of the development of the mid- and long-term railway network. Luo, Xu et al. (2004) studied the impact of high-speed railways on the accessibility landscape on the Shanghai-Nanjing corridor. Zhang and Lu (2006) adopted a more comprehensive view by taking into account both rail and road transport in the evaluation of regional accessibility in the Yangtze River Delta. However, while the huge plans are being carried out, a major concern of the transport sector has emerged. Since most of the transport projects are concentrated in central and eastern regions in China, people question whether new transport infrastructure will bring forth more equal regional accessibility or induce more uneven development (Hou & Li, 2011). Statistics have shown that large regional variations exist in the density and quality of road infrastructure in China, for instance. The western region is poorly served by roads compared to the central and coastal regions. In 2002, there were only 166 and 66 km of roads for every 103 km<sup>2</sup> of land in southwest and northwest of China, respectively, compared to more than 460 km per 103 km<sup>2</sup> of land in eastern and central regions. Among all provinces, Tibet and Qinghai are particularly poor in roads, with a density of only 33 km per 103 km<sup>2</sup> of land. In addition, road quality is also the worst in the western region: high-grade roads like expressways, 1st and 2<sup>nd</sup> class roads account for less than 6% of the road network (Fan & Chan-Kang, 2008). Regarding the railways, especially for the passenger dedicated lines, most research findings have indicated that their construction will increase the imbalances between major cities and their hinterlands (Gutiérrez, González et al., 1996; Murayama, 1994). For example, after the introduction of Beijing-Shanghai high-speed rail, cities connected to this system immediately gained location advantages, while cities non-connected to this line were marginalized (Jiang, Xu et al., 2010). Apart from the inequality problem in China's transport infrastructure development, another main problem revolves around the motorization issue and the negative externalities that go with it in urban areas. The growth of private car ownership in China, which has provided greater opportunities for people to select their housing, places of work, business, entertainment and other activities, has led

to the progressive dispersal of cities and to excessive motorized travel volumes, which generate substantial negative impact on the urban environment.

## Conclusions

As the short tour d'horizon in the previous sections points out, many impressive developments have taken place in the previous three decades when it comes to transport infrastructure development, but many challenges still lie ahead in terms of regional and income distribution issues, persistent congestion, environmental and safety hazards and the professional policy-making and management approaches deployed to deal with these issues. In the remaining six contributions to this issue, recent research on transport infrastructure management in China will be provided and its outcomes described. In the next and second article, Martin de Jong will take the reader into the subject of Confucian values and their modern day impact on decision-making on transport infrastructures in China. They also come across issues of regional distribution within that large country and conclude that it was a good choice for the various governments to focus increasingly on investments in the interior of the country, but that the macro-economic benefits of focusing on the central parts may very well be more substantial than those pushing forward the West.

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**FEATURES OF  
ACCOUNTING AND  
ANALYTICAL ENSURE  
OF THE ENTERPRISE  
MANAGEMENT  
SYSTEM IN TERMS OF  
THE PANDEMIC**

**Formulation of the problem.** In terms of the pandemic and constant changes in the external environment and internal conditions of implementation of economic activity, there is a high probability the emergence of threats, the realization of which may lead to signs of crisis state, and further bankruptcy a significant part of domestic enterprises.

The presence of a significant number of threats to the sustainable and efficient function of each enterprise requires the improvement of existing and develop of new mechanisms to guarantee of economic security at the micro level. Key today, in accordance with the high level of uncertainty of functioning conditions, are the problems of information ensure of management the enterprise in terms of the pandemic. The center of information support should be accounting and analytical ensure, which will provide for the formation of accounting and analytical information due to the collection and processing of external and internal information, to develop on its basis tactical and strategic objectives in enterprise management.

**Analysis of recent research and publications.** The following scientists made a significant contribution to the study of the problem of accounting and analytical ensure of the management process: S. Vasilishyn [3], O. Goncharenko [2], L. Gnylytska [1], Ya. Krupka [5], A. Shtangret [11] and others.

O. Goncharenko [2], notes that the information component of the ensure involves the collection, processing and accumulation of information on factors of external and internal environment in order to assess the level and state of economic security of the own enterprise, its potential partners and competitors, as well as the formation strategy and tactics of counteraction threats to activity of the enterprise and its sustainable development [2].

L. Gnylytska [1] in her scientific work considers the main directions of accounting and analytical activities, its content and role in the preparation of information used for decision-making related to ensuring the stable functioning of economic entities. L. Hnylytska [1] notes that the central place in the information support is given to accounting and analytical ensure. On the one hand, accounting and analytical ensure is an information basis for monitoring the state and level of economic security of the enterprise, and on the other – a specific type of professional activity in the field of security, which directly affects its ensure. The mechanism of accounting and analytical ensure is determined by the sectoral characteristics of activity the enterprise, its organizational and legal form, the tasks assigned to the economic security service, the strategy of enterprise development and a number of other conditions [1].

S. Vasilishyn [3] draws attention to the fact that competitive

positions and performance indicators of business structures of various organizational and legal forms are related to the level of their economic security, which consists of a set of principles, tools and forms of protection against internal and external threats in order to obtain maximum profits and minimize the impact of business risks. Along with corporate, information, technological and energy, investment and innovation, personnel and social, financial and environmental components, an important place is occupied by the resource component of economic security, which is associated with the efficient use of assets of economic entities. A significant role in managing the cost of production is given to a rationally constructed system of accounting for assets, the costs of which form the amount of material costs, which represent a significant share in the costs of basic production [3].

Ya. Krupka [5] emphasizes in his article that accounting as an information system pursues the goal of the most complete and timely ensure of users with reliable data concerning property and financial condition, as well as the results of activity the enterprises. In world practice, accounting is called the language of business. It should ensure users with information on at least the following two areas of activity the enterprise:

- to assess the economic efficiency of activities, which is determined by profitability;
- to determine the future solvency, the possibility of timely and full repayment of its obligations, which is manifested through the financial position of the economic entity. Information on these areas is first necessary for the most important group of users, which are the owners (founders, investors). Profitability of activity, its growth gives hope to owners to receive a part of profit in the form of dividends. And the improvement of the financial situation raises the share price of enterprises in the financial investment market. It is in these two areas that the accounting policy is built [5].

A. Shtangret [11] in his article points out that the management of economic security of the enterprise is a continuous process of obtaining information about the level of security and the likelihood of occurrence and development of challenges, threats and risks with further develop of adequate to the situation of management decisions. Accordingly, accounting and analytical information must

meet the following requirements:

- clearly and accurately reflect in the external and internal reporting of all economic transactions carried out at the enterprise;
- provide of the security entities information on the current level of economic security by calculating the most important qualitative and quantitative indicators;
- to detect, identify and monitor the development of internal and external challenges, risks and threats;
- counteract industrial espionage and leakage of confidential information;
- to form an information base for decision-making in the process of managing the economic security of the enterprise [11].

Paying tribute to the scientific and practical significance of the works of these scientists, it should be noted that in domestic and foreign literature have not yet adequately reflected some important aspects of accounting and analytical ensure of enterprise management system in terms of pandemic.

**The purpose of the article** is to determine the role and place of accounting and analytical ensure in the management of the enterprise in terms of pandemic and to develop ways to improve it as an important factor in the development of each economic entity.

In the process of researching this goal, general scientific methods of cognition were used: a combination of abstract and concrete, induction, deduction, analysis, synthesis.

**Presentation of the main results of the study.** In terms of pandemic, one of the most important components of accounting and analytical ensure of the enterprise management system is reliable and timely information. Accounting and analytical information is the result of the functioning of the relevant ensure system [9]. The basis of accounting and analytical ensure is information, i.e. a set of knowledge about the internal and external environment of the enterprise, which is used to assess and analyze economic phenomena and processes for the developing and adoption of management decisions [11].

Today, in terms of pandemic, digitalization and transformation of business processes are becoming increasingly important. This involves, first of all, attracting innovative technologies, changing business processes, improving the efficiency of communication with

customers and improving the working conditions of employees. Such changes for the modern company are facilitated by the introduction of electronic document exchange along with reporting [10].

The enterprises in the terms of pandemic have begun more effectively to implement Electronic Document Management System (EDMS), and this has affected the speed of work, saving time, money and no need to store papers. Also, thanks to Electronic Document Management System it is possible to track at what stage of signing a certain document is. Now the exchange of documents is much faster than before. The most valuable asset after the transition to Electronic Document Management System was a significant saving of time of the enterprises and the time of their contractors. In addition, with the transition to EDMS there are no incidents with lost or undelivered documents. Electronic Document Management System (EDMS) is a set of processes for creating, processing, sending, transmitting, receiving, storing, using and destroying electronic documents, which are performed using integrity checks and, if necessary, with confirmation of receipt of such documents [6].

The original electronic document is an electronic copy of the document with mandatory details, including the electronic signature of the author or a signature equivalent to a handwritten signature in accordance with the Law of Ukraine “On Electronic Trust Services” [7]. Relations related to the use of advanced and qualified electronic signatures are regulated by the Law of Ukraine “On Electronic Trust Services” [7].

Assessment of compliance with the requirements for qualified electronic trust services and the services they provide is carried out taking into account the requirements of the legislation on the provision and use of qualified electronic trust services, including their provision by banks, other persons operating in financial services markets, state regulation and supervision of which is carried out by the National Bank of Ukraine, payment system operators and participants in payment systems, technological operators of payment services, as well as taking into account the requirements of legislation in the field of information protection [7].

The enterprises can use M.E.Doc or SOTA. No matter what the counterparty uses, they still have the opportunity to share with him, because the software products are connected to the PTAH platform

[10].

Thus, “IT-MARK” offers its clients to switch to Electronic Document Management System with M.E.Doc, FlyDoc, SOTA, FREDO and freely exchange documents, regardless of the chosen software thanks to the universal PTAH platform. In addition, the company’s representatives are convinced that electronic document exchange is not only an opportunity to automate business processes, but also its own contribution to environmental protection [13]. Thanks to the unified platform “PTAH” the enterprises can exchange documents with all contractors who use the program M.E.Doc, web service SOTA, FlyDoc FREDO, API.PTAH.

The main advantages of the transition to digital exchange format is that the program provides:

- stable and fast exchange of primary accounting documents with a guarantee of their receipt by the recipient;
- saving working hours and finances;
- preservation of the environment.

L. Gnylytska [1] notes the following main directions of accounting and analytical ensure in the enterprise management system:

- diagnosing the financial and economic condition of the enterprise in order to prevent its insolvency (bankruptcy);
- assessment of the state and level of economic security of one’s own enterprise;
- assessing of the state security and reliability of potential partners and competitors;
- making managerial decisions on the feasibility of activities taking into account the identified threats and dangers;
- the most complete information support of the economic security system of the enterprise and its individual functional units;
- promoting the harmonization of the interests of the enterprise as a legal entity and individual employees as individuals in order to minimize internal threats;
- ensuring the protection of information received that relates to commercial secrets of the enterprise.

From 01 September 2021, the medical institutions of Ukraine switched to electronic hospitals. This is a document in electronic form, which replaces the paper. The first step in forming a hospital

remains the same: the employee consults a doctor (health care facility). Then the work begins of the doctor: he opens the medical certificate in the electronic system and signs it with his electronic signature. The doctor must enter the name of the employer where the patient works and his tax number in the Unified State Register, so the employee must know the tax number of the company where he works. Then, on the basis of a medical opinion in the Register (maintained by the Pension Fund of Ukraine) is formed an entry with a unique number – the only registration number of the certificate of incapacity for work. And right now we can assume that the electronic certificate of incapacity for work has been created – sick leave is already the basis for accrual of benefits. The employee must inform his employer that he has fallen ill and applied to the hospital for e-hospital [12].

The employer can view information from electronic certificate of incapacity of his employee on the web portal <http://portal.pfu.gov.ua> [4]. He needs to go to the electronic office of the insured in the section “Electronic register of sick leaves”. The necessary information will be available on the tax number of the individual employee. Such information is available to the employer only about those employees who work for him at his main place of work. It should be noted that the employer will not have access to data with the specified diagnosis of the employee. After receiving the information, the employer can immediately form a statement of account to finance funds from the Social Insurance Fund. The information immediately becomes available to the Social Insurance Fund [12].

The insured (employer) has the opportunity to obtain information about the electronic certificate of incapacity for work on the web portal of electronic services of the Pension Fund of Ukraine <https://portal.pfu.gov.ua> [4]. Also, the insured person (employee) can get information about e-hospital, but through his personal office on the web portal of the Pension Fund. If necessary, the employee or employer may obtain information in electronic form on the portal of the Pension Fund or in paper form in the form of an extract from the Register by oral request to the territorial bodies of the Pension Fund of Ukraine. The application-calculation for the Social Insurance Fund and the Notice of payment of funds to the insured persons is

convenient to submit through the M.E.Doc program [10].

The President of Ukraine submitted to the Verkhovna Rada of Ukraine a bill “On Amendments to Certain Legislative Acts to Facilitate the Simplifying the Provision of Information for Financial Monitoring Purposes”, which simplifies the transfer of information on ultimate beneficial owners to the Unified State Register of legal entities and individuals-entrepreneurs. This is stated on the website of the President [8]. The document provides for the possibility of electronic submission of information by business representatives and other legal entities for financial monitoring in order to combat money laundering, obtained by criminal means. In addition, it is possible to automatically reconcile the information provided by companies with the data of state registers, which will replace the long-term reconciliation of paper documents with electronic registers in manual mode and significantly speed up the registration process.

**Conclusions.** Thus, meeting the information needs of external and internal users is the main task of the accounting and analytical system. The effective functioning of the enterprise depends primarily on the ability to obtain and use for its intended purpose quality, reliable, truthful, timely, relevant information about the property and financial condition, as well as the results of activity the enterprise.

Thus, the transition to electronic document management will help optimize work and use working time more efficiently – to address pressing issues and improve business processes. Today, digitalization of business from a trend is becoming a necessity. At a time when most business processes are automated, document management with customers cannot remain on paper. Invest in continuous improvement: improving the quality of service, improving communication with customers – a need that identifies leaders.

The processes of formation of information channels and improvement of the procedure of processing primary, analytical and synthetic information need further consideration.

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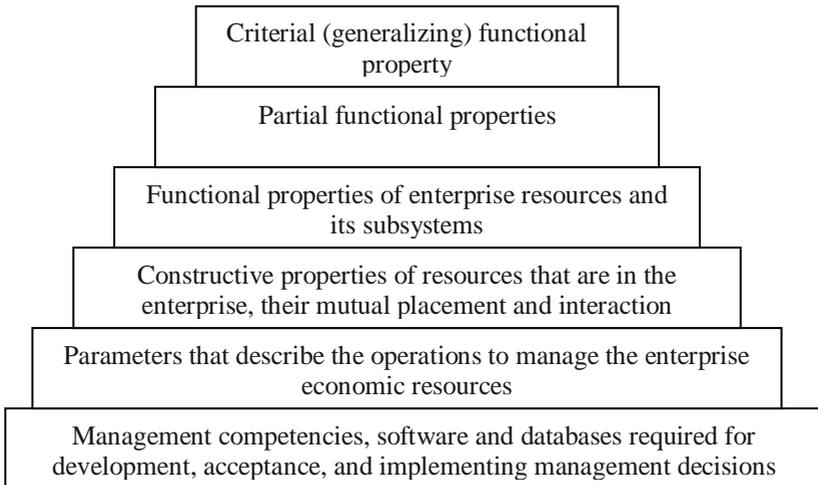
**DIAGNOSIS TOOLS  
OF POTENTIAL OF  
MANAGEMENT  
STAFF  
DEVELOPMENT OF  
ENTERPRISES IN  
THE CONDITION OF  
THE PANDEMIC**

Ensuring high growth rates of financial and economic results of enterprises' economic activity in a dynamic market environment is possible provided that economic entities have the appropriate potential for their economic development. The magnitude of this potential depends on the enterprises' ability to increase the available aggregate economic potential and fully realize their strategic economic opportunities. In turn, this ability is largely determined by the competence level of enterprises' managers and specialists in drawing up and implementing plans for their activities. These competencies became especially important during the COVID-19 pandemic when many companies had to show maximum ability to survive and develop in the face of economic conditions acute complications.

The competence level of enterprises' managers and specialists is not constant and can be increased. The possibilities of such an increase assessment should be carried out on the development and use basis of effective tools for diagnosing the enterprises' management personnel development potential. In the modern scientific literature, considerable attention is paid to the enterprises'

activity planning and staff development. Significant progress in addressing these issues has been made, in particular, by scientists such as H. Chen [1], A. M. Dachner [2], R. Daft [3], A. Dysvik [4], P. Garg [5], M. Makri [6], K. Jehanzeb [7], C. G. Nerstad [8] and others. Among others, the researchers identified the factors and analyzed the mechanisms of labor potential forming both at the individual employee or group of employees level and the whole enterprise level, proposed indicators and methods for assessing this potential, and developed measures to manage it. At the same time, the issue of diagnosing the development potential of enterprises' management personnel in the context of the management competencies' allocation and assessment is not currently definitively resolved and needs further study.

In the process of enterprises' economic development potential forming and realization, it is important to consider the hierarchy of this potential's forming factors. This hierarchy can be represented as a pyramid, as shown in Figure 2.1, from which, in particular, it follows that the basic forming factors of the enterprises' economic development potential are managerial competencies, as well as software and databases required for the relevant management decisions development, adoption, and implementation.



**Figure 2.1 Pyramid of enterprise's economic development potential forming factors**

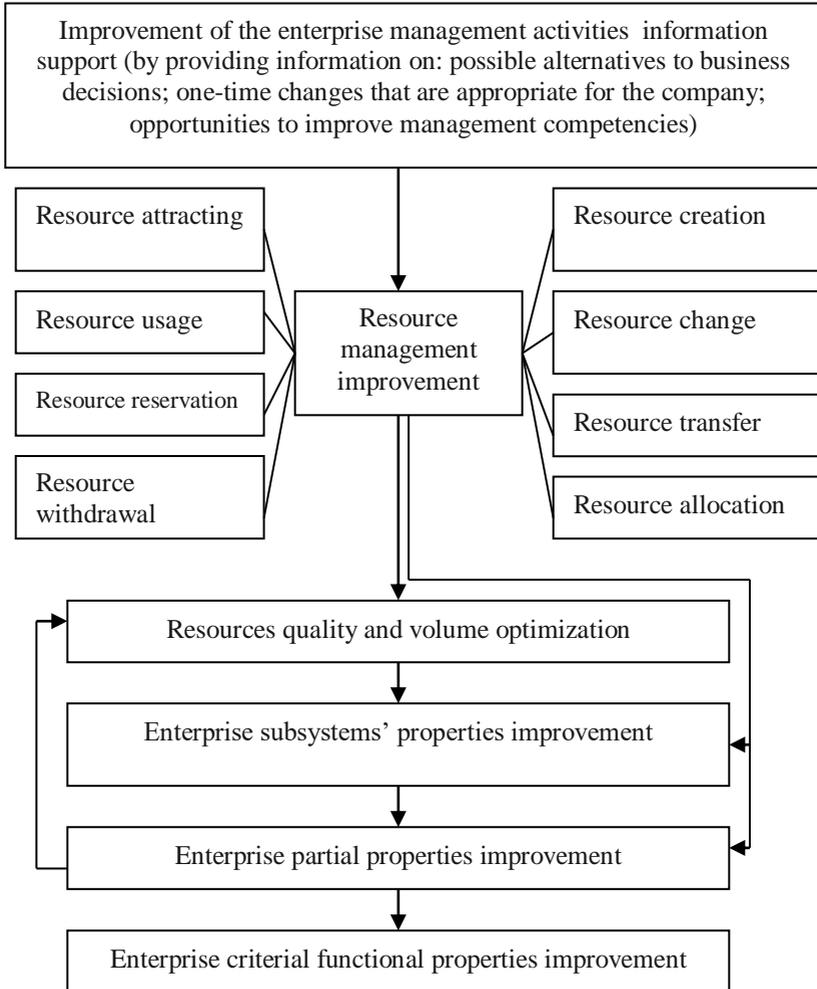
*Source: compiled by the authors*

In this case, each group of factors represented at the appropriate hierarchy level affects the factors from the higher level, resulting in the highest level of the criterial (generalizing) functional property, which directly describes the enterprises' economic development potential.

Concerning the business entity's criterial functional properties, one of them, of course, is the entity's market value, as its maximization is one of the generalized goals of many enterprises. With regard to the enterprise's partial functional properties, they can include competitiveness, flexibility, financial stability, creditworthiness and others.

At the same time, the driving force of forming the enterprises' economic development potential is the improvement of administrative activity information maintenance. Such improvement can occur in the following main ways (Figure 2.2): by providing information about possible alternatives to business decisions that are made or will be made at the enterprise; by providing information on one-time changes that should be made to the company (for example, changes in its organizational management structure) and by providing information on opportunities to improve management competencies (in particular, improving competencies in planning the resources for economic activity).

So, one of the fundamental factors determining the magnitude of the enterprise's economic development potential is the existing competencies of its managers and opportunities for their improvement in the future. The use efficiency level of its production, financial, and information resources, optimal volumes and consumer characteristics of these resources, development and realization processes' perfection of enterprise's mutual relations strategies with its external environment, and others, depends on workers' competencies of an enterprise's management subsystem. This ultimately determines the profit amount and other financial and economic results types of economic entities. Thus, the magnitude of the enterprise's economic development potential is determined mainly by the development potential level of its management potential. In this regard, diagnosing the managers' development potential, especially opportunities to improve their competencies, is an essential prerequisite for determining the prospects for further economic growth of enterprises.



**Figure 2.2 Mechanism of forming the enterprise's economic development potential**

*Source: compiled by the authors*

In general, the importance of the competence level of an enterprise management subsystem employees to ensure the proper efficiency of its activities is because this subsystem ultimately regulates both the level of all entity's general properties and its

resources [9]. It can be argued that two main factors determine insufficient enterprises' economic efficiency level: the insufficient competence level of management staff and negative environmental factors that the company, even with the highest management subsystem competence level, can not overcome. For example, such negative factors will include a reduction in demand for the company's products caused by the general negative situation in the markets for these products, provided that any action of the company (improving product quality, large-scale advertising campaigns, and others) can not stop this reduction in demand [10].

Given the above, diagnosing the enterprise managers' development potential should be based on measuring their current competence level and determining reserves to improve the ability of these employees to develop, adopt and implement appropriate management decisions. At the same time, the general process sequence of measuring the competence level of the enterprise management staff should include the following main stages:

1. Choice of the main competencies types of management subsystem employees. Note that the grouping of such competencies can be performed on various grounds. Since the management subject in the enterprise are its economic resources, the most reasonable is the competencies grouping on the grounds that are tied to the economic activity resource provision. In particular, as the management competencies grouping signs may act the used resources types (for example, competencies in enterprise material resources management) and resource operations types (for example, competencies in management operations with involving resources). In addition, of course, managerial competencies can be classified according to general management functions.

2. Building the general managerial competencies set. In this case, as the general will be considered competence, which can be divided into separate components, each of which, in turn, will be a lower-level competence. It is advisable to use the double grouping method to distinguish the main managerial competencies, i.e., to use two qualification features at the same time. In particular, as noted above, such features may be the used resources types and the resource operations types.

3. Defining the list of partial managerial competencies for each

general managerial competence. For this purpose, you can use the decomposition method of general management competence in its separate implementation stages. For example, the operation to attract a particular resource may include the following main stages: determining the company's need for resources, pre-establishing of required resource's qualitative and quantitative characteristics, choosing the suppliers of the resources, choosing the ways to attract resources (for example, purchase or lease), resource selection, negotiations, the contract concluding for the resources supply. Each of the general competence implementation stages can be considered as a certain partial managerial competence.

4. Assessment of current managers' proficiency level of the relevant general competence. For this purpose, you can use the expert survey method. At the same time, both the heads of the enterprise itself and invited specialists in this management field, particularly from consulting companies, can act as experts. Then the managers' proficiency level of the relevant general competence can be assessed by the following formula:

$$L_i = \sum_{j=1}^{n_i} L_{ij} \cdot \beta_{ij} , \quad (2.1)$$

where:

$L_i$  – the enterprise managers' proficiency level of the  $i$ -th general competence;

$n_i$  – the number of special management competencies that belong to the  $i$ -th general competence;

$L_{ij}$  – the enterprise managers' proficiency level of the  $j$ -th special competence, which belongs to the  $i$ -th general competence;

$\beta_{ij}$  – significance factor of the  $j$ -th special competence, which belongs to the  $i$ -th general competence.

5. Assessment of the current managers' proficiency level of the whole general competencies set. The following formula can be used for this purpose :

$$L = \sum_{i=1}^n L_i \cdot \beta_i , \quad (2.2)$$

where:

$L$  – the managers' proficiency level of the whole general competencies set;

$n$  – number of general managerial competencies;  
 $\beta_i$  – significance factor of the  $i$ -th general competence.

Thus, the enterprise management staff competencies are characterized by diversity and can be grouped by different signs, as shown in Table 2.1.

*Table 2.1*

**Competencies grouping of the enterprise management subsystem employees**

General competencies			Special competencies
By resource operations types	By resource types	By management functions	
Competencies in: resource and service attraction; resource usage; resource reservation; resource withdrawal and services provision; resource (products) creation; change of available resources properties; resource transfer; resource allocation	Competencies in management of: human resources; material resources; fixed assets; financial resources; information resources	Competencies in: organizing; planning; motivation; regulation	Contractors selection and establishing relationships with them; resource with which operations take place choice; actions parameters with resources in space and time determination; the developed plans implementation

*Source: compiled by the authors*

Since the proposed approach to the management competencies assessment is based on the special competencies analysis and measurement of enterprise management subsystem employees, it is advisable to use the proposed in the Table 2.2 point-scoring scale for special competencies certain characteristics of enterprise management subsystem employees.

An important place among the managerial competencies is occupied by the employees' competencies in business activity planning. Diagnosing the enterprise competencies in planning its economic activities is complicated by numerous planned indicators, each of which must acquire a reasonable (optimal) level, and by complex relationships between these indicators (Table 2.3).

Table 2.2

**The offered point-scoring of special competencies certain characteristics of the enterprise management subsystem employees**

Number of alternatives considered		Forecasting indicators methods that form an input information array		Ways to justify management decisions	
Gradation	Points	Gradation	Points	Gradation	Points
All possible alternatives are considered	3	Factor forecasting is carried out	3	Comprehensive optimization of management decisions parameters on the economic and mathematical modeling basis	3
Quite a few alternatives are considered	2	Trend forecasting is carried out	2	Partial optimization of management decisions parameters on the economic and mathematical modeling basis	2
A small number of alternatives are considered	1	Informal forecasting is carried out	1	Management decisions heuristic substantiation	1
No alternatives are considered	0	Forecasting is not carried out	0	Management decisions substantiation is not carried out	0

*Source: compiled by the authors*

At the same time the managerial competencies diagnosing sequence concerning the planned indicators substantiation of enterprise activity includes the following stages: 1) the basic competences groups allocation concerning the enterprise activity planning; 2) determining the list of enterprise activity planned indicators for each of their groups; 3) establishing the factors influencing indicators planned values establishment; 4) determining

the interrelations between planned indicators, building the corresponding competences chains on indicators planned values establishment; 5) assessment of existing competencies level for establishing the indicators planned values (assessment of input information relevance, completeness and accuracy; assessment of factors influencing the indicators planned values establishment; assessment of possible alternatives for business operations; assessment of planned indicators optimal setting); 6) general assessment of existing competencies level for establishing the indicators planned values.

*Table 2.3*

**The list of main groups of enterprise management employees competencies concerning its activity planning and the corresponding planned indicators**

Activity planning competencies	Planned indicators
Resources and services attraction planning	Attraction volumes, attraction methods, attraction time, resource prices, services tariffs, etc.
Resource usage planning	The resource usage level in terms of time and productivity, technologies used, etc.
Resource reservation planning	Reserve volumes, reservation time, reserve types, resources used for reservation, etc.
Resource withdrawal and services provision planning	Resource withdrawal volumes, particularly payments, resource prices quality, withdrawal methods, resources used, etc.
Resource (product) creation planning	Volumes of resources created, their quality, resources used to create other resources, etc.
Change of available resources properties planning	Types and volumes of resources to be changed, change methods, change results, involved resources volumes, etc.
Resource transfer and allocation planning	Transfer volumes, transfer routes, locations, resources involved, etc.

*Source: compiled by the authors*

Thus, diagnosing the enterprises' management staff development potential should involve identifying opportunities to improve certain general and special managers competencies of these enterprises. For this purpose, it is necessary to identify the main types of these competencies, establish the relationship between them and perform their quantification.

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**ASSESSMENT OF  
OPPORTUNITIES OF  
APPLICATION OF  
THE LEAN  
METHOD IN THE  
STUDY PROCESS**

### **Theoretical aspects of application of the LEAN system**

In the concept of application of the LEAN system, distinguishing two main aspects, which are the focus of application of the system, is important. These aspects are the organizational culture and methods. From a cultural point of view, an organization must understand the opportunities for improvement, without being afraid to talk about the existing problems and at the same time refraining from personalizing them in order to achieve the highest level of confidence and cooperation, willingness to change and improve. Cooperation and sharing of experience inside and outside the company are among the most important principles of the LEAN system. The use of teamwork (which is the basis of the LEAN system) allows employees to find optimal solutions and implement them in their activities, i.e. to standardize certain processes. Then it becomes easier to implement and plan the works, cutting down on unnecessary processes in the organization. On the other hand, this matter should be viewed from a philosophical point of view, assessing the possibilities of applying the LEAN system in higher education institutions.

The LEAN system as a method is a systematic approach to process optimization, which relies on the principle that non-value-creating steps called process waste are taken in any work, and they need to be eliminated.

Paro and Gerolam (2017) state that LEAN is constantly evolving

and developing, with company knowledge and understanding of LEAN changing over time, and the concept and methods of LEAN itself constantly evolving. After all, LEAN process is based on continuous uninterrupted improvement. This is also typical of higher education, and reflects the idea of the Bologna process – lifelong learning and continuous improvement, which is related to the paradigm of LEAN philosophy.

According to Holweg (2007), 4 stages of maturity can be distinguished in LEAN evolution within and outside of an organization, each of which can be characterized by certain features:

- *1<sup>st</sup> maturity stage:* Lean – a set of methods, techniques and instruments.
- *2<sup>nd</sup> maturity stage:* Lean – a system of management principles and values.
- *3<sup>rd</sup> maturity stage:* Lean – a value chain.
- *4<sup>th</sup> maturity stage:* Lean – a value system.

Value creation and ongoing assessment of the situation can help the management to decide how to foster a culture which would lead to a successful transformation dictated by the LEAN system (Badurdeen *et al.*, 2012). In order for employees to be involved in the improvement of organization processes and to participate in day-to-day changes, it is necessary to change the habits or culture of the organization. Changing organizational culture requires changing employee attitudes and mindsets. This idea can be successfully applied in higher education as well (Čižiūnienė *et al.*, 2019).

In the LEAN implementation process, Jasti and Kodali (2015) mainly focus on top management of the organization, its commitment and leadership in the implementation of the principles of the LEAN system. It is argued that an organization willing to maintain a LEAN culture and long-term change must understand certain essential elements that affect people's behaviour:

- people need to feel that change is beneficial;
- employees need to get involved in change and see benefits thereof;
- positive feedback and active learning help to create lasting change;
- in order to change behaviour, mindset must be changed first of all;

- employees do not want to change until managers change;
- personal involvement and assignment creates motivation and confidence.

These elements are important in higher education in shaping attitudes and skills of future specialists. Instead of waiting for specialists who would solve the problem, which is normal in many companies, the essence of LEAN is that having faced a problem, employees are adequately trained and able to solve it on the spot. This way, “respect for people” is more than just nice words – it rather is the basis of problem solving.

Gong *et al.* (2015) state that due to the specifics of their activities, organizations operating in the service sector should follow the following four principles in creating value:

1. Creating value for the customer – every employee must understand the wishes and needs of the user (internal or external). This means that employees must bear the end result in their minds and focus on taking the right actions to achieve that result;
2. Continuous flow and emphasis – working methods that help everyone to coordinate their work in different business processes of a service organization in order to meet customer needs. Having a clear vision of what creates value for customers, this principle helps everyone to have one direction and ensures smooth work;
3. Continuous improvement is a principle which translates people’s constant efforts to put out fires into proactive problem solving. Its goal is to continuously improve the execution and efficiency of processes;
4. Systematic thinking – the focus is on interrelated processes that make up a continuous flow of value. All people who provide services to customers need to have a holistic approach in order to understand how a specific activity relates to the whole. This principle combines the three principles mentioned above.

The summary of the aspects of the LEAN concept presented by various authors allows stating that the basic principles of LEAN are the same everywhere: creation of value for the organization and users (external and internal), continuous improvement, on-site and timely

performance of work, elimination of waste and creation of a continuous flow, employee involvement in improving the operations and respect for employees. The application of all these principles is relevant in any activity, both production and service provision, in the same way as in higher education and the study process.

### **Results of the study of opportunities of application of the LEAN method in the study process**

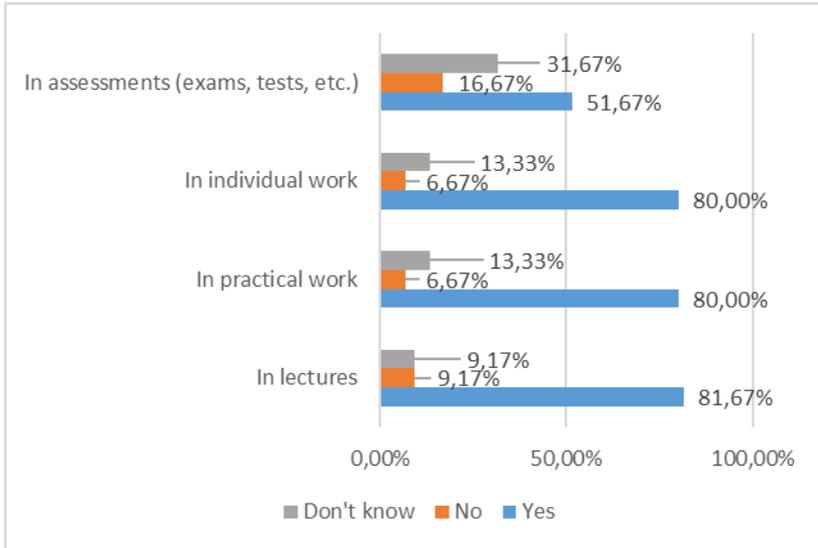
In order to determine the opportunities for applying the LEAN method in the study process, a research was conducted, using a quantitative research method. A direct survey using a standardized questionnaire was used to collect data. This method of data collection was chosen because a survey is one of the most popular methods of empirical research, while the standardization of questions ensures the comparability of measured variables in the population (Butkevičienė, 2011).

**The aim of the research** was to identify the opportunities of for applying LEAN to analyse and improve the study process.

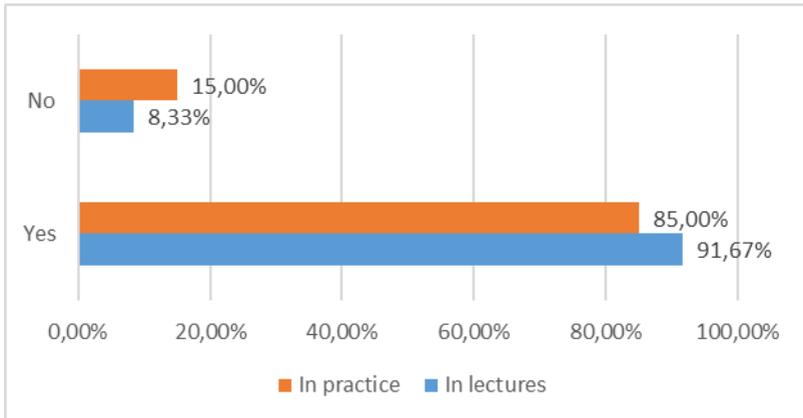
A total of 120 respondents took part in the research. Given that organizations have the same perception of the LEAN principles and method, assessing whether these ideas can be moved to the higher education space by training future specialists was appropriate. The research aimed to find out whether LEAN principles and method could be applied in the study process and teaching (learning) methods (Figure 3.1).

The results of the research showed that the application of the LEAN method in the study process was possible, especially in lectures and practical and independent work. This allows concluding that if subject curricula took into account non-duplication of topics and their systematic interrelationship, “unnecessary” work, i.e. repetition of the same information, would be eliminated. On the other hand, the LEAN philosophy states that “in order to change behaviour, mindset must be changed first of all.” The need for such mindset became apparent and the need for change in higher education came to light after the COVID-19 pandemic locked down the world. Thus, the research aimed to find out whether respondents agreed with this statement in the face of the COVID-19 pandemic. The majority of respondents (96.67%) agreed with this statement.

Therefore, the research also aimed to find out in which of the teaching / learning methods its application was most appropriate (Figure 3.2).

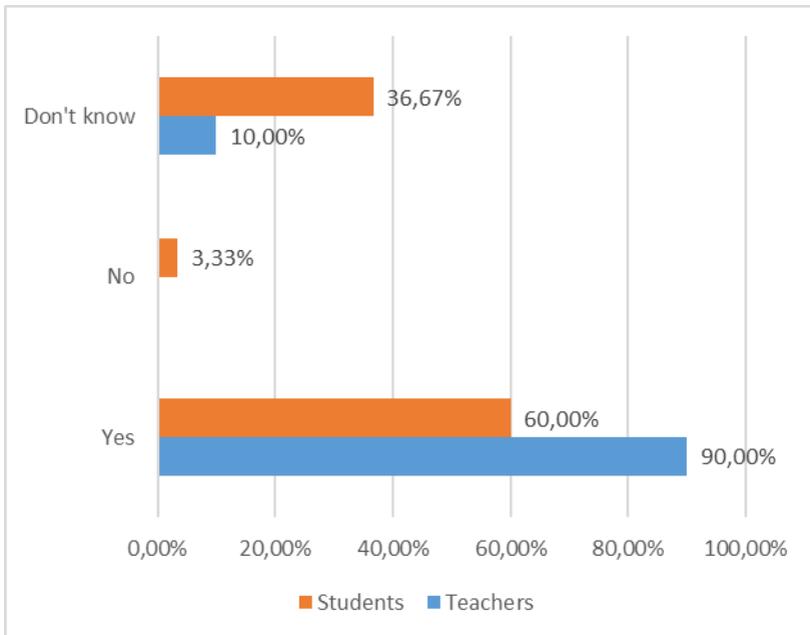


**Figure 3.1 Opportunities for applying LEAN in the study process**



**Figure 3.2 Opportunities for applying the statement “in order to change behaviour, mindset must be changed first of all” in the study process**

The results of the research reveal that the application of this statement is not only realistic, but also necessary when organizing both lectures and practice sessions, which suggests that everyone involved in the learning process should review and evaluate their mindset about the work and actions they take (for example, students, who study full-time and work, should assess what their priority in the study process is); if studies move to a virtual (remote) space – time and effort invested by students, their self-motivation, etc., must be taken into account). However, this raises a key question of who should get involved and initiate these changes? Therefore, the research also aimed to find out whether getting involved in initiating changes in the organization of the study process would be expedient and where the initiative should come from (Figure 3.3).

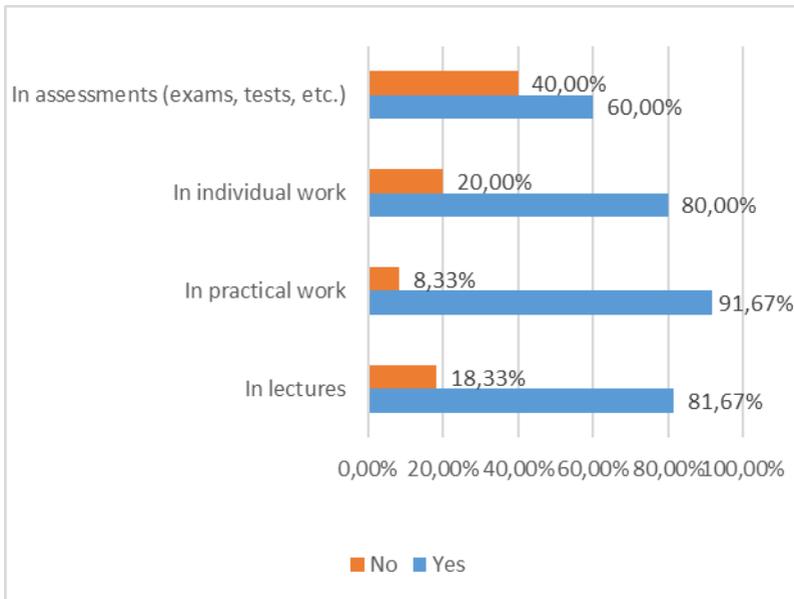


**Figure 3.3 People who should (could) get involved in initiating changes in the organization of the study process**

The research results (Figure 3.3) revealed that both teachers and students themselves need to be involved in changes in the

organization of the study process. However, the initiation of changes requires close cooperation and interconnection between teachers and students. Therefore, the research also aimed to determine whether there is feedback in the study process and the teaching / learning methods where it is present (Figure 3.4).

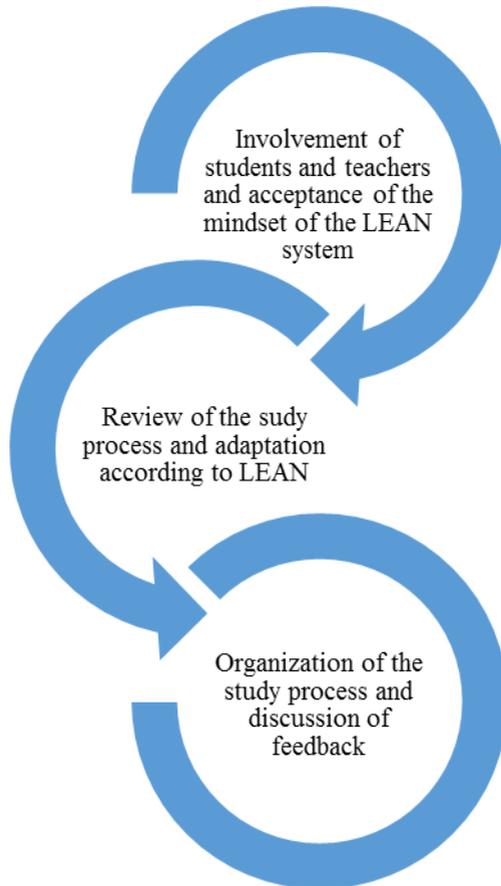
The results of the research showed that there is feedback between teachers and students, but it was mostly ensured through practical work. This is most likely due to the fact that students have to defend (present) the results of their practical work, and in turn teachers have to evaluate them and provide comments explaining why such results were received. Therefore, during the COVID-19 pandemic, ensuring feedback becomes an even more important matter in order to ensure a continuous and high-quality study process.



**Figure 3.4 Identifying feedback between teachers and students**

The theoretical insights and the research performed were used as a basis for developing a model of LEAN implementation in the study process (Figure 3.5), which shows that reaching an agreement and commitment to LEAN principles in the study process is important for

successful LEAN implementation. The next stage is related to communication and discussion of the identified benefits and experiences. The periodic application of such a model in the implementation of the study process will have a significant impact on changes in the mindset and behaviour, which will lead to the transition of the LEAN maturity stage from the application of methods to value creation in the study process in the long run.



**Figure 3.5 Model of the implementation of LEAN method in the study process**

## Conclusions

1. The conducted analysis of the theoretical aspects of the LEAN organization culture and principles allows concluding that the LEAN system contains a number of solutions and methods, the practical application of which in a specific service sector helps to create an efficient service and product delivery system.
2. The analysis of scientific literature allowed to identify that the LEAN system, which works perfectly in one organization, cannot be copied and applied in another organization, and it requires creating an individual system of one's own organization which would meet specific needs of the organization.
3. The conducted research revealed that the LEAN method can be used in the teaching / learning process both in lectures and other classes, because the LEAN process is based on continuous and uninterrupted improvement.
4. The research found that both teachers and students must get involved in change in the study organization process, because changing the behaviour requires changing one's mindset and attitudes first of all, which can be ensured with the help of feedback only.
5. The compiled model of the implementation of the LEAN system in the study process emphasized the main factors determining the successful implementation and continuous improvement of LEAN.

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**INNOVATIVE  
BUSINESS  
MODELS OF THE  
CIRCULAR  
ECONOMY**

One of the main challenges of the future is the increasing impact of environmental factors on economic development – like environmental threats, climate change, waste minimization and reduction of CO<sub>2</sub> emissions. At the present stage, achieving sustainable economic growth has become an important item on the global agenda. Resource constraints, as well as increased waste and pollution, can increase threats to society’s well-being and, from a commercial point of view to business competitiveness, profitability, and sustainability. Simply put, there is an urgent need for decoupling, or in other words, transition to a circular economy.

That is why a lot of companies have already started working on the principles of sustainable development instead of the principle “earn more, no matter what”. To overcome the aforementioned problems, in December 2019 the European Commission presented an ambitious program – European Green Deal – aiming to ensure the sustainability of the EU economy through the transition to a climate-neutral, circular economy by 2050.

Circular economy is a model that is based on closed cycles, with multiple use of resources and high degree waste recycling, reducing their consumption. The transition to a circular economy can benefit countries by increasing sustainability, creating jobs, protecting the environment, and reducing emissions. At the same time, there are different assessments of the benefits and possible risks, the ratio and structure of which necessitate the differentiation of approaches to the implementation of this concept in countries with different development levels.

The existence of circular processes in developing countries, most of which involve sorting and reuse of waste, provides so-called “growth points” that will allow governments, private sector and other stakeholders to promote innovative models [2].

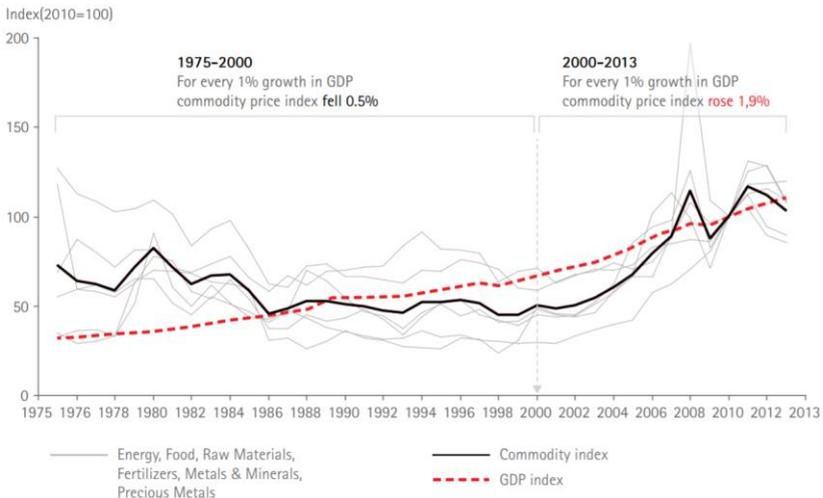
There is a wide range of works in the literature that explore innovative and traditional business models of circular economy. M. Linder and M. Williander define a business-model of circular economy as “model in which conceptual logic of value creation is based on the use of economic value retained in products after applying new offer in production” [10].

In contrast to business models, the concept of “innovative business model” is less clear and studied, as its use has only recently begun [4]. However, there is no doubt of the urgent need to develop and implement such business models. Literature analysis provides the following groups of innovative business models:

- 1) new combinations of traditional (standard) business models (e.g. upgrade, reuse, remanufacturing, recycling) [13];
- 2) models, based on product innovations and novel technological solutions (biodegradable materials, modular design, upcycling [3]);
- 3) models, based on organizational and procedural innovations (circular supplies, waste as resources, waste prevention, eco-design, sharing platforms etc.).

Moreover, M. Antikainen and K. Valkokari state that innovative business models of circular economy are networked in nature: they require collaboration, communication and coordination within the complex relationships between connected, but independent, stakeholders [1].

A significant contribution to the research of innovative business models has been made in the Accenture study [9]. The need to spearhead them is due not only because of the deterioration of the environment and the greenhouse effect, but also because of the gradual depletion of reserves of non-renewable natural resources. Figure 3.6 shows how the elasticity of commodity prices (energy, raw materials, metals and minerals, precious metals, etc.) has changed in relation economic growth. In the period from 1975 to 2000, for every 1% of GDP growth, the price of raw materials fell by 0.5%, and there was industrial expansion without analysis of the environmental consequences. However, for 2000-2013 years, the situation changed radically – with GDP growth of 1%, the level of prices for raw materials increased by 1.9%.



**Figure 3.6 Commodity Price & GDP index, 1975-2013**

Source: [9]

Extended calculations for 2014-2020 years, the growth of GDP by 1% annually was accompanied by an increase in commodity

prices of 7.1% in average. It proves the growing shortage of resources and the need to expand the practice of their reuse.

The authors of the study – P. Lacy et al. – separate the five main business models of circular economy – (1) circular supplies, (2) resource recovery, (3) product life extension, (4) sharing platforms, and (5) product as a service – taken as a basis for developing circular production models in many countries.

Chen Ch.-W. in his research [3] proposes new mechanisms for creating a true circular economy for business. However, he warns that the novel business models can have negative results if used carelessly. These include, in particular: a) the use of biodegradable materials; b) modular design to extend the service life of products; c) processing for new production processes. For example, the use of biodegradable materials may lead to a reduction in the service life of a product, and hence the need for faster replacement and, consequently, an increase in the industrial load on the environment due to the increased consumption of resources, combined with more frequent negative effects of such production. In addition, the public benefit may also be questionable, as more frequent consumption of products made of such materials requires an increase in household spending that already possess limited budgets.

X. Vence and Á. Pereira [17] consider innovative circular business-models as a combination of efforts to change dominant business models (from new product and service design to reconfigured value chains, new/short supply chains), to transform the way citizens interact with products and services (ownership, leasing, sharing, repairing, reducing, remanufacturing, etc.) and development of improved systems for delivering value (green mobility, smart energy systems, short supply chains, etc.).

N. Gakhovych, O. Kushnirenko and O. Zarudna [5] review the most widespread innovative business models (per the Accenture classification) by the economic branches – food, light, pulp and paper, electronic, chemical, services, repair and maintenance of ships. Among them – reuse, upcycling, product life extension, sharing economy, resource use rationale based on digital technologies etc. The authors analyze the main obstacles to the implementation of these models in the practice of Ukrainian business and conclude that circular value chains will be actively formed only

if the institutional and legal frameworks are updated, production management methods are improved, logistics infrastructure is developed, and the range of funding for circular economy projects is expanded for small and medium-sized businesses, as well as if the active position of the state in these matters arises and sustains.

The range of the reviewed scientific works in the field of innovative business models of circular production is not exhaustive. However, these and other existing studies emphasize that the creation of innovative circular economy business models is the result of close collaboration within the “quadruple helix”, when the efforts of the state and research institutions to implement circular principles are supported by producers and consumers.

The application of circular business models in various industries leads to significant economic, environmental and social benefits. For example, according to experts, the introduction of closed-loop economics in the automotive industry will reduce consumption of raw materials by 98%, provide energy savings of 83%, reduce the cost of finished products by 40%, and reduce carbon emissions by 87%.

We can identify several approaches to the formation of circular business models in global practices. Accenture experts have compiled a popular classification of innovative business models that are implemented both separately and jointly [9]. They constitute as follows: circular supplies; resources recovery; product life extension; sharing platforms; product as a service.

**1. Circular supplies** – a model in which limited resources are replaced by fully renewable sources. It is based on long-term R&D, provides for the supply of fully renewable sources, recycled or biodegradable resources that form the basis of a circular system of production and consumption. Automotive and energy industries are the leaders of the model implementation.

Renault was the first automaker to commit to implementing the circular economy concept by establishing a subsidiary in 2008 – Renault Environment – which controls the flow of automotive waste and parts. As a result, vehicles are 85% reusable and contain 95% of parts gathered at the end-of-life stage. The share of recycled plastics in production is constantly growing, spare parts of previously sold cars with expired service life are restored and reused, copper

recycling processes are implemented [7]. Currently, the company's revenue from the practice of circular economy is 0.5 billion euros per year [8].

**2. Resources recovery** [9] – is the model that uses technological innovations and opportunities to recover and reuse resources, which eliminates their losses by reducing waste and increasing the profitability of production from reverse flows. This model is most suitable for companies that produce large amounts of by-products, as well as those that can effectively recover and recycle waste. Examples include the closed recycling cycle involving the recycling of waste into new resources. **Co-product recovery pattern** is a partial instance of this model [3]. It creates a new industrial value chain, where residual outputs or by-products of a company can become feedstock or inputs for another company.

One of the most shining examples is the example of Danish companies: the drug manufacturer Novo Nordisk, the enzyme manufacturer Novozymes and DONG Energy, together with Denmark's largest oil refinery run by Statoil, exchange waste and by-products. Steam from the DONG power plant is piped to Novo Nordisk and Novozymes, where it is used as a cleaning agent, and to a refinery, where it is used in several processes. Statoil has also reduced emissions by converting unnecessary sulphur and nitrogen into fertilizers [18].

**3. Product life extension** [9] – a model that allows companies to extend the life cycle of their products through repair, modernisation, reconstruction or restoration. It is more suitable for manufacturers of industrial equipment, where the new models provide a miniscule increase in productivity compared to the previous ones. This model also involves the transition from the sale of things to the sale of services for their use.

The business model is used by the Caterpillar Inc. (USA). Being the world's largest manufacturer of special equipment, its restoration programs include certified Cat® restorations, overhaul of components from Cat® dealers, solar turbine restoration, and more. Full Cat Certified Rebuild certification includes more than 350 tests and inspections, automatic replacement of about 7,000 parts and a warranty on new machines. Recovery programmes also increase equipment life by providing customers with product upgrades for a

fraction of the cost of buying a new machine [15].

**4. Sharing platforms** [9] – a model that is based around the exchange or sharing of goods or assets. For example, using digital platforms for rent, sale, exchange and reuse. It provides for the promotion of platforms for product users cooperation (individuals or organizations), thereby increasing the level of their use. They are most interesting for the manufacturers with low product utilization or underutilized capacity. This business model has led to significant changes in the field of consumer relations (C2C – consumer to consumer), business and consumer (B2C – business to consumer), and has significant potential in the field of business to business relations (B2B), as it allows potential competitors to cooperate in order to distribute fixed costs, increase the use of assets, generate revenue from the joint exploitation of equipment and increase overall efficiency.

The C2C relationship model includes transport exchange resources: BlaBlaCar – the world’s largest international online service for finding car passengers, RelayRides – car rental service, Airbnb – a popular global platform for renting and leasing private housing, Rent-a-Park – service for renting parking places, TaskRabbit and NeighborGoods – services for helping neighbors, etc.

Within the B2C model, the 3DHubs platform unites industrial designers with the owners of 3D printers; Tool Library – is a library without books, but each visitor can find there many different tools: from a screwdriver to a serious industrial machine used by furniture factories [6].

**5. Product as a service** [9] – a model in which customers use products through “rent”, with payment upon use. It is an alternative to the traditional “buy-own” model, and may constitute lease or rent, etc. If the manufacturer retains ownership of all materials and equipment, there is an incentive to create a product with a long-life cycle, requiring minimal maintenance, optimized for reuse or disposal of individual parts after its service life.

Philips implements the Circular Lighting program, where the company provides lighting services instead of lighting fixtures. In this case, all technical aspects (maintenance, replacement, etc.) remain the responsibility of Philips. This has two important

consequences: a) for the consumer it simplifies the organization of lighting services; b) for the supplier the whole process becomes more efficient because it integrates vertically the design, production, selection of solutions for lighting, implementation, maintenance and replacement of lighting equipment [14].

In 2014, the French train manufacturer Alstom offered HealthHub, a predictive maintenance tool that allows one to move from traditional mileage-based maintenance to predicted maintenance, based on advanced analytical data measuring the performance of wheels, brake pads and pantograph strips etc. [16].

The practical spread of this business models is demonstrated in the OECD’s report [12] (see Table 3.1).

*Table 3.1*

**Market share of innovative circular business models in selected sectors**

<i>Business-model</i>	<i>Sector</i>	<i>Market penetration</i>
Waste as a value: recycling	Pulp and paper	38%
	Steel	25%
	Plastics	13%
	Rare earth element (REE) metals	<1%
Product life extension: refurbishment	Smartphones	4–8%
Product life extension: remanufacturing	Machinery	3–4%
	Aerospace	2–12%
	Automotive	1%
	Consumer and electrical and electronic equipment (EEE)	0–1%
Sharing economy	Transport (car sharing)	<1%

New technologies and resource recovery processes can help build circular value-added chains. But changing the mindset of stakeholders and consumers is the key to a circular economy. As circular economy involves the creation of a complex multi-component economy and network of values, it is accompanied by numerous challenges and barriers that arise when creating the novel business models.

The study of the global experience of implementing the five basic innovative business models, which are gradually transformed into the

benchmark ones, shows that:

✓ both companies and consumers benefit from the introduction of a circular economy;

✓ in addition to the short-term financial benefits, companies receive long-term strategic advantages: optimisation of material flows; access to new markets; and obtaining additional profits from services related to the closed-loop process;

✓ innovative models are not always well-founded and can lead to a predominance of negative externalities in the given economy instead of positive ones.

It must be understood that the new, more environmentally friendly economic model and the modern global requirements are not a burden but an opportunity. Cost and resource reduction, rational use and high efficiency of consumption, all this should be the basis of every business.

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**FORMING THE  
INNOVATIVE  
ENTREPRENEURIAL  
UNIVERSITIES IN  
UKRAINE AND THE  
ALTERNATIVE SOURCES  
OF THEIR FUNDING**

Today, Ukraine, like the rest of the world, is suffering from a coronavirus pandemic. The scientists and practitioners are looking for ways to overcome economic, social, psychological and others problems, caused by the pandemic. And here the important role is given to education sphere. However, today there is a need to form the knowledge necessary not only to survive in a pandemic, ensure socio-economic development of the country, but also to ensure the transformation of society taking into account socio-economic realities, which are focused on the Concept of Innovative Development of Ukraine, overcoming the educational problems sphere and educational environment.

At present time, as is well known, innovation is a new form of intellectualism. In these conditions, bringing the content of education, its innovative development in line with the demands of society is very actually. Moreover, the scientific intensity of GDP is steadily declining – from 0.70% in 2013 to the critical value – 0.41% in 2020. With such trends, science ceases to perform an economic function. According to experts, with the scientific intensity of less than 0.9% of GDP, science performs only a cognitive function [11, p. 17]. The above actualizes the task of transforming the ordinary academic universities into new, innovative entrepreneurial university.

The purpose of this work is to study and analyze trends in the forming the innovative entrepreneurial universities in ukraine and the alternative sources of their funding, as well as substantiation of proposals for optimal improvement of the identified trends. Norman Itzkowitz identifies three missions in the development of the university: educational, research and entrepreneurship, emphasizing that the scientific community undertakes to implement a new method

of production, which is based on the continuous progress of organizational and technological innovations [4, p. 66]. In the concept of “Triple Helix” [4] the author proposes a model of innovative development, according to which in the XXI century the development of the economy and society as a whole is most effectively ensured through the closed cooperation of three actors (branches of the figurative helix): authorities (state and local), business and universities, and the central role should belong, due to the growing importance of information and knowledge in the broad sense, is the updated higher education institutions.

The international experience shows that the reaction to the innovative needs of society in the field of education are innovative entrepreneurial universities – educational, research and production centers. Today it solves a wide range of problems of social state, regional development.

Under the innovative system of higher education the author understands the organizational and managerial mechanism for the development and implementation of innovations for increasing its competitiveness. Its purpose is to identify and implement the promising areas of activity in two relatively independent, but interrelated and complementary aspects of higher education: development and implementation of new educational technologies and improvement of the existing educational process in general; increasing the efficiency of scientific and research activities. Among the defining features of the functioning of innovative entrepreneurial universities are the following:

- 1 – the university becomes a full-fledged center of productive communication of the state, business and society on issues of technological, general economic, social forecasting, exchange of advanced knowledge;

- 2 – replacement of the traditional linear scheme “basic research – applied development – implementation” by more flexible organizational mechanisms based on the constant closed cooperation with the real sector of the economy both in finding orders for applied development and in creating innovative enterprises to implement the results;

- 3 – mastering by students of basic competencies of innovative activity through their inclusion in the corresponding practices;

4 – intensification of international cooperation in both research and innovation, related to the consequences of globalization processes in science and economy.

The forming of the innovative entrepreneurial universities takes place in different ways that correspond to the national characteristics. In Ukraine, the process of forming the innovative entrepreneurial universities is at the early stage. Innovation is carried out primarily by universities that have received this status.

As the integral assessment of the current state of Ukrainian universities, we can consider their place in the QS World University Rankings by the four criteria: research, teaching, employment and international perspectives. For the first time in 2019-2020, 6 Ukrainian universities were included to this ranking [5]. In 2021, the list of the best universities on the planet QS World University Rankings 2022 included two more universities.

Some such tendencies testify to the birth of the new paradigm of education, which we observe today, where it is a question of innovative activity of the leading universities of Ukraine. One of the evidences of the prospects for the development of innovative universities in Ukraine is the rapid development of the export sphere of information technologies, the volume of which is estimated by the international experts at more than 1 billion dollars per year, which is twice and more ahead of similar indicators of our neighboring EU member states – Romania, Poland and Hungary.

The research and developments today are one of the key functions of higher education institutions and key priorities of higher education. In the recent years, many universities have become research. The universities have begun to innovate massively through the development of the ecosystem of laboratories, startups, business accelerators, and creative spaces around campus. Through the research and developments at the intersection of disciplines, the ukrainian universities are beginning to form global meanings that affect the interests of everyone in the world.

The statistical data show that the negative consequences of the pandemic were the impetus for the growth of innovation in universities (133 institutions in 2019 and 155 institutions in 2020, which is 6.2% more than in the analyzed period) [11, p. 13]. Unfortunately, in Ukraine there is a tendency to reduce the number

of researchers by 43% (from 90.2 thousand people in 2015 to 51.4 thousand people in 2020), which leads to the gradual degradation of scientific potential. The negative consequences can be traced in the higher education sector for the period 2015-2020 (reduction of the number of researchers by 24.1 thousand people or by 65.3%). However, as a result of the pandemic in 2019, the directions were made to optimize the network of universities by increasing the number of researchers per 1,000 persons [11, p. 15].

It should be emphasized that the minor positive developments highlight the need for further action to improve the approaches to management, funding, modernization in higher education in general and in particular in the activities of universities. In the process of increasing the pace of research development over the past two years (the pandemic period), universities are looking for production potential and opportunities for their practical implementation.

That is why at the present stage of development of higher education the considerable attention of the government of Ukraine is paid to the problem of transferring it to the innovative basis.

In September 2020, the Ministry of Digital Transformation of Ukraine together with the Ministry of Education and Science of Ukraine, the Ukrainian Startup Fund and YEP with the support of the USAID “Competitive Economy Program” launched the Innovative Entrepreneurship and Startup Project Management.

In February 2021, the first national final of the student startup competition was held.

The problem of financial efficiency of the higher education system deserves special attention in finding ways to modernize and reform it. Today, funding for higher education in Ukraine is implemented using the budget method. It is worth noting that recently budget funding has been a tool to support the best research areas in universities. The government acts as a public entrepreneur and venture investor, complementing its traditional legislative and regulatory role. From 2020, the universities will be funded according to a formula where universities with better performance receive more funding in comparison with the last year’s budget. The relevant decision was approved by the Government on December 24, 2019 [9].

The calculation of funding in 2020 was made by the Ministry of

Education and Science on specific indicators, including: the scale of the university; contingent; regional coefficient; positions in international rankings; the amount of funds for research that the university attracts from business or international grants. From 2021, these indicators have been supplemented by the employment of graduates, which the Ministry of Education and Science will monitor through the online system. For the gradual transition in 2020, restrictions were introduced by the minimum and maximum change in the budget of each university – 95% and 120% from 2019, respectively.

136 higher education institutions and 12 of their branches, which have their own estimates, received funding according to the new formula. In 2020, 94 institutions received 100-120% of the 2019 budget, and 54 – 95-99% of the 2019 budget [10].

In 2019, 31.3 billion UAH was allocated from the state budget for training in universities, and 1 billion UAH was used to finance the scientific and scientific-technical activities. In 2020-2021, 28.3 billion UAH and 31.7 billion UAH were allocated for training, respectively. The expenditures on scientific and scientific-technical activities amounted to 1.2 billion UAH per year.

The positive changes are taking place in the state funding of innovative universities. Thanks to the calculation of funding according to the formula in 2020, 17 universities received an increasing in funding by more than 15 million UAH. The largest funding from the state budget was received by Kyiv National University, named by T. Shevchenko – UAH 1 billion 707.2 million UAH. In second place was Kyiv Polytechnic Institute – 1 billion 200.7 million UAH, in third place – Lviv Polytechnic, which received 746.7 million UAH from the budget.

Slightly more than 400 million UAH from the state budget in 2020 was allocated for the National University of Life and Environmental Sciences, as well as Lviv University, named by I. Franko. In 2020, the National Aviation University in Kyiv received 394.1 million UAH from the state budget, Kharkiv Polytechnic Institute – 368.2 million UAH, Kyiv University of Culture and Arts - 350.7 million UAH, Kharkiv University, named by Karazin – 297.1 million UAH, Dnipro University, named by Honchar – 244.3 million UAH.

It is worth emphasizing that the modern economic theory considers higher education as a service that is a mixed good that provides benefits not only to the state but also to individuals and businesses. Therefore, the experts are invited to actively develop mixed financing models, which are based on the optimal proportions between the size of investments of the state, individuals and businesses.

At present, non-state funding is important in the financing of higher education institutions. The development of non-state forms of financing is gradual. In addition, the using of individual sources is quite limited for various reasons. An obstacle to the financing of educational institutions by enterprises and financial structures is the non-transparency of the budget process both at the level of individual educational institutions and at the level of the district or city. The using of education credit mechanisms is also limited.

The venture capital is the important mechanism for financial support of innovative development in leading countries. Venture funds are important basic elements of the overall venture investment system, but their activities in Ukraine are still far from the European standard.

The experience of economically developed countries, where the mechanism of venture financing has long been tested, confirms its effectiveness in attracting funds in various fields, and especially in innovative educational and research business. However, the lack of promotion of the interaction between universities and investors, unbranched marketing system for the sale of ideas, start-ups, insufficient number of innovative universities wishing to commercialize their research (for various reasons), leads to the fact that such universities are unknown to the general public. information.

The results of competitions for innovative projects conducted by the Ministry of Education and Science in recent years are not indicative, as they do not financially stimulate participants properly, and therefore regularly participate in them almost the same organizations (institutions). That is why radical innovative developments bypass such competitions and look for their investors via the Internet or other communication channels. Alternatives – crowdfunding and Initial Coin Offering. Crowdfunding is used more quickly for hardware products, Initial Coin Offering – to finance

startups based on blockchain from the beginning. And these scenarios also have their risks, which are huge.

Unfortunately, unlike economically developed countries, Ukrainian venture capital is practically not focused on innovative educational and research projects. In the current conditions, the state does not use effective levers for the implementation of innovative projects through venture financing. However, despite on this, the Ukrainian venture business is beginning to develop. Although the process is moving quite restrained, there are many problems, the solution of which is within the competence of the state.

Given the need to develop an innovative economy, as well as taking into account the socio-economic conditions and the specifics of the educational and scientific system of modern Ukraine, the development of innovative entrepreneurial universities is moving very slowly. According to the author, the main restraining factors in Ukraine for the accelerated development of innovative entrepreneurial universities are:

- Ukraine's focus on external borrowing, which, unfortunately, is not used for investment in new technologies and means of production;

- not enough foreign and national investors in high-tech business. They do not go to this sector due to the lack of mechanisms for innovation, relevant legislation and stability. Indicators of net foreign direct investment in 2020 in Ukraine are the worst in the last 20 years. The COVID-19 pandemic has hurt the economies of countries around the world, and Ukraine is no exception. The foreign direct investment amounted to minus -868.2 million. The field of "education" was also negative – 1.5 million US dollars [1].

- insufficient academic mobility of education as an opportunity for participants in the educational process is to study, teach, train or conduct research in another higher education institution (scientific institution) in Ukraine or abroad.

- weak innovation culture and social responsibility, which significantly affect the competitiveness of Ukrainian universities;

- insufficient attention to the problems of internationalization of higher education at the state level, both in its strategic dimension and in terms of implementing even certain strategic guidelines [3]. This is evidenced, first of all, by the fact that in the "National Strategy for

the Development of Education in Ukraine for 2012-2021” among the strategic directions of educational development, internationalization and the development of international cooperation are not mentioned, just as they are not mentioned among the list of major problems, challenges and risks of domestic education” [8].

- the system of higher education in Ukraine, in particular universities, still does not have a strong scientific potential commensurate with the potential of academic institutions.

- lack of world-class universities due to non-compliance with the qualitative parameters of world rankings. Ukrainian universities are practically not promoted in the international rankings of universities, their number is practically not increasing. And it is the prestige of the state, the loss of financial income and international grants, this is the loss of the professional level of domestic employees;

- in addition to the new university funding system, financial legislation and unresolved issues regarding the financial autonomy of universities remain imperfect. It is already well known that education and science in Ukraine are still funded on a definitive basis.

- “Brain drain” – “Ukraine has long been a country that mainly exports highly qualified employees. A large share of non-return of holders of foreign scientific degrees – as a younger, educated, productive and active in international cooperation group - is a significant challenge for educational, scientific, innovative and social development of Ukraine” [2, p. 88].

Despite the difficulties that have deepened with the spread of coronavirus disease, the topic of choosing areas of innovative development of the university has been, is and will always be relevant. The subject of discussion is to determine the optimal directions and optimal costs of a new type of university. According to the author, the importance and priority of innovative entrepreneurial development of the Ukrainian university necessitates a systematic approach, which includes:

- analysis of the results of research and development to identify the most promising for commercialization and stimulation of new areas of scientific and technological development without separation from the specific problems of the domestic economy with its backward level and current needs for development;

- as not every university can innovate, one of the most acute

problems today is the financing of innovative university projects. Venture capital is almost non-existent in Ukraine, but there is a state system to support science. It is possible to realize the innovative potential of universities and use promising developments with the help of the centralized structure of venture business with state participation. The state must ensure the possibility of closed cooperation of such an organization with industrial enterprises, foreign and domestic investors, a network of regional innovation centers.

- given the insufficient logistics of universities, and hence the impossibility of producing innovative products directly on their basis, it is necessary to find alternative ways to commercialize research. This can be cooperation of universities with enterprises in the following organizational forms: contract, option agreement, license agreement, creation of own innovative production, joint venture, implementation of contracts on a subcontract basis, lease agreement.

- the role of the state is especially important in the competition for the talented students and scientists, where success in the long run will bring both short-term and long-term economic benefits. The effective mechanisms in this direction are state programs to support the internationalization of higher education

- it is necessary to complete the forming of the single legislative field of innovation by amending several dozen previously adopted laws and various departmental documents and their mutual coordination. The involving state policy is aimed at priority scientific and technological development (so far such a policy has only been declared).

- creating conditions for the fastest commercialization of the results of promising research and development, including by simplifying the mechanisms of interaction of new and existing innovative enterprises with the authorities; accelerating the solution of the issue of autonomy of Ukrainian universities.

Thus, modernity raises the issue of a new paradigm of higher education, the development of which in a pandemic continues to change: intensification of competition between universities for leadership in the domestic and global market of educational services and at the same time the growth of international scientific

cooperation; introduction of the newest educational technologies for increasing of quality of educational services and adaptation of educational process to inquiries and needs of individuals; diversification of mechanisms for financing education and research with weak participation of the state, government and business structures. The elements of entrepreneurship are stably integrated and penetrate into various areas of activity of Ukrainian educational institutions. At the same time, one of the crucial prerequisites for success is a significant expansion of university autonomy in both academic and research and economic terms, including the disposal of funds in the implementation of research and innovation, commercialization of research results.

So, the innovative-entrepreneurial model of university development dictates the need for deep integration of scientific, educational and innovative activities, development and implementation of mechanisms that increase the real competitiveness of universities by improving the quality of all activities.

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**LOGISTIC ACTIVITY OF  
E-COMMERCE  
ENTERPRISES AND ITS  
FEATURES IN PANDEMIC  
CONDITIONS**

The questions of outsourcing of logistic processes have become especially acute in the organization of logistic activities in the field of e-commerce, where one of the most difficult aspects of the sale of tangible goods is the implementation of logistic operations for spatial and temporal movement of goods from storage to the consumer (B2C model) or the buyer (B2B model) in conditions where most e-commerce companies in Ukraine do not have their own logistic infrastructure and cooperate with delivery companies, which do not always take into account the timing of the seller (Malovycho, 2015).

Despite the presence of a significant number of scientific publications by foreign and domestic authors (I. Balabanov, A. Bereza, D. Bracchi, S. Valygurskii, N. Valkova, N. Gryniv, V. Guzhva, G. Duncan, P. Drucker (1999), D. Eymor, R. Imeri, A. Kantarovych, M. Kindii, O. Kobelev, I. Kozak, D. Kozie, K. Kolli, M. Maga, M. Makarova, S. Malovycho (2015), N. Medzhybovska, N. Mitsenko (2019), L. Ponomarenko, V. Tolstov, I. Uspenskyi, V. Tsarev, O. Shaleva (2010), I. Yarova, etc.), devoted to the development of Internet commerce and tools for e-commerce enterprises management, especially in conditions of pandemics (Berger & Galeta, 2021; Kalach & Onishchuk, 2021), the issues of economic-organizational, technical-technological and logistical support of e-commerce processes and the functioning of e-commerce enterprises still remain insufficiently studied and require increased attention of both theorists and practitioners.

Logistic activity of e-commerce enterprises, as noted by Kulakova (2013), may include: sale of goods that are not available from the seller or not yet manufactured; implementation of acts of purchase, payment and receipt by the buyer of goods under

conditions of their mismatch in time; convenience of forms of delivery and payment as a prerequisite for the purchase of goods; the possibility of simultaneous performance by the e-commerce enterprise of the functions of a trade intermediary in the channels of zero, first or second level, as well as a combination of processes of order acceptance centralization and decentralization of goods delivery.

The transition to e-commerce technologies radically changes the organization of logistic activities of commercial enterprises, in the structure of which online stores are created: the leading place in the organizational structure is occupied by the service responsible for e-commerce (IT-department), while commercial service, warehousing and the transport service acquires the status of service subdivisions; fixed assets of a material nature are minimized (to the complete absence of warehouses and vehicles), there is no need for commercial premises; there is a revision of strategic and tactical decisions to ensure interaction with suppliers of goods, approaches to inventory management, including the refusal to maintain them). Thanks to personalization of communication individualization of orders, information and consultative support is provided, the organization of orders registration, schemes of document circulation changes, there is a transition to full automation of processes of management of a complete set of orders, the press of the accompanying documentation, control of service terms, joint systems of data exchange with carriers are created, etc. (Shaleva, 2010).

The specifics of retail e-commerce involves radical changes in the nature of business processes and logistic processes (Figure 3.7), aimed at strengthening the competitiveness of e-commerce both by boosting sales and expanding the range of goods, and by providing speed, efficiency and convenience for the consumer. At the same time, the biggest changes occur in those logistic processes that ensure the delivery of goods sold by online stores, and provide for their transportation, warehousing, storage, as well as communication with the consumer. According to Drucker (1999), with relatively equal marketing conditions in e-commerce, the level of logistics organization becomes the main competitive advantage of the trader: In e-commerce, delivery will be the only area in which the company can really excel. It will become the main area of competence. Firms

will trade not in what they produce, but in what they can supply to the buyer.

<i>Features of logistic activities of the enterprise</i>	
traditional retail	e-retail
Transportation of goods mainly from the manufacturer to the retail outlet; the possibility of paid delivery of bulky goods to the consumer's home; availability of delivery services in a limited number of large enterprises; packaging of goods is focused on ensuring transport capacity and mechanization of transport and warehousing	Significant increase in traffic; the possibility of transporting goods to the consumer from the manufacturer, without the involvement of the trader; obtaining by e-store the competitive advantages due to the speed, convenience of receiving the goods and low cost of delivery; own courier service is quite common; mandatory packaging to ensure the safety of the goods
Availability of storage space, storage at points of sale – mandatory; mostly small size of warehouse space	The need for significant warehouse space when selling pre-purchased goods; the possibility of using the involved warehouse space; complete absence of warehouse space in the online store in the case of the organization of delivery of goods directly from the production warehouse
Information on logistic processes is usually not disclosed; it is agreed to provide information on the delivery of goods to the buyer's home in the event of its implementation	It is mandatory to provide information to the buyer about the terms of completion, shipping and delivery of the order; in case of absence of the goods at the trader / supplier the information on date of its receipt is necessary

**Figure 3.7 Features of Internet logistics in relation to traditional retail**

However, (Kulakova, 2013) it is in the organization of delivery of goods that the factors limiting the growth of retail online trade are concentrated: the inability of most online stores to provide a full-fledged logistics service; lack of consumer complete and reliable information about the time and day of delivery of goods; the existence of a problem with tracking the passage of goods from seller to consumer, with the return of goods.

Delivery of goods is a complex process of spatial movement of

goods in the logistic chain and related additional works and operations that provide the ability to perform high-quality orders of customers of the online store. The organization of delivery depends on the characteristics of the goods, order volumes, type of packaging, location of the buyer, etc. The task of the organization of delivery of goods is to ensure the availability of all conditions for the buyer to decide on the purchase of goods; the necessary requirements for the organization of an effective system of delivery of goods should be its stability, integration and efficiency.

The question of quality delivery of goods is one of the main factors influencing the buyer's decision on the feasibility of purchasing goods in a particular online store, as evidenced by the results of a survey of specialists in e-commerce (Hamula, 2014). Factors "speed of delivery of goods to the buyer" (average score "7.33" on a 10-point scale; rank "3") and "cost of delivery of goods to the buyer" (average score "6.05"; rank "5"), related to the process of delivery of goods, by the importance of the assessed factors yielded only to the factor "the level of prices for goods offered". In the context of the logistic business process of delivery of goods, it is advisable to pay attention to the condition of guaranteeing the availability of goods in the e-shop, because the availability of inventory affects the seller's ability to deliver goods in a timely manner and the overall duration of the customer service. In turn, the availability of stocks is ensured by the interaction of the e-commerce company with partners in the logistic chain, in which the movement of goods flows to the e-shop, through its departments and from it to consumers. This necessitates the formation in e-commerce of such a structure of participants and ensuring that they carry out such a set of works, operations and processes, so that ultimately the total added value was realized due to the fact that the e-shop customer applied for a product and agreed to payment of its cost and delivery (taking into account the requirements for place, time, readiness of goods for consumption, etc.) (Gres, 2004).

According to the study (Hamula, 2014), in the practice of e-commerce enterprises of Ukraine, the organization of delivery of goods sold relies on employees of various departments, for which activities in the field of logistics can be both a priority and complementary to the main functions. The vast majority of domestic

e-shops have not created in their structure specialized delivery services, do not have separate warehouses or a scattered network of warehouses for storage of goods and customer service from rural areas and small urban settlements. The specifics of the organizational structure of e-commerce enterprises of Ukraine, which in the vast majority function as small businesses, objectively does not contribute to the creation of a separate division of logistics in their structure; at the same time, the issue of transportation of goods to consumers and control of related costs is the subject of daily attention of managers of such enterprises.

The most organic way to deliver goods in e-commerce systems is to deliver the goods by the e-commerce company's own courier service. This option is used in cases of need for maximum efficiency of delivery of goods or during the sale of goods, which is accompanied by the provision of additional services for their installation, connection and adjustment. This method of delivery is especially relevant for online stores that conduct e-commerce of large household appliances, which during transportation requires constant freight forwarding and the most common payment option is payment by courier at the time of goods delivery to the buyer's place of residence. In practice, a significant number of e-commerce companies do not have their own delivery service and use the services of existing operators of public and special delivery systems to fulfill orders. Delivery of goods in such cases requires close cooperation with the subjects of the market of transport services, because in the case of delivery of goods under the so-called "mixed" transportation scheme by several modes of transport in the delivery process involves several contractors (they account for 37% of all shipments). The use of professional courier and delivery services allows online stores to ensure delivery of goods to customers at minimal cost, to impose on the carrier obligations to ensure liability for goods, as well as to avoid the need to create their own transport department and staff. A promising direction in the organization of delivery of goods sold by online stores is the transition to relationships with these transport, courier companies and commercial delivery services on the basis of outsourcing of logistics, the so-called logistic operators and 3PL-providers. In this case, the status of 3PL-provider is more important because it assumes the function of

managing the customer's inventory along the entire supply chain, while the logistics operator on behalf of the trading company performs a limited list of logistic operations and processes (Semenychev, 2013).

The feasibility of transferring an e-commerce logistic complex to a 3PL-provider is due to their potential advantages such as flexibility (ability to provide an online store with small volumes, responding quickly to changes in material flow), efficiency and specialization. Semenychev (2013) argues that most often 3PL-providers take responsibility for the implementation of logistic operations for the e-commerce company listed in Table 3.2, however, the study of domestic practice shows the predominance of traditional approaches to the organization of delivery of goods to customers of online stores.

*Table 3.2*

**Functions transmitted by online stores to 3PL-providers**

Logistic function	The content of the function
Supply management	Ensuring the efficient movement of goods from the supplier to the e-commerce company or to its warehouse (distribution center)
Warehousing	Constant control over the level of stocks, application of advanced warehousing and storage technologies
Delivery (transportation and customer service)	Ensuring clear delivery of the desired product of proper quality in a certain quantity to a specific place to a specific consumer with optimal costs; execution of orders with minimal deviations from customer requirements and agreed delivery terms
Consolidation	Combining small shipments into one settlement or region with the formation of a “collective” installment (to a separate geographical point where the consolidated installments are disaggregated into separate shipments or orders) with savings on transport costs
Information support	Application of modern information technologies and software that allow to control the state of sales and stocks, the process of delivery and informing customers about the state of order fulfillment
Reverse logistics	Execution of works on return of goods delivered not to the destination (errors in addressing) or at the request of the buyer – sold and delivered goods in case of detection of defects, damages or refusal of the buyer from the goods (under the terms of sale)

Established (Malovychko, 2015; Hamula, 2014; Shaleva, 2010) that most domestic e-commerce companies choose options for delivery of goods by “Ukrzaliznytsia”, “Ukrposhta”, commercial delivery systems (“Autolux”, “Your time”, “Gunsel”, “Delivery”, “EMS”, “InTime”, “Nova Poshta”, “Night Express”, “Mist Express”, “SAT”, etc., as well as some international logistics operators – “DHL”, “FedEx”, “TNT”); in this case, under the terms of agreements with these operators, their staff can accept payment for goods from customers.

Taking into account the peculiarities of the territorial location of e-commerce enterprises (in Kyiv and several regional centers – Dnipro, Kharkiv, Lviv, Odessa, Zaporizhia, etc., where, according to our data, more than 80% of all subjects of domestic e-commerce are registered) and the specified cargo delivery operators (most of which provide transportation of goods only to sufficiently large settlements), quite often the services of several carriers are used simultaneously. Possibilities of realization and further delivery of goods from online stores to residents of small settlements are problematic due to the high cost of transport services (they become comparable to the price of the goods), which causes artificial narrowing of potential buyers of e-shops in Ukraine and refusal to accept their orders due to cost delivery of goods in small quantities. Instead, the specifics of the formation of the range of goods in online stores is characterized by the predominance of products with compact shapes and dimensions, as well as relatively low cost parameters of purchases: in the vast majority of e-shops the average purchase cost was from 100 to 750 UAH. As a result (Shaleva, 2010), of the ten leading domestic online stores, only half use the services of national courier services. In addition, only for two stores the activities of these services cover the entire territory of Ukraine, which significantly limits the audience of potential customers.

The option of delivery of goods to the regional offices of the carrier with their subsequent receipt by the customer in a warehouse or office of the courier service, the address of which is previously notified to the buyer, or the option of self-pickup (used by more than a third of online stores) is quite common. They are justified only in cases where the buyer's place of residence is close to the office, store or off-line store that combines traditional commerce with online

commerce.

The most common for small-sized goods is delivery in the form of postal items by the Ukrposhta system to the nearest post office to the buyer or by the logistics provider Nova Poshta LTD – to one of the customer service departments.

Decisions made by the e-commerce company on the configuration of the logistic chain and the choice of organizational model of the process of delivery of goods in e-commerce systems are reflected in the timing of orders. As noted by Malovychko (2015), delivery services provide their services in accordance with their own schedule, and the delivery time in different cases is from several days to several weeks. An additional factor in increasing the duration of orders can be the consolidation of small shipments by combined geographical areas, as well as a delay in sending certain purchases for a certain time (in order to combine orders, form a team installment and win on transportation costs).

Acceleration of order fulfillment is facilitated by the use of an organizational scheme under which online stores can sell goods subject to delivery from the warehouses of finished products or distribution warehouses of enterprises – manufacturers of goods traded in the e-shop. However, domestic e-commerce companies do not use such models and, as a result, do not have the opportunity to create a flexible system of placement of stocks of goods and decentralized execution of customer orders by manufacturers.

Along with the analysis of methods of delivery of goods, an important question is to determine its quality, primarily in the context of consumer satisfaction with its implementation by such components as accuracy of order fulfillment, preservation of integrity and quality of goods, compliance with delivery times, accuracy and correctness of documentation. etc. The consumer's assessment of the online store may also be influenced by the characteristics of the offered range of goods not directly related to the delivery to the requests of the relevant contingents of consumers; offers of goods with a high level of "quality / price" ratio; providing complete and truthful information about the consumer properties and characteristics of the goods, the seller, the progress of the order; providing the consumer with the opportunity to choose alternative options for the place and time of receipt of the ordered goods;

comfort of the process of buying goods in the online store, including due to the personalization of the service and polite communication, etc. (Shorkin). Therefore, the evaluation of the logistic activities of the e-trader should not be limited to the complex of delivery of goods, which is only one of its logistic business processes. Zaburdayev emphasizes that the organization of logistics of the e-commerce enterprise is not limited to the choice of methods of delivery of goods; it covers information and accounting systems, tools for planning and supporting decision-making, evaluation of suppliers and partners, the creation of warehouses and distribution centers. Kyzym and Zakharova insist on attributing to its content a complex of assortment formation and product flows based on marketing research, maintaining relationships with suppliers and consumers, document management, implementation of modern information systems, optimization of business processes, etc. According to (Skitsko, 2013), the logistic activity of the online store covers the whole complex of functional logistic processes related to procurement, sales, warehousing, transport, marketing, service, information, financial logistics and inventory management logistics.

We emphasize that the logistic activities of the e-commerce company are subject to the general objectives of the trader and covers related to these functional areas tasks on organization, implementation and management of the relevant complexes of logistic processes. In view of this, the main efforts of all market participants interested in the development of e-commerce should be aimed at activating such fundamental prerequisites for the development of e-commerce logistics as: (1) acceleration of scientific and technological progress, computerization of enterprises, a radical change in the nature of business processes; (2) growth in the number of Internet users, and, as a consequence, the number of customers in online stores; (3) expansion of sales and range of goods that determine the needs of online stores in warehouses and staff; (4) overcoming the problems of inefficiency of traditional methods of logistic activity management, which cause financial and time losses; (5) increasing competition in the Internet market, where the most important success factors are the speed, efficiency and convenience of logistic processes for the consumer.

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**NANO-INNOVATIVE  
 PROCESSES IN MODERN  
 SOCIAL AND ECONOMIC  
 SYSTEMS**

More recently, nano-innovative processes have received a boost, specifically in the context of the pandemic. Nano-processes are first and foremost innovative in their nature. Nanotechnologies imply manipulation of matter with dimension sized 10<sup>-9</sup> [1]. The emergence of nanotechnologies occurred early XX century. They have further developed since early XXI century when matters at the nano-meter scale and advanced product manufacturing approaches and various processes were applied in physics, chemistry, biology, medicine, electronics and other fields. In addition, these technologies are gradually applied in COVID-19 fighting.

*Table 3.3*

**Data on nanotechnology products in 2020**

<u>Agriculture</u> Products 233 Companies 76 Countries 26	<u>Automotive engineering</u> Products 687 Companies 223 Countries 38	<u>Construction</u> Products 918 Companies 419 Countries 41
<u>Cosmetics</u> Products 896 Companies 271 Countries 31	<u>Electronics</u> Products 1936 Companies 111 Countries 20	<u>Environment protection</u> Products 561 Companies 248 Countries 34
<u>Food products</u> Products 360 Companies 145 Countries 26	<u>Home appliances</u> Products 338 Companies 135 Countries 20	<u>Medicine</u> Products 1,133 Companies 423 Countries 45
<u>Other</u> Products 557 Companies 276 Countries 38	<u>Oil refining</u> Products 295 Companies 122 Countries 28	<u>Publishing</u> Products 161 Companies 72 Countries 19
<u>Renewable energy</u> Products 300 Companies 147 Countries 28	<u>Sports and fitness</u> Products 158 Companies 51 Countries 24	<u>Textile industry</u> Products 817 Companies 496 Countries 42

*Source: [www.statnano.com/report/579](http://www.statnano.com/report/579)*

As Table 3.3 shows, medicine, construction, cosmetics and textile industry are among the leaders in nanotechnology application. All these industries strive for improving life quality of an individual.

It is worth mentioning that nanotechnologies [2] are in the process of their innovation generation. Considering that innovation is a new development changing the production function, i.e., profit-making, nanotechnologies are only being put to practical use and profitability is featured with new management standards. Nano-innovations [4] present technology solutions permitting to earn profit from nanotechnology application.

In terms of COVID-19, nanotechnologies split into two groups:

- ✓ Disease-fighting technologies (medicine, vaccines, hardware technology etc.);
- ✓ Technologies influencing the environment of disease circulation (disinfectors, self-restoring clothes items, disease-prevention furniture, sports and fitness for better body resistance to disease etc.).

These technologies get ahead of the demand. Thus, the technology of using nanotubes for drug delivery to the focus of disease without any effect produced on other organs is a good example. These technologies cost a lot and manufacturers impose conditions for their application and outgrow the demand. Such nano-innovations are of high value and have restriction on their application.

One should note that the term “innovation” is interpreted in the world economic literature as the practical implementation of potential scientific and technical progress that results in the introduction of new goods and technologies. The term “innovation” gained its extensive use in the transitional economy of Ukraine both as a single definition and as description of associated notions: “innovative activity”, “innovative process”, “innovative solution” etc.

There exists a variety of definition of innovations. For example, in terms of contents or internal structure, innovations fall into technical, economic, organizational, management etc. Relying on these definitions, nano-innovations may be formulated. The following features are singled out: innovation scale (global and local); lifecycle parameters (selection and analysis of all phases and

subphases); patterns of introduction process.

Different scientists (N. Monchev, I. Perlaki, V. Hartmann, E. Mansfield, R. Foster, B. Tviss, J. Schumpeter, E. Rodgers etc.) interpret this notion from the perspective of object and subject of their study. For example, B. Tviss determines innovation as the process where an invention or an idea gain their economic substance. F. Nixon considers innovation as the collection of technical, production and commercial measures which result in entering the market and improvement of industrial processes and equipment. According to B. Santo, innovation is a social, technical and economic process, which through practical application of ideas and inventions, gives rise to goods and technologies with better properties; and if the innovation is focused on economic benefit or profit then its appearance at the market may generate extra revenue. J. Schumpeter construes innovation as new scientific and organizational combination of production factors characterizing the spirit of entrepreneurship. The reasoning behind of innovation presents a new spectrum of economic growth acceleration.

Analysis of various definitions of innovations suggests that changes make the essence of innovations and the function of change is the primary function of innovative activity.

The Austrian scientist J. Schumpeter singled out five common changes:

- 1) Usage of new machines, new technological processes or new market support of production (sale and purchase);
- 2) Introduction of products with new properties;
- 3) Application of new raw materials;
- 4) Re-organization of production and its logistics;
- 5) Opening up of new markets.

These postulates were identified by J. Schumpeter [5] as recently as 1911. Later in the 1930s, he established the notion of innovations characterizing them as the transformation towards introduction and application of new consumer goods, new production and transport facilities, markets and forms of organization in the industry.

Sometimes, nano-innovation is considered as the process. This concept implies that innovation is developed within the timeframe and has clearly defined phases.

It should be mentioned that following the international standards

nano-innovation is defined as an outcome of innovative activity in the form of a new or improved product introduced at the market, a new or improved technological process put into practice or a new approach to social services [3].

Nano-innovation may be scrutinized both from dynamic and static point of view. The latter one treats innovation as an outcome of scientific and production cycle.

In accordance with the foregoing, nano-innovations have the following characteristics [5]:

- They should be of novel nature;
- They should satisfy the market demand;
- They should gain profits.

Spread of innovations and their creation are embedded into the nano-innovation process.

There exist three logical forms of nano-innovation process: basic internal organizational (natural), basic inter-organizational (commodity) and extended. The basic internal organizational nano-innovation process involves introduction and application of nano-innovations within the same organization without acquiring any direct commodity form.

Production of material and nonmaterial benefits, other values are at the core of the human society development. The entire variety of such values provide conditions for standard of living. Nanoeconomics is underlying for such standards [6]. The nanoeconomics is defined as the vital part of the economics where individuals perform the function of productive forces. These individuals equipped with optimum management solutions and nanotechnologies deliver and upgrade high figures of competitiveness within the economic environment. Any society, particularly highly developed and present-day one, takes the form of a social system. A social system is a complexly ordered integrity comprising individuals and civil societies united with varied ties and mutual relations being specific in their nature.

The economic system is an essential subsystem of the society underlying for a social system. Economic relations being intrinsically diverse arise and improve continuously in course of production, distribution, exchange and consumption of such benefits among participants of these processes. Economic relations are demonstrated

through economic behaviour of business entities, i.e., through the nanoeconomics [7].

Specific historic totality of nano-economic relations, corresponding to the system of productive forces and interacting with it, is developed against both objective nano-economic laws and subjective factors and features the essence of the nano-economic system in the society.

Hence, the nano-economic system presents the scope of operations for productive forces and nano-economic relations which when interacted produce the variety of organizational forms and types of nano-economic activities.

Structural units framing diverse economic systems are heterogenous in their nature. They combine general and specific, basic and derivative, new emerging and old obsolete, transitional and intermediate economic forms relying both on the logic of development shared by the whole system and on its own line of thinking. General economic forms provide for that nano-entities act in all directions of the economic development. Specific forms are marked by their influence on engineering of nanotechnologies in various life and economy aspects. Basic forms entail application of nanotechnology solutions in all process chains of economic reproduction on a progressively increasing scale: in nano-idea shaping, development of fundamental and applied knowledge, design of applied nanotechnologies and in the process of production, distribution, exchange and consumption. Derivative forms of using nanotechnologies are affected by the subjective factor when this is an individual who sets up conditions for nano-knowledge development and their usage pattern. New forms are featured with emergence of advanced nano-solutions in various facets (from fundamental science to know-how in the area of management). Old obsolete management forms foresee replacing old economic forms with new, usually nano-economic solutions. Transitional economic forms provide for the basis for switching the nanoeconomics to more progressive aspects of development when intermediate forms signal on moving to more currently important economic activities.

The peculiar features of structural elements of the nano-system are described as having dynamic, fluctuating and controversial pace of development in the present economic context [8]. This explains

the necessity to differentiate in the terms of structure the components of the nano-economic system of the society. Otherwise, it would be complicated to get to know objective laws and its functioning principles.

Any economic system is hierarchical striving for integrity and harmony.

System hierarchy defines arrangement of its elements in the social structure and mechanism for its subordination. System elements may interact vertically or horizontally. Vertical dependence manifests itself in coercion relationship, power-obedience, controllability-subordination hierarchy. Horizontal relations are developed on collaborating, voluntary and competitive basis. The pandemic affected establishment of both vertical and horizontal relations since hierarchical and partnership ties have been adjusted through communicating via the Internet.

In socially oriented nano-economic systems partnership relations dominate notably. Entities acting as effective driving and modifying force are something special in establishment, functioning and development of the nano-economic system. Each nano-entity is a carrier of certain rights, obligation and responsibilities exercised in the course of its functional activity. There exist various classifications of economic entities: individual (the primary nano-economic entity), collective body, the State; manufacturer (seller), agent, consumer (buyer); natural persons and legal entities; national and foreign; institutional (manufacturing companies, banks, stock exchanges) etc. The nanoeconomics was also influenced by the coronavirus since human-human relations became dangerous and communications moved instead to Zoom and Google conferences and management was carried out on a new nano-basis.

When the system possesses necessary and sufficient elements for self-development, self-repair and poly-functioning activities, then it is deemed integral and sustainable. The nano-system looks seamless when being inherently and genetically integral, pure and having non-alien elements. The more transitional, mixed phenomena, forms and process the nano-economic system has, the less organic and pure it is. Such development trend should not be treated as expressly change for the worse. If interdependency, intersection, convergence of the nano-economic system enhancement make each other enriched and

improved, this is a forward-looking process [9].

The nanoeconomics is growing more urgent for relations within the framework of all-level systems. Offline communications are no longer safe and Internet technologies step forward: from foods ordering to client and partner onboarding.

The nano-economic system has diverse areas of functioning and levels of economic management of its entities.

Maturity, interaction and complementarity of economic levels are essential for sustainability, dynamism and effectiveness of the system. These days in lockdown conditions, nano, micro and macrolevels rely on quality of personality factors of individuals creating such relations. Nanotechnology and individuals produce effect on improvement of these three levels and determine their quality.

The ability to respond to the environmental changes in a comprehensive, proper and timely manner speaks for mobility of the nano-economic system. Currently the environment is changed under the pandemic influence. This, in its turn, is essential for establishing both macro and microeconomic balance.

The nano-economic system has three basic components, subsystems: an economic structure of productive forces of the society, a system of economic relations and an economic management mechanism.

Productive forces present the system of economic factors which in the course of social division of labour ensure environment transformations, create benefits for satisfaction of human and public needs, specify the level of social labour productivity. An individual as the primary productive forces under the effect of lockdown measures becomes a man of ideas. The crisis induces to search for new development techniques.

Economic relations represent the whole of social and economic, organizational and production relations between economic entities in the process of production, distribution, exchange and consumption of material benefits, services and revenues. Lockdown restrictions facilitated search of new forms of relations on various levels of economic systems.

The management mechanism adjusts functioning and development of the nano-economic system elements, brings

productive forces and economic relations into compliance. It is the total of specific forms of nano-management, organizational and institutional systems, methods and control levers of nano-economic processes.

Mechanism of nano-management turns into operation both subjective and objective factors. Influence of subjective factors is determined by goal-oriented activity of an individual and his/her public associations. Objective factors imply development of social and economic processes being independent from human will and consciousness, determined by the effect of economic laws. Ignoring objective factors, applying subjective desires and spontaneous decisions of some officials into the activities put brakes on the system enhancement. However, objective lockdown circumstances manifest themselves and are implemented through activities of individuals, public institutions and the State. The higher knowledge of economic laws, compliance of social and political and economic practices with their requirements are, the more steady and progressive growth of the social systems is under the pandemic influence.

Therefore, the nano-management mechanism is the variety of forms of organization and management of social acts of economic entities focused on implementation of economic laws. Government officials didn't leave their offices during lockdown and exercised control while at work.

An individual lies at the heart of the nano-economic system amidst the pandemic. He/she unites and coordinates functioning of all elements of the economic system as the fundamental productive force, personification of economic relations, subject and object of the economic activity, carrier and implementor of economic needs and interests. Nature of the economic system is explained by the place of an individual in social hierarchy under existing challenging environment, opportunities and forms of his/her realisation of personal potential. Polystructural and polyfunctional features of an individual shape dual nature of productive forces.

Under lockdown circumstances, on the one hand, they appear as in kind and tangible, and social, on the other hand. The notion of technological method of production is related with the latter ones which indicates the combination of instruments of labour with

production engineering. Transition from one technological method of production to another one occurs due to qualitative changes in pattern of instruments of labour, advances in science and technology when affected by the lockdown.

Pursuant to their dual nature, productive forces of the society exist as both engineering and technology and as a social organism. The process of human labour during the lockdown is marked with simultaneous interaction with the nature and among them as regards nano-production.

Within productive forces, an individual and his/her labour are the centrepiece not only as the most active component, but also as the immediate source of material and real-valued elements presenting their part. This extremely important theoretical postulate was already proved by representatives of the classical school of political economy A. Smith and D. Ricardo.

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**ADAPTIVE  
MANAGEMENT OF  
THE ENTERPRISE IN  
THE CONDITIONS OF  
CORONARY CRISIS**

Management theories of the first half of the XX century developed in a relatively stable external environment and focused mainly on finding ways of increasing the enterprise efficiency by improving its management. The spread of adaptive management was the result of the development of management theory in conditions of increasing uncertainty of the enterprise external environment. Currently, it is considered as an independent concept of management, implemented in terms of innovation, strategic management and risk management. Instead, from the second half of the XX century, management approaches responded to challenges relevant to the appropriate time period and focused on ways of adapting to the external environment. From the standpoint of systems theory, any enterprise is considered as a system, while adaptive is a system, that can change in response to changes in internal and external parameters of functioning. This issue becomes especially relevant in the context of the coronary crisis in which companies were forced to develop new approaches to doing business in order to avoid the negative consequences of the pandemic, and thus maintain their own market position.

The problems of adaptive management formation are presented in detail in the works of huge amount of foreign and domestic

scientists. Despite the significant amount of work in which various aspects of management are presented, the issues of ensuring the competitiveness and economic stability of enterprises in a volatile environment remain controversial and require further study.

Improving the enterprise efficiency and competitiveness in modern business conditions is associated with the ability to adapt to a changing environment. If we consider the enterprise as a system, the feature of the adaptive system is the ability to change in response to the transformation of internal and external parameters of functioning. Along with the concept of adaptive system, there is also the concept of “adaptive control”, i.e. control in a system with incomplete information about the controlled process, which changes as the accumulation and processing of additional parameters necessary to improve the quality of management. Adaptive management can be considered as a process of making and implementing management decisions, that ensure a timely response of the enterprise and all its structural units to change the parameters of the external and internal environment.

Various approaches to the management of the second half of the XX century focused on various aspects of enterprise management and ways to adapt to the external environment. As a result, different approaches to management have been formed, which, responding to the realities of their time, are differentiated in essence, principles, features, but aimed at effective work in a changing environment. The development of adaptive management takes place within the situational approach, because it involves the assessment of specific variables at the appropriate time, and then – an adequate response to it [1].

The importance of adaptive management increases in the following situations:

- in case of crisis management;
- in the implementation of innovations (innovation management);
- in case of organizational changes.

The purpose of adaptive management is to find the most effective options for decision-making and implementation aimed at the functioning and development of enterprises in a competitive environment [2]. The tasks of adaptive management are the realization of the purpose of enterprise functioning and development,

based on the formation of methodology, organization of adaptive management process, development of theoretical and practical mechanisms for managing the stabilization of the enterprise in a competitive environment.

Adaptive case management (ACM) is an approach to the dynamic management of an enterprise business processes, which allows to organize effective interaction of employees to solve a given task (case), respond in a timely manner to external changes and form a library of “best practices” based on the results of its implementation.

The quarantine measures imposed by almost all countries of the world due to the pandemic COVID-19 have caused qualitative and quantitative changes in the world economy. This is due to the closure of state borders, the stoppage of transport links, the closure of a significant number of enterprises, the application of numerous restrictions on doing business. There is a liquidation of certain sectors of the economy and a radical redistribution of labor resources among others. Most likely, the recovery of the economy requires a redistribution of labor resources between those industries that remained and can make the largest contribution to real production. The actions of all the world's economies in overcoming the current recession will show how effective such a redistribution can be. Well-thought-out and considered decisions allow certain economies to survive.

After a 3.5 per cent fall in 2020, UNCTAD expects world output to grow 5.3 per cent this year, partially recovering the ground lost in 2020. However, considering the average annual global growth rate of 3 per cent in 2017-2019, world income will still be 3.7 per cent below where its pre-pandemic trend would have put it by 2022

Simultaneously with the coronary crisis, the business is experiencing a “crisis of adaptation”, learning to work and make a profit in the new environment. The pandemic has shown how limited is an ability to learn quickly in a dynamic world, when few days of procrastination can lead to a fourfold increase in the number of infected and, as well, to destabilization of business and society. As companies will have to adapt to work after the coronavirus, they must first and foremost accelerate the pace of their digital transformation. Long before the crisis, many organizations implemented digital transformation programs to protect their

positions from high-end competitors technologies and take advantage of the greater functionality of digital business models with their adaptability, productivity, and customization. Currently, digital transformation has become a priority for other companies. The COVID-19 outbreak has accelerated the development of e-commerce, and, as a result, businesses and consumers have a unique opportunity to get used to shopping online, working remotely etc.



**Figure 3.8 World output growth in 2015-2022, %**

*Source: conducted by the authors on the basis of [6]*

Table 3.4 represents real GDP growth in Europe and Central Asia. The concept of globalization of the world economy has changed the usual structure of economic activities of the economies of many countries. Thus, the need to optimize the process of creating global GDP began to dominate the national interests of individual countries, and their participation in integration groups and global production, of which international production networks (IPN) are an integral part, is now regarded as an opportunity to diversify the economy and overcome economic and industrial backwardness. At the same time, the participation of enterprises in different countries in the IPNs is not the same, which is due to the influence of determinants that contribute to or, conversely, impede active industrial integration, and then economic growth.

Factors affecting world trade during the COVID-19 pandemic are declining production of goods and services due to restrictions on economic and social activity imposed by countries, disruption of global value chains, rising trade costs, a sharp drop in services trade, decline in prices for goods with low level of processing.

Table 3.4

**Real GDP growth at market prices, %**

Region/ Country	2018	2019	2020 <sup>e</sup>	2021 <sup>f</sup>	2022 <sup>f</sup>	2023 <sup>f</sup>	2021 <sup>f*</sup>	2022 <sup>f*</sup>
Central Europe	4,9	4,4	-3,7	4,6	4,6	4,0	1,0	0,4
Western Balkans	4,0	3,6	-3,4	4,4	3,7	3,8	0,9	0,0
Eastern Europe	3,4	2,7	-3,2	1,9	2,8	2,6	0,7	0,3
South Caucasus	2,8	3,6	-5,2	3,6	4,2	4,0	1,1	-0,6
Central Asia	4,5	4,9	-1,5	3,7	4,3	5,1	0,7	0,4
Turkey	3,0	0,9	1,8	5,0	4,5	4,5	0,5	-0,5
Poland	5,4	4,7	-2,7	3,8	4,5	3,9	0,3	0,2

*Note: e = estimate; f = forecast; World Bank forecasts are frequently updated based on new information and changing (global) circumstances.*

*\* Percentage point differences from January 2021 projections*

*Source: conducted by the authors on the basis of [6]*

Factors affecting world trade during the COVID-19 pandemic are declining production of goods and services due to restrictions on economic and social activity imposed by countries, disruption of global value chains, rising trade costs, a sharp drop in services trade, decline in prices for goods with low level of processing.

Due to the pandemic crisis, which is taking place in a time of accelerated digitalisation, government decision-making on pandemic response and adaptation of governments, businesses and consumers is becoming more efficient. After the introduction of social distancing measures and restrictions on movement, digital solutions are actively used to conduct economic and social activities remotely. The use of software products for video conferencing and messaging – Microsoft Teams, Skype, Zoom, etc. – has increased in times [5].

According to Microsoft data, the number of cases of using their software products for online communication in the week after the introduction of quarantine measures increased by 40%. On the other hand, these services have been improved and become more consumer-friendly, and messengers such as Viber and WhatsApp, which did not support group video conferencing before the crisis, have introduced them [5].

It is obvious, that the pandemic has radically affected consumer behavior. Digital commerce replaces retail trade in goods and services. Such digital retail platforms as Amazon in the US, JD.com in China, Rozetka in Ukraine, as well as Netflix, YouTube and other video hosting services benefited significantly, in contrast to digital platforms providing services in the sphere of tourism – Booking.com, Airbnb, Expedia, Agoda, as well as Ukrainian startups in the area of travel services, such as TripMyDream [5].

According to research by the Institute for Economic Research and Policy Consulting, domestic business can be divided into three major groups. The first group includes enterprises, that have ceased operations due to inability to operate in the new environment, including micro-enterprises, small and partly medium-sized, related to trade, the provision of services related to the tourism industry, and so on. The second group is companies, that have reformatted their activities in the direction of offering new products and services without changes in the business model, including takeaway, online services and services, that have traditionally been present in the market, but not so much popular. The third group includes companies, that have found their niche in the market and developed new products and products. Of course, in a pandemic, those types of businesses, that have been able to move to online work are in a favorable position [3].

COVID-19 forced business leaders to do three things at once: develop a plan to return to normal work, understand and apply the experience gained during the crisis, and define a plan of action. Focusing only on returning to business is not a practical solution, as it will not allow companies to effectively apply all the knowledge and experience gained in recent months. Instead, companies should follow the advice of Thomas Friedman, a correspondent for The New York Times: “to adapt to changes in an accelerating era, companies need to achieve a “dynamic stability”. Instead of trying to stop the inevitable change, Friedman urges CEOs to “become drivers of such changes, using it as a source of energy and inspiration, and create a platform for dynamic stability”.

The COVID-19 pandemic has affected all enterprises of the world with no exceptions. Quarantine restrictions in the context of the COVID-19 pandemic have had a negative impact on established

global supply chains, and this fact will contribute to the global trend of transition from free foreign trade to protectionist policies. The world's leading companies are already thinking about transforming their strategy in terms of supply chain optimization and localization of production with maximum added value. As for migration phenomenon, the spread of viral infection will allow a number of countries to strengthen migration policy. Nevertheless, more and more EU leaders are in favor of revising the Schengen agreement. As for the United States, even before the pandemic, protecting the American labor market from migrants was identified as an important task set by US government. Restrictions will affect labor mobility, and rising unemployment will not contribute to wage growth. Business processes will be maximally digitized, the role of electronic documentation management will grow, as well as software aimed at automatizing the activities. Companies will expand their workforce capacity for distance working, which will save on office maintenance. Thus, the optimization of organizational structures of companies is expected – part of the management levels will cease. The role of business communication with the help of video communication services (Zoom, Webex) will increase, in turn, the need in personal meetings will decrease. This will significantly affect the services of passenger air transportation and the hotel industry, as the number of business trips will be significantly reduced. The partnership between business and the state will become more significant. Government will become more interested in large investment projects, being involved in the process of business design and planning, because employment growth, stable tax collection and social development of the territory are the main priorities in a crisis. Authorities will focus precisely on developing and implementing business support and development programs. Currently, the world's leading companies are directing main forces towards adapting their activities to quarantine-related limitations, saving workplaces and minimizing their losses due to the recession [7].

The introduction of technological solutions of the new generation creates opportunities for changing production methods and, as a result, the totality of production factors. Combinations of classical factors of production (labor, land, capital) are undergoing significant changes, and the main component of the development of economic

systems will be the ability to develop and implement in a short time production models and technologies of new ways.

Processes dynamically develop at the present stage of historical development, they require an analysis of the multifaceted aspects of the interaction of a complex system with many interrelated components. Over the past three hundred years, the experience of scientific and technical achievements has allowed to expand the allowable limits of economic growth. At the same time, the basis of production processes shifted from natural wealth (in particular, land and relatively unskilled labor) to tangible assets created by man (buildings and structures), and then to intangible assets (knowledge and information).

According to estimates by the US Bureau of Statistics, in 1950, 80% of the value added in US industrial sectors were primary or processed materials, or raw materials, and only 20% of the value added was knowledge. By 2015, the proportions have changed significantly and are 25% and 75%, respectively. The book value of tangible assets currently serves as an ever-decreasing component of the market value of companies – for most companies, the ratio of intellectual capital to physical and financial capital ranges from 5:1 to 16:1 [4].

During a pandemic, a critical success factor in adaptive management is the organization's ability to quickly mobilize all available resources (financial, managerial, technological, etc.) to support the process of changes.

In the new economic realities, the adaptive management is associated with the following difficulties [8]:

- difficulties in setting goals quickly;
- lack of coordination in the organization;
- difficulties in identifying the resources needed to successfully implement changes in the organization;
- lack of flexibility in the management system and the slow process of approval of the program of changes;
- lack of a clear plan for the implementation of the program of changes;
- ineffective communication in the workplace.

Thus, during the spread of the coronavirus, in the face of increasing uncertainty, some companies, reducing the decision-

making time, benefit from achieving results. Organizations that are too closed and inflexible, more focused on profit, have proven to be inert and unable to respond to change quickly.

The variability of the business environment is a feature of the development of any enterprise in market conditions. The company operates and develops in a dynamic environment, adapting to its changes. The complexity and instability of market conditions require the company to constantly improving the forms and methods of management. In order to survive and maintain the competitiveness of enterprises in the current conditions, systematic adjustments of their economic activity are required, taking into account changes in external conditions. Changes in management of domestic enterprises should be focused mainly not on solving existing problems, but on using the enterprise existing opportunities and strengths. Therefore, to adapt the company to the dynamic factors of the external environment, the company must use one of the forms of adaptive management. Considering the genesis of management development, these forms have evolved from the simplest to the most complex, based on non-trivial tools of adaptation.

Adaptive management has become one of the most important factors in the success of any business in the face of constant change. The external environment is changing rapidly, technologies are developing, consumer preferences are changing, new market rules are regularly introduced, the crises caused by the COVID-19 pandemic promotes new business requirements. All these processes require modern business to adapt in a timely manner, otherwise the market will be seized by other companies that promptly respond to changes and implement development programs.

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**INNOVATIVE ECONOMIC  
DEVELOPMENT OF  
UKRAINE AS AN  
INTEGRATION STRATEGY  
IN A PANDEMIC**

One of the global challenges for humanity in the 21st century has been the coronavirus pandemic (COVID-19). Country after country, a terrible disease engulfed new horizons, took lives and destroyed the coordinated processes of public administration. Along with this, the coronavirus pandemic has become not only a medical but also an economic problem. The disease has brought chaos and uncertainty to

the world economy. That is why the issue of countries overcoming the impending crisis is becoming relevant.

The coronavirus first paralyzed production in China, then shut down hundreds of businesses in Europe and Asia, followed by the United States. According to the rating agency S&P Global, such a serious and sudden failure in the world economy will provoke a global recession in 2020, and annual world GDP growth will not exceed 1-1.5%. And according to experts from one of the leading financial information companies Bloomberg, as a result of a new pandemic, the world economy could lose about \$ 2.7 trillion. The slowdown in the world economy will occur for the first time since 2009. And many financial analysts say the worst-case scenario could be a repeat of the 2009 global crisis. According to the International Labor Organization, about 25 million people may lose their jobs due to COVID-19. All this forces the governments of various world states to make quick decisions to maintain the economic condition of their countries [12].

Innovative economic development seems to be a necessary component for modern conditions of Ukraine's integration into the world economy. The strategic approach to innovative economic development provides a better approach to innovation and innovation infrastructure. In the context of ensuring sustainable economic development of Ukraine's economy, the study of theoretical foundations and the development of effective practical measures to implement and improve the modern model of innovative development within the existing investment, structural and institutional constraints is of particular importance. The achievements of domestic and foreign scientists provide a theoretical and methodological basis for studying the innovative development of the economy and elucidating the features of innovation as a strategic direction of achieving equal partnership in the world economy.

Researches of scientists have undoubtedly high scientific and practical significance. for the innovative development of the national economy, but in modern conditions this problem remains very urgent, especially if we consider it in the context of strategic direction.

Determining the theoretical foundations of the study of innovative economic development requires a thorough terminological study.

The concept of innovative economic development is extremely broad, and its content has its own characteristics in different sections of economics and fields of practice. Therefore, before giving a clear definition of the category of innovative economic development, it is necessary to distinguish and define the relationship between the concepts of “economic growth”, “economic development” and “innovative economic development”.

Some researchers reduce the category of economic growth to the quantitative characteristics of output. For example, according to K. McConnell and S. Brew, economic growth is an increase in real output, or real output per capita [3]. But in turn, the authors of domestic literature highlight their approaches to the definition of economic growth. In particular, economic growth is understood as long-term changes in the real volume of national production associated with the development of productive forces in the long run. [6].

In contrast to economic growth, economic development is a multifaceted process that includes economic growth, structural changes in the economy, improving the conditions and quality of life. It should be noted that in the economic literature there is no single definition of the category of economic development based on sources [7, 8, 12], the author presents approaches to defining the concept of economic development, which are given in Table 3.5.

Thus, the analysis of the approaches of scientists to define the concept of economic development, given in Table 3.5, allows us to reach a very important conclusion: despite the many quantitative and qualitative changes, any limited system seeks to find its own identity and preserve its integrity in the process of its development. With this in mind, as well as taking into account all the variety of theoretical positions, we justify our own refined definition, which corresponds to the purpose of the study. Economic development is a gradual movement of the economy, which is an alternation of changes in a certain sequence.

As soon as Ukraine embarked on the path of an independent state, the main attention was paid to the country's natural resources. And much less was said about intellectual potential. But today it is possible to say that the only way to develop Ukraine is innovative. The transition to innovative economic development is becoming an important area of socio-economic transformation in today's market

relations. Today in Ukraine during the formation of society innovations are one of the main factors of economic growth, development and progress. In the transition to an innovative type of economic development, the role of knowledge and information as the most important resources of production grows significantly and becomes a priority. “Information and knowledge – writes V. Inozemtsev – which are understood not as a substance embodied in production processes or means of production, but as a direct productive force, becomes the most important factor in modern economy” [7].

*Table 3.5*

**Scientists approaches to defining the concept of economic development**

Representatives	Definition of
D. Myrdal, L. Baltserovych, H. Thomas	Economic development means increasing the welfare of per capita income, improving the quality of life, increasing the degree of satisfaction of basic needs of all members of society.
B. Gabovich, G. Clarke, D. Lukyanenko	Reveal economic development through the characteristics of its general patterns: cyclical nature, the relationship with progress and economic growth, evolution, expansion.
P. Nureyev, S. Enke et al.	Economic development is considered as a multifaceted process that includes profound changes in technological, economic, social, political, institutional spheres in the field of infrastructure, educational technologies, as well as taking into account the analysis of key factors of production.
Shavans, A. Nazaretyan, B.	Consider economic development in the historical – philosophical aspect and interpreted it as a natural and repeated repetition, ie alternation of order and chaos in line with social synergetics or as a process of historical development based on revolutionary or evolutionary changes.
Spencer, K. Marx and others	In their works, the authors gave the most general philosophical concept of economic development, which was associated with qualitative changes in objects, the emergence of new social forms of – innovation, as well as the transformation of internal and external relations these objects.

Based on the analysis of the features of innovative development, we see that the main feature is the active implementation of innovation, which ultimately increases the total innovative products, increases the competitiveness of both enterprises and the country in general. The second feature is innovative continuity. This is due to the fact that in economic development, the new is spreading rapidly, and most are trying to replicate its uniqueness, even in another country. And all this leads to a loss of competitiveness, which must be achieved again through the introduction of new innovations. Thus, innovative economic development in market conditions reaches continuity. In this regard, there is an interesting statement by A. Shugart, who said: “Sometimes it seems to me that the day will soon come when we will present a new product in the morning, and in the evening we will withdraw it from production”. The next feature is “innovative work”, its specificity is, on the one hand, this work means the active development of something new, and on the other in the process of this work, the worker needs to acquire new knowledge, resulting in the need to break existing skills, habits that are not easy to do in a short period of time. As the work should not be stereotypical, it should include retraining, the process of professional development, because there is a constant need for new knowledge, and sometimes in several areas. Finally, it is impossible to note the fourth feature – innovation risk. There may be a situation with adverse consequences for the subject. This can happen as a result of the introduction of something new. It is possible to reduce the risk, but it requires careful preparation, organization, calculation work when planning an innovation.

Based on factors, it can be argued that the innovative nature of economic development today is dominant. In order to develop successfully, it is necessary to create products that are competitive in world markets. Innovative orientation of the economy must be carefully and meticulously created, so for its development must take into account a number of conditions. Highlight the essential aspects of innovation:

- the need for large-scale funding; extremely high risks,
- availability of institutional infrastructure.

Modern innovative developments require significant financial investments. Investments in innovation, in addition, are characterized

by risks that are much higher than average – the probability of losing financial investments if they are not in line with trends in scientific and technological progress, is very high. Therefore, innovation activities around the world are characterized by a certain institutional support. Prospects for innovative development are realized only if you master high-tech industries and software methods of managing them. It should be noted that the organization of the innovation segment of the market is impossible without the existence of regulatory framework, which confirms the need to improve it.

Thus, the innovative development of the economic system can be represented as the movement of the process from one to another. Consideration of the innovation system is not possible without the formation of balanced development, which reflects changes in economic growth. To ensure balanced innovation development, it is possible to distinguish a number of tasks, which are represented by categories:

*socio-economic category:*

- ✓ development of financial and credit support for the implementation of competitive scientific, technical and innovative programs and projects; providing support and protection of the national producer; ensuring the innovative orientation of the education system; development of human resources in the field of innovation;
- ✓ ensuring the development of effective information-analytical and expert-consulting infrastructure of innovation; introduction of an effective mechanism of public-private partnership aimed at achieving a high level of competitiveness of domestic products on the world market in certain sectors of science-intensive production, mainly based on the introduction of domestic technologies

*technical and technological category:*

- ✓ ensuring the development of production and technological innovation programs and projects;
- ✓ creating conditions for technology transfer and improving the protection of intellectual property rights;
- ✓ implementation in accordance with European Union and an effective mechanism for stimulating and state support for scientific, technical and innovative activities by business entities.

The interaction of innovation resources and institutions in the management system of innovation development (country, region,

enterprise) is directly manifested through organizational innovation and is seen as the end result of the process of creating, disseminating and applying new business knowledge, and institutions – as rules and forms of innovation on the implementation of innovative solutions in the socio-economic system of the appropriate type, resulting in innovative development of the economic system on the basis of qualitative changes in its functioning in the process of transition to a new technological level.

Ukraine's transition to an innovative model of economic development is a perfect means of economic growth. Almost all developed countries have embarked on an innovative path of economic development, with economic development of each country based on its own innovation model, which takes into account the starting conditions and features of the country (infrastructure, attitude to private property and innovation, economic structure, innovation potential, investment attractiveness). The main foundation for the development of innovation is the continuous and purposeful search for new knowledge, which contributes to the growth of production, increase the economic efficiency of production processes in general and labor productivity in particular. Thus, in modern conditions there is an objective need to form an innovative model of economic development of any country.

Achieving the goal set by the Government and implementing the provisions of the State Program of Socio-Economic Development of Ukraine is hindered by a number of factors. As a result of the economic crisis, the state, regions and enterprises do not have the opportunity, and, above all, financial resources to innovate. Thus, when forming an innovative model of economic development of Ukraine, it is especially important to take into account the peculiarities of the current stage of development of the country, which will increase the adequacy of the developed model, scientific results and their technological implementation in production, ensuring GDP growth mainly through the production and sale of knowledge-intensive products and services. Its main goal is to increase the competitiveness of the national economy through the use of domestic and world scientific, technical and educational potentials.

At the same time, in the practice of public administration at the macroeconomic or regional levels there is no focus on ensuring high

technological competitiveness of the economy of the country or its regions. Based on the general situation, at the microeconomic level there is also no clear focus on the introduction of innovations in the production process. Regarding the formation of socio-economic infrastructure of innovative development, the country is also insufficiently active.

Thus, Ukraine has certain preconditions for the creation and approval of an innovative model of economic development, which are mostly derived from technological and production potential: a sufficiently developed scientific system, industry schools, scientific complexes and high-tech sectors in the economy, science and technology and human resources.

In terms of scientific and technological potential, it is known that Ukraine [9, 11]:

- ✓ is one of the world's leading countries in terms of education, but is one of the poorest countries;
- ✓ is one of the 25% leading countries by the number of engineers per capita, but high-tech products account for only 8% of the country's exports,
- ✓ ranks 11th among 60 countries in terms of mathematics and science education;
- ✓ ranked out of 88 countries in terms of the number of scientists (more than 2,000 scientists and engineers per 1 million inhabitants).

The country remains technologically backward and is characterized by a low level of innovative development. This is the result of insufficient state funding for research and development, unclaimed research results, lack of economic incentives for researchers.

In our opinion, in the current conditions of the pandemic and the aggravation of the financial and economic crisis in solving the strategic tasks of socio-economic development of the state, the business sector is gaining the status of an equal partner. All the implemented anti-crisis measures in many countries of the world provide for the expansion of cooperation between the state, business sector and civil society, which is possible only on the basis of partnership as a public-private partnership, which becomes an effective mechanism for economic development and public services.

It is no secret that the coronavirus pandemic has become a real challenge for Ukraine. And public-private partnership should become

one of the main strategic directions for the development and modernization of various industries to combat and overcome the crisis. It should be noted that the Government of Ukraine has already taken certain measures for Ukraine's gradual exit from the economic crisis caused by COVID-19.

Since small and medium-sized businesses in Ukraine bring 55% of gross domestic product to the country's economy, in particular only small businesses 16%, these areas need special attention from the state in a pandemic. After all, these businesses are experiencing the greatest negative impact of the economic crisis. And as noted earlier, in many countries around the world, the government has already implemented a number of measures to support them. As for Ukraine, the government has only recently expanded the possibilities of refinancing existing business loans, but with the preservation of jobs and salaries for employees, as the problem of unemployment has gained new importance during the quarantine. The program "Affordable loans 5-7-9%" was launched in February 2020 to stimulate the development of entrepreneurship in Ukraine by reducing the cost of investment, under which micro and small businesses can get up to UAH 3 million in loans at 5, 7 or 9% for various business development purposes

Thus, the COVID-19 coronavirus pandemic not only showed how ready the economies of different countries were, but also laid the groundwork for the introduction of new platforms to address global challenges. It is important for Ukraine to adopt the experience of overcoming the crisis of European countries, but it should be noted that the economy of our country is much weaker and more unstable than European countries. Therefore, the creation of a "strategic platform" on the basis of public-private partnership, adapted to the economic situation in Ukraine, in the long run may become an effective anti-crisis measure and a strategic tool for economic development in the long run.

Although the identified in the context of the coronavirus crisis innovations are mostly not a systematic business renewal, but innovations that improve the organization of economic activity, they enable in the period of quarantine restrictions to avoid loss of human capital and restore profitability. Further research should be carried out to strengthen the validity of the use of innovation as an anti-crisis

tool for enterprises in various industries.

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## Chapter 4

# COMPETITIVENESS OF SOCIO-ECONOMIC SYSTEMS IN TERM OF THE PANDEMIC

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## MODELING OF THE ECONOMIC SYSTEM ACTORS BEHAVIOR IN THE CRISIS PERIOD OF COVID-19 PANDEMIC

The general state of humanity since the beginning of 2020 can be described as a global entropy formed as a result of the COVID-19 pandemic. The uniqueness of the situation in which we find

ourselves lies in the equally unprecedented scale of uncertainty for all actors of socio-economic development at different levels of its organization regarding the possible course of events. G7 governments, multinational corporations, firms and small businesses, and households are still far from knowing what and when the pandemic will end.

One of the main reasons for this situation is the conventionality of human knowledge. It is expressed in the subjective-idealistic worldview, in which man determines his behavior within the constructed in the mass consciousness picture of the world, which is defined by human nature, structured information about the principles and mechanisms of organization and behavior, a range of meanings, essence, value and sources of material and spiritual goods. Socialization gives a person access to relevant information, which makes him part of a complex, open system called society.

The development of modern economics takes place within the methodological space of post-classical science and one of its main components – the theory of self-organization of complex systems. Mechanisms of self-organization of complex systems based on their ability to self-development on the basis of complexity and energy exchange with the external environment are substantiated in the works of V. Vasyilkova [1], I. Prigozhin, I. Stengers [2], Y. Yakovets [3]. Analysis and solution of socio-economic development problems within the methodological space of the concept of “entropy”, which reflects the mechanism of stabilization of unbalanced complex systems, are developed in the studies of I. Prangishvili [4], V. Shapovalova [5], G. Yurina [6] and other scientists. The study of the course and consequences of the COVID-19 pandemic is now at the stage of empirical generalizations and predictions formed by experts [7-8], recognized research organizations such as McKinsey & Company [9], L.P. Bloomberg [10].

The next stage of scientific understanding of the problems that arose as a result of the COVID-19 pandemic involves the formation of a conceptual vision and definition of mechanisms for economic development in the context of the COVID-19 pandemic.

The highest degree of destabilizing impact of the COVID-19 pandemic is because the specific factors that determine its dynamics (duration of immunity and the degree of mutagenicity) are not part of

existing knowledge, they are absent in the information space of society. The lack of reliable information on the nature of threats and opportunities for the existing system of economic relations causes an increase in entropy. The reaction of complex economic systems that try to regulate the growing chaos of unpredictability is natural. Thus, the definition and systematization of behavioral responses of the main actors of the economic system in a COVID-19 pandemic forms a modern methodological framework for crisis management.

The available information on the development of the COVID-19 pandemic, which is compared to the Great Depression of the late 1930s in terms of its devastating economic consequences, can be presented as a list of the following facts and generalizations.

The main cause of the pandemic is the spread of the previously unknown coronavirus SARS-CoV-2, which causes the rapid development of respiratory failure and severe pneumonia. The first outbreak of coronavirus was recorded in late 2019 in Wuhan, China. The lack of treatment protocols and the necessary antiviral drugs, a wide range of possible routes of transmission of the virus led to its rapid spread. Due to the rapid spread in different countries, the World Health Organization on March 11, 2020 declared the outbreak of COVID-19 a pandemic [7].

The facts of the severe course of the disease and the high mortality rate of people affected by the virus have had a destabilizing effect on all spheres of life of the international community.

According to the World Health Organization (WHO), as of November 15, 2020, 53.767 million cases of coronavirus infection were recorded. The number of registered deaths was 1.309 million. The global mortality rate from the total number of cases of the virus is 2.6%. The regions with the highest number of diseases and deaths from COVID-19, respectively: America – 43% and 52% (mortality rate – 2.9%); Europe – 28% and 26% (average mortality rate 2.3%); Southeast Asia – 19% and 12% (average mortality rate of 1.5%).

In terms of countries, the most widespread pandemic COVID-19 was in the United States – 19.8% and 18.5% (2.3%); India – 16.4% and 9.9% (1.5%); Brazil – 10.8% and 12.6% (2.8%). Among European countries, the largest number of infections and deaths is in France – 3.6% and 3.4% (2.3%); Great Britain – 2.5% and 4% (3.9%); Italy – 2.1% and 3.4% (3.9%). Ukraine ranks 17th in the

world in terms of the number of infections (535.8 thousand people), mortality is 1.8%. In less than six months of summer and autumn 2020, growing exponentially, the number of cases of infection increased 9.5 times, the number of deaths 3.7 times [8].

The main generalizations formed by WHO experts and staff of well-known research organizations based on observations of the dynamics of the COVID-19 pandemic include the following.

First, the spread of coronavirus is accelerating, with cases reported in 220 countries. The first half of November 2020 is characterized by a decrease in the spread of coronavirus in Europe (-10%) and Southeast Asia (-4%). At the same time, the rate of spread is increasing in the Americas (+ 41%), the Eastern Mediterranean (+ 11%), Africa (+ 22%), and the Western Pacific (+ 22%) [8]. The geographical dynamics of the COVID-19 pandemic indicate that the main factors accelerating the spread of the coronavirus are high population density and mobility.

Second, the global mortality rate from April to mid-November 2020 decreased from 8.2% to 2.6%. There is a convergence of values by region. Thus, the reduction in mortality from April to mid-November 2020 was: in the EU and the UK – from about 13% to 2.3%, in other European countries - from about 5% to 2%, in Latin America – from about 14% to 3%, in the United States and Canada – from about 10% to 2.9% [9]. Differentiation of mortality rates at the first stage of the pandemic is explained by the lack of standardized testing methods, different approaches to statistical accounting, the specifics of political systems and their attitude to the dissemination of relevant information. At the same time, McKinsey & Company experts point out that mortality rates will continue to decline amid increasing testing, effective treatment protocols and the spread of coronavirus to non-at-risk populations.

Third, the highest risk groups include the elderly and people with chronic diseases of the cardiovascular system, lungs, liver or kidneys, patients with diabetes. According to various expert estimates, the mortality of infected COVID-19 can range at the age of 50 from 0.1% in Europe [9], 0.2% in Ukraine [11], 0.3% in China [12], to 0.5 in the United States [9]. At the age of 60 years, from 2.2% in Europe [9], 4.3% in Ukraine [11], 6.4% in China [12], to 16.4% in the United States [9]. At the age of 80 years from 6.7% in

Europe [9], 13.4% in China [11], 14.5% in Ukraine [12], 16.4 in the United States [9].

Fourth, despite the 9 months of experience in the COVID-19 pandemic in the treatment of patients, the mortality rate among hospitalized remains within 25% in Europe and 30% in the United States [9]. The corresponding dynamics indicate the lack of effective treatment protocols that can be based on existing drugs.

Fifth, most people who are not at risk tolerate COVID-19 infection without visible symptoms. Under appropriate conditions, most cases of infection remain uncertain, making it impossible to take precautions to spread the coronavirus. The spread of the coronavirus does not depend on weather conditions, but on the behavior of people who congregate indoors during the cold season.

Sixth, the main factors that determine the dynamics of the COVID-19 pandemic remain unclear, namely, whether the presence of antibodies indicates immunity and what determines its strength and longevity, as well as how strong the mutagenicity of the coronavirus is. Cases of coronavirus re-infection have been reported in many countries. This indicates a lack of complete immunity after the disease [13]. Researchers have made assumptions that have not yet been properly confirmed about the possibility of forming partial immunity based on previous vaccination against other viruses, such as BCG [14].

Predictions of the dynamics of the COVID-19 pandemic are based on assumptions about the possibility of the formation of immunity using vaccines. According to WHO and McKinsey & Company experts, a positive pandemic control scenario is formed when 58% of the immune population is reached [8-9]. The optimistic scenario assumes that under the conditions of efficiency of the developed vaccines, the necessary level of immune population which will allow to overcome the COVID-19 pandemic in its basic centers, can be reached in the fourth quarter of 2021.

According to the portal Our world in data (Figure 4.1), 30% of the world's population received at least one dose of coronavirus vaccine. At the same time, 15.5% of the population were fully vaccinated.

In Ukraine, as of August 8, only 5.8% of the adult population had been fully vaccinated against coronavirus.



**Figure 4.1 Geography of complete vaccination from coronavirus (COVID-19)**

*Source: compiled by the authors on the basis of the data on 13.09.2021*

Studies of the behavioral reactions of actors in the economic system in connection with these events have shown that:

1) Their behavioral responses were formed depending on the content of information that reflected the course of the COVID-19 pandemic. The main imperative of consumer behavior in the economic crisis, which involves limiting spending on basic necessities, launched a chain reaction, which led to a decrease in sales and production of most non-food products, the formation of a shortage of durable food and household goods.

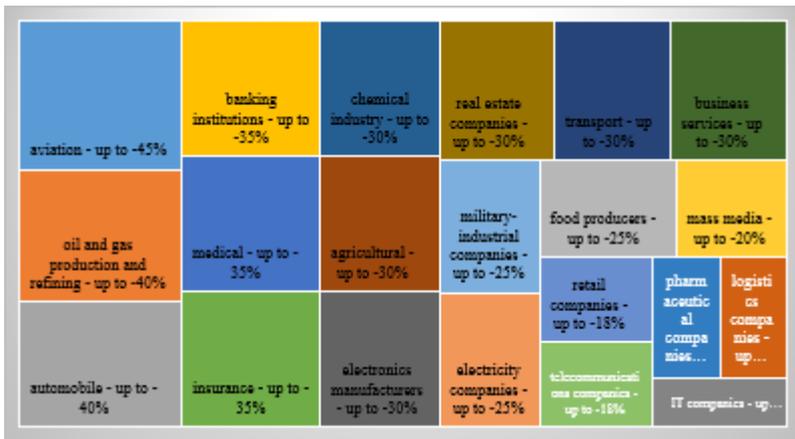
2) In the first stage of the pandemic, the cessation of production related to the automotive industry and electrical engineering in China led to the rupture of international production chains, reduced production, forced vacations of large numbers of workers [15]. The market of new cars in January-April 2020 in European countries decreased compared to the corresponding period of 2019 by 30-50%.

3) The closure of borders has led to a decrease in traffic. First, it concerned aviation. During the lockdown in February-June 2020, 90% of flights in the EU were canceled, the volume of passenger transport by road decreased in various segments by 60-90%, the volume of public transport decreased by 50%. The reduction in sea freight traffic led to a decrease in the business activity of 11 of the 12

largest sea routes, which were forced to abandon the leasing of many vessels [16].

4) Reductions in the production of goods, transportation and travel, the closure of enterprises and the relocation of most communications to the online environment have led to a reduction in energy consumption. According to the International Energy Agency, energy demand in 2020 will decline by 6%, which is the largest decline in 70 years [17].

For the first three months of the greatest uncertainty in 2020 there was a significant decline in the value of shares of companies in all spheres of economic activity (Figure 4.2).



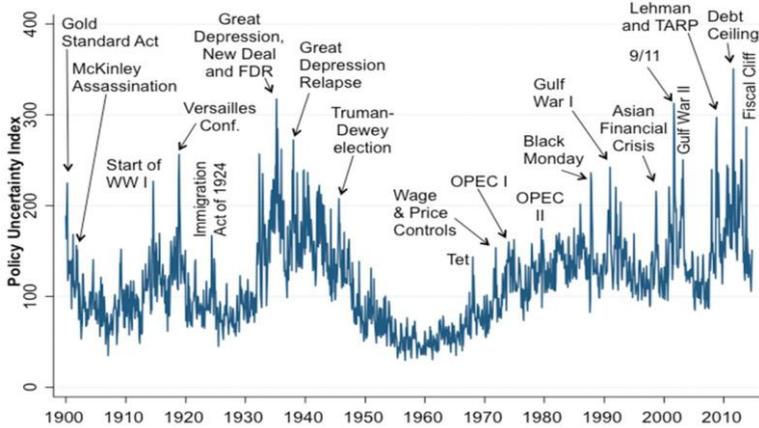
**Figure 4.2 Falling value of companies shares in the areas of economic activity in 2020**

*Source: compiled by the authors according to the source [9]*

The impact of information uncertainty on the development of the modern economy has been particularly enhanced as a result of value virtualization, which occurs within the stock market game, which depends on the content of economic information, relevant forecasts and strategies of market players [18]. Rising uncertainty increases entropy, destroys the strategic plans of economic agents, based on forecasting.

One of the analytical tools in the study of this problem is the Policy Uncertainty Index, which was developed by American researchers S. Baker, N. Bloom, S. Davis [19]. The daily version of

this index reflects the frequency of newspaper articles with one or more terms about “economy”, “politics” and “uncertainty” in about 2,000 US newspapers. The index is normalized to 100 based on an analysis of the period from 1985 to 2010 (Figure 4.3), so values above 100 reflect uncertainty above average.



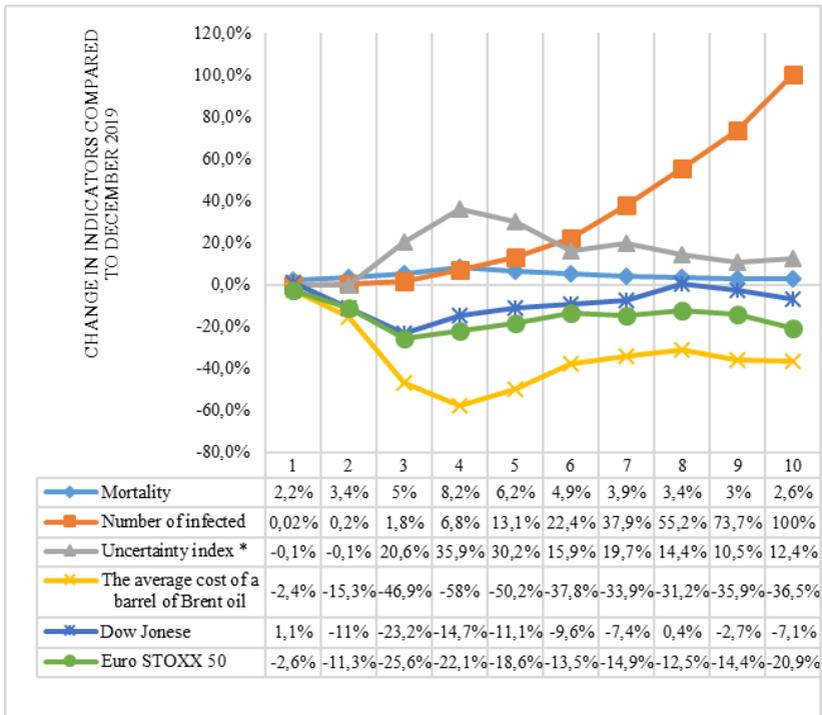
**Figure 4.3 Dynamics of the Policy Uncertainty Index in 1900-2010**

*Source: compiled by the authors according to the source [19]*

According to our calculations, the average value of the index increased from 109.6 in January 2020 to almost 554 in April 2020, which is historically the highest figure.

Graphical synchronization of the dynamic characteristics of the COVID-19 pandemic and the uncertainty index with markers of economic activity makes it possible to determine the logic of behavioral reactions of economic agents in the development of the current crisis, characterized by a shock increase in entropy (Figure 4.4).

From the factor of external influence, the pandemic turns into a structural condition of economic activity. Under appropriate conditions, there is a significant weakening of the relationship between the number of infected and dead on the one hand and the dynamics of the economy on the other. There is a negative correlation between the recovery of economic agents and the index of economic policy uncertainty, which is gradually declining.

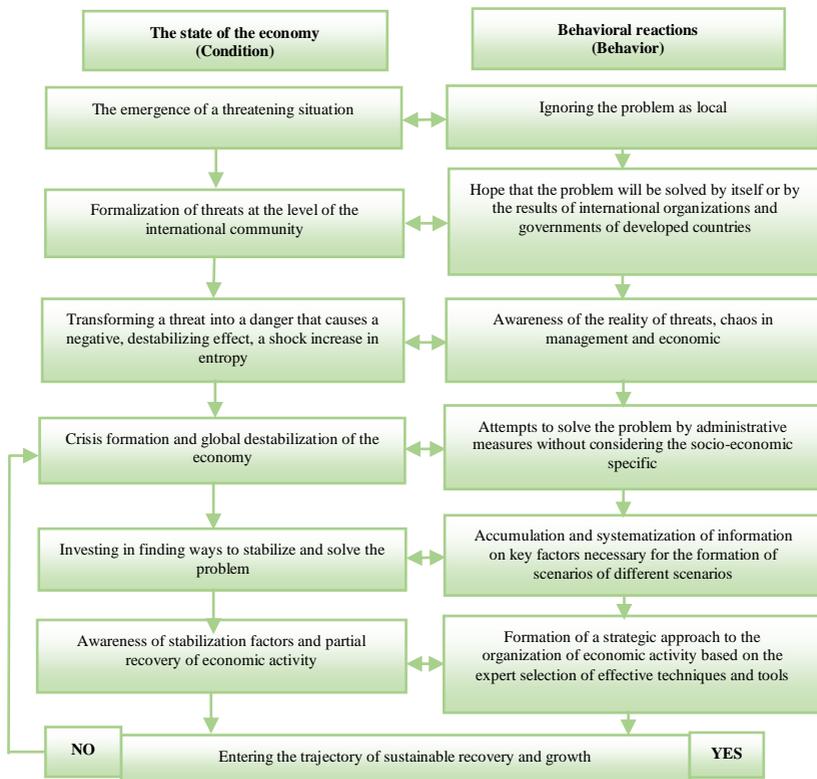


**Figure 4.4 Correlation of dynamic characteristics of the COVID-19 pandemic and the uncertainty index with markers of economic activity in 2020**

*Source: compiled by the authors based on [17; 20-23]*

The corresponding situation can be characterized as a new economic reality that is developing in an updated coordinate system, one of which is the COVID-19 pandemic. We investigated the dependence of the stages of development of the crisis in the economy in the pandemic COVID-19 and the behavioral responses of economic system actors.

Early period is preceded by a behavioral protective reaction of economic system actors, which is expressed in ignoring the importance of the problem as such, which has a local character (B1 on the Figure 4.5).



**Figure 4.5 Stages of development of the crisis in the economy in a pandemic COVID-19 and behavioral responses of economic agents**

*Source: designed by the authors*

The corresponding behavior of economic system actors was observed during January 2020.

The next stage of development is characterized by the continuation of protective mechanisms that prefer to keep economic systems intact (B2). Only in the face of a shock increase in the number of infected and dead do economic system actors realize the danger and the lack of the necessary information to make effective decisions (B3).

Management inertia causes attempts to solve the problem by traditional, administrative measures (B4), which at various organizational levels include: quarantine restrictions and financial support of business structures from the state, stopping production processes by enterprises, limiting household costs.

The high degree of danger leads to the consolidation of efforts and resources in the direction of accumulation and systematization of information on key factors necessary for the formation of different scenarios (B5).

Based on the accumulated information the updated information space within which the strategic vision of administrative tasks, effective techniques and means is defined (B6).

Depending on the results of the updated system, it either enters the trajectory of sustainable development, or, in case of insufficient efficiency, again falls into a state of crisis, which requires further information and organizational transformation [24].

Recent statistics indicate that the decline in economic activity against the backdrop of a 10% increase in infections and increased uncertainty index indicates a possible beginning of a new wave of the crisis caused by the COVID-19 pandemic and the overall situation returns to combination C4B4.

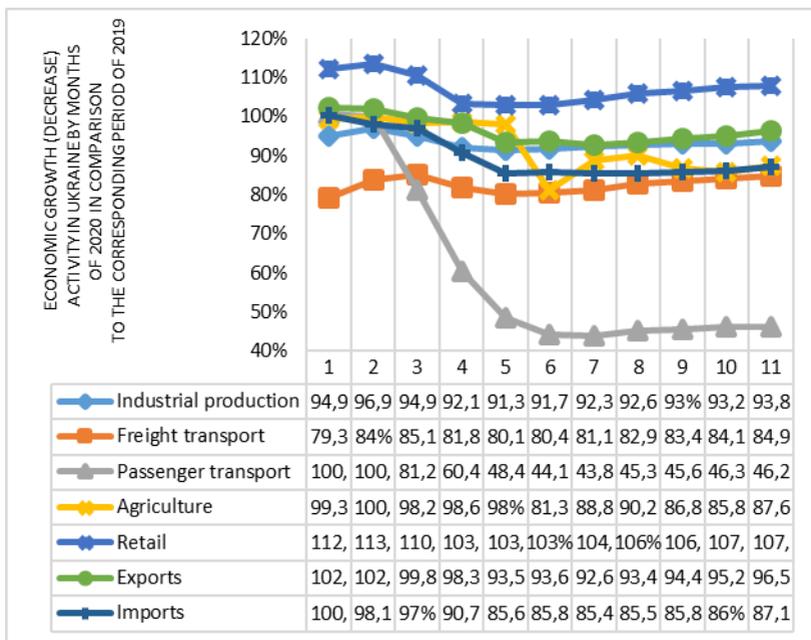
The globalization of the world economy has created the conditions for synchronizing the main trends in national economies. During the COVID-19 pandemic, Ukraine's economy underwent similar stages to the economies of developed countries, characterized by a certain condition and the corresponding behavioral reactions of economic system actors (Figure 4.6).

The dynamics of indicators of economic activity in Ukraine is similar to global trends [25]. The shock increase in entropy corresponds to a sharp decrease in economic activity.

Based on the observation of economic behavior of business structures, it was found that there are two main behavioral strategies:

- 1) defense, which provides a reactive position and reduction;
- 2) offensive, aimed at the development of economic activity.

Thus, by identifying patterns and certain models of behavior of subjects of the economic system during the crisis period, it is possible to reduce the negative impact of the crisis on their activities and on the functioning of the economy as a whole.



**Figure 4.6 Stages of development of the crisis in the economy in a pandemic COVID-19 and behavioral responses of economic agents**

*Source: compiled by the authors based on the own calculations*

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## **SHAPING LOCAL TAX SYSTEM AFTER THE COVID-19 PANDEMIC, THROUGH THE EXAMPLE OF HUNGARY**

## **1. Introduction**

Local tax revenues are important financial sources at European local governments, they ensure public services. Local governments can levy local taxes to cover their operational costs and support their autonomy, since these revenues make local budgets less sensitive to the volatility of central government budgets.

However, local tax revenues are highly dependent not only on the central budget but also on economic fluctuations. Coronavirus pandemic caused a worldwide economic crisis in 2020, which effected local taxes as well, especially and eminently the tourist tax.

As a consequence of the pandemic, central government legislation provided some new tax regulations for local governments. The changes required a redesign of local budgets. Municipalities need to increase their revenues in line with the new legal provisions.

The study analyses the evolution of local tax revenues taking the pandemic into account, and reveals methods to keep and even increase local tax revenues in 2021 and the following years. The consequences and results of the recession, as well as the prospects for the future, that occurred in Hungary, are also valid at international level.

## **2. Local tax system in Hungary**

Own revenues have an important role in local government finance. Municipalities gain much of their own revenues from local taxation. The share of tax revenues within total municipal revenues was around 28.9% in 2020 (OECD, 2021). In respect of local taxes, Hungarian local authorities can levy business tax, property taxes, communal tax, tourist tax and (multipurpose) municipal tax within the conditions of Act C of 1990 on Local Taxes. In addition, they can share in transferred central taxes.

### **2.1. Local tax revenues**

Own revenue of local governments increased from 2010 to 2019 in total by around HUF 344 billion, i.e. by more than 33%. The growth was due to the increase in local tax revenues by around HUF 430 billion, i.e. 79% in the same period (Berczik, 2021). Local governments collected HUF 972 billion local tax in 2019 in 3156 of all 3178 Hungarian settlements.

The share of business tax among local tax revenues is steadily decisive at all types of settlements, around 80% in the recent period, while the proportion of tourist tax did not reach 2%. In 2019, business tax was introduced in 91.2% of municipalities, while only 26.6% levied tourist tax (MÁK, 2021a). Property taxes also play a significant role in the budget of local governments, the revenue from it was about HUF 127 billion.

There is an inequality in terms of local tax revenue, since there are significant differences between certain types of settlements. Local tax revenues derive from 8.5% of local governments, the capital city collected by itself fifth of national local business tax

revenues. 61.6% of local business tax arise at 1.5% of local governments (ÁSZ, 2021).

Due to the dominance of local business tax, local tax revenues are sensitive to economic recessions. Changes in the economic performance of enterprises operating in the settlements directly cause a decrease in tax revenues. Being prepared for these economic downturns is difficult for most municipalities. In contrast, the literature on tourist tax was different. Kamplér (2006) classified this tax type as a stable source of local revenues, independent from business cycles, similar to wealth taxes and the communal tax. Nevertheless, local governments suffered a sudden decline in tourism tax revenues in March 2020. The decrease of these revenues not only affected the reference months but had also longer-term impacts.

## **2.2. The case of a specific local tax, the tourist tax**

Tourist tax has a special place in the local tax system, since it does not generate a significant amount of revenue in national context, however, it plays an important role in local budgets at certain local governments. The capital city, Budapest represents an outstanding value, its tourist tax revenue in 2018 was HUF 6.412 billion, therefore the data of the city is distributed among the districts and is treated as local governments in the surveys. In the budgets of settlements with a strong tourism profile, tourist tax revenues are of special importance. The highest per capita tourist tax revenues were recorded in the spa towns of Western Transdanubia (Zalakaros, Hévíz, Bük), but several other spa towns, settlements at Lake Balaton and villages from the northern Hungarian region also represented a significant proportion. The relevance of tourism tax is also shown by the fact, that revenues from this type of tax in several settlements accounted for more than half of the municipal public revenues (TEIR, 2019). Tourist tax revenues are of variant importance in different types of settlements, they play more significant role in the budget of touristed villages than in the capital city or other larger settlements (Table 4.1).

In connection with tourist tax, a grant was provided by the central budget. Municipalities could count on additional central grant for each HUF tourist tax revenue, in connection with resort tasks. The rate of grant was 100% until 2020, which meant HUF 1 after each

unit of collected tourist tax, which was an important source of municipal revenues (Budget Act of 2019, Annex 2).

*Table 4.1*

**Tourist tax revenues by type of settlement, 2019**

	number of settlements	tourist tax revenue, million HUF	tourist tax per capita, HUF	tourist tax per settlement, million HUF	tourist tax in total tax revenues, %
village	485	1,567	2,972	3.2	7.50
large village	37	222	1,693	6.0	3.46
towns	188	5,223	2,472	27.8	3.02
city with county	23	1,633	835	71.0	0.71
capital district	23	6,102	3,487	290.6	3.17

*Source: own calculation based on MÁK (2021b) database*

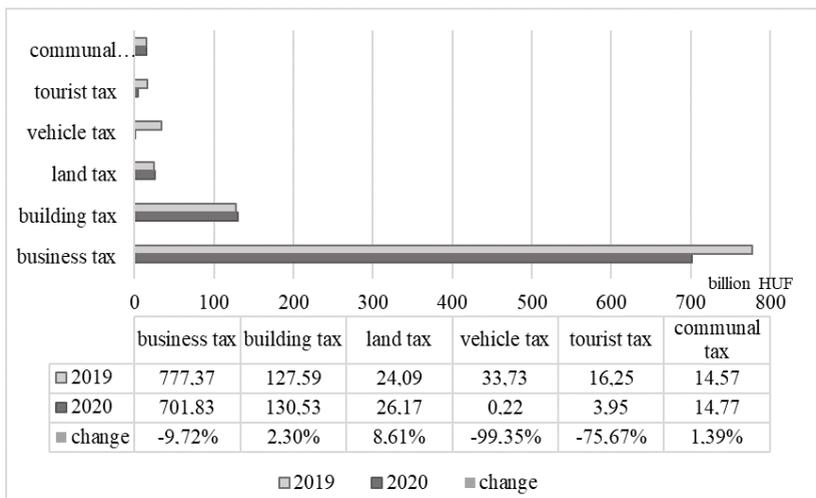
The revenue from tourist tax grew steadily in Hungary, exceeding HUF 16 billion in 2019. On the one hand, the growth was due to the permanent expansion of tourism. On the other hand, municipalities continuously follow the maximum statutory rate when they determine their applied tax rate. As municipalities have the right to increase some of their local tax rates by the annual cumulative inflation rate (i.e. the maximum tourist tax rate is HUF 550 per person per night in 2021).

### **3. Impact of the COVID-19 pandemic on local taxes**

Local tax revenues represent about 2% of GDP, but 29% of total local government revenues (KSH, 2021a). Local governments generally have to balance their operating budgets, they can hardly borrow to finance large deficits. The COVID-19 pandemic was causing acute fiscal stress for settlements, it reduced their tax collections, which was problematic given their balanced-budget requirements.

#### **3.1. Revenue decrease at local governments**

In 2020, on the revenue side of the local government balance sheet, own revenues fell the most, due to a large decrease in the business tax revenues and due to the global tourism recession and consequently, the decrease of tourist tax revenues. In 2020, local taxes fell short of the actual data of 2019 by HUF 92.4 billion, of which the business tax was about HUF 76 billion due to the economic downturn (Figure 4.7).



**Figure 4.7 Local tax revenues by tax type, 2019-2020, billion HUF**

*Source: own edition based on MÁK (2021b) database*

In 2020, tourism was among the most affected sectors by the coronavirus pandemic, 1.4 billion fewer nights were spent in the European Union at tourist accommodations compared with 2019 (Eurostat, 2021). Guest nights spent in Hungary decreased from 2019 to 2020 by 26 million (55.32%) (KSH, 2021b), while tourist tax revenue by HUF 12.3 billion (75.67%) (MÁK, 2021b). Beyond tourist tax loss, the reduction in the business tax of tourism service providers will also have a negative impact on business tax advances and tax revenues in the coming years.

Beside the tax amount decrease, on account of their difficult financial situation, some businesses still had difficulties to meet their tax obligations for 2020. Several taxpayers also requested deferral of payment or instalment payment. These allowances affected the temporal realization of tax revenues and the loss is also spread over several years. Therefore, local governments had to reschedule and correct their annual budget plans for 2020, 2021 and the following fiscal years, because also investments and developments may have had to be deferred or cancelled.

### **3.2. Budgetary implications of legislative changes**

In addition to the economic performance, changes in legislation on taxation also had a significant impact on the tax revenues of municipalities. The regulations on transferred central taxes and local taxes, as well as the changes in the conditions of subsidies related to collected taxes are forcing local governments to restructure their budgets. After COVID-19 pandemic, measures to stimulate the economy have generated temporary contingencies in the local public sector, however, a part of the loss has been rebound by the central government.

According to No. 535/2020 (I.XII.) Hungarian government decree about local tax provisions in the interest of mitigation the impact of coronavirus pandemic on the national economy, the representative bodies of the settlements could not set higher local tax rates in 2021 than what they previously introduced, and they could not introduce new types of local taxes. Though, regarding tourist tax, the statutory maximum tax rate adjusted for inflation is HUF 550 per person per guest night in 2021, they are forbidden to apply more than HUF 532 (maximum tax rate for 2020).

Accommodation providers did not have to collect tourist tax from guests and pay it to local governments until 30 June 2021, but they were still obliged to submit tax return about the number of guest nights spent at their accommodation, according to No. 498/2020 (13.XI.) Hungarian government decree. In 2020, local governments were eligible to claim state grant for non-collected, but registered taxable guest nights. Thereafter, however, the loss of tourist tax revenue for the period from 1 January to 30 June 2021 was no longer compensated by the state.

In addition, the exclusion of resort tasks grant from the municipal grant system led to revenue losses as well. Resort tasks grant was previously calculated after the tourist tax revenue of local governments, it represented 1 HUF subsidy for each tax HUF collected by local authorities. The Act LX of 2020 amending the Central Budget Act for 2020 suspended the payment of resort tasks grant from April 2020, and this grant was no longer included in the central budget acts for following years.

Legislative measures regarding local business tax also affected local budgets. According to No. 639/2020 Hungarian government

decree, local business tax rate dropped to 1% for 2021, if the currently business tax rate is already higher in the settlement. Micro, small and medium-sized enterprises were eligible for the discount, whose turnover or balance sheet total does not exceed HUF 4 billion. Annex 3 to the Central Budget Act of 2021 provided, that municipalities with a population of less than twenty-five thousand inhabitants received a subsidy equivalent to the sum of the discount of their micro, small and medium-sized enterprises. Central government decided separately about the amount of this support of municipalities with a population of more than twenty-five thousand inhabitants (1369/2021 (10.VI.) government decision).

Local governments have transferred revenue from central budget, but the share of transferred central taxes decreased significantly in the recent fiscal years. Among others, municipalities received 40% of the vehicle tax collected by themselves until 2019. In 2020, 100% of vehicle tax revenues were taken from local governments by central government, however, the taxation procedure was only centralized in 2021. The centralization of vehicle tax meant HUF 35 billion deduction from local budgets. The distraction of vehicle tax had variant effect on the budget of different types of settlements with different size of population (Table 4.2). In spite of the relatively low amount of vehicle tax at national level, villages had to suffer most of all from its ademption from local public revenues.

*Table 4.2*

**Vehicle tax revenues by type of settlement, 2019**

	number of settlements	vehicle tax revenue, million HUF	vehicle tax per capita, HUF	vehicle tax in total public revenues, %
village	485	7,974	3,030	8.71
large village	37	1,577	4,059	6.67
towns	188	10,971	3,351	3.87
city with county rights	23	6,935	3,562	2.97
capital district	23	6,269	3,742	2.88

*Source: own calculation based on MÁK (2021b) database*

Revenue decrease and legislative changes regarding local budgeting could cause longer-term financial difficulties for local governments, setting new challenges for them, especially, for municipalities, that are interested in tourist tax.

#### **4. Adapting to the new circumstances of local taxation**

Municipalities reacted to the crisis by reducing or restructuring their expenditures. Adapting to most recent government measures, it is necessary to carefully shape local government budgets. If local governments want to enhance own revenues in their budget, they have to find ways to gain additional sources of local taxes. A review of the taxes that are already introduced is needed at municipalities. If the validity of No. 535/2020 government decree about the prohibition of local tax burden increase will not be extended for the year 2022, local governments should consider the introduction of new tax types or the increase of current tax rates within the limits of Local Tax Act.

Local governments may introduce, in their area of competence, municipal taxes that are not prohibited by other law. It means the introduction of the open list taxation method (Kecsó, 2015), because local authorities may impose a municipal tax on any tax object, provided that it is not covered by a public charge regulated by law. This method can cause confusion in local tax system. Therefore, carefulness and preliminary impact assessment is needed when levying a new local tax. Moreover, local characteristics and tax burden capacity of taxpayers should be also considered, along with the fact, that municipal tax should not be applied on businesses. Municipal tax is not yet widespread. Settlements prefer levying land tax, but among others, water-craft vehicle tax, dog tax, tax on tall buildings also exist (MÁK, 2021a).

After the sudden decline in revenues, the role of diversification in local taxes becomes increasingly considerable. Business tax from companies with a non-touristic main profile turns out to be more important, in order to reduce the effects of economic fluctuations on local tax revenues. More emphasis should be placed on industrial investments in sectors that are less vulnerable to economic recessions. Local tax systems should be diversified at municipalities, by strengthening different nature of taxes (e.g. collecting business tax and wealth taxes, charging corporate sector and citizens) at the same time.

However, local authorities must also take the principles of taxation into account, which were formulated by several economists (Smith, 1776; Stiglitz, 2000) in recent decades. Musgrave (1989)

emphasized that local tax systems should be independent to the cyclical nature of the economy. Property tax revenues in the past have been relatively insensitive to business cycles, they do not rise immediately when the economy is robust and do not decrease much during recessions, especially, if the tax base is the useful floor area instead of market value. With respect of taxation principles, raising tax rates, tightening tax exemptions or extending taxpayer circle could be a solution for the increase of local tax revenues.

In the future, more emphasis will be placed on outstanding tax demand. Faster and more efficient recovery of receivables could improve liquidity. Local tax authorities have several methods to enforce tax liabilities (such as wage attachment, bank account collection), and eventually, they can request the competent county board of the National Tax and Customs Administration to enforce tax debts for them. These measures probably encourage taxpayers to pay tax liabilities on time.

Local tax control is necessary in order to uncover local tax evasions. It urges taxpayers to comply with the regulations and deadlines. As far as tourist tax is concerned, increased tax control helps to uncover hidden guest nights, whereby accommodation providers are encouraged to give up concealing any of their guests. As a consequence, local tax revenues will increase and arrive on time.

## **5. Conclusions**

The budget revenues and development opportunities of local governments are determined by the operation of the economy, not only in Hungary, but also at international level. As a result of the pandemic recession, local revenues declined significantly. With the direct and indirect impacts of the pandemic, local governments got in a difficult position. They are forced to manage more frugal operation. However, in spite of the difficulties, the municipal subnational sector has remained stable, and its debt has barely changed.

Touristed municipalities had to book the biggest loss in local tax revenues in 2020, though, they have been able to calculate the tourist tax as a constant or even increasing revenue for years. Besides, tourism has had an impact on their business tax revenues as well, through the tax payments of tourism and other service providers. The

case is expected to be an expensive tuition, as the seemingly stable tourist tax revenue should not be taken for granted.

In the interest of the increase of local tax revenues, local governments have many opportunities. Beside restructuring their expenditures, they can extend the number of taxable persons, increase tax rates or introduce new tax types. Diversification in tax types and applying property taxes may generate steadier income in local budgets. Moreover, local governments should aim faster recovery of tax liabilities and outstandings. In addition, more emphasis should be placed on local tax control methods and procedures.

In conclusion, municipalities should make efforts to prevent fluctuations in their resources in accordance with their own opportunities. As a result of COVID-19 pandemic and the global economic recession, and also of governmental legislative changes, settlements should plan their budgets and manage their financial operation even more prudently.

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**THE PECULIARITIES OF  
FORMATION OF  
INDUSTRIAL  
COMPETITIVENESS OF  
UKRAINE AND THE EU IN  
THE LIGHT OF THE  
PANDEMIC CHALLENGES**

The development of European industrial production has always been among the key priorities of the EU. The global pandemic COVID-19 disease, which is still ongoing, has only confirmed the importance of the industrial component of the economy. The ability of countries to successfully overcome the challenges of the pandemic is directly linked to the presence and development of this industrial component of the economy. On the one hand, the pandemic has accentuated the problems of economic nationalism and political egoism, in particular the developed countries versus the developing ones and the poor countries, in prioritizing the provision of drugs and products to combat the disease. On the other hand, due to the closed national borders and global supply chains blocked by quarantine and the world's major manufacturers diverting their supplies to the priority needs of their own countries, governments in other countries are faced with the challenge of overcoming such external dependency and reviving their own medical and pharmaceutical industries to at least a level that would safeguard against similar situations in the future. However, the development of these industries should be seen in a broader context, namely in the context of industrialization and increased industrial competitiveness of countries through the development of processing industries in general, as it creates significant positive externalities for the whole economy, stimulates the development of education, science, social sphere and infrastructure, and countries with high industrial competitiveness are more resistant to crisis shocks and challenges, including pandemics. In addition, having their own highly developed industry is seen by the EU as the main means to counter growing competitive pressures from its key counterparts in the global market

– the US and China. In this regard, the most important issue for countries is the right choice of industrialization strategy, its models and mechanisms.

At the same time, Ukraine, having chosen the path of integration with the EU, is unfortunately not sufficiently aware of the importance of the industrial component both for such integration and for its continued secure existence. The large gap between Ukraine and the EU in terms of industrial competitiveness has prompted various politicians and experts to speak of a disparity and unequal relationship between the two countries, often describing Ukraine in unpleasant terms as a “raw materials appendage of Europe”, an “externally governed country”, a “donor of cheap labor”, etc. However, while Ukraine actively adapts its legislation to the EU norms, it does not pay any attention to the approaches used by the EU to the development of member states’ industries. This creates a certain dissonance – striving to integrate into the EU, Ukraine, in its policy for the development of its own industry, follows a different path from the European one, which has turned out to be false because of the deep crisis and degradation of the industry. This can explain Ukraine's outright weakness, both in dealing with the pandemic and in solving its own numerous economic and social problems.

The vast majority of EU countries are in the top 30 of UNIDO’s industrial competitiveness ranking (Table 4.3), and the EU itself ranked third in 2019 in terms of its contribution to Manufacturing Value Added (MVA) (16.6%) after China (28.7%) and the USA (16.8%) (Figure 4.8).

Ukraine had a 69th position in the industrial competitiveness ranking and its contribution to MVA was minimum at 0.12%, while its population surpassed most European countries. Ukraine is strikingly, repeatedly inferior to EU countries and the world's industrial leaders – China, Japan, Korea and the US – in all the indicators of industrial competitiveness. For example, in 2018 the amount of MVA per capita in Ukraine was almost 100 times lower than in Ireland – the EU’s five million leader for this indicator – \$ 277 versus \$ 26,100. From Germany – the leader of the global industrial competitiveness ranking – the gap was more than 30 times, from the former socialist countries – Ukraine’s closest neighbors who became EU members – the gap was 18.5 times from the Czech

Republic, Slovakia 14.3 times, Hungary and Lithuania 10.6 times, Poland 9.8 times. A similar 10-fold gap between the EU countries and Ukraine in terms of Manufactured Exports per capita. In 2018 compared to Ireland this gap was 43 times (USD 767 vs. USD 32.8 thousand), Germany – 22 times, Czech Republic – 23.5 times, Slovakia – 21.3 times, Hungary – 15.3 times, Lithuania – 13.6 times and Poland – 8 times.

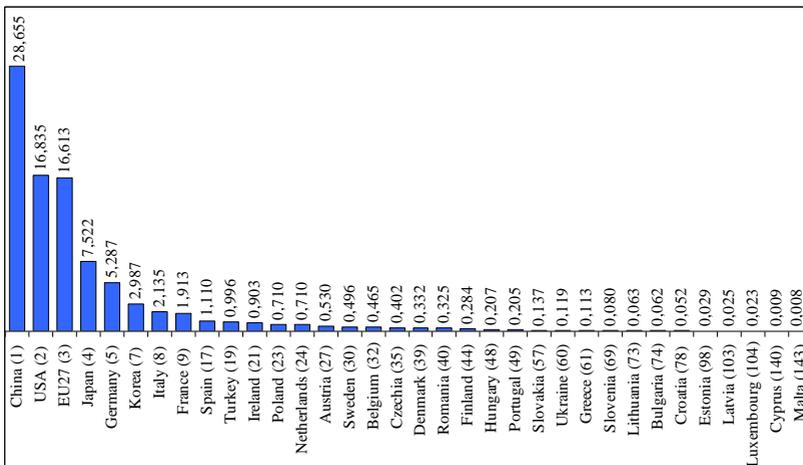
*Table 4.3*

**Selected indicators of the UNIDO’s Competitive Industrial Performance (CIP) Index 2020 for the EU27, selected other industrialized countries and Ukraine**

Countries	CIP rank	Manufacturing Value Added per capita, US doll.	Manufactured Exports per capita, US doll.	Medium- and High-tech Manufacturing Value Added share in total manufacturing value added, a percentage	Medium- and High-tech manufactured Exports share in total manufactured exports, a percentage	Share of MVA in GDP, a percentage	Share of manufactured exports in total exports, a percentage	Industrialization intensity index
Germany	1	9148	16906	62	74	21	90	0,68
China	2	2726	1685	41	61	29	96	0,67
Rep. of Korea	3	8084	11505	64	74	27	97	0,78
USA	4	6762	3114	47	62	11	72	0,45
Japan	5	7556	5250	57	81	21	90	0,65
Ireland	6	26090	32873	55	59	35	95	0,84
Netherlands	10	5352	28233	50	56	11	87	0,46
Italy	11	4665	8035	44	54	15	93	0,48
Belgium	12	5269	36726	50	53	13	90	0,48
France	13	4115	7784	49	66	10	89	0,45
Austria	14	8123	17496	46	61	18	88	0,53
Czech Republic	16	5144	18073	53	71	27	95	0,71

Countries	CIP rank	Manufacturing Value Added per capita, US doll.	Manufactured Exports per capita, US doll.	Medium- and High-tech Manufacturing Value Added share in total manufacturing value added, a percentage	Medium- and High-tech manufactured Exports share in total manufactured exports, a percentage	Share of MVA in GDP, a percentage	Share of manufactured exports in total exports, a percentage	Industrialization intensity index
Sweden	17	7526	14738	52	60	14	89	0,52
Spain	18	3559	6041	40	55	13	86	0,42
Denmark	21	7093	15786	55	58	13	84	0,52
Poland	22	2704	6170	34	54	19	89	0,48
Finland	25	7074	11514	46	49	16	84	0,50
Slovakia	26	3963	16354	50	71	22	95	0,62
Hungary	27	2942	11734	57	75	21	92	0,65
<i>Turkey</i>	29	2032	1802	32	44	17	88	0,44
Slovenia	30	4964	16131	48	64	21	92	0,60
Romania	31	2145	3711	46	62	20	90	0,57
Portugal	33	2574	6688	26	43	13	93	0,34
Lithuania	41	2937	10436	27	42	18	88	0,42
Luxembourg	46	4932	22171	20	47	5	89	0,19
Estonia	48	2592	11826	28	47	14	88	0,36
Greece	49	1758	2981	20	25	9	79	0,25
Bulgaria	54	1135	3501	30	45	14	73	0,39
Croatia	57	1642	3624	27	46	13	88	0,34
Latvia	58	1682	6445	23	43	11	82	0,29
<i>Ukraine</i>	69	277	767	27	35	12	72	0,34
Malta	71	2100	7942	36	46	7	90	0,32
Cyprus	91	870	1354	27	28	5	86	0,22

Source: [1]



**Figure 4.8 Contribution and place of the EU27, selected other industrialized countries and Ukraine to manufacturing value added in 2019, in US doll., per cent.**

*Source: calculated according to UNIDO data [1]*

Ukraine's technological backwardness from the EU top and other most industrialized countries is clearly demonstrated by the low share of medium- and high-tech sectors in the creation of MVA, the value-added of processing itself in GDP, and the drastic differences in the structure of industrial production. In Ukraine, the share of medium- and high-tech sectors in 2018 was 27% in MVA and processing itself 13% in GDP, which is 1.5-2 times lower than in European countries, for example in Germany these figures were 62% and 21% respectively, in Ireland – 55% and 35%, in the Czech Republic – 53% and 27%, in Poland – 34% and 19%.

The share of manufacturing in the structure of industrial production in Ukraine is about 65%, and mining – 14.3%, while for the vast majority of EU countries and industrialized countries, the former fluctuates around 90%, and the latter – about 1% (Table 4.4). For example, in Germany, manufacturing provides 90% of industrial output, and extraction – only 0.5%, in Korea – 93.7% and 0.2%, in Ireland – 92.2% and 0.8%, in the Czech Republic – 88.9% and 1.3%, in Hungary – 93.3% and 0.6% respectively. In the manufacturing of developed countries, the leaders are the activities that produce the most technologically complex and knowledge-

intensive products. For most countries, it is me-  
 chanical engineering and chemical and pharmaceutical produc-  
 tion. In Germany, the share of the former is 43% of industrial output,  
 the latter – 8.9%, in Korea – 42.8% and 10%, in Ireland – 12.5% and  
 43%, in the Czech Republic – 45.9 and 3.8%, in Hungary – 45.9% and  
 7.9% respectively. In Ukraine, mechanical engineering provided only 7%  
 of output, and chemical and pharmaceutical production – 4.5%, while  
 the undisputed leaders in processing were low-tech food production  
 (23%) and metal-lurgical production (15%).

Table 4.4

**Industrial production structure in 2018 of selected countries and  
 Ukraine (2020) by activity according to ISIC-4, per cent**

Industry	Germany	Rep. of Korea	Ireland	Czech Republic	Poland	Hungary	Ukraine
Mining and quarrying [B]	0,5	0,2	0,8	1,3	3,6	0,6	14,3
Manufacturing [C]	90,0	93,7	92,2	88,9	86,5	93,3	64,6
<i>Food products, beverages and tobacco (10-12)</i>	8,9	6,4	20,1	7,0	16,7	10,3	23,0
<i>Textiles, wearing apparel, leather and related products (13-15)</i>	1,1	4,0	0,3	1,5	2,0	1,4	1,0
<i>Wood and paper products, and printing (16-18)</i>	3,9	2,4	1,9	4,2	6,8	3,3	1,5
<i>Coke and refined petroleum products (19)</i>	2,4	6,9	0,0	1,7	5,5	5,1	2,3
<i>Chemical and pharmaceutical products (20-21)</i>	8,9	10,0	43,0	3,8	5,2	7,9	4,5
<i>Rubber and plastics products, and other non-metallic mineral products (22-23)</i>	6,1	6,5	2,4	8,5	10,3	8,0	6,3
<i>Basic metals and fabricated metal products, except machinery and equipment (24-25)</i>	11,0	12,9	2,1	11,8	11,6	8,1	15,0
<i>Engineering (26-30)</i>	43,0	42,8	12,5	45,9	21,5	45,9	7,0
<i>Machinery and equipment (26-28)</i>	21,5	30,4	11,9	20,2	10,1	20,7	4,2

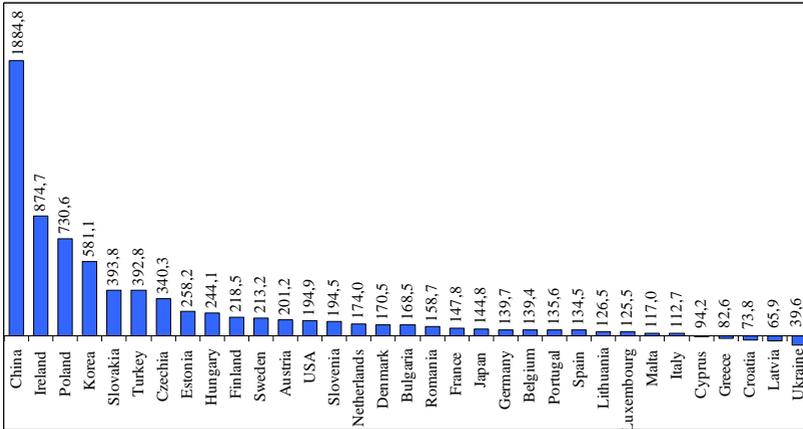
Industry	Germany	Rep. of Korea	Ireland	Czech Republic	Poland	Hungary	Ukraine
<i>Transport equipment (29-30)</i>	21,5	12,5	0,6	25,7	11,4	25,2	2,8
<i>Furniture; other manufacturing; repair and installation of machinery and equipment (31-33)</i>	4,6	1,8	10,0	4,4	6,8	3,2	2,1
Electricity, gas and water supply; sewerage, waste management and remediation activities [D-E]	9,5	6,1	7,1	9,8	9,9	6,1	21,1

*Source: compiled by the author according to data [2; 3]*

It should be noted that Ukraine's industrial structure has not always been deformed and burdened with raw materials compared to that of the developed industrialized countries. In the early 1990s Ukrainian industry was not much inferior to that in developed countries in terms of its technological sophistication and industrial structure. Ukraine was one of the world's 30 most industrialized countries, while China, for example, was not considered an industrialized country at that time. But over the past 30 years the situation has drastically changed. Due to the state's complete disregard for the problems of Ukraine's production development and the need to maintain its competitive position in the world market through technological factors, the dynamics of industrial growth in Ukraine has slowed down and become negative with corresponding degradation and deformation of its structure and growing technological backwardness. In 2019, MVA volumes in Ukraine were only 39.6% of 1990 levels (Figure 4.9).

At the same time, developed countries have multiplied the scale of industrial production and increased the technological and knowledge-intensive nature of industrial production. China in general has transformed itself from a semi-feudal agrarian country into an industrialized world leader, with an unprecedented growth rate of more than 18 times for 30 years in MVA production – 1884.8% in 2019 compared to 1990. Many European countries, especially the former socialist countries, have also shown impressive

rates of industrial growth. The undisputed leaders, the “stars” of industrial growth in the EU were Ireland, with a growth rate of nearly 9 times (874.7%), followed by Poland – 7 times (730.3%) and Slovakia – 4 times (393.8%). The Czech Republic – 3.5 times (340.3%).



**Figure 4.9 Processing industry value added index of EU27, selected other industrialized countries of the world and Ukraine in 2019 compared to 1990 (= 100%), per cent.**

*Source: calculated according to UNIDO data [1]*

The success of the EU’s own industrial development should be linked to the industrial policy model they have pursued. According to current theoretical approaches, policy success is achieved through the complementary application of structural and fundamental development factors [4]. Structural factors provide outstripping development of individual sectors and industries with higher productivity, and the subject of “vertical” (“hard”) means of industrial policy. Fundamental factors aim at creating a favorable business climate, limiting monopoly and supporting competition, small and medium-sized businesses, financing education, vocational training and retraining, research and development, health care development, infrastructure of all types, correspond to the institutional or “horizontal” (“soft”) means of industrial policy. It is this dualistic complementary approach that has demonstrated its effectiveness in the world’s leading industrialized countries.

In general terms, the aim of EU industrial policy is to increase the competitiveness of European industry through innovation and technological development in order to adapt to domestic challenges and global structural changes in the global economy. The European policy model is somewhat different from the US model of an entrepreneurial latent development state [5] and fundamentally different from the Chinese model with directive control [6]. In both the Lisbon Strategy 2000 and the subsequent Europe 2020 Strategy adopted in 2010, the EU placed greater emphasis on institutional (horizontal) policy instruments. The use of sectoral (vertical) policy instruments in the EU is officially allowed in some cases as an exception: in particular, selective or targeted state aid is provided to the so-called “sensitive” industries for their support (agriculture, forestry, fisheries), development (broadband networks, creation of audiovisual products, different modes of transport), restructuring and closure (metallurgy, coal mining) [7].

However, it should be noted that in reality the level of sectoral support is much higher than officially declared. In order to legitimize the expansion of such support, the EU has resorted to various large-scale initiatives, which are presented as challenges for the community, and state and business should work together to overcome them. The practical implementation of such initiatives always implies the improvement of the qualitative characteristics of industry, for which significant financial resources are allocated. They are provided to enterprises and industries as direct financial aid on condition that it is further used for technological modernization of production in order to achieve the goals of the announced initiatives. Among the latest of these initiatives is the adoption in 2020 of the European Green Deal, which aims to make European manufacturing climate neutral by 2050. The European industrial sector is almost central to this deal [8].

The widespread use of such initiatives demonstrates that a problem-based, rather than sectoral, approach to setting development priorities is used to bring about the desired structural change in the European industry. According to this approach, scientific research is developed, new technologies, business organization models and industries are created, new products are developed, staff is trained according to in-demand occupations or specialties, new regulations

and standards are introduced (regulations and standards often limit access of foreign products to the EU market due to technical incompatibilities) direct financial assistance is provided to producers, etc. Thus, we can argue that the EU has a sophisticated policy, it combines horizontal and sectoral support measures, it targets specific problems, the direct results of which are improving the structure and technology of production, its diversification and the emergence of new markets, where European producers are supposed to gain advantages and leadership. According to this problem-oriented approach, the strategy of the European industry, as set out in the relevant communiqués of the European Commission and accepted as entrepreneurial, assumes that the development of the industry should be innovative, sustainable, smart, green, climate-neutral, circular, digital, and localized as much as possible within the EU [9], which should lead to job creation, increase the sustainability of the European economy in relation to the US and Chinese economies and level out the negative technogenic impact of industrial activity on the environment.

Meanwhile, the European Commission admits that the policy methods it uses do not always allow it to effectively counteract external challenges associated with trade wars, protectionist policy and technological pressure from the US and China [9, p. 3]. Therefore, the aims and goals of the Lisbon Strategy have not been achieved, and just as it has become clear that the goals of the Europe 2020 Strategy have not been fully achieved either. Among the reasons of failure, researchers mention the horizontal nature of the policy, its weak systematicity, comprehensive nature, scope, extremely limited funding and insufficient opportunity to complement horizontal means with vertical ones in the framework of the current EU legislation. The low growth rates of the economies of most EU countries are added to these constraints due to the small potential for expanding domestic demand. Therefore, EU countries also see support for their industrial development in increasing industrial exports to developing countries. For this reason, they promote and enforce international trade rules that are advantageous to them, through which they gain unhindered access to “third country” markets, while at the same time imposing a number of restrictions in the form of quotas and non-tariff barriers to the full

access of their products to their domestic market [10].

At the same time, it should be noted that every EU country has its own national differences in implementing its own industrial policy, and therefore it cannot be claimed that the EU forms a single template that is imposed on the member states. This partly explains the rather large disparities between countries in terms of industrial growth (see Figure 4.9) and performance (see Table 4.3). These disparities have enabled Germany to become a world industrial leader [11] and Ireland and Poland [12] to make a rapid industrial breakthrough.

In contrast to the EU and other industrialized leaders of the world, Ukraine, unfortunately, has not paid much attention to the development of its own industry over the past three decades, and it has caused a profound deindustrialization of Ukrainian economy. The reforms in Ukraine looked like the so-called the Washington Consensus, a set of neoliberal approaches to the policy of transition to a market economy. The policy was a complete failure, with outright negative economic and social consequences, but it is still pursued in the country today. The main leitmotif of this model is deregulation and liberalization of economic relations, withdrawal of the state from the economy, and minimization of state social guarantees for the population.

Ukraine has embarked on a new course of European integration and the state started to adapt its legislation to the European one, but this adaptation looks limited and formal rather than taking into account Ukraine's national features and the state of its economy and industry. The adaptation does not practically increase the efficiency of work, does not provide the modernization of industry, fundamentally does not lay the opportunity to quickly solve the structural problems of the industry. The adaptation of legislation to EU norms does not include, for example, the mechanisms and means of public policy that have enabled Poland in particular to achieve rapid industrial growth and Germany to maintain its global industrial leadership.

The one-sidedness, formality and limited adaptation of Ukraine's legislation to the European one is manifested in the fact that structural policy in Ukraine was understood only as measures of denationalization, the establishment of private property, small and

medium-sized businesses, the reform of public administration, its decentralization, changes in administrative-territorial structure and so on. This policy, unlike the European one, is categorically related to neither institutional nor sectoral context of structural changes. As for the institutional component, the need to maintain and develop long-term fundamental factors of development was not addressed at all during the entire post-Soviet period. This is evidenced by the large-scale degradation of education, science, health, social welfare, and infrastructure of all types. All these areas have been supported and financed by the state on a final basis with a steady trend to reduce spending on them. Sectoral structural policy corresponding to the sectoral component of change took place, its content was distorted and substantially diverged from the policies pursued by developed countries and the world's new industrialized leaders. There was no allocation and provision of state support to productive sectors that could serve as growth drivers. Instead, assistance was provided to businesses close to government officials, with the de facto aim of keeping production "afloat" through subsidies, debt forgiveness, favorable tariffs, protection from competitors, granting monopoly market positions and the like, rather than modernizing it.

Ukraine has taken a passive stance on the development of domestic production, subordinating it primarily to the consumer and investment needs of Ukraine's market. Excessive and unjustified expectations have been and continue to be placed on foreign business and foreign investors in the development of Ukraine's economy. The question arises how their interests should be coordinated or subordinated to the national interests of the country, it is considered that the interests of both countries coincide. The government has been imposed views on the need to develop the economy only on the basis of using the current competitive advantages of the country – cheap natural, land, and labor resources. The representatives of partner countries and donors of Ukraine constantly stress on the necessity of Ukraine's specialization in agriculture, which is embodied in various governmental strategies and programs<sup>1</sup>. At the

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<sup>1</sup> *A fairly striking example of conscious programming of Ukraine's future as an agrarian country is an estimate of demand for investment by sectors of the economy until 2030, made in the draft National Economic Strategy until 2030, proposed by the government of D. Shmygal in autumn 2020. According to the officials, the*

same time, the need to form promising competitive advantages based on innovations and high technologies and the development of long-term fundamental factors of development is not mentioned. This position is responsible for the profound deindustrialization, agrarianisation, and strengthening of the raw material bias of the national economy.

Instead of institutional structural changes aimed at the development of long-term fundamentals, the government of Ukraine sees as its main objective the deregulation of the economy, which is supposed to make Ukraine attractive to foreign investors. The goal of the state is to constantly increase Ukraine's place in the World Bank's Doing Business rating.

The government sets as an end in itself the task of permanently improving Ukraine's place in the World Bank's Doing Business Ranking. The ranking according to its indicators, assessing in particular the degree of labor liberalization, tax burden, unhindered access of capital to natural and financial resources and regulatory barriers, is a reflection of the classical neoliberal approach to economic policy, while leaving aside issues of changing the structure of production, ensuring social justice, property equality, opportunities for income growth and addressing environmental problems. It is proved by the fact that Ukraine in the last 10 years has managed to rise significantly in the ranking of Doing Business – from 152nd place in 2012 to 64th in 2020, but this has led neither to a progressive restructuring of production (on the contrary, its degradation has deepened), nor to an investment boom by Ukraine's companies and a boom in foreign investment, nor, most importantly, to a significant increase in incomes of ordinary citizens. At the same time, external labor migration has only increased and the presence of foreign goods in the domestic market as one of the direct

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*Ukraine's agricultural sector needs \$50 billion investments, while industry needs only \$20 billion. This money should be spent not on sectoral changes, but only on modernization of production facilities, introduction of new technologies, and the development of new technologies. Another \$7 billion is planned for the extractive sector. At the same time, it is planned to direct to Ukraine's IT sector 3.5 times more than to industry – \$70 billion, and to the development of transport – 1.5 times more – \$30 billion [13, p.106]. We can conclude that the issue of industrialization in Ukraine and the corresponding growth of productivity and income of the population is not on the government's agenda.*

consequences of the “improvement” in rankings due to deregulation and liberalization has increased.

Ukraine joined the international agreements, not caring much about their negative economic consequences. The state has actually given the domestic market to foreign producers at the expense of the interests of Ukrainian producers. In the last decade the principles of neoliberalism [14] have been practically implemented in the Ukrainian legislation and de facto made it impossible to implement sectoral structural policy and the application of structural factors of economic growth stimulation by the state. Any attempts to employ structural policy instruments met with overt political and diplomatic resistance from Ukraine’s western partner countries in the form of a rather rare legislative initiative. Any attempts in the form of rather isolated legislative initiatives to use sectoral structural policy tools have met with open political and diplomatic opposition from Ukraine's Western partners. At the same time, in the absence of attention to the development of long-term fundamentals, the state has in fact completely deprived itself of the opportunity to undertake a progressive restructuring of the economy and overcome deindustrialization. The state sometimes in the interests of large foreign companies, under pressure from foreign lobbyists “closed” the domestic market or significantly narrowed its space for domestic products. Under such circumstances, Ukrainian science and education, as an important element for successful industrial transformation, degraded. At the same time Ukraine’s commodity production, which began to dominate the country as a result of extremely destructive government actions and policies, did not need science and education at all.

Institutional transformations in the system of property relations have formed an oligarchy in Ukraine that has concentrated virtually all the country’s wealth and resources, subordinated state administration and state power to its interests. The development of the country and the use of its resources and industrial assets began to be determined not by the needs of society as a whole but by the interests of the oligarchy. These interests lie in the fact of maximum and rapid enrichment at the expense of both ruthless exploitation of production and human resources and constant invention of more and more sources of rent incomes. At the same time, the elite in power in

Ukraine, against the background of a backward and completely open economy, preferred to receive rents not through the development of production, but through the creation of rent-oriented organizations.

Ukraine's overall premature deindustrialization by external openness and fierce competition on global and domestic markets made successful transformation almost impossible, and incentives for investment in job creation in medium- and high-tech sectors disappeared. The reduction of Ukraine's aggregate demand for domestic manufactured goods due to increased imports and in the absence of mirror growth of processing industry exports has been a factor in deepening deindustrialization, as there has been an expansion of low-productivity activities in the primary and service sectors, breaking the chain link between income, demand, domestic production, and domestic investment in it.

Summing up, we note that the persistence of negative trends in Ukraine's industrial sector requires a corresponding revision of approaches to the formation of industrial policy. Such a policy must be endogenous, in other words, predominantly oriented towards the satisfaction of domestic consumer and investment needs at the expense of domestic production. This will generate the effect of "circular cumulative causality" of industrialization. G. Myrdal noted the necessity of circular cumulative causality to link the growth of production (supply) with income (demand), to stimulate the development of related areas, education, science, and infrastructure [15]. An important task for the state in this context is to maintain the capacity of traditional markets and create new markets of industrial products for domestic producers, applying means of reasonable protectionism, using the significant potential of state consumption.

Industrialization policy should be pursued on the basis of a dualistic combination of structural and fundamental development factors. A rigid focus on exploiting exclusively current competitive advantages (cheap resources), the emphasis on which has so far determined deindustrialization and agrarianisation of the economy, should be categorically abandoned. The development of the aforementioned structural and fundamental factors should be oriented towards the formation of promising competitive advantages based on knowledge and technology, it will allow changing the structure of production, overcoming its technological backwardness.

In the context of structural factor development, industrial sectors should be identified as drivers of rapid growth, with appropriate state aid. Organizationally, these drivers should be vertically integrated, state-owned companies with research units or integrated with research institutions or universities on a triple helix basis. They will be able to focus on a strategic long-term perspective, promote domestic innovative developments, become a platform for development of promising start-ups, borrow foreign technologies when necessary, introduce standards of social responsibility of business, etc. Such state-owned companies should close inter-industry technology chains, localize production within the country as much as possible, creating a multiplier effect of growth of economic and innovative activity in related industries.

All this should be carried out within the framework of elaboration by the state of the long-term strategy of development of the country's economy with determination of clear guidelines – innovation-technology, production, social, security, and ecological. It is in the context of movement according to these benchmarks that the system of state aid, the system of education and science, and the system of state administration as a whole should be formed, which will ultimately improve Ukraine's industrial competitiveness and its resilience to global challenges, including pandemic ones.

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**IMPACT OF COVID-19  
PANDEMIC ON PROCESS  
OF EUROPEAN  
ECONOMIC  
INTEGRATION: FROM  
THEORY TO PRACTICE**

## **Introduction**

Global economic integration is not a new phenomenon. Some communication and trade took place between distant civilisations even in ancient times. Since the travels of Marco Polo seven centuries ago, global economic integration – through trade, factor movements, and communication of economically useful knowledge and technology – has been on a generally rising trend. This process of globalisation in the economic domain has not always proceeded smoothly. Nor has it always benefited all whom it has affected.

But, despite occasional interruptions, such as following the collapse of the Roman Empire or during the interwar period in this century, the degree of economic integration among different societies worldwide has generally been rising. Indeed, during the past half-century, the pace of economic globalisation (including the reversal of the interwar decline) has been particularly rapid. And, apart from human migration, global economic integration today is more significant than it ever has been and is likely to deepen going forward

No one can seriously question the success of European integration, whether in economic or political terms. Since the early steps were taken shortly after World War Two to create the European Coal and Steel Community, the 'European integration project' has gone from a limited form of industrial cooperation to an economic and monetary union with no parallel elsewhere. It is, plainly, much more than a trading arrangement of the sort seen in other regional blocs – such as ASEAN in Asia, Mercosur in South America or the USMCA arrangement in North America – yet stops well short of being a federation.

Belonging to the European Union (EU) entails much more

commitments and expectations than membership of other international organisations. Nor is it static: through treaty changes, successive enlargements, and significant policy initiatives, the EU has become, to borrow a phrase often used by Wolfgang Wessels (2016), both 'wider' and 'deeper'. Jacques Delors, one of the leading architects of the EU, was renowned for referring to the Union as an 'unidentified political object'.

European integration is one of those that has managed to make the most of the development of globalisation so far. Much of Europe's post-war economic expansion is because of market liberalisation and its growth dynamics. Much of today's European Union prosperity is based on the ties between European states themselves. However, global competition is knocking at the door, and the challenges of the European Union require new tools. Competitiveness becomes the key to assessing one's position in the world. Reforms are becoming the key to competitiveness. Reforms are a tool of new regionalism in the world and respond flexibly to societal events, and as well as the EU must face the challenges of today.

The EU is largely viewed as a cornerstone of European stability and prosperity. However, for much of the last decade, many EU countries have faced considerable economic difficulties. One of these difficulties, as well as challenges, is the COVID-19 pandemic. The COVID-19 pandemic was first 'just' a health crisis. Later, everything had an economic impact. Today, we must face the most significant economic downturn since the Great Depression in the 1930s. As a result, the EU had to intervene and propose stimulating packages to avoid a fatal economic collapse (Begg, 2021).

The chapter aims to summarise the process of European economic integration after World War II and show how the EU fights against the COVID-19 pandemic. The systematic literature review is the primary method used in this chapter. The chapter is structured as follows: the theoretical part explains the historical evolution of the EU, and the practical part discusses the main milestones of the integration process. Special attention is dedicated to the current challenge in the form of the COVID-19 pandemic. Finally, the EU's response and the strategy for dealing with the crisis are outlined in conclusions.

## **Theory of European Integration Process – in Brief**

The EU is a political and economic partnership representing a unique form of cooperation among sovereign states. It is the latest stage in European integration that began after World War II, initially by six Western European countries, to promote peace and economic recovery. Its founders hoped that integration would foster interdependence and make another war in Europe unthinkable by pooling sovereignty in specific sectors (primarily economic ones at first).

Bela Balassa (1962) was the first author to define economic integration. According to him, economic integration can be explained as *‘the abolition of discrimination within an area’*. Economic integration can also be defined as the economic cohesion of national economies. Another author describes economic integration as combining different economies into a larger economic region. Despite there being no clear definition of economic integration, the main aim of economic integration can be set as the elimination of economic boundaries between at least two economics. The objective of economic integration can also be set as a reduced cost for both consumers and producers and to increase trade between at least two countries involved in agreement (Musat, 2019). Easily, economic integration can be defined as a process of eliminating discrimination in trade relations between countries (Marinov, 2015).

The meaning and thrust of integration have been extensively studied in the academic literature, usually with a sub-text of trying to optimise economic governance arrangements and often with an underlying assumption that, since global free trade was unattainable, regional arrangements are a worthwhile second-best. Writing in 1954, when much of Europe was still recovering from the ravages of World War II, Jan Tinbergen, the Nobel Prize-winning Dutch economist, argued that *‘integration may be said to be the creation of the most desirable structure of the international economy, removing artificial hindrances to the optimal operation and introducing deliberately all desirable instruments of coordination or unification’* (Tinbergen, 1954). He also emphasised the need to assign policy competencies appropriately between the different levels of government. Jacob Viner (1950) introduced the concepts of ‘trade

creation', and 'trade diversion', showing how countries agreeing to lower trade barriers among themselves would benefit if the new trade created exceeded the trade diverted away from countries outside the arrangement.

The theory of integration put forward by Bela Balassa (1962) posited five forms of economic integration. These are free trade areas, enabling unrestricted exports and imports among participants, but allowing them to have their agreements with non-participants; customs unions, which also enable free trade internally, but impose a common external policy vis-à-vis non-participants; common markets, adding freedom of movements of factors of production and, depending on the nature of the more basic models, trade in services; economics unions in which there are common rules and more extensive coordination of national economic policies; and total integration, adding a single currency.

These stages capture much of the evolution of the EU but need to be complemented by bringing in the notion of federalism. Many of the pioneers of European integration, such as Alcide de Gasperi (see Daniela Preda, 2004) Jean Monnet, Walter Hallstein and Robert Schuman – motivated by their recent memories of war – envisaged a federal Europe as the final stage. In his Zurich speech of 1946, Winston Churchill raised the prospect of a 'United States of Europe' and saw France and Germany as being in the driving seat. His rousing ending was a plea to 'let Europe arise!', although he saw the UK as remaining outside, as the leader of the Commonwealth.

### **Methodology – Literature Review**

A systematic literature review was chosen for this research. This type of review can be explained as a research method and process to identify and critically assess relevant research. The systematic literature review included literature documentation and screening, data or information extraction, and the final step of writing the literature review. This systematic literature review aimed to identify the theoretical case of economic integration, and the practical case of the EU economic integration. Sources such as books, articles and official information sources of the EU institutions were used.

## **The Reality of COVID-19 Pandemic – Results and Discussion**

The COVID-19 pandemic has shown how globalised the world really is and how everything is connected, and that what is happening on the other side of the world can quickly affect the EU. The COVID-19 pandemic has shown that a regional problem can soon become global. Many authors agreed that the EU is facing the most dramatic economic crisis in its history. In 2020, when the pandemic grew stronger, the EU GDP fell by 5.9% year on year. Unemployment at the end of 2020 reached 7.3%, there is a visible growing trend compared to the same period in 2019. Unfortunately, there has also been an increase in people at risk of poverty and social exclusion. The European Commission (2020) signalled four channels through which the COVID-19 affects the economy. Firstly, China's extensive decline in economic performance in the first quarter of 2020 has affected consumers and the range of goods and global trade chains. Secondly, the lockdowns cause the problem of disrupted supply chains. Third, rising unemployment, mobility, and travel restriction affect a weak demand. Fourth, the global pandemic has also affected financial markets (Zinecker et al., 2021). So, here is how the EU replied to the negative impact of the COVID-19 pandemic. The EU should ensure effective recovery for all Member States. The EU's Member States should work together and define policies' limits. But there's a problem member states had a different opinion on how to respond to the global COVID-19 pandemic. It was undoubtedly a challenge for all of them (Ferrera, Miró, Ronchi, 2021). This chapter looks at the pandemic from the EU's point of view. There are mentioned EU's steps to stimulate the European economy and try to boost the resilience. Due to the COVID-19 pandemic, the concept of resilience is growing. A system approach based on resilience must prepare the socio-economic system for unexpected exogenous shocks (Staničková, Melecký, 2021). Resilience has become a new compass for EU policies with the COVID-19 crisis. Resilience is the ability to withstand and cope with challenges and undergo transitions in a sustainable, fair, and democratic manner. Resilience is necessary in all policy areas to undergo the green and digital changes while maintaining the EU's core purpose and integrity in a dynamic and, at times, turbulent environment. A more resilient Europe will recover faster, emerge

stronger from current and future crises.

The EU must introduce an extensive number of measurements quickly. EU leaders must implement urgent measures in stimulating packages to avoid a fatal economic collapse (Fedajev et al., 2021). The first measurement was taken by the Croatian presidency on 28 January 2020. The Croatian EU presidency decided to switch on the integrated political crisis response mechanism (IPCR) in information sharing mode. IPCR is a valuable tool for coordinating cross-sectoral crises at the highest political level. Due to not getting a better pandemic, the IPCR mechanism has been activated to full mode since 2 March 2020 (European Council, 2021a; Council of European Union, 2018). The EU response to the pandemic caused by COVID-19 is structured into four main priorities: limiting the spread of the virus, ensuring the provision of medical equipment, promoting research for treatments and vaccines, supporting jobs, business, and the economy (European Council, 2021a). The EU has already mobilised resources to support the emergency response to the virus. Firstly, the EU ensures the supply of protective equipment, boosting research and supporting our global partners who need the EU's help (European Council, 2021b).

Then to help the affected EU by pandemic, a recovery plan for Europe was established on 23 April 2020. The EU recovery plan aims to mitigate the effects of the crisis. EU leaders decided to have an overall budget of €1 824 billion for 2021-2027. The new Multiannual Financial Framework (MFF) envisages more powerful flexibility mechanisms to ensure the ability to respond to unforeseen needs and shocks. The new budget should thus work well even in the event of uncertainty. The financial package combines the Multiannual Financial Framework and the additional recovery effort of €750 billion (€800 billion in current prices) and the Next Generation EU (NGEU). The NGEU is not just a plan to support recovery. It is a tool to help the EU emerge from a stronger pandemic and transform European economies. It also includes the creation of new opportunities and jobs. The NGEU is a tool to repair the economic and social damage caused by a coronavirus pandemic. NGEU aims to build a more resilient, sustainable, and fair Europe via the financial support for investment and reforms (Staničková, Melecký, 2021).

Following the global pandemic caused by COVID-19, the EU will be more environmentally friendly, digital, resilient, and responsive to current and future challenges. The mentioned financial tool should rebuild the EU after the COVID-19 pandemic and boost green and digital transitions investment. MFF and extra recovery effort and NGEU are additional parts to safety nets of €540 billion already put in place by the EU to support countries, businesses, and workers. In October 2020, the EU agreed on priorities for the recovery of the EU. The three priorities are a fully functioning single market, EU industries more competitive globally, and digital transition (Crescenzi, Giua, Sonzogno, 2021; European Council, 2021c; Krotz, Schramm, 2021; European Council, 2020).

The EU digital COVID-19 certificate was agreed as a tool to increase free movement during the COVID-19 pandemic. The EU digital COVID-19 certificate proves that the person has been vaccinated against COVID-19, received a negative test result, or recovered from COVID-19. The certificate has been valid in EU-27, Switzerland, Iceland, Norway, and Liechtenstein without any charge since 1 July 2021. There has been generated more than 400 million certificates in Europe. The EU digital certificate is used in 42 countries on four continents (European Commission, 2021; European Council, 2021d).

Another solution to the pandemic is highly debatable, and the company divides into two groups. First, it is a vaccination against COVID-19. Since the beginning of the global pandemic, the European Union has been financially supporting the development of the COVID-19 vaccine. Despite that, Europe is among the world leaders. More than 70 % of the European Union's adults are fully vaccinated. The European Union was the only region that had to share half of the vaccine production with the rest of the world. EU should deliver 700 million doses to European citizens and 700 million doses to the rest of the world. EU agreed to deliver 250 million doses of vaccine against COVID-19 to Africa. European Union will donate the next 200 million doses to Africa by the first half of next year (European Commission, 2021; European Council, 2021a).

## Conclusion

The reasons for economic integration have been different in the past and present. The speed of events and the enormity of the challenges are sometimes difficult to grasp. Robert Schuman said: Europe needs a soul, an idea, and the political will to serve this ideal. Europe has brought those words to life in the past. Generally, the European Union is viewed mainly as a cornerstone of European stability and prosperity. However, for much of the last decade, many EU countries have faced considerable economic difficulties. Such economic pressures and societal changes have contributed to the rise of populist and anti-establishment political parties, at least some of which harbour anti-EU or “Eurosceptic” sentiments. Such trends have complicated the EU's ability to deal with multiple internal and external challenges. Among the most prominent challenges are the exit of Great Britain from the EU (‘Brexit’); democracy and rule-of-law concerns in Poland, Hungary, and other EU members; migration and related societal integration concerns; heightened terrorism threat; and many more. Of course, the challenges now automatically include the COVID-19. Amid these difficult issues, some are questioning the future shape and character of the EU. Supporters of the EU worry that certain aspects of EU integration could be stopped or reversed. Others contend that the multiple crises could produce beneficial reforms and transform the EU into a more effective, cohesive entity.

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**FORMATION  
CONDITIONS OF  
THE CONSUMER  
LOYALTY DURING  
A PANDEMIC**

With the beginning of the COVID-19 pandemic, there was a sharp and sudden change in consumer priorities, behaviors and habits, the impact of which was appreciable, thus creating changes in various areas of the retail market.

Being 1.5 years in conditions of uncertainty, companies realized that 2021 was a year of transition. With the exception of any unforeseen circumstances or catastrophes, society, businesses and individuals have adapted to the new reality and not just experienced the present, but started to act. However, their activities have changed, they have not returned to the conditions of 2019, which can be compared with the pre-war and post-war periods, but calls it before-COVID-19 and after-COVID-19. The period when theaters and museums were without visitors, clothes remained in the closet, and the entrance to the store was limited by lines with the distance caused the phenomenon of "revenge shopping", when consumers have accumulated the need to buy and want to satisfy this process in any way [1].

The area that has developed and grown the most as a result of the COVID-19 pandemic is digitalization: from online customer service to distance work and home learning. Consumers have been forced to

master the mechanism of online shopping, as it is the safest way to buy everything from disinfectants and food to hygiene products and even clothing. E-commerce now accounts for 16.1% of all sales in the US, compared to 11.8% in the pre-COVID-19 period and the dynamics will continue. Most companies have been forced to adapt and invest in E-commerce, as consumers intend to continue shopping online even after the end of the pandemic [2].

The development of digital technologies and the Internet have allowed consumers and companies to interact despite their physical distance. Improving and mastering the principles of E-commerce allow brands and sellers to sell their products to consumers, who in turn will be able to support the business with their loyalty in a difficult crisis period.

This section of the monograph will highlight the trends that have shaped the new conditions of consumption in the field of E-commerce. It is determined how they affected the direction of the global economy in the world and business in Ukraine, analyzed how business has adapted and how society has changed as a result of the COVID-19 crisis.

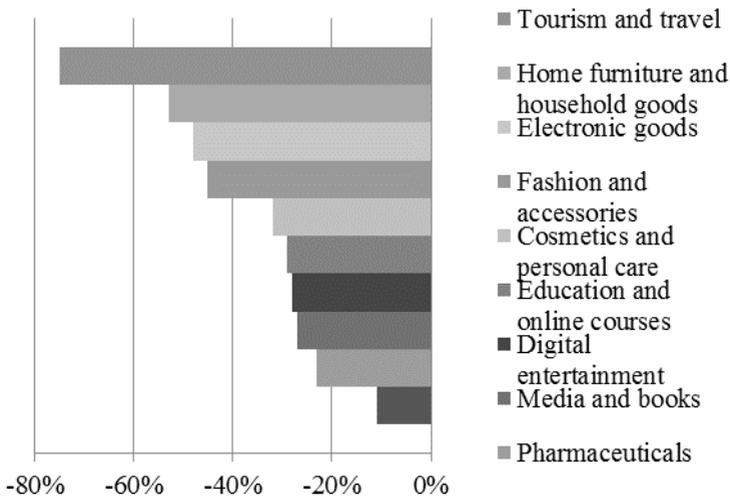
## **CHAPTER 1. TRANSFORMED CONSUMER SPENDING HABITS DURING A PANDEMIC COVID-19**

The COVID-19 pandemic was a period of total economic uncertainty: a record high level of unemployment, an overall reduction in consumer spending, and a lack of answers about when things would return to normal. A study by the United Nations Conference on Trade and Development (UNCTAD) found that the crisis had forced 130 million people to find themselves in extreme poverty, and that inequality and vulnerability would only deepen. Consumers in both developing and developed economies have suspended significant spending and focused more on basic necessities (food, hygiene products and medicines). The tourism sector decreased the most, the average cost per buyer decreased by as much as 75% (Figure 5.1) [3].

The most unexpected challenge for businesses around the world has been the role and importance of E-commerce, which can operate regardless of quarantine restrictions or prohibitions. It is digital technologies that have offered an alternative channel to support

business and brands, social interaction and the process of consumption during restrictions and quarantine requirements.

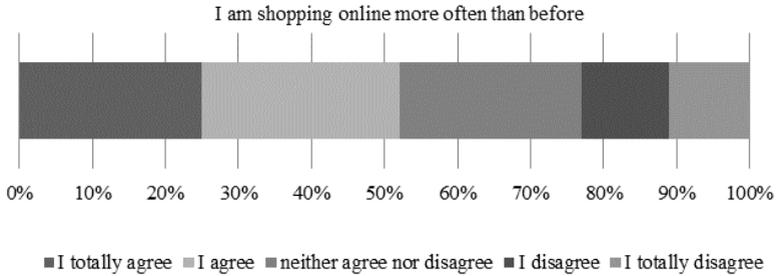
The transition from standard to digital stores has accelerated in the United States for about five years. Such unprecedented growth of E-commerce business in the future will violate the national framework of retail trade and the basics of international trade, as well as open unique opportunities for businesses and brands to grow both domestically and internationally.



**Figure 5.1 Reduction of consumer spending by category per month**

*Source: [3]*

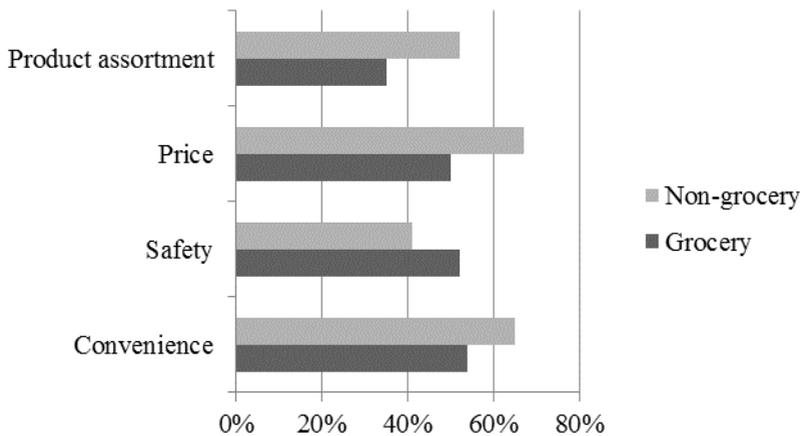
The results of a UNCTAD (United Nations Conference on Trade and Development) study on “COVID-19 and E-Commerce findings from a survey of online consumers in 9 countries” showed the reaction of consumers in 9 different countries to online shopping and other activities in The Internet in a pandemic. Figure 5.2 shows the transition of consumers to shopping in online stores. Also, about 85% of respondents prefer “home delivery” and 22% – self-pickup from the points of the logistics provider [4].



**Figure 5.2 The consumer’s shift to digital caused by the COVID-19 pandemic**

Source: [4]

The primary reason for switching from a physical store to online is the convenience that the consumer receives during this unstable period. To bring the consumer back to the physical store, new reasons and benefits should be offered for offline purchases. Because price and convenience are key to consumer decision-making, retailers will need to develop their online logistics and last mile delivery capabilities, as well as balance between home delivery and their range in the physical store. In Figure 5.3 shows the main factors that influence the decision to buy online.



**Figure 5.3 Reasons for consumers to switch to online stores**

Source: [5]

The transition of consumers to online explains the record flashes in online sales, which were recorded this year on November 11 (Bachelor's Day) in Southeast Asia: in Malaysia and Thailand, online sales increased by 600% and 305%, respectively, and in Singapore – by 248 %. This is due to existing online shoppers who have started to buy more, as well as the attraction of new ones who have been pushed out of their “comfort zone in the store” due to certain circumstances and necessity. These new online shoppers represent a great opportunity for brands to expand their existing audience on digital channels. Use marketing tools, such as retail media advertising and retargeting on social media, to attract the most relevant consumers and encourage them to buy.

This explains the increase in marketing costs, and marketers plan to increase spending on social media (58%), search marketing (56%) and content marketing (54%) over the next 6-12 months. In addition to increasing the cost of digital marketing channels, brands will step up their efforts to attract consumers through applications. The share of sales of applications with a shopping program is 75%, and 55% of buyers worldwide have downloaded at least one application for shopping using a mobile phone (retail, food, alcohol) since the beginning of the COVID-19 pandemic. This will continue, as consumers have benefited from this type of procurement. That's why in-app advertising needs to be considered in brand media plans to attract new consumers on these platforms and keep existing ones, as they will spend more time there [6].

KPMG's Consumer and the New Reality study presents a new type of consumer – financially constrained and advanced in the use of digital technology, more moderate and selective in decision-making, seeking to see the pandemic as an opportunity to reset values. Accordingly, the business has faced new challenges, which can be divided into three areas [5]:

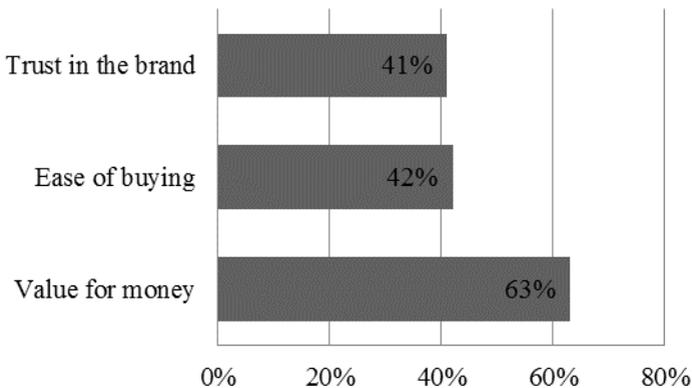
1. Economic impact of the pandemic on consumer behavior. About 40% of respondents have financial difficulties and therefore reduce their costs, and 13% postpone large purchases and are not willing to pay more for premium products.

2. The new consumer is digital-savvy and requires ease of interaction with the business through digital channels. Online shopping and contactless payments have become the norm for most

consumers, and cards and digital wallets are used more than cash. If earlier about 40% of consumers preferred offline shopping, now only 26%. One in five consumers says they buy products in online stores (35%) and will continue to do so.

3. Consumers are increasingly buying products from trusted brands, and trust has become more difficult to build. The essence of consumer confidence in companies is changing, because it now means: the priority of consumer needs, their sense of security and preservation of personal data, which must be securely protected. Young respondents are increasingly concerned about the company's environmental and social policies.

The above trends have formed the following key purchase drivers of new consumer (Figure 5.4).



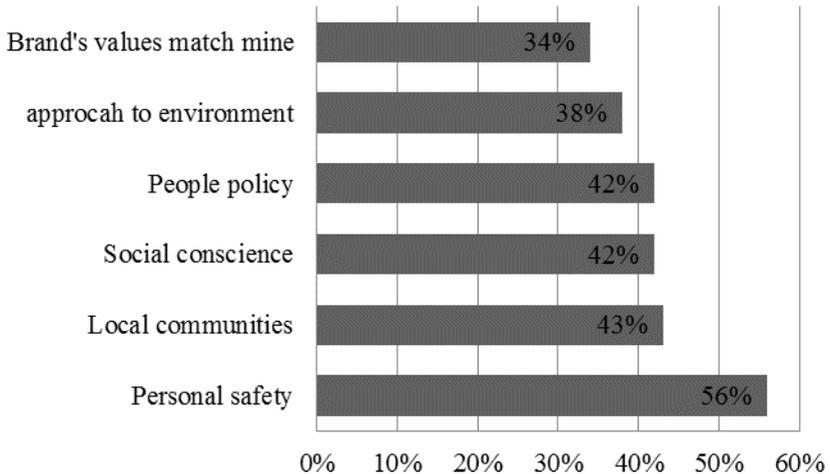
**Figure 5.4 Key purchase drivers of new consumer**

*Source: [5]*

Brand trust is one of the most important factors in consumers' purchase decisions and consists of elements such as: personal safety, social awareness, concern for the environment and the shared values of the brand and the consumer. That is why companies need to review their goals and values, identify issues that can strengthen trust, and minimize those that destroy that trust (Figure 5.5).

Maintaining a stable level of sales by brands during the quarantine crisis was made possible by loyal consumers, because in conditions of instability, they found stability in the products of their favorite brands. Another component – at a time when some brands

were concerned about fluctuations and the market situation, other brands cared about their loyal customers, providing them with the necessary stability of their products [7].



**Figure 5.5. Components of trust in the brand**

*Source: [5]*

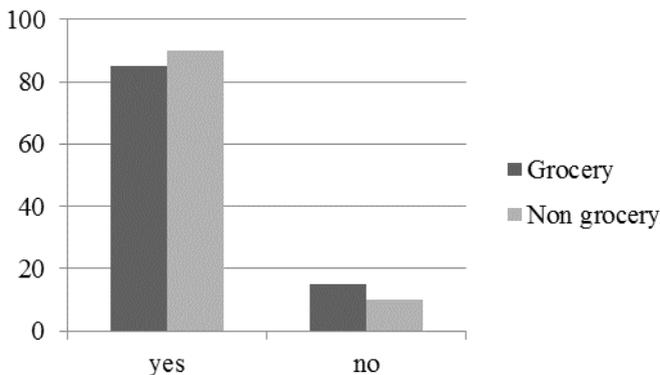
A study conducted by NCSolutions among 50 million consumers identified 5 trends in customer loyalty to the brand [8]:

1. Growing brands have further strengthened their position. Companies that gained significant market share before the COVID-19 pandemic further increased their share during the quarantine period. This growth is caused by new customers, because in conditions of uncertainty and limited financial resources, the consumer prefers a well-known brand.
2. Declining brands have become even smaller. Brands that began to lose market share before the COVID-19 crisis significantly reduced their positions with the first wave of the pandemic. However, these firms can improve their position by offering low prices and securing an online presence.
3. Brands with a high level of loyalty have maintained their market position. Firms that have loyal customers have stable sales, because in conditions of uncertainty you should choose a reliable brand.
4. Consumers are searching for comfort. High levels of stress and

- limited entertainment opportunities have made consumers picky about the range and quality of goods, preferring comfort.
- Advertising works even during a pandemic. Brands that were most aggressively advertised during the pandemic significantly increased their market share, while brands that stopped advertising decreased sales.

Speaking of loyalty, of the three-quarters of Americans who have changed their buying behavior since the start of COVID-19, about 40% said they have changed the brand of the product, and the level of brand change has doubled in 2020 compared to 2019. This substitution behavior is more common in Generation Z and Y consumers than in boomers (44% of Generation Z and Y have tried a new brand, compared with 35% among boomers). Convenience and value are the main reasons for changing consumer behavior, but the quality and search for brands that match their values are also reasons for changing the brand of 40% of young consumers [9].

Although there has been a general decline in local brand purchases since the beginning of the COVID-19 pandemic, constant stays at home and travel restrictions have focused on local concerns. Local stores have fostered new relationships, cared for vulnerable people and the elderly, providing delivery services and making purchases secure. That is why those who prefer local stores have become 9 out of 10 and are willing to pay more for local products if their support will have a significant impact on the local economy, and the supplier can be trusted (Figure 5.6) [5].



**Figure 5.6 Consumers' desire to pay more for local goods**  
*Source: [5]*

Shopping locally and supporting our communities from home is a trend that will very likely last in 2021 and beyond. The trend towards local goods will be able to increase the local economy, increase employment in the region and so on. Manufacturers will have to adapt their supply chains to the growing trend of local aspirations. Companies must demonstratively support communities, new consumer demands and meet their values.

## **CHAPTER 2. OFFLINE AND ONLINE BEHAVIOR OF UKRAINIANS CONSUMER CONSIDERING THE CONSUMPTION OF LOCAL PRODUCERS' PRODUCTS**

In this section, we analyze the study of consumer behavior in Ukraine in 2020, taking into account the impact of the pandemic. According to [10], 63% of Ukrainians believe that quarantine has affected their consumer habits. Thus, over the next 1-2 years, 32% of respondents plan to buy more in online stores, and 20% of respondents – to reduce purchases in traditional stores. More than 45% of Ukrainians observe a change in their purchasing activity due to the pandemic, more than half of Ukrainians (52% in traditional stores and 54% in online stores) do not observe a change in their purchasing activity due to the pandemic. In addition, the following indicators are important for better understanding changes and identifying key trends:

- the share of respondents who started shopping more often in online stores is higher than those who started shopping offline (18% and 9% respectively); with increasing income, the population's tendency to shop online and refuse to shop in traditional stores increases and vice versa. People aged 16–29 began to spend more on online shopping;
- the share of respondents who began to spend more on shopping in online stores is higher than those who began to spend more in traditional stores (22% and 15% respectively);
- decreasing in purchasing activity among Ukrainians is observed in traditional stores shopping: 39% of respondents said that they began to make purchases in traditional stores less often than before quarantine, and 30% of respondents began to spend less on such purchases;

- the pandemic has the greatest impact on the restaurant business and fast food restaurants, with a 64% and 60% decrease in attendance, respectively, and a 47% and 45% reduction in order costs in restaurants and fast food restaurants, respectively. However, young people have hardly changed their consumer behavior – 30% of them visit cafes and restaurants more than 2 times a week (both before and after quarantine). At the same time, the share of respondents aged 44-59 who visit restaurants and cafes several times a week decreased from 22% to 10%, and the share of Ukrainians over 60 who do not visit catering establishments at all increased from 13% to 25%;
- 50% of Ukrainians regularly use the service of purchase on credit or in installments, and 4% of respondents have never used such services;
- 35% of Ukrainians say that their choice is significantly influenced by the availability of discounts or cashback (clothing (44%), household appliances and electronics (44%), furniture and household goods (39%), as well as shoes, cosmetics, perfumes, household goods). Goods that save less are medicines, baby products and ready meals. 8% of buyers do not pay attention to the discount and cashback [10].

The above data should be addressed to a local brands that produce or sell those categories of goods that are most affected by the changes. The top 3 categories of Ukrainians shopping in different stores look like this: in stores near the house: dairy products, pasta, groceries; in supermarkets: fresh and frozen meat, sausages and meat products, semi-finished products, fish and seafood; in hypermarkets: fresh and frozen meat, sausages and meat products, semi-finished products, fish and seafood; in Online stores: fresh fruits and vegetables, confectionery, bottled water; in stores at petrol stations: soft drinks, groceries, bottled water.

As part of loyalty data study to clothing and footwear brands, [11] presented the following results:

- on average, only 24% of Ukrainians have favorite brands – one or more (the larger % – is the population of cities, mostly

in purchasing clothes and shoes). Thus, among the inhabitants of cities with a population of less than 100 thousand, the share is 19%, and with a population of over 1 million – 29% (Kyiv – 33%);

- respondents with above-average income (34%) are most in favor of one or more brands. Business owners 12% of the brand importance is noted more often than the average Ukrainian;
- the most popular place to buy clothes and shoes are shopping malls (41%), multi-brand stores in second place (26%).

The next step is to analyze data on support for Ukrainian goods and loyalty. Deloitte’s first Global Marketing Trends report introduced the concept of “debt experience” [12]. That is, when organizations build their digital future for efficiency rather than human connections, debt arises, which can manifest itself in biased outcomes, lack of inclusiveness, and a sense of social isolation. As people turned to digital solutions that deepened this connection, they often left companies that did not reflect what they valued.

Other results that characterize the consumer behavior of Ukrainians in relation to several categories of goods are presented in Table 5.1.

In Ukraine, there are other factors that mainly affect the purchase. For example, a limited budget forces Ukrainians to be more careful about their choices, to make rational purchases, and to avoid the additional costs of buying goods from not reliable manufacturers (Figure 5.7). On the other hand, retailers are increasingly beginning to create their own brands that customers trust. And although brands and private brands in Ukraine are mostly in different price segments, European market trends show how over time they become full-fledged competitors [10]. The most popular categories of Ukrainian producers consumer goods are alcoholic beverages, food, as well as household chemicals and household items. More than half of Ukrainians (54%) buy mainly in Ukrainian stores both local and imported goods.

Consumers buy the least in foreign stores and products only from Ukrainian producers (5%). The share of respondents who buy only in foreign stores is the largest among consumers of perfumes (8%) and cosmetics (6%). As for the brands of local cosmetics manufacturers,

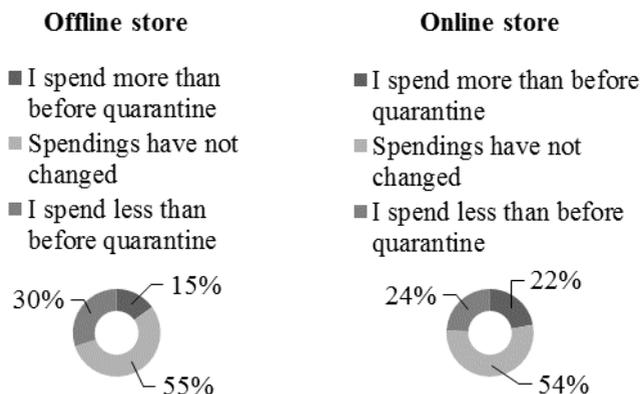
a 30% of Ukrainians are ready to buy cosmetics and perfumes of their own production only at a lower price, and one in five is not ready to buy. Among those who are willing to buy Ukrainian goods at an average price and above, respondents aged 30-44 prevail.

*Table 5.1*

**Trends in consumer behavior of Ukrainians buying certain categories of goods**

	Food	Clothes and shoes	Household goods and household chemicals	Cosmetics and perfumes	Electronics and home appliances
Ukrainians who continue to buy goods in traditional stores (and% who buy online)	98%	94% (71%)	95% (55%)	86% (56%)	85% (65%)
Respondents who prefer:	Ukrainian goods - 69%	clothes and shoes that made of genuine leather and fur - 39%		environmentally friendly product – 85% eco and organic product – 82%	
The influence of the product brand on the buyers choice: - note the influence of the brand when choosing a product in a traditional store (online) - will recommend the product they like to relatives, friends and acquaintances	64% (72%)  74%	23% (most of them aged 19-23)  76% (75%)	  68% (66%)	72% (77%)  -	79% (84%)  64% (68%)
Impulsiveness of shopping: - thoughtfully choose the product - make a choice before coming to the store	49% (67%)  37%	74% (69%)	53% (55%)  39% (32%)	66%	69% (75%) 30% - read reviews on the Internet 23% - take into account previous experience

*Source: [11]*



**Figure 5.7 Change in costs during the quarantine period compared to the quarantine period**

Source: [10]

In the Deloitte study [10], the majority of respondents supported the business related to ready meals (31%), visits to fast food restaurants (29%), as well as restaurants and bars (27%). The study also reported the following results:

- 25% of Ukrainians buy more local products, even if their price is higher than usual;
- 24% of Ukrainians buy more from those brands that have responded correctly to the current situation;
- 20% of respondents supported clothing stores;
- 27% of respondents supported restaurants and bars (with an average check of UAH 834);
- 54% of Ukrainians buy mainly in Ukrainian stores both local and imported goods;
- 35% of Ukrainians with an above-average income level noted that they support local business;
- 57% prefer to buy goods in stores near the house.

Young consumers predominate among Ukrainians who support local business. Thus, the share of respondents who supported restaurants and bars decreases with age: 32% among respondents aged 16-29 and 13% among those over 60. Owners of fast food restaurants are most supported by respondents aged 30-44 (34%).

Ukrainians aged 16-29 prefer food products of Ukrainian origin by 17% less than the average respondent. Business owners buy Ukrainian goods on average more often than other respondents. Respondents with above-average incomes prefer goods of Ukrainian origin less than others [11].

The majority of Ukrainians (70%) know “Made in Ukraine” products, in particular 56% buy such products. However, respondents in the age group of 30-44 most often noted that they buy such products (64%), while among consumers in the age group of 16-29 years only 46% of respondents answered that they know and buy “Made in Ukraine” products. Clothing and footwear marked “Made in Ukraine” are in demand among the population over the age of 60: 10% of respondents in this category buy and support such goods. Among young people, this indicator is twice lower (5%). The majority of Ukrainians (89%) at least sometimes check the country of production, and more than half (59%) do so regularly [10; 12].

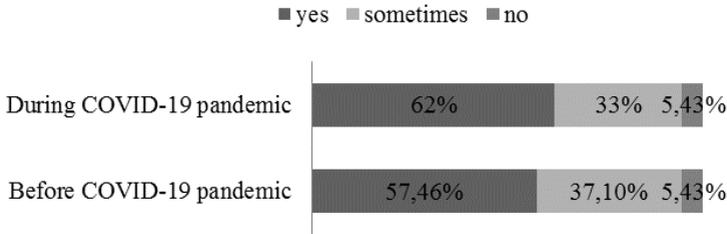
The average costs of Ukrainians who shop to support local business depend on the category of goods they buy. Respondents’ highest average expenditures per purchase to support local business are observed in the purchase of clothing (UAH 1,084), perfumes (UAH 856) and cosmetics (UAH 719) [10].

In order to identify the main changes in consumer behavior of Ukrainian consumers to brands during the pandemic COVID-19, the authors conducted a survey using a questionnaire in which 222 respondents participated (18 years old and older), 93.7% are residents of the city [13].

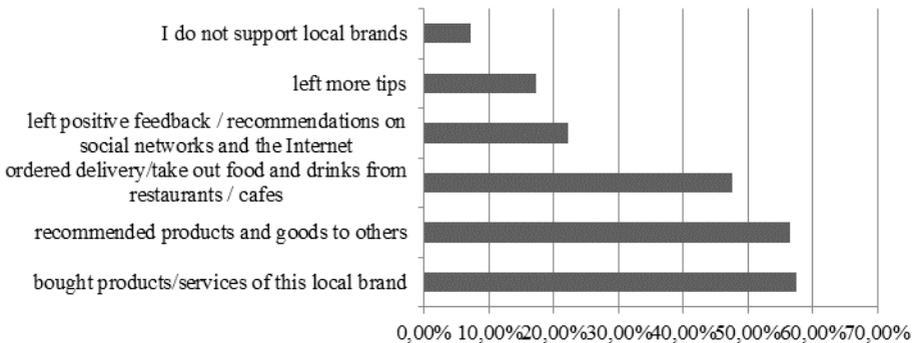
Among the questions were also those related to the actions of respondents regarding the goods of local producers. To the question “Have you bought products from local manufacturers before and during pandemic?”, the answers were following (Figure 5.8). That is, the percentage increase in purchases of local producers is only 4.52%, and people who started buying more such goods are people who bought before the pandemic, but not often.

It should be taken into account that although people answered that they do not buy goods from local producers, they named some trade marks in other answer (Table 5.2).

To the question “How usually do you support local business?”, we’ve received the following answers (Figure 5.9).



**Figure 5.8 Changing support for local producers before and during the COVID-19 pandemic**



**Figure 5.9 Ways of supporting local business and brands**

Because 5.43% indicated that they do not buy goods from local producers, and 7.2% do not support other actions of local producers, this indicates that almost all people who buy goods from local producers often and infrequently, support them in addition to the above actions (except for 1.77% of respondents, whose support is only the purchase of goods). It is worth noting that the largest percentage, in addition to buying, is the response “recommended products and goods to friends and relatives”, which is a favorable factor for the likelihood of maintaining the trend of increasing demand for products from local producers.

The survey also asked which respondents remember Ukrainian brands (including local ones), product or industrial products they buy. 9% of respondents did not answer this question (this is a larger number of these people aged 18-25 and 36-45), but 91% indicated one or more brands. The answers are given in Table 5.2.

Table 5.2

## Ukrainian respondents' loyalty to local brands

Category of goods	Brands mentioned by respondents from 1 to 4 times			Brands that are mentioned 5 or more times
<b>Food</b>	Shchedryy korovay Ligos Nasha ryaba Argomol Baba peredala Lookasy Галя балувана Kramar Ltd. Oleksa's apiary Vegetable post Bio organic Flagman seafood Loza Soloha Lviv yeast Carpathian spring	Kokhana Boim Zlagoda Yuvileynyy Green Farm Lviv Povtor Galka Vesela vrenychna Konyk Kukharochka Kult khliba Magur GreenGard Yatran Buy Galician Stetsko Varto	Globyno Biskotti Terra Zernovyta Oleyna Eco Lavka Lviv coffee Coffe from Lviv Morshynska Leleka Farm Torchyn Galytska soroka Veres Vienna coffee Chumak Premiya Yarych	Family sausage Taste of life Live bread Torch Galicia Roshen Tom butter
<b>Dairy products</b>	Yagotynske Limo Shatsk milk Ideal milk Curly farmer	Cheese kingdom Komo Farm Prostokvashyno Shchedro	Jersey Hutsul bryndza Magur Afina Rud	Molokiya Galychyna Radymo Mykko Cheese travels
<b>Clothes and shoes</b>	Dasti Lady_di Volan Chereshnivska TeenBerry Papaya KinderFrau Davis Staff Belsta Harvest zpb	Lux-Elite Gorgany Vovk Pink MUST HAVE Lito Goldi TopMe shop GuruMama Aviation of Galicia Romastyle	Mida Casual Milkmark Tote Duna Dodo socks Litma Sammy icon Stefano Leomoda Jim Atelier Gunia	
<b>Coffee shops, restaurants</b>	La piec Tomatina Svit kavy Papi	Family bakery Lviv croissants Crimean pastries Black Honey	Shoco Cheese bakery Chelentano	FEST, Lokal
<b>Accessories, jewelry, gifts</b>	Guzema jewelry Famo	Kliamra Kviten	Orner	
<b>Other brands of goods and/or services</b>	Kyivstar Nova post Rosa	Old lion publishing Ababahalamaha Decor Factory Garni Decor	Goods with with the inscription «Made in Ukraine»	

Along with the names of brands, the respondents indicated the establishments where they make purchases, among them the most common: Silpo, households, Arsen, Metro, Auchan, ATB, Komirka, Eco Shop, Tradition Shop. As expected, respondents indicated the most food brands, as these products are everyday goods.

According to the results of research on changes in Ukrainians consumer behavior obtained and analyzed above, the following generalizations and recommendations can be made for local enterprises in the direction of maintaining consumer loyalty:

- the share of online purchases increases and will continue after the end of the pandemic, so companies should invest in the development of enterprise digital processes and ensure maximum contact with the consumer online;
- the world of social networks will increasingly influence the perception and reputation of brands;
- young consumers who have entered the period of their solvency will support brands that are guided by a high social goal and are a reflection of their values and beliefs;
- consumers will increase the level of their expectations from brands and will be guided by those who are socially and environmentally conscious;
- consumers who supported local business during the pandemic will continue to support it, because “having gone through hard times together” has a special connection;
- brands that have shown their sympathy and support to consumers not only in advertising campaigns, but also in fact will maintain the leading position of their products in the hearts and minds of people.

The next stage of our research may be to study the characteristics that most attract Ukrainians in brands and changes in the development of those brands that Ukrainians refuse for one reason or another.

**Conclusions.** Companies and brands that have used the challenges of this uncertain period as opportunities to build a strong digital presence in the long term perspective will have guaranteed growth and prosperity in the future post-COVID-19 period.

Given that the online interaction between companies and people

is growing, the following recommendations have been developed for companies so that they can become more human-centered:

- development of market solutions based on values. 95% of purchase decisions are due to subconscious motives, the largest of which are emotions. A Deloitte study of 16,000 people found that more than half of people wanted a more “human” experience in their virtual environment;

- redesign of infrastructure to respond to the most pressing needs of society. Companies can use periods of turmoil to assess whether they are prepared to respond – and if not, use the knowledge gained to change internal processes and policies to make them stronger than before.

Local companies should take the opportunity to attract more consumers, take into account marketing trends, such as the fact that social networks are now more likely to work with a locally limited audience through geolocation and setting up promotions for individual local audiences. Companies should not only be more enthusiastic about selling something locally, but also use online / offline tools to build good neighborly relationships with people.

The founders of the brands, who spoke honestly from their pages about the problems of business, aroused strong loyalty to the brands and secured the status of experts. Despite reduced budgets, companies should invest in PR. At the same time, special attention should also be paid to the personal PR of business owners [14; 15].

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**INTERNET MARKETING  
AND PURCHASING  
BEHAVIOUR IN TERM OF  
THE PANDEMIC COVID-19:  
LITERATURE REVIEW**

## **Introduction**

Internet marketing is very important for businesses as more and more business activities are done online during a pandemic. Nowadays, online marketing has become one of the main ones features worldwide. Internet marketing tools aim to communicate, develop and sustain long-term relationships with customers. Communication on social networks is considered an essential tool of online marketing in a pandemic environment. Internet marketing tools use helps to better communicate with the target customer, maintain a stable and long-lasting relationship.

The isolation measures introduced during the pandemic have led to significant changes in consumers' work, eating, communication and health care habits. The measures have affected all walks of life for consumers, including shopping habits. Although shopping in physical stores is preferred, some consumers now buy goods online.

## **Internet marketing concept**

Internet marketing is often referred to as electronic or digital marketing. The main goal of online marketing is to sell goods online, maintain feedback with customers, advertise goods. Thanks to online marketing, it is possible to calculate how many people viewed the advertisement, as well as how many of them bought the goods advertised in it. Online advertising is convenient in that it does not interfere with the activities of others. The need for online marketing

is growing as consumers of goods and services use computers more often. The importance of the Internet has increased significantly during the last pandemic of 2020-2021. With the help of the internet, businesses can reduce the costs by developing various online marketing strategies. Internet marketing provides an opportunity for Lithuanian businesses to compete in international markets, and online marketing saves money on traditional advertising. It is important to note that online marketing is person-centered, the target customer surfs the internet alone, so online marketing messages can reach him in person. This element of online marketing is used in search engines where a user enters keywords into a search engine and ads are displayed based on those keywords. Internet marketing has a great opportunity to reach only those target users whose hobbies or occupations coincide with the online marketing strategy. Unlike traditional marketing, which reaches a wide demographic distribution of users, who may not even be interested in what is being advertised. Traditional marketers often segment market target users by gender, age, geography, or other general parameters. Internet marketing has a unique opportunity to reach the target user according to his occupation. Internet marketing is relatively inexpensive when comparing the target audience's reach to price ratio. Businesses can reach a wide target audience for a relatively small amount when compared to traditional marketing budgets. The online medium allows consumers to search and buy goods or services for their own convenience, and companies have a great opportunity to reach those target customers very and very quickly. With the help of Internet marketing opportunities, it is very easy and inexpensive to check online marketing statistics. Virtually all online marketing parameters can be tracked, measured or tested. Advertising usually pays for impressions or pay per click. Results can be adjusted, improved, or tested immediately – because users first click on your ad, then go to your page and perform a non-targeted action (buy a product, download a file, read an article, etc.). Internet marketing is defined differently by different authors. Definitions of internet marketing are given in Table 5.3.

### **Internet marketing and consumer behaviour in COVID-19**

Businesses are going through one of the most difficult periods the COVID-19 pandemic, which is having a negative impact on

businesses. Businesses that do not adapt to a pandemic run the risk of facing dire consequences. Small and medium-sized enterprises have been hit hardest by the pandemic, while the hotel and restaurant, tourism and service sectors have been hit hardest. However, the business is not standing still and moving its activities to the electronic space.

*Table 5.3*

**Internet marketing definition**

Author	Highlight
Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Jacobson, J., Jain, V., Karjaluoto, H., Kefi, H., Krishen, A.S., Kumar, V., Rahman, M.M., Raman, R., Rauschnabel, P.A., Rowley, J., Salo, J., Tran, G.A., Wang, Y. (2021).	spending an ever-increasing amount time online searching for information about products and services communicate with other users about their experiences and communicate with companies.
Sultan, F., Rohm, A.J. (2004)	companies use the Internet to increase value chain efficiency, reduce costs, and strengthen relationships with customers and channels
Bala, M., Verma, D. (2018)	social media websites are used by a company’s target market guarantees that internet marketing will be successful.
Schwarzl, S., Grabowska, M. (2015)	includes packages of tools that should encourage internet users certain websites to buy or order certain products or services.
Corley, J.K., Jourdan, Z. & Ingram, W.R. (2013)	benefits include round-the-clock access to customers, reduced geographic boundaries to allow access to new markets, and the ability to communicate with customers immediately.
Chen, Ch. J., Shih, B.Y., Chen, Z.S., Chen, T.H. (2011)	indicates a normal network perform website or brand marketing activities.
Ponde, S., Jain, A. (2019)	a strategy that gives a person or organization the ability to contact customers by implementing innovative practices, combining technology with traditional marketing strategies.

Author	Highlight
Tiago, M. T., Tiago, F. (2012)	use of information technology tools to communicate with consumers, enabling customer-centric strategies while reducing transaction costs and use of new technologies to improve traditional processes and new forms that will replace traditional methods and develop new tools marketing level.
Varadarajan, R., Yadav, M.S. (2009)	is deeply rooted in business lexicon, a phenomenon that is actually being talked about Internet marketing. In fact, more and more organizations around the world, if not all marketing switch to internet-enabled marketing.
Tran, L.T.T. (2021)	online technologies allow businesses to sell products directly to consumers through e-commerce platforms, leading to increased sales and consumers are unable to physically inspect products when shopping online, leading to product uncertainty.

During the pandemic, opportunities for online marketing opened up, and buyer behaviour changed. Addo, P.C., Jiaming, F., Kulbo, N.B., & Liangqiang L. (2020) present as “fear appeal”; a negative hedonic feeling affected the sale and purchase of selected goods. Thus, based on the published symptoms and preventive measures, Addo, P.C., Jiaming, F., Kulbo, N.B., & Liangqiang L. (2020) expected a drastic change in consumer behaviour online due to the known high purchase of clothing (clothing) and baby products (Kim & Forsythe, 2010), often seen online with COVID-19 personal protective equipment (PPE).

Bandara, R., Fernando, M., Akter, S. (2020) mentioned that internet users often express dissatisfaction and concern about their privacy, but do not take appropriate precautions. The authors investigated a phenomenon known as the privacy paradox. Based on semi-structured interviews with online shoppers and thematic data analysis, the privacy paradox is highlighted on three topics: psychological privacy distance, perceived social privacy contracts, and learned helplessness and privacy empowerment.

Gu, S., Slusarczyk, B., Hajizada, S., Kovalyova, I., Sakhbieva, A. (2021) considered what is changing consumer shopping behaviour is

typical of the COVID-19 pandemic. User impact understanding and experience increased. Internet users have become more experienced, which is influenced their purchasing behaviour. This study demonstrated the changing impact of the internet factors of consumer purchasing behaviour during a pandemic. Increasing speed value consumer decision-making when buying goods and services online has been established.

Ali Taha, V., Pencarelli, T., Škerháková, V., Fedorko, R., Košíková, M. (2021) conducted a survey in their article examining 937 respondents from the two countries on how the pandemic affected their shopping behaviour and consumer preferences In Italy and Slovakia. The results revealed the existence of statistically significant differences in the use of social networks during the first wave of the COVID-19 pandemic, given various demographic factors, as well as the relatively weak link between social media use and e-commerce advertising advertised on social media. Research shows that these business leaders should use social media to optimize the overall customer experience at all different stages of the purchasing cycle, starting with the problem analysis phase, then continuing to search for information, evaluate alternatives, buy and post-purchase. For each of these stages, social network managers can choose the most effective social channel so that potential buyers get the information they need to optimize their purchase, such as feedback, opinions from friends, experts, or influencers. Use of e-commerce platforms and collection of feedback on post-purchase behaviour.

Noor, Z.Z. (2021) stated information and communication technologies are understood as a tool which must be used responsibly.

Mehta, M., Saxena, T., Purohi, N. (2020) mentioned that the article attempts to penetrate through the labyrinth of literature on consumer behaviour in normal and crisis times, is reinforcing rapidly evaluation reports eradicated by various consulting organizations during the closure phase substantiate the same when consumers and professionals first-hand narrate and retell their experiences. The hypothesis of a pandemic affecting the paradigm shift has been raised by consumer materialism – consumer spiritism.

## **Internet marketing and consumer behaviour in Lithuania in terms of the pandemic**

As stated Verschueren CH. (2021) e-commerce accounts for 10-15% of all retail sales in the EU. Still, it affects a much larger part of the user's journey (up to 50% or more), which nowadays involves a mixture of physical substances and online. Rapid growth has accelerated over the past decade with the Covid 19 pandemic, which is attracting many more users online for the first time: 71 percent bought online in 2020, from 66% in 2019 and 64% in 2018. This trend continues to grow as the number of consumers increases experience, see the benefits of selling online and expect a seamless experience, including online and offline shopping (European E-commerce report (2021)).

According to European E-commerce report (2021) Table 5.4 shows the percentage of internet users that bought goods or services online in Lithuania. Internet users that bought goods or services online in Lithuania increase from 44 percent in 2015 to 70 percent in 2021.

*Table 5.4*

### **Percentage of internet users that bought goods or services online in Lithuania**

2015	2016	2017	2018	2019	2020	2021
44	44	49	54	59	64	70

*Source: European E-commerce report (2021)*

According to European E-commerce report (2021) Table 5.5 shows the percentage of the population accessing the internet. As we see from Table 5.3 the percentage of the population accessing the internet in Lithuania increase from 72 to 84 percent.

*Table 5.5*

### **Percentage of the population accessing the internet in Lithuania**

2015	2016	2017	2018	2019	2020	2021
72	75	79	81	82	84	84

*Source: European E-commerce report (2021)*

As Table 5.6 shows the most popular social media channels in 2021 in Lithuania: Facebook, in second place – Pinterest, third is Twitter.

Table 5.6

**Most popular social media channels in 2021 in Lithuania**

Social media	Facebook	Pinterest	Twitter	Instagram	YouTube
Percent	69	15	6	4	4

*Source: European E-commerce report (2021)*

According Business Lithuania (2020) a survey of Lithuanian residents showed that during the quarantine a fifth (20%) of respondents started buying more online, a third (30%) – bought as much as before quarantine, almost a tenth (9%) bought less, and 41 percent replied that he does not buy online at all. The announcement of quarantine disrupted the usual routine of people – most physical stores had to close, visit grocery stores, pharmacies became unsafe, therefore e. trade has acquired great importance. From the results of the survey, we can see that even every fifth resident of our country has started to buy more online. Slightly more women (22%) than men (17%) bought online, and we noticed that 26-35 year olds started shopping virtually more often (33%) and 18-25 (28%) Lithuanians, as well as those with an average monthly income of more than EUR 700 (34%) and residents of large cities (29%).

According Business Lithuania (2020) during quarantine, increased e. shopping popularity will not decrease even after its end – almost a fifth (17%) of the respondents intend to continue buying more online, 73%. will buy as much as before quarantine, and 10 percent. decided to buy less. “These changed trends in consumer behaviour were quickly noticed by e. Lithuanian entrepreneurs assessed the trade potential. As soon as the quarantine was announced, Business Lithuania (2020) launched the business support initiative “There is no quarantine on the Internet” and invited Lithuanian small and medium-sized businesses to register in one place shops. More than 700 businesses have already signed up in the first few weeks, and now this list of stores there are almost twice as many – about 1200. Every tenth e. shop – new, located during the quarantine period. Businesses realized that the only way to survive was to develop their business online, so they used all possible channels to be more visible, consulted with our team of mentors on various e. on commercial issues, took advantage of special proposals prepared by the initiative partners, which provided an opportunity to digitize business faster and easier – shared her insights Inga

Juozapavičienė, Director of the Entrepreneurship Department of Entrepreneurial Lithuania.

## Conclusions

The article analyses online marketing and consumer behaviour during a pandemic. Consumer behaviour, its characteristics and changes during a pandemic are studied. The latest literature of foreign scientists on consumer behaviour and factors influencing it is analysed, and the Covid-19 pandemic and its impact on global change are discussed. An analysis of the scientific literature has shown that internet users have become more experienced, which affects their purchasing behaviour. Statistical analysis of the data has shown an increase in the number of consumers shopping online during a pandemic. This study showed the changing impact of online factors on consumer buying behaviour during a pandemic.

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## **MARKETING RESEARCH: THE IMPORTANCE OF A FOCUS GROUP PROTOCOL AND TOPIC GUIDE**

### **1. Introduction**

Qualitative research methods have become endemic in many disciplines including marketing. Interest in qualitative research is increasing, mainly because of lower costs, the possibility of in-depth insight into customers' motives and feelings, and thus the effectiveness of qualitative research.

Through qualitative research methods, it is possible to obtain a large amount of content-rich information, the analysis of the data thus obtained is more creative, personal and interpretative. They allow more flexibility as questions adapt to the data already obtained. Due to the above characteristics, the qualitative methods are perfectly suited to the problems addressed in marketing.

In this paper, we evaluate the role of in-depth interviews and focus groups in marketing research, explore procedures for preparing and conducting focus groups and discuss the importance of focus group protocol, the role of the moderator and focus group topic guide.

### **2. Qualitative marketing research methods**

According to many authors (Maison, 2019, Malhotra et al., 2017, Churchill and Iacobacci, 2005, Malhotra and Birks, 2005, Flick, 2002, McDaniel and Sates, 1998), in-depth interviews and focus groups are the two most common methods in marketing research.

In-depth interviews represent a direct and unstructured (questions not standardized) way of obtaining information (Malhotra and Birks 2005), whereby the interviewer makes sure that he/she is conducted in a relaxed atmosphere, remains objective and receptive, encourages and motivates the interviewee, raises questions of an informative nature, is not satisfied with the short answers (yes and no) and tries to penetrate into the depth of the problem under study. In-depth

interviewing seeks “deep” information and understanding (Malhotra and al., 2017).

Many marketing decisions can be made with support from researchers using in-depth interviews (Figure 5.10).

<b>Application</b>	<b>Example</b>
Interviews with professional people	Finance directors using banking services
Interviews with children	Attitudes towards a theme park
Interviews with elite individuals	Wealthy individuals involved in large philanthropic ventures
Detailed probing of the participant	New-product development for cars
Discussion of confidential, sensitive or embarrassing topics	Personal hygiene issues
Situations where strong social norms exist and where the participant may be easily swayed by a group response	Attitudes of university students towards sports
Detailed understanding of habitual or tacit behaviour	The ‘rituals’ an individual may go through when preparing to get ready for an evening out
Detailed understanding of complicated behaviour	The purchase of fashion or ‘high-status’ goods
Interviews with competitors who are unlikely to reveal the information in a group setting	Travel agents’ perceptions of airline travel packages
Situations where the product consumption experience is sensory in nature, affecting mood states and emotions	Perfumes, bath soap

**Figure 5.10 Applications of in-depth interviews in marketing**

*Source: Sharma and Pugh, 2007, Sokolow, 1985 in Malhotra et al. 2017*

Interviews can take anywhere from half an hour to more than an hour. The order and formulation of questions vary from interview to interview, meaning that the content of each interview also varies (Churchill and Iacobucci 2005).

Another method by which we gain ideas and insight into a research problem is the *focus group method*. Focus group interviews,

also called focus group discussions, are the most commonly commissioned type of qualitative research in marketing (Belk, Fischer, & Kozinets, 2013; ESOMAR, 2016; Greenbaum, 1993 in Maison, 2019). They are regularly used in new product development, advertising development and image studies (Malhotra et al., 2017).

According to Churchill and Brown (2003 in Kodrin, 2020), focus groups have proven to be an extremely productive technique for market research, especially when providing background information, gaining customers' impressions, obtaining the information needed to formulate questionnaires and hypothesizing, which is later tested through quantitative research. The methodology of focus group implementation dictated the choice of focus group format in the first step. Calder (in McDaniel and Sates, 1998) classifies focus groups into investigative focus groups used to define research problems, hypothesize, explore ideas, and as preparation for quantitative research, clinical focus groups used to find the subconscious emotions and motives and experiential focus groups that allow subscribers to observe and listen to customer discussing products or services.

A focus group interview is a discussion between several participants, usually, about six to eight, led by an interviewer, called a moderator. The conversation is in-depth, and it is in the form of a discussion. The moderator's task is to focus the interview appropriately to find out as much as possible about the research subject (Maison, 2019). In guiding the discussion, the moderator must follow some additional principles. To reduce bias the leader has to involve all participants, allowing different opinions, avoiding the dominance of dominant participants. He has to avoid direct questions, especially those that allow yes and no answers as they inhibit discussion but must ask questions to encourage conversation among participants, overcome congestion and solve problems (Kolar 2003).

Malhotra and Birks (2005) consider that the key strengths of focus groups over other methods are, in particular, greater breadth of information, greater involvement of members, relaxation, spontaneity, specialization, flexibility, ability to monitor discussions by the client, these are relatively fast. The key weaknesses of the focus groups are focus group leadership problems and biased

interpretation of results (Churchill and Brown, 2003 in Kodrin, 2020; Malhotra and Birks, 2005), data confusion resulting from unstructured responses (Malhotra and Birks, 2005) and limited impact on the flow of discussion (Flick, 2002) and the dominance of individual group members that influence the course of the conversation (Flick, 2002) or the closeness of others (McDaniel and Sates, 1998).

### 3. Procedures for preparing and conducting focus groups

Although the methods used in qualitative research are less structured than in quantitative research, which does not mean that they require less preparation. Writing a well-structured research protocol is a critical component of any research activity. The procedure for planning and conducting focus groups begins with an examination of the marketing research problems and objectives of using focus groups. There should be a clear understanding of what information can be collected and what the limitations of the technique are.



**Figure 5.11 Planning and conducting focus groups**

*Source: adopted from Malhotra et al., 2017*

The next step is to develop a list of issues, that are to be tackled in the focus groups. A focus group topic guide or discussion guide is a plan that specifies the main topics that should be discussed during the focus group along with the time frame to be allocated to each topic in the discussion. The role of the moderator, an individual who conducts a focus group discussion, is described in Figure 5.12. Essential to successfully leading group interviews is knowledge of group dynamics' rules and a set of group's coping skills (Barrett, 2007; Forsyth, 1990; Gergen, 2014; Mariampolski, 2001 in Maison, 2019). The largest threat to focus group discussion is group conformity which cannot be avoided but the moderator can, with the right discussion navigation, minimise its effects (Maison, 2019).

<b>Kindness with firmness</b>	<b>The moderator must develop an empathy with group members, show kindness to make participants feel welcome, combined with a firmness to stop particular individuals taking over the discussion.</b>
<b>Permissiveness</b>	The moderator must be permissive, allowing the flow of discussion to develop but alert to signs that the group's cordiality or purpose is disintegrating.
<b>Involvement</b>	The moderator must encourage and stimulate intense personal involvement.
<b>Incomplete understanding</b>	The moderator must encourage participants to be more specific about generalised comments by exhibiting a feigned naïvety or incomplete understanding.
<b>Encouragement</b>	The moderator must encourage unresponsive members to participate.
<b>Flexibility</b>	The moderator must be able to improvise and alter the planned outline amid the distractions of the group process
<b>Sensitivity</b>	The moderator must be sensitive enough to guide the group discussion at an intellectual as well as emotional level.
<b>Observation</b>	As the group progresses, notes must be made of ideas or questions to come back to.

**Figure 5.12 The focus group moderator qualities required**  
*Source: adopted from Malhotra et al., 2017*

The next step in protocol design is to specify the type of group

members to take part in the discussions. To screen potential participants, a questionnaire is prepared. Information obtained from the questionnaire may include product familiarity and knowledge, usage behaviour, attitudes towards and participation in focus groups and standard demographic characteristics (Malhotra et al., 2017).

After determining the location of the focus group, recruitment of group members progresses. “This is one of the most difficult tasks, as potential group members may be sceptical of what may happen at the group”, believe Malhotra et al. (2017) therefore “getting the right types of participant together at the right place and time can prove difficult”. Recruitment may take place on a face-to-face basis through street interviews or by phone or email.

The last check of the focus group topic guide is through the experimental focus group within which all aspects of running the group should be evaluated. It is important that the group members feel relaxed and comfortable in the chosen location and forget that they are recorded. With reflection on issues such as group member interaction, the structure and the issues of the focus group protocol, time planning etc, alterations can be made.

The question arises here of how many groups should be run. If there are a great variety of types of individuals that make up a target market, then many homogeneous groups may be needed to reflect the variety of types (Malhotra et al., 2017). Recording the discussion is reasonable and advisable as the moderator can focus more on the content while ensuring accurate recording of the content of the discussion. In any case, it is necessary to obtain the consent of the group members before recording, following CC/ESOMAR International Code on Market, Opinion and Social Research and Data Analytics that promote high standards of ethical behaviour and reinforce public confidence in research thus set out global standards for self-regulation for researchers and data analysts (ESOMAR, 2016).

The analysis and interpretation of the findings of qualitative marketing research is the final and very important stage in planning and conducting focus groups. The quality of the conducted study largely depends on analysis and interpretation of the findings (Neale & West, 2015, O’Brien et al., 2014; Silverman, 2001). The results of the discussions can be interpreted by several researchers, which

makes the research more expensive. The researcher influences the interpretation of the results, and the problem of subjectivity questions the reliability and validity of the results.

To determine the dimensions of the expected and perceived quality of educational services from students' perspective the focus group protocol presented in Figure 5.13 was developed.

**The objective of the study: Determine the dimensions of the expected and perceived quality of educational services from students' perspective.**

**The role of focus groups: Identify the expectations and perceptions of students as primary customers of educational services and determine the dimensions of the expected and perceived quality of educational services from students' perspective.**

**The topic guide: Figure 5.14**

**Types of target respondents: Secondary school students**

**The location: Classroom PD4**

**Group members: The first, the second, the third and the last year students, gender balanced groups (2).**

**Experimental group: Group members from the third and last year students,**

**Focus groups conducted: September 29<sup>th</sup> and September 30<sup>th</sup> morning.**

**Data analysis and findings presentations: November.**

**Figure 5.13 Focus groups protocol to determine the dimensions of the expected and perceived quality of educational services**

*Source: own research*

The specific objectives of qualitative research were to: identify the expectations and perceptions of students as primary customers of educational services, determine the dimensions of the expected and perceived quality of educational services from students' perspective and identify if the dimensions of the expected and perceived quality of students coincide with the dimensions in the classical gap model (Zeithaml et al., 2018).

Focus groups were conducted to define roughly the selection of possible dimensions of the quality of educational services. The discussion was conducted in three focus groups. The first focus

group was experimental and served primarily to test the setting of the focus group and to seek ideas for creating a protocol for the formal two focus groups of students.

#### **4. A focus group topic guide design**

The focus group topic guide is usually prepared by the moderator. There is no universal topic guide that can automatically be copied from study to study. Each research situation is different, which is why every topic guide should be best fitting to each research problem and its specific characteristics (Levitt et al., 2018; Levitt, Motulsky, Wertz, Morrow, & Ponterotto, 2017).

A prerequisite to a well-prepared topic guide is precisely defined research goals and their thorough understanding by the researcher (Järvinen, M., Mik-Meyer, 2020). The topic guide sets the direction of the discussion. More important than phrasing specific questions, is for the moderator to never lose sight of the research goals and the problems that are going to be discussed (Gergen, 2014; Gergen, Josselson, & Freeman, 2015 in Maison, 2019). Constructing focus groups topic guides with open-ended questions is particularly helpful for novices. When discussing a specific topic the generation of as many questions as possible could prove to be an excellent exercise for less experienced moderators. An experienced moderator who is cognisant of the research problem uses the topic guide as a support and not as a strict list of interview guidelines. A more detailed discussion guide with sample questions would be required if many moderators were involved in the study (ibidem). Malhotra et al. (2017) believe that the specific questions may be of help to the moderator to present a consistent set of points to different focus groups to allow clear comparisons to be made.

“The moderator should open the focus group discussion with an introductory question to make participants comfortable with the subject and the purpose of the research” stress Malhotra et al. (2017) and continue “This question should encourage conversation and interaction among the participants”. The introductory question should be followed with one or two transition questions that help participants to envision the topic in a broader scope. Through these questions, they become more aware of their fellow participants.

The moderator can then move the discussion towards the key questions and issues. Questions in focus groups discussion have two

basic functions: they should be informative and motivating (Wertz, 2014). While informative questions search for specific information, motivating questions serve as the basis for maintaining and enhancing motivation. The questions should be well-phrased, clear, specific, and to encourage more elaborate responses, open-ended. There may be additional, new issues that develop and can be discussed. The emphasis of the moderator should be upon an evolution and learning process rather than administering a consistent set of questions (Malhotra et al., 2017).

Projective techniques are increasingly applied in marketing research and are typically used in in-depth interviews and focus groups. They encourage participants to project their underlying motivations, beliefs, attitudes or feelings regarding the issues of concern (Branthwaite 2002, Chandler and Owen 2002, Best 1995 in Malhotra et al. 2017). This can be achieved by word associations, unfinished sentences and stories, tests with drawings, photographs. Many fields related to consumer choices are unconscious, leaving the consumer oblivious to the forces driving him, incapable of expressing them in words. Learning about consumer needs, buying motives, as well as the barriers to reaching for certain categories or brands, are typical marketing research areas where projective techniques help understand the real answer to these questions (Maison 2019). Consumers tend to have a limited understanding of their behaviour and have difficulty articulating their motivations and desires. When market researchers want to investigate consumers' deeper values and beliefs., projective techniques are used in conjunction with direct questioning.

To strengthen the quality of the research moderators may use a combination of various qualitative techniques that is, multimethod research (Silverman, 2020). Multimethod research can contribute to a better understanding of a research problem compared to research that is based on only one methodological approach (Creswell, 2015) as different techniques allow for different angles and nuances to be visible.

To help the moderator to streamline the interview process time plans are useful. Time plans are only there to guide the moderator and it may turn out during a focus group that they have to be, because of lots of interesting insights connected with the research

goal, adjusted. The duration of focus group interviews may depend on the homogeneity of the group. Heterogeneous groups in terms of experiences usually last longer because of the broader spectrum of opinions (Maison, 2019). When developing the topic guide, “one should consider what the logical sequence of relevant problems is” stresses Maison (2019) “and introduce the topics into the discussion in line with this logic. If the guide is logical, there will be a seamless transition between the topics”.

The topic guide should conclude with “ending questions” that invite members of the focus group to introduce something they consider relevant and to ask questions back to the moderator (Järvinen, M., Mik-Meyer, 2020).

For a students’ focus group conducted to determine the dimensions of the expected and perceived quality of educational services the topic guide was designed (Figure 5.14).

Hello. Thank you to come. The content of the conversation will be a topic with which you have all the experience. We will talk about the quality of educational services. The discussion will take about an hour and a half.

Before we start the conversation I would like to introduce you to some of the basic rules of this conversation. Although we are in the school, there are no right and wrong answers this time. Only your opinions count. I ask that all of you participate in the conversation, so that we try not to talk one over the other.

**I would like to remind you about your primary school. Think about what you like the most.**

**I would like to discuss about our school. Think about what you like in your school and what you do not like.**

**I would like to discuss more about the environment at school. Think about what kind of environment a school should have. Think of the classrooms, the gym, the library, the hallways, the canteen, the toilets... Think of the different extracurricular activities your kids are involved in.**

- *What should be the premises of the school for well-being? Does it matter how big these rooms are, what kind of walls they are...? Does it matter what the furniture and equipment of the school premises are like? What should be the equipment of classrooms, hallways, gym, library ...?*
- *What do you think about teaching equipment in school? Do you think teaching equipment is needed? What teaching equipment do you want?*

**Try to remember what you felt when you were together with your parents deciding about the school and collecting information about secondary schools.**

- *What was the information material you received on the information days? Were you satisfied with the information contained in the material ...? Were you satisfied with the format of the material...? What was the material that attracted you most...? Did something bother you, didn't you like it ...?*
- *What information material would you like to receive before your child is enrolled in*

*school? Did you find the publications, websites, etc ... more appropriate?*

**Now I would like to discuss in more detail the staff you contact at school (school management, social worker, librarian, administrative staff, janitor, security guard, etc.).**

- *What do you expect from school staff?*
- *Remember your favourite teacher at school. How is it different or different from other teachers ...? In what way does he stand out or stand out from other teachers....? What do you like best about him / her ...?*
- *What do you expect from the classroom teacher?*
- *In your opinion, what could teachers do to make students less absent from teaching?*
- *How do you expect employees to respond when you want to talk to them?*
- *What bothers you most about the school staff?*

Is there something I haven't asked you that you think is relevant to our topic?

Is there anything you would like to ask me?

... to look at the quality of educational services a little differently: Suppose that the Minister of Education would put you at the forefront of a group that would set standards for what a quality school should look like. I ask everyone to think and write down what I would suggest for such standards. (Wait, write on the board, sort by relevance.)

### **Figure 5.14 Students' focus group topic guide**

*Source: own research*

Based on the results of both focus groups discussion, we obtained the dimensions of perceived and expected quality of educational services which correspond to the dimensions in the classical gap model of the authors Zeithaml, Parasuraman, Berry (1990 in Zeithaml et al., 2018). The questionnaire was designed to collect data.

## **5. Conclusions**

The present paper discusses in-depth interviews and focus groups as one of the most common quantitative research methods and evaluates the role of the focus group in marketing research. An attempt has been made to demonstrate that the development of a focus group protocol is a systematic process that requires time, focus, knowledge as well as careful planning. The paper aimed to show that, if conducted well, qualitative research using the focus group method can answer specific research questions in marketing research.

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**MARKETING AND  
LOGISTICS PROVIDING  
AS A TOOL OF  
INCREASING OF THE  
COMPETITIVENESS OF  
THE ENTERPRISE**

Current trends of the development of market relations are a reflection of the marketing and logistics paradigm, which is based on the inextricably linked marketing and logistics processes in business, occurring between numerous structures.

The importance and relevance of information communications in modern business conditions are obvious. None of the control systems can function outside the field of information exchange. However, we note that such exchange cannot be effective without streamlining the processes of exchanging information elements of processing primary, intermediate, reference and output documents. The received information on a situation on the market of the goods and services will allow timely define and choose this or that marketing strategy of conducting business on the target market or its segment.

As a rule, information systems of marketing communications management should reflect objectively developing evolutionary integrative processes of the world market. The evolution of international marketing was carried out on the stages, each of which became a logical continuation of the previous one, which contributed to the emergence of new forms and methods of organizing and managing the information flows of marketing communications, adequate to the level of innovation and technical process of the market relations. In this regard, there is an objective need for theoretical justification and interpretation of modern information and communication problems faced by Ukrainian business in practice.

Development of theoretical bases of the organization and management of the given systems first of all assumes the

development of unified methodological bases for carrying out researches of objects of the market, their classification and formalization of the information problems of the marketing communications. This means that for the current stage of the development of the market relations is relevant corporate approach for building information and communication systems based on innovation and comprehensive solution of all interrelated tasks, ensuring effective business management taking into account the current market situation in a particular segment. Moreover, the most important state strategy – diversification of the Ukrainian economy – can be implemented only on the basis of modern innovation processes in the economy, including in the field of optimization and efficiency of relations, interdependence of market structures.

When before the 1980s the main attention was paid to the solution of internal communication processes in the organization, so in the 1990s there was a transition to the external integration of communication tools that help to ensure high business competitiveness, speed of calculations and information support.

In traditional business management information systems, organizations are considered as isolated elements of marketing communications, autonomously planning their needs and purchases. At the same time, local optimization, inconsistency of interaction of all market participants and low level of quality and reliability in the process of information exchange led to a situation where minor changes of the end-consumer demand inevitably led to significant deviations in the plans of other market participants. In this regard, in corporate accounting for the successful implementation of business it is important comprehensive assessment each element of the information system, taking into account its quantitative and qualitative indicators that determine the place of the organization in its market segment.

Obviously, the basis of any proposals for improving the corporate governance of marketing activities of business should be the understanding of objectively evolving real processes in the Ukrainian economy. And before you change something, you should be clearly aware of the feasibility of corporate governance in the context of this problem. Some features were analyzed in great detail in the national literature. At the same time, uncertainty in the interpretation of a

number of problems of a conceptual nature significantly complicates the process of making applied decisions in the field of development of the model of corporate marketing and logistics management.

Emerging in the Ukrainian science corporate approach for marketing and logistics management still carries declarative nature and conclusions about one or another model has not been sufficiently substantiated.

The issue of research and implementation of innovative marketing and logistics solutions that allow the lowest cost to adapt in the integration processes of the world market, today it is equally relevant for various organizational structures of Ukrainian business, regardless of their form of ownership. How to make Ukrainian companies competitive, despite the existing organizational and legal problems in the economy? It is inseparably linked with corporate business management issues of improving marketing and logistics activities of companies, designed to optimize logistics costs throughout the chain of material flow promotion, as business practice shows that the company is not a static object: it is dynamically developing in line with global and domestic markets.

Marketing and logistics activity is one of the most complex and little studied by science business phenomena.

Marketing and logistics are two such areas, the synergy of achieving the goals of which opens for the enterprise the competitive potential, increases the profit margin and keeps the company's brands in the field of customer loyalty [1, p. 127]

In conditions of the huge growth of multibillion-dollar commercial transactions within the global business community, Ukrainian companies are forced to seek opportunities to survive, and even more to achieve a leading position in their market segment.

In this regard, today conducting a comprehensive study of the corporate approach is one of the key areas to increase the competitiveness of business.

Now we are going to consider the activities of the firm in terms of the interaction of marketing and logistics as a single corporate function based on corporate business strategy. The main goals of integrated marketing activities are to ensure the competitive advantages of existing businesses, the development of new market segments and maximizing profits.

But we must not forget that the most careful thought-out marketing strategy will not be successful if the product is not delivered to the end consumer with minimal costs, which is directly related to the increasing of the value and profit of the firm. To do this, the organization must have a strategic logistics resource that can meet the growing consumer demands, taking into account the implementation of all logistics rules.

As world experience shows, the logistics on the firm is not always developed synchronously with marketing. As a result, the pace of business development falls, and the company loses its competitive advantages on the singled segment of the market.

How to be? How to win and not lose your niche in the positioned market, to build your business successful and prosperous? The practical experience of many Ukrainian companies confirms the objective need to conduct and implement comprehensive, scientifically grounded marketing research programs. Often, companies on the basis of superficial marketing research identify a promising market segment, taking into account the high projected profitability of the business. On this basis, commercial contracts are concluded with partners. But such contracts ultimately prove to be unprofitable when it comes to attracting specific logistics companies to the business, supplying equipment for the implementation of «rainbow» projects through real logistics chains.

As a result, the business becomes unprofitable, there are problems with partners, time is lost, the company's image suffers, as a result of which it bears uncompensated losses.

And the reason of everything is the lack of timely coordinated marketing and logistics actions at the company. This is not the only example for Ukrainian business. It should be noted that similar problems also exist in foreign business practice. Thus, well-known American marketers K. Clancy and P. Krieg [2] claims that for the successful conduct of modern business in conditions of fierce competition, firms must develop scientifically grounded comprehensive marketing programs, based, among other things, on the logistics activities of the company. An important factor here is the fact that the interaction with logistics should be carried out at the stage of business development planning and positioning of new market segments with a detailed assessment of real logistics costs

throughout the integrated supply chain to the final consumer.

Determining the most effective areas of development of the company's marketing activities, taking into account trends in the market of logistics services allows you to give a more reliable financial analysis of the costs of marketing research and thus avoid unjustified financial costs. As the experience of market economies shows, the close interaction of marketing and logistics creates the conditions for successful business functioning. And in this regard, the study of the impact of marketing methods and logistics on business results is a major problem [3].

The analysis of the effectiveness of marketing and logistics activities of more than thirty Ukrainian companies engaged in sales, advertising, as well as freight forwarding and other types of activities in various organizational structures and industries, showed that the used marketing solutions lag behind the emerging market and do not give the desired result due to the lack of consistency with logistics, which leads to unreasonable decisions in the face of emerging uncertainty of market processes. It is becoming quite obvious that increasing the level of business competitiveness cannot be achieved without the introduction of scientifically grounded modern methods in the marketing and logistics activities of the company. Every marketing program should be based on an objective and reliable analysis of factors, but not on the intuition and uncertain predictions of pseudo-specialists of this field.

Company executives rightly demand a quantitative assessment of investments in marketing programs, their real value and share in the company's profits (losses). In today's situation, the marketing manager is not able to fully manage the motivational processes of consumers. In the arsenal of any consumer there is a wide range of goods, and he prefers something specific, based on his taste, formed on the basis of many factors. Access to competitors' product information is expanding every day, and the marketer is unable to give an accurate and objective analysis, assessment and forecast of demand.

According to foreign experts' opinion [4], intuitive assessment of emerging demand cannot give an objective analysis of the situation on the market segment and, consequently, will lead to the wrong marketing decision for the company, which, in turn, will lead to its

bankruptcy. Excessive interest in conducting research with quality assessment on fox groups is due to the desire of the head of the company to minimize the cost on the research, and this is understandable. But experience shows that without a detailed corporate approach to research, no effective marketing solution can be developed.

Note that the competitiveness of the business largely depends on reducing the cost price of goods and services, as well as minimizing logistics costs, constituting a significant share of the total costs of the business. A significant part of logistics operations in the process of promoting the material flow from producer to consumer are performed by logistics service providers. The need to expand the market of logistics services is growing in proportion to the development of the Ukrainian economy [5]. In this regard to ensure a favorable market environment, an appropriate infrastructure should also be developed, creating conditions for minimizing logistics and marketing costs, which, in turn, will provide the Ukrainian entrepreneur with conditions for increasing the competitiveness of business. Thus, according to such leading players on the world market as Bosch, Siemens, Mitsubishi, and General Motors, a 1% reduction in logistics costs corresponds to a 10% increase in sales. The given example clearly demonstrates the objective need to find ways to minimize marketing and logistics costs for a business.

This goal can be realized in practice only on the basis of the formation of corporate information marketing and logistics management system, including all evaluative qualitative and quantitative indicators of marketing and logistics. According to the author's assessment based on a study of more than fifty Ukrainian companies in terms of the effectiveness of marketing and logistics, it can be claimed that the lack of modern information marketing and logistics communication systems leads to significant losses. The same opinion also has the specialists of these companies. And since the process of integration of the Ukrainian economy into the European Union is inevitable, the problem under consideration will be especially acute for Ukrainian entrepreneurs, as they will find themselves in unequal competitive conditions on the world market.

Today, this problem is especially relevant, as Ukrainian business cannot ensure its competitiveness without minimizing logistics costs,

which in the Ukrainian economy, according to expert estimates, on the average constitutes about 30% of total costs [6].

In this regard, the authors proposed a corporate information and communication marketing and logistics business model (see Figure 5.15).

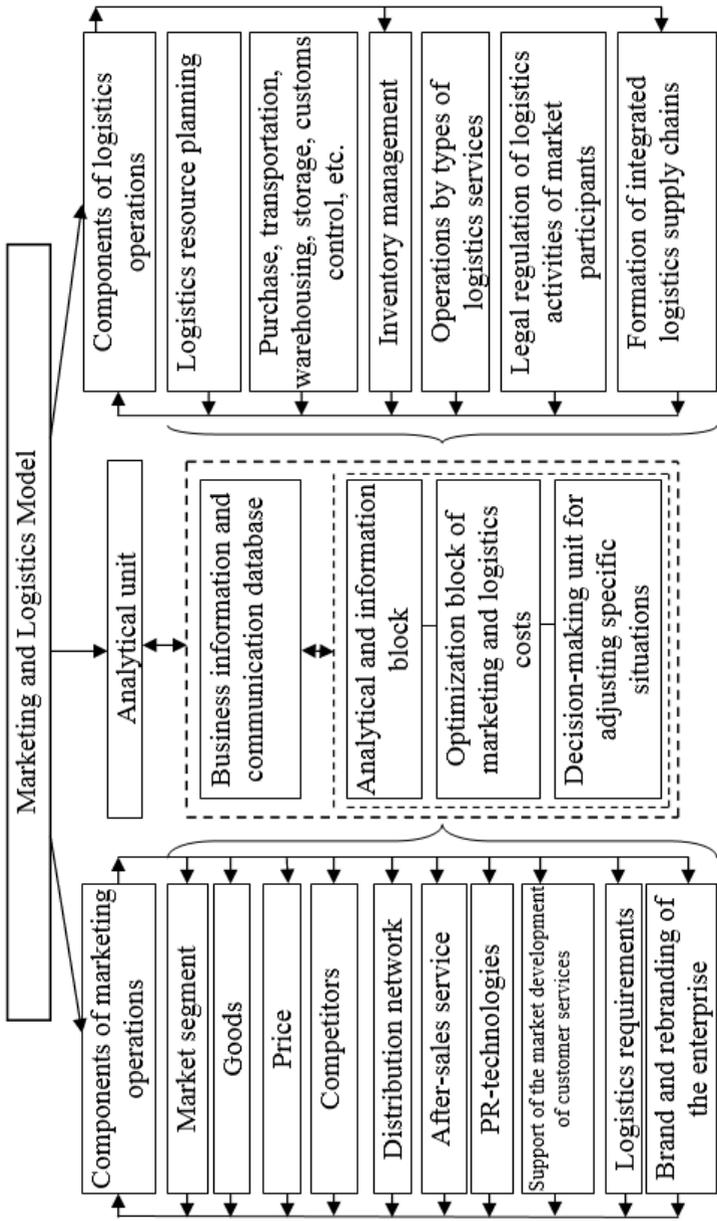
Each information element of the company's business processes is transformed in the context of organizing an integrated information system of marketing and logistics management as a single corporate communication function of the business. This model includes a systematic organization of collection, primary processing, analysis, formation of information data characterizing the real situation of the state of the market segment in accordance with the specific situation that has developed on it. This model should also provide the ability to obtain, at the request of the target user, on-line information and reference information about all changes and the current situation in the positioned market segment in order to make timely informed decisions on adjusting the business.

It should be noted that none of the constituent elements which is indicated on the picture of the information system of communication processes management can be considered secondary.

Their importance is determined by the management system, based on the choice of the organization's strategy, which is relevant for a certain period of time.

In conclusion, we note that this model has a corporate nature, eliminating the antagonistic relationship between marketing and logistics.

The ability of the model to respond timely to the new control effects of information elements of marketing communications characterizes it as a flexible system with a high level of business adaptation to external and internal market changes. In conclusion, we note that the corporate marketing and logistics approach for running business is based on the concept of marketing, aimed at the consumer, taking into account the real capabilities of logistics services of the company that successfully implements this strategy. The effectiveness of this approach must be confirmed by an increase in profits.



**Figure 5.15 Corporate Marketing and Logistics Model of the Development of the Enterprise**

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**DIGITIZATION OF SOCIO-ECONOMIC  
PROCESSES IN TERM OF THE  
PANDEMIC**

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**TECHNOLOGICAL  
PROGRESS AND  
INFORMATION  
TECHNOLOGY: NEW  
CHALLENGES FOR  
BUSINESS**

Ancient business relations have always been limited by geographical barriers related to the technological capabilities of land and maritime transport. It is therefore not surprising that Australia, N. and S. America stayed behind the Eurasian and African supermarket chains. River transport and canoes were used in N. and S. America, but there were no wheeled vehicles and this restricted trade.

In Eurasia, the development of evolving kinking technologies, road construction, shipping and cartography technologies has made cross-ground and interregional trade more possible. Over a long-distance, luxury goods and raw materials were transported both by sea and by land caravan roads. Technological innovation, improved navigation and better trade organisation have reduced transport costs, making it profitable to trade a wider range of goods.

The use of steam force in railways and shipping has significantly improved international transport. Freight costs were steadily decreasing and at the beginning of the 1990s accounted for only half of the costs of the 1970s and early 1970s. In the post-war period, transport costs decreased due to technological progress, the use of containers and cheap fuel. In 1930, transatlantic telephone and air transport emerged. Between 1930 and 1990, air transport was cheaper six times, maritime transport twice and transatlantic

telephone communications 80 times. Remarkable advances in communication technology have stimulated trade and the shift in trade towards global markets has been facilitated by the emergence of global transport and communication infrastructures.

Technical progress has enabled the development of extremely large and powerful vehicles. Recently, the world's largest container ship began its journey through the world's waters, which can transport 50 million passengers at a time. mobile phones or 1.3 million 29-inch diameter TV.

The trends in planes and airports are similar. The capacity of the planes is growing, creating planes capable of carrying 150 tons of taxable weight. Meanwhile, the cargo turnover of modern airports amounts to EUR 3.6 million.

Scientific literature indicates that technological progress leads to an increase in trade volumes: technological progress leads to more advanced technologies, improved production and marketing methods, lower production and marketing costs, and companies produce and sell competitive products.

Economists believe that technological progress is the cause of fluctuations in economic activity. According to the literature, the upturn in economic activity is caused by the spread of the most important technologies, which occurs every 50-60 years. And that this is a regular process.

It should be noted that the emergence and spread of new technologies (when investments are used for this purpose) sooner or later leads to an increase in economic activity (Lipsev et al. 1992). Mr Stoneman (2002) argues that growth is driven by the appearance and dissemination of "general technologies" such as steam power, railways (Solomou 1998), electricity, information technology. E. J. Nell (1998) believes that the growth of economic activity is influenced by the appearance of productivity-enhancing technologies (such as mass production and transport technologies). According to R.J. Carbaugh (2008), the emergence of technologies leads to the emergence of new production and marketing methods and their improvement.

Circularity has certain properties. Cycles can be of different durations and amplitudes (Lipsev et al. 1992). The literature states that in practice there are very short cycles that last up to 4.5 years,

and very long cycles that last 50 years or more (Hugill, 1995; Solomou, 1998).

Kondratiev hypothesized that industrial development is cyclical. Scientists say that advanced technologies increase the ability of economic operators to produce competitive products and thus survive on the market. Thanks to the technology copying strategy, technology spreads across the industry, and increased demand for bank credit and investment leads to an upturn in economic activity. As technology expands, their competitive advantage disappears, the investments of economic operators decrease, and the recession begins. Schumpeter believes that continuous scientific and technical progress is causing technological shocks. Schumpeter argues that the first long-running boom was caused by the use of machinery in the industry, the second by the construction of railways, the third by the development of electricity and car production, the application of internal combustion engines in the industry, and the fourth by the intensive use of informatics and biotechnology sciences in economic activities. The fifth long-running boom is expected to be triggered by the transition to resource-efficient technologies.

The Neoclassical Growth Model (Solow-Swan) states that a “stable” balance largely depends on the level of technological progress and the constant volume of investment in technology. As investment in technology increases, a ‘transition period’ characterised by the accumulation of physical capital and the uptake of new technologies begins (Marelli et al. 2010). During take-off, total production volume and capacity load increase. It shall be followed by a balance characterised by a maximum load or shortage of production capacity.

Technological progress determines the prospects for the development of both production and trade. Several technologies used until then, mainly in the military industry, are spreading rapidly between businesses and consumers. Without increasing prices for technology users, technology infrastructure, technological power and higher requirements for their maintenance are rapidly developing. In the context of technological progress, new and improved old technologies are being implemented: automation is being developed and developed, opportunities for robot-based, modern trading technologies are being developed and developed. Successful

technological advances include a greater diversity of new technologies, increased application and better opportunities for technology integration.

The 21st century is characterised by the very rapid technological development that is manifested in the modern economy. As the number of new technologies has doubled in the last decade, their market life has become significantly shorter than before, and the speed of technology transfer has become important.

The infrastructure for the international disposal of products must be adapted to the existing outlets and the possible increase in disposal. Infrastructure may depend on the geographical location of the socially defined entities involved in the marketing of specific products, or may be chosen according to the needs of consumers and the period of validity of the goods. For example, the infrastructure for the disposal of products in an electronic environment is different from that traditionally designed for the disposal of products or for goods with a short disposal infrastructure which must be flexible while ensuring the rapid delivery of goods to final consumers. When existing infrastructure for the disposal of products at international level no longer ensures an increase in the volume of disposal, there is a need to invest. There may also be an investment need when new consumption needs are created and investment in infrastructure for the development, production and realisation of products is necessary to meet such needs.

Modern challenges to international trade. The global economy is undergoing significant changes affecting people's lives, businesses and competition. These changes are linked to the phenomenon of globalisation, the ongoing socio-economic development, the increased development of the European Union and the consolidation of knowledge in the economy.

Firstly, businesses and markets are no longer limited to geographical borders, products that have so far been realised in closed national markets are now not protected from international competition. The removal of larger geographical restrictions has created largely 24/7 outlets for tangible goods (hereinafter referred to as 'goods') and services worldwide. Not only do companies sell goods and services (hereinafter referred to as "products") in global, more interconnected markets or markets without internal frontiers,

but they also have to adapt to changes such as increased national and international competition, product diversity, improved communication opportunities and an increased role in information technology.

In response to new challenges, companies adapt differently:

- undertakings compete by targeting products to different local markets. They sell products through their autonomous units, which operate in different countries and adapt products to local markets;

- companies compete to orientate products to the world market. They sell the same products in the same way everywhere. Such enterprises seek economies of scale and standardise their activities, operating worldwide as if in a single unit;

- companies are looking for opportunities to achieve higher efficiency and productivity: they use the services provided by another entity. Companies may outsource operations to another socially defined entity specialising in their execution;

The willingness of companies to compete successfully encourages them to cooperate, conclude joint agreements with suppliers, buyers and allies, and apply new business models. In this way, associations of enterprises and partnership networks are formed, which include new forms of production, supply, communication, technology take-up, competition and cooperation. Such a partnership strengthens the competitive position of companies, creates an environment in which new ideas and new solutions are “born” faster. As a result, there is a growing influence of multinational corporations, trade unions and international organisations in global markets. All this has a significant impact on the development and development of international trade.

Another important factor in the manifestation of the process of globalisation is technological progress, which takes place in practically all areas of production and product realization. Many technologies used until then, mainly in the military industry, are spreading rapidly between businesses and consumers, while at the same time reducing their production costs. Without increasing prices for technology users, technology infrastructure, technological power and higher requirements for their maintenance are rapidly developing. In the context of technological progress, changes are taking place in the implementation of new technologies; International

trade faces new challenges – the development of automation, robot use-based and packaging, self-checkouts, loyalty cards and other technologies.

Secondly, there is the socio-economic development, manifested in the ongoing changes in international integration, the spread of common standards of quality of life, standards and a pervasive culture of individualism. In the context of socio-economic development, intensification of tourism, various international exchanges, culture and science play a major role; labour mobility, the activities of international organisations, global mass media to promote the dissemination of the lifestyle model across different cultures. In this way, demand for some consumer goods becomes similar, traditions and values formed in the West spread, and general consumer needs are formed, which can be described as identical or converged and more dominant, covering different cultures and spheres of life.

In the context of socio-economic development, lifestyle models of the populations of economically developed countries in economically developing countries, where they are adapted, are spreading rapidly. As a result, demand for products that meet local characteristics is growing in economically developing countries. In this context, anticipation and timely response to cultural, economic and social changes in the future in consumption is of great importance in the development of international trade.

Thirdly, there are more active processes for the development and development of the European Union. The European Union's clear priority to increase the European Union's global competitiveness is in the high-tech field. The European Union promotes the development and production of high-tech technologies (biotechnology, mechatronics, laser technologies, information technology, nanotechnologies and electronic technologies), invests in education, research and experimental activities, implements science and business dialogue platforms for high-tech development, promotes the development of cluster networks, partnership systems, sectoral cooperation, and enhances high-tech perspectives World. The European Union's competitive advantage in the world is realised through the development and sale of high-quality high-tech or high-tech products based on them.

Fourthly, as the knowledge economy develops, the rate of change increases. It is driven by a significant increase in the speed of information transmission, reduced costs for the transmission and storage of information, and progress in the field of information technology and telecommunications. Knowledge is becoming more and more accessible, is not limited by geographical borders and time, and is used to create greater value. In such an environment, products with higher intellectual value are developed; businesses and activities based on knowledge and information are developed. At the same time, creative, open society for innovation is formed, able to create, reproduce, assimilate, accumulate, improve, transmit, codify and disseminate knowledge using information technologies and telecommunications, apply knowledge to the development and realization of products, technologies and solving new problems.

Technology is a set of knowledge through which patent law, scientific knowledge, results of research and creations are applied in the production of goods. Technology can be materialized and intangible. Intangible technology is understood as constructive solutions, methods, processes. Materialized technology means machinery, equipment, etc.

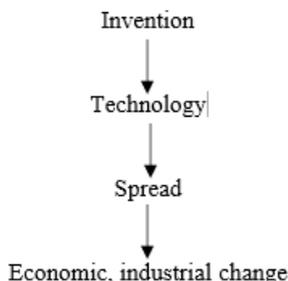
Four types of technological products are distinguished:

- low-tech products are based on well-established technologies;
- mid-technology products, i.e. improvements to existing products that include several new features, but are based on existing technologies;
- high-tech products are based on recently developed technologies. This is associated with high uncertainty, risk and investment (examples include advanced defence systems, satellites, information technology, robots). These technologies allow for faster and more efficient data collection, reducing the cost of their transmission and storage. Trade-in high-tech products reflect the country's capacity to commercialise research and experimental performance.

The clear priority of the European Union's – to increase the European Union's global competitiveness in the high-tech field. The European Union promotes the development and production of high-tech technologies (laser technologies, information technology, nanotechnologies and electronics and other technologies), invests in

research and experimental activities, deploys science and business dialogue platforms for high-tech development, promotes sectoral cooperation and enhances the world's prospects for high-tech fields. The European Union's competitive advantage in the world is realised through the development and sale of high-quality high-tech or high-tech products based on them. The integration of lasers and information technologies creates good quality automation, robot application- based and other technologies.

With the introduction of new technology, tangible results often have to wait a long time until productivity and quality of life will improve. C.C. Onyemelukwe (2005) considers that the reason for this is that the full potential of new technology is often not exploited when used in isolation. However, the potential of new technology is realised when it is widely used: because it becomes generally available and technical support infrastructure is established; it is also the cause and effect of the widespread application of such technology. Therefore, according to C.C. Onyemelukwe (2005), no matter how special the new technology is, in all cases after the introduction of the technology, the tangible impact is only achieved by reaching a critical mass of its users (Onyemelukwe 2005).



**Figure 6.1 Traditional approach to fundamental economic change (Lundgren 1995)**

The American economist R. Solou found that between 1909 and 1949, in the USA, more than 80% of gross domestic product (GDP) growth was due to technological advances (Balkytė et al. 2006). GDP growth rates are also linked to technological changes: innovation, improvement of scientific and technical knowledge, inventions (Jakutis et al. 2005).

In particular, GDP growth rates are linked to technological progress in the field of informative telecommunications technologies (ITT). There is an interdependency between GDP growth and ITT output. In the case of Lithuania, we can express this dependence with the following regressive equation:

$$Y = 4,08 + 12,874 x,$$

where:  $y$  – GDP,  $x$  – ITT products (6.1)

ITT can be considered as the main factor determining the organization of work in enterprises and supporting relations between enterprises and households. In addition, modern ITT allows faster processing, transmission and more reliable storage of information. The application of ITT promotes new business opportunities, allows for the analysis and accumulation of large amounts of information.

In 1901, Guglielmo Marconi received the first wireless message in Canada. Now, 100 years later, the infrastructure developed by information technology and telecommunications allows exchanging of electronic information more and more frequently. Of course, this influences and opens up new trade opportunities.

Technologies are essential for the modernisation of international trade. They create a favourable environment for international trade, accelerate and improve international trade processes and promote the uninterrupted adaptation of international trade to changing conditions and circumstances. Information technology is one such technology.

**Modern challenges to increasing the efficiency of international trade.** To make good use of the opportunities aimed at improving the efficiency of international trade, it is necessary to assess trends in improving the efficiency of international trade, which include the following:

- the introduction and efficient use of modern technologies used in international trade to increase revenues, profits, provide value-added services, reduce operating costs and depend on unreliable manpower resources;
- development and implementation of technological solutions in the business chains of international trade to develop international trade itself;
- improvement of innovation and modern technologies used and

applicable in international trade;

- the combination of accumulated technology application and other experience between socially defined international trade entities;
- the implementation of innovations adapted to ensure international flows of goods to activate forms of management of international trade development processes;
- initiating opportunities for the development of products marketed in international trade with new characteristics to reduce operating costs.

The listed trends in increasing the efficiency of international trade as a whole make it possible to understand the significance of international trade itself, its development and the activation of innovation in the development of international trade. The activation of innovation in international trade can be initiated through the implementation of various measures by socially defined entities directly involved in international trade, business and public sectors.

To make good use of the opportunities offered by the development of international trade, it is necessary to understand the needs of socially defined entities active in international trade and their importance for the improvement of international trade. The needs of socially defined entities active in international trade can vary widely. The needs of different entities can be oriented towards short-term and long-term interests, organization of individual business processes, optimization of business structures, the economically rational and irrational layout of divisions internationally, willingness to cooperate, have allies, apply innovations, modern technologies, new business models, etc. Socially defined entities may have different capacities and capacities to adapt to changing environmental conditions and respond to new challenges. When analysing opportunities for the development of international trade, the most important is the favourable needs of socially defined entities, which lead to the improvement of their abilities and capacity building.

When analysing the possibilities for increasing the efficiency of international trade, it is proposed to evaluate them in economic terms.

To make good use of the opportunities offered by improving the efficiency of international trade, it is proposed to assess the general

interests of socially defined entities active in international trade, which may be identified as the pursuit of the cost-effectiveness of international trade. Seeking to increase the cost-effectiveness of international trade by reducing operating costs, promoting the more efficient use of resources, creating greater added value for consumers, increasing results per unit of international trade costs.

The impact of information technology on international trade can be assessed in two ways: firstly, international trade in information technology is emerging, and secondly, the use of information technology is driving various changes.

**International trade in information technology.** Attention is drawn to the fact that since 1990 the growth rate of trade in information technology has been faster than that of general trade (E-Business Watch 2008; OECD 2009). It should also be noted that in the last twenty years, the locations of development of different information technologies have changed geographically: some of these technologies have been produced by developing economies. Nevertheless, most information technologies are developed in the countries of the European Union and the USA.

In scientific literature, trade-in information technology is referred to as digital goods. There are many differences between the marketing of goods in digital form and trade in goods in tangible form (Barnes et al 2006). In particular, there are regulatory differences: the US and Japan classify digital products as goods and the European Union as services (Paliulis et al 2007).

Trade in tangible goods takes place between participants, involving suppliers, buyers, insurance companies (insure transactions and cargoes), banks (involved in the transfer of money), transporters (agents, carriers).

The marketing of goods in book-entry form is much simpler. Such trade usually involves the seller, the buyer and the bank. Trade-in such goods was formed when goods in tangible form became intangible (digital) goods in traditional trade (e.g. music, games, books).

Trade-in information technology can be divided into the following main groups:

- trade in licenses (this is about acquiring the right of temporary and constant use of the software);

- provision of services (talking about software installation, consulting, business process design and other services).

The scientific literature focuses on trade in services. Information technology services are often referred to as electronic services (if they can be provided from a distance using computer networks). Sometimes trade in information technology services is also known as high-tech trade. Other authors classify information technology services by content (Sousa, Voss, 2009): services with very high requirements (e.g. installation of antivirus software) and less stringent requirements (e.g. website design services).

It is noted that it is particularly difficult to gain a competitive advantage (Seyoum 2007). For example, 85% of all services created in the European Union are sold in Europe and only the remaining services are exported further.

The volumes of global sales of information technology licences grew rapidly (exports increased by 2.5 times between 1999 and 2007). It should be noted that licence sales are dominated by the USA, the European Union and Japan; these countries account for 91% of global exports. Globally, the US exports licences most actively (46% globally). In the EU, U. Kingdom and the Netherlands export licences most actively. As regards the specificities of the European Union's trade-in licences, it was noted that Dutch and French export licence growth rates were particularly strong.

The scientific literature focuses on studies examining the impact of funds allocated to the development of information technologies and technological skills of small and medium-sized enterprises (Lee et al., 2008). For example, Australian companies provide several installations and consulting services, so their surplus is exported, but Australian companies buy a larger share of licenses, business process design services from operators located in other countries. The opposite is true in the European Union: the volume of licences and services sold by companies is similar.

Japan, meanwhile, buys 3 times more services than it sells itself. In Japan, exports of services are negligible and represent only 1% globally.

It should be noted that it is proposed to examine the export/import ratio in the scientific literature on trade in services (Seyoum 2007), but such a ratio has not been applied in it. An analysis of the sales

volume of licences showed that sales volumes of licences in the USA are 3.3 times higher than their purchase volume in Japan.

To sum up, globally, most services are sold by European companies and licensed by US companies. In general, companies in the European Union sell more information technology than they buy themselves. In European Union companies, sales of services are higher than licence sales, and therefore the growth rates of trade in services in the European Union are also higher than the growth rates of licence trade.

It is noted that to increase the volume of exports of information technology, companies must have the appropriate technological capacity (Lee et al., 2008) and that their acquisition requires appropriate state policy (Hou et al 2006; Javalgi et al 2004), which focuses on increasing funds for the development and improvement of information technology.

It should be noted that there is a moderate relationship between the export volumes of information technology services and the funds allocated to the development and improvement of information technology (correlation coefficient 0.61). This relationship can be expressed in equations:

$$T = 52 + 3,891z \quad (6.2)$$

where:  $T$  is the export volume of information technology services;  $z$  is the number of funds allocated to the development and improvement of information technology.

It should also be noted that there is also a medium-term link between the export volumes of information technology licences and the funds allocated to the development of information technology (correlation coefficient of 0.65). This relationship can be expressed in equations:

$$A = 75 + 4,712b \quad (6.3)$$

where:  $A$  is the export volume of information technology licences;  $b$  is the volume of funds allocated to the development and improvement of information technology.

The assessment of the impact of the funds allocated to the development and improvement of information technologies on the export volumes of information technology licences has shown that these effects are moderate in the old Member States of the European Union.

The literature focuses on the application of information technology (Gallivan, 2001; Moore et al. 1991) and marketing (Moreau et al. 2001; Gatignon et al. 1989). It identifies the main models. One of them is dedicated to the uptake of technology (Technology Acceptance Model, abbreviation TAM2) (Davis 1989), the other is the explanation of the factors influencing companies' decisions on the use of technology. Technology-Organization-Environment model, abbreviation TOE) (Rogers 1962). These models are used to explain various issues, such as companies' decisions to apply technology, technology information transmission, etc. Some studies are devoted specifically to dealing with these issues. Technology Acceptance Model, abbreviation TAM2). The model is designed for the uptake of new information technologies (applications and information systems) in enterprises. The Pioneer of this model is F. Davis (1989). In the model, the intention of behaviour can be explained by the desire to use the technology and understand its benefits.

The model consists of two components: perceived benefits (perceived usefulness, abbreviation PU) and perceived ease of use (abbreviation PEOU). The perceived benefit, according to Davis (1989), is the degree to which employees believe that using technology will improve their performance “when convenient use means that using a particular technology will not require much effort”.

According to the hypothesis, the greater the perceived benefits and convenience of use, the better is the reaction of employees to the new technology and the greater the intention to assimilate it (accept). This new model has become known as TAM2.

**Technology – Organisation – Environment Model** (Technology-Organization-Environment model, abbreviation TOE)) pioneers L.G. Tornatzky, M. Fleisher (1990). According to the authors, the decision of companies to apply technology is influenced by technological, organisational and environmental factors

(Tornatzky, Fleischer, 1990):

- technological factors include internal and external technological solutions that are necessary for the development of the company. Intra-corporate technological solutions include actions related to the use of technological solutions within the company to innovate and expand business processes, while external technology solutions include the adoption and use of technology by market representatives.

- organizational factors include the company's resources and its characteristics: size, structure, the complexity of management aspects and quality of human resources.

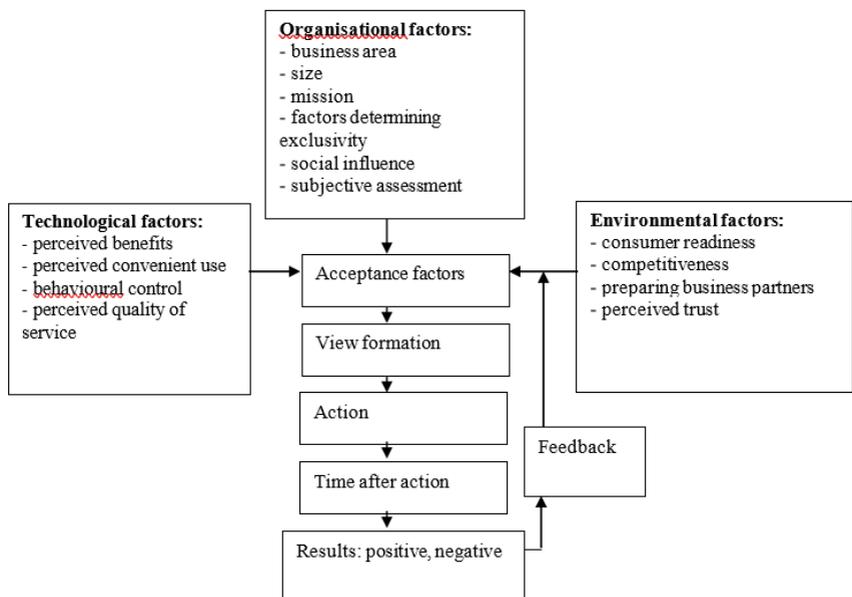
- environmental factors include market size, competitors, suppliers, macroeconomic factors and the legal regulation of business processes.

Assessing the influence of all three (technological, organisational and environmental) factors on business processes and the application of technologies, it can be said that the above factors highlight not only opportunities but also restrictions to adopt modern technologies not only local but also in the international market.

A. Hart, M.N. Barinedum, J.I. Benjamin (2010) presents a modified technology-organizational environmental model (TOE) that links dimensions of the technical mastery model (TAM) and technology – organization – environmental model (TOE) that influences the adoption and application of advanced solutions.

The model proposed by O.A. Hart, M.N. Barinedum, J.I. Benjamin (2010) can be used for small and medium-sized businesses that focus on business development and the use of advanced technologies. The approach to the use of information technology is formed based on the evaluation of the system, which influences a positive attitude leading to a high participation of users in advanced decision-making. In the meantime, feedback is formed based on experience and user repetitive behaviour. Users' experiences and knowledge can then be adapted to reduce unwanted behaviour by consumers.

The literature discusses models that can be used to assess consumer behaviour and attitudes towards the use and benefits of technology:

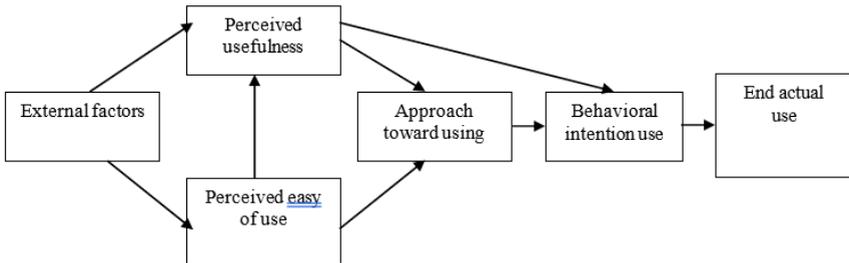


**Figure 6.2 Modified technology - organisation - environment model (Hart et al. 2010)**

- Technology mastery model;
- Technology recognition and use model;
- A theoretical model of motivated waste;
- The theoretical model of the intended behaviour;
- Model for the approval of expectations.

**Technology acceptance model.** Various models can be found in the scientific literature to assess consumers' attitudes towards the use of information technology. The most common and used model is the technology uptake model. The pioneers of this model are F. Davis, R.P. Bagozzi, P.R. Warshaw (1989). In the opinion of the researchers, the consumer's final decision to reap the benefits of information technology is influenced by perceived benefits (perceived usefulness, abbreviation PU) and perceived ease of use (abbreviation PEOU). All these factors influence the approach toward using, abbreviation ATU) and behavioural intention use

(abbreviation BIU) information technology, the latter for the end actual use (abbreviation EAS, actual use) of information technology (Calisir et al. 2009) (Figure 6.3).



**Figure 6.3 Technology Acceptance Model (TAM)  
(Davis et al. 1989)**

*Perceived benefits.* The potential consumer, aware of the benefits of information technology and the advantages of IT tools, plans to buy goods online. This dimension includes convenient shopping methods, product options, easy ordering process, time-saving. Meanwhile, perceived convenient use is the realization that the use of technology will not require additional effort. This dimension includes reliable shopping, support for consumer needs, protection, delivery of services at the right time (Lee 2014).

According to J.W. Lee (2014), the potential consumer must be able to understand both the benefits and the characteristics of convenient use.

The technology uptake model (TAM) is similar to the Motivated Action Model (TRA), a person's belief is determined by a positive attitude towards the use of technology, in turn, attitude can also mean an intention to use. Finally, it affects the decision to use the technology. These links are investigated and supported (Chen et al. 2002; Suh et al. 2002; Morris et al. 1997). In particular, as the Internet and e-commerce spread, researchers adapted and adjusted the TAM to demonstrate the feasibility of applying the model under new conditions (i.e. with the advent of the Internet) (Cheong 2005).

Most scientists (Ramayah, Ignatius 2005; Hernandez, Jimenez, Martin 2009; Lee 2014; Tong 2010) use this model to assess users' propensity for online solutions and their intention to use the

opportunities offered by information technology. However, most authors modify this model to assess other factors that influence the final decision of users.

Although the technology uptake model (TAM) can be used in the case of multi-technology uptake, it is criticised for not reflecting the views of most consumers on the technology (Moon et al. 2001). The model should therefore be extended to include additional factors. When examining the uptake of a particular technology, the additional factors proposed by the main users of the technology should be taken into account (Moon et al. 2001).

T. Ramayah, J. Ignatius (2005) presents another dimension to the dimensions of the mastery model of the aforementioned technologies – perceived pleasure. In the opinion of the authors, the latter dimension also influences the final decision of consumers. The study found that perceived ease of use and enjoyment have a positive impact on consumers' decisions to purchase goods online (Gillenson et al., 2002). All this proves that the ease of use and degree of satisfaction with technology are factors that need to be assessed to create and stimulate consumer propensity to purchase goods online (Ramayah et al. 2005).

Meanwhile, Hernandez, Jimenez, Martin (2009) analyse consumers' propensity to use information technology to assess trust. The perception of trust is treated as a belief in one's ability to use information technology. The consumer must realize and feel that he is capable and able to control information technology during shopping (Hernandez, Jimenez, Martin 2009). According to the authors, this affects perceived favour and convenient use, all of which leads to final behaviour.

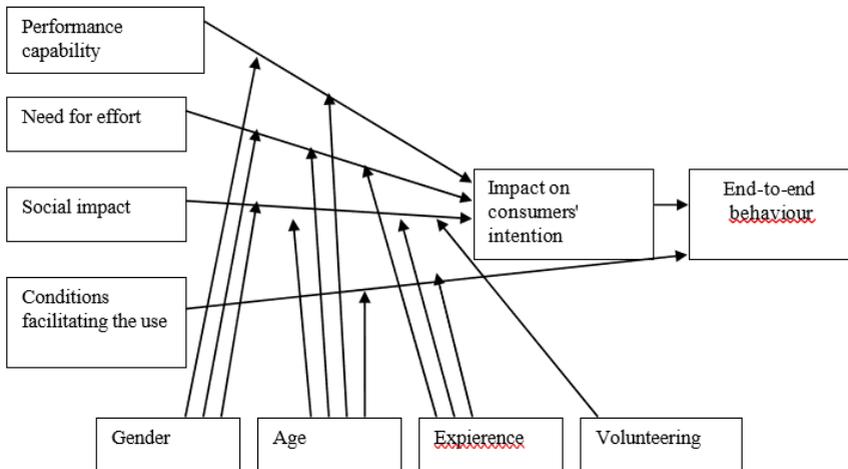
X. Tong (2010) modified the technology mastery model to assess the impact of perceived pleasure, risk and online shopping experience on the decision to purchase goods online. The study found that the perceived benefits of online shopping, perceived pleasure and experience in online commerce have a positive impact on consumers' decision to purchase goods online in both China and the US. Meanwhile, perceived risks negatively affect consumers' decisions and propensity to buy goods online.

Demographic factors also influence the uptake and use of information technology. Foreign author J.W. Lee (2014) modified

the technology mastery model by assessing the impact of demographic factors on consumers' final decision to use information technology. According to the author, gender, age, education and income influence this. On this basis, it can be argued that it is appropriate to take into account consumers, the market and adapt information technology to their needs.

**The model of recognition and use of technology** is based on the theory of recognition and use of technology (abbreviation UTAUT) to define the intention of users to use information systems and the re-use of information technology.

The model covers four main dimensions (performance capability, need for effort, conditions facilitating social impact and the use of information systems) and their impact on consumers' intention to use information technology and end-to-end behaviour (Venkatesh, Morris, Davis, Davis, 2003). The authors distinguish the influence of gender, age, experience and volunteering on the above dimensions (Figure 6.4).



**Figure 6.4 Technology Recognition and Use Model (Venkatesh, Morris, Davis, Davis, 2003)**

Performance capability is the level of consumer perception about the benefits of the technology used and the ability to achieve the goals set. This results in:

1. Perceived benefits (consumer attitude to the benefits of information technology);
2. External motivation (perception that the behaviour will affect the achievement of the desired goals);
3. Appropriateness (behaviour will improve consumer performance);
4. Relative advantage (perception that the use of new technologies brings greater benefits than the use of traditional technologies);
5. The probability to generate income.

The second dimension affecting the use of technology is the need for effort. The need for effort is treated as a person's perception of the need for the necessary efforts to use information technology. This dimension is characterized by perceived ease of use, ease of use experience and complexity.

The third dimension, which equates to the tendency of consumers to use new technologies, is social influence. Social influence is defined as the opinion and influence of the people around the consumer on the use of new technologies. This dimension is conditioned by subjective norms, social factors and the image of the company offering to apply the technology.

Use is facilitated by consumers' positive attitudes towards technological infrastructure, which needs to be sufficiently developed, technology compatibility, etc. (e.g. customer service centres, instructions for use).

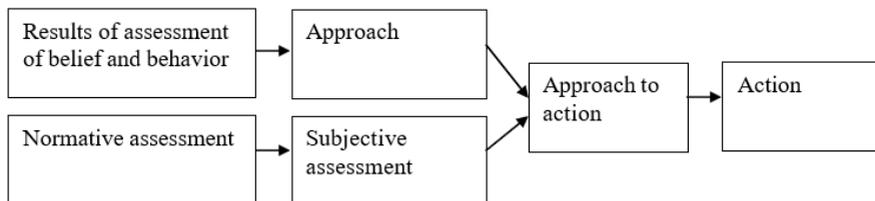
The theoretical model of motivated actions is based on the theory of motivated actions (Theory of Reasoned Action, abbreviation TRA), which was developed by American scientists M. Fishbein, I. Ajzen (1975). The model includes the conscious behaviour of people leading to psychological processes and the factors influencing such behaviour (Figure 6.5).

I. Ajzen, M. Fishbein (2005) distinguishes the dimension "approach" into two components:

- approach to a physical object: internet, computer.
- approach to behaviour or a specific action taken: use of the Internet.

The positive attitude of consumers to both the physical object and the specific action performed leads to the decision and the intention

to participate in the online shopping process. Negative attitudes will undoubtedly influence consumers' passive behaviour and negative propensity towards processes that include seeking information, structuring, participating in online auctions, fulfilment of orders and payments.



**Figure 6.5 Theoretical model of motivated action (Fishbein et al. 1975)**

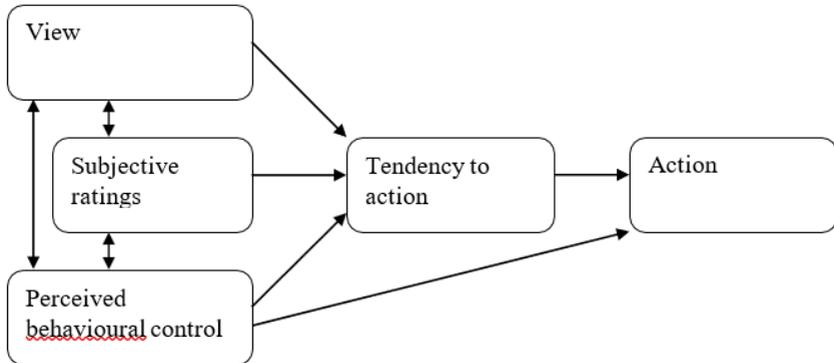
Meanwhile, X. Cao, P.L. Mokhtarian (2005) presents factors that influence the outcome and attitude of the assessment of belief and behaviour:

- perceived benefits of the product;
- online shopping experience;
- customer service;
- potential risks.

Subjective assessment includes the influence of the social environment on the person and his behaviour. This dimension is intended to identify the influence of a group of people around a person on their behaviour (Gopi et al. 2007). The consumer's decision to purchase the desired product online is influenced by the people around him since the feedback, opinion and support of the latter determine the consumer's tendency to take advantage of information technology.

The theoretical model of the predicted behaviour is based on the theory of predicted behaviour (Theory of Planned Behaviour, abbreviation TPB). Pioneer of predicted behavioural theory, American scientist I. Ajzen (1991). The theory was developed to extend the contribution of American scientists M. Fishbein, I. Ajzen to the theoretical model of motivated actions. A new theoretical model of the intended behaviour is created based on the theoretical model of motivated actions, complementing its dimensions, i.e. by

inserting another dimension that influences the final decision of users – perceived behavioural control (Figure 6.6).



**Figure 6.6 Theoretical model of predicted behaviour (Ajzen 1991)**

Thus, a new dimension – perceived behavioural control – is added to address situations where consumers may be affected by the inability of consumers to control their behaviour (Gopi et al. 2007). Ms Stone, I.M Jawahar, Jennifer L. Kisamore (2009) argue that this dimension has been included in anticipation of possible situations influenced by limited or in breach of rules and norms. This dimension determines both the tendency to action and the action itself.

Perceived behavioural control consists of two factors (Baker et al. 2007):

- control beliefs that relate to a person's skills, resources and capabilities;
- control beliefs that are related to a person's perception, the need for the necessary skills, resources and opportunities, to achieve the desired result.

In the J. F. George (2004) study, the standard model of predicted behavioural theory was modified to include certain dimensions that, according to the author, affect attitudes, subjective assessment and perceived behavioural control. According to J.F. George (2004), a positive attitude is influenced by the reliability of the Internet and the security of personal information, subjective assessment is conditioned by normative beliefs, while the control of perceived

behaviour is influenced by the effectiveness of the process. The investigation showed that reliability has a positive impact on consumers' propensity to purchase goods online. Consumers who rely on technology and their abilities are more likely to buy goods online than consumers who lack these skills and confidence (George 2004).

The advantage of this model is to assess the user's perceived control, which determines the decision of users to use information technology. A proper assessment of their capabilities, skills and efforts can lead to a positive attitude towards the opportunities offered by the Internet and other information technologies for the purchase of goods online.

The possibilities for adapting and modifying the model are wide. E.W. Baker, S.S. Al-Gahtani, G.S. Hubona (2007) apply a theoretical model of intended behaviour to assess the peculiarities of the behaviour of individuals depending on demographic factors: gender, age and education.

Limayem et al. (2000) modified the model to include two more dimensions: perceived consequence and perceived innovation. These factors were assessed to determine their impact on both the approach and the final decision. In the model they presented, the subjective assessment was measured at the level of family members and friends of consumer acceptance, while behavioural control was assessed taking into account the availability of the website, informativeness of products, simplicity of operations, system capabilities, speed and convenience.

Expectation Approval Model Expectation Confirmation Model abbreviation ECM) was developed by Bhattacharjee in 2001 and is dedicated to analysing the post-use behaviour of IT users. The model is based on the Theory of Approval of Expectations (Expectation Confirmation Theory, abbreviation ECT), proposed by Oliver in 1980. The theory of the confirmation of expectations is a very popular theory, most often mentioned in the literature on marketing and consumer behaviour (Oliver 1980; Dabholkar et al. 2000).

The model emphasizes expectations. The authors say that expectations are changing, so expectations that are confirmed or not using technology are preferred. The expectation-setting model contains the following components: the first component is the benefit

derived from the use of the technology, the second is the satisfaction component (Bhattacharjee et al. 2011), the third component is the validation component and the fourth component is the re-use component of the technology (Figure 6.7).



**Figure 6.7 Expectations Approval Model  
(Bhattacharjee et al. 2011)**

The model validation component includes expectations and real benefits (Bhattacharjee 2001). The benefits can be both welcome and real, but the author of the model assumes that if there is confirmation, then it also includes the influence of the expected benefits.

It is noted that the dissemination of ITT leads to the following trends:

- the boundaries between trade and manufacturing companies are gradually blurring;
- Investments in ITTs based on the use of robots and a higher level of automation encourage trading companies to produce part of the goods themselves. As a result, they often create production units and carry out production
- Investments in e-commerce (e-commerce) technologies also lead to the fact that the paints of the manufacturing company trade online and sell goods to end-users, i.e. they also engage in more active trading activities in addition to their main activities;
- tax payment locations change geographically. Over time, international e-shops are likely to more or less replace traditional local shops, which will often mean another place to pay taxes in the

OECD (2001).

- turnover in other sectors is changing. OECD documents state that the growing use of e-commerce technologies will affect turnover in the ITT, logistics, finance, trade and tourism sectors;

- the cost structure is changing. Less investment is made in tangible fixed assets, wage costs are reduced, and more funds are allocated to the acquisition and maintenance of ITT.

It is noted that the application of ITT promotes the following changes:

- Investments in e-commerce lead to companies taking on new activities. For example, wholesalers apply online sales to end-users, i.e. they also carry out retail activities in addition to their core business.

- The use of technologies based on the use of robots leads to companies undertaking manufacturing activities. The use of these technologies encourages retailers to produce part of the goods themselves. Its retail businesses create production and packaging units and carry out producer and wholesale activities in addition to their main activities;

- Business developments related to investments in e-commerce by retailers, technologies based on automation and robot use lead to retail businesses carrying out wholesale activities, i.e. targeting professional consumers (offices, catering and accommodation establishments).

The result of the technology is the 'formation of a competitive advantage' (Porter 1999), which is characterised by the separation of the company from its competitors, a better position on the market and the use of new methods. "The essence of these methods is that the goods or services offered by the company must be available on the market as unique and consumer service more efficient" (International Business 2008).

These changes also affect the unified system of interdependent undertakings, i.e. the distribution channel. Based on these developments, it is proposed to complement the traditional concepts of distribution channels.

Until now, the concepts of distribution channels have been treated as follows:

- an extended distribution channel where the manufacturer

entrusts his goods to the wholesaler to retail outlets which will sell them to the final consumer;

- limited distribution channel – the second alternative for the manufacturer, this distribution channel eliminates the wholesaler;
- direct distribution channel – the third alternative for the manufacturer, it eliminates both wholesale and retail businesses. Manufacturers use television, press or e-mail to search for buyers. This method of distribution is also called door-to-door (Dale et al., 1998).

In the light of the changes, it is proposed to improve the concepts of trading channels for the following:

- the concept of a restricted distribution channel should include the elimination of one trading undertaking (whether wholesale or retail);
- it is proposed to link the concept of a direct distribution channel to any undertaking engaged in production (e.g. production by a retail establishment); this may be the main or ancillary activity of the enterprise (Table 6.1).

*Table 6.1*

**Traditional concepts of distribution channels and their new additions**

Channel type	Traditional extended channel concept	Traditional concept of limited channel	Proposed addition to the concept of a limited channel	Traditional concept of direct channel	Proposed addition to the concept of direct channel
Channel participants					
Manufacturer	X	X	X	X	
Wholesaler / Professional consumer	X		X		X
Retail company	X	X			X
End user	X	X	X	X	XX

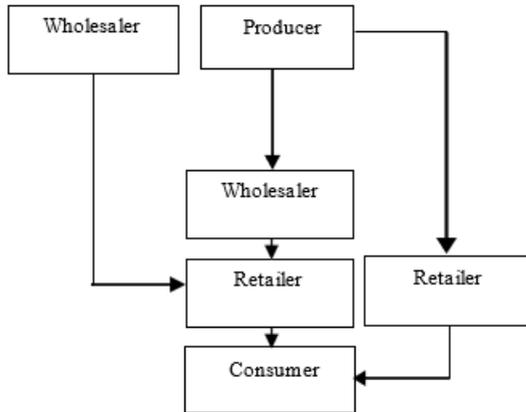
In the context of e-commerce, changes in the use of distribution channels are expected to lead to more active use of the direct channel and more passive use of other channels.

Looking at the impact of ITT on distribution channels, the following perspectives can be distinguished:

- perspectives related to the functions of the participants in the distribution channel;
- prospects related to commodities, information and cash flows in the distribution channel.

From a functional point of view, it is recognised that it is not important who will perform the actions in the distribution channel, these actions must be carried out. For example, when fulfilling customer orders, the retail company collects goods, select, packs, and transports them. On the other hand, the company can hire a logistics company that will select, pack, transport goods. In this case, the retail company will transfer the order to the logistics company, which will take care of its assembly and delivery to the consumer.

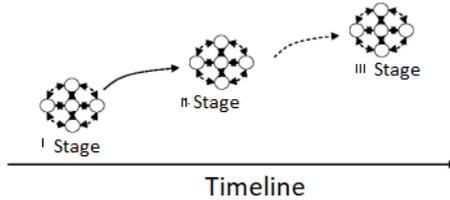
From a systemic point of view, a distribution channel is considered to be a unified system of interdependent enterprises covering the flow of goods, information and cash, therefore it is proposed to look at the distribution channel as an integrated system (Figure 6.8): companies work together to create value in order to reach the consumer faster through the distribution channel.



**Figure 6.8 Distribution channel, integrated system**

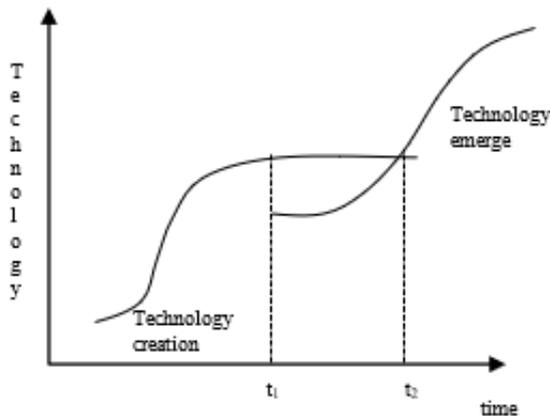
The analysis of relations between business partners is the focus of a common systems theory. General Systems Theory (abbreviation GST). The distribution channel partners – a unified system of interconnected companies – work together to bring the product to the consumer faster and at a lower cost. McLeod (1995) states that business partners use more advanced information technologies to achieve their stated goals. This means that, as a success of the application of information technology, the exchange of information, goods and money between the partners of the distribution channel is intensified.

Any technology must start with an idea and end with a certain result. Frequent technological development develops a strategic objective and provides for several phases (Figure 6.9), each of which is linked to the “primary objective”.



**Figure 6.9 Multi-stage technological development process (Lim et al. 2004)**

There are many examples where ideas have been known for many years but were not developed or found only limited application since several factors are missing for their full realization. Often such missing factors are associated with the development of other technologies (Figure 6.10).



**Figure 6.10 Technology Continuity (Sanchez 2005)**

Technologies available on the market are retrofitted or combined with new technologies as new technologies emerge and take on a

new form. It should be noted that technological improvements in the field of microelectronics have led to rapid progress in the areas of computers, electronic components and telecommunications, affecting not only trade but also the economic system as a whole (Meliciani 2001).

The two perspectives used to understand how new ideas, processes and technologies are spreading between and within companies (as mentioned by Niehm et al. 2010, Rogers 2003) is called as the innovation spread scheme and technology mastery model (TAM) (Davis et al. 1989).

Rogers' innovation spread scheme consists of five stages: (1) familiarisation with innovation (2) favourable approach to innovation (3) decision to use innovation (4) innovation mastery and (5) validation of innovation.

According to the Innovation Spread Scheme, innovation will spread if there is a decision to use the innovation, i.e. if it is a relative advantage, compatible with existing values, needs and experiences (Rogers, 2003). A negative attitude towards innovation can be overcome if the perceived value of innovation has high social importance and is easy to adapt (Scarborough and Zimmerer 2006). Authors L.G. Tornatzky, R.J. Klein (1982), after analysing 75 publications dedicated to the spread of innovation, found that only the relative advantage, compatibility and complexity were constantly linked to the rate of innovation.

The process of initiating, creating (preparing), implementing (spreading) an idea is a complex. In scientific work, great attention is paid to the management of this process. Technology uptake is of great importance in the process of implementing technology.

The uptake of technology is the time frame within which technologies are mastered. Technologies can be mastered in the year of investment, after one, several or three years. Technology uptake varies from country to country:

- the first group of countries includes countries where technology is absorbed during the investment year. In these countries, technology is absorbed immediately, but sometimes the level of productivity achieved can only be maintained through annual investments;
- the second group of countries, countries where technology is

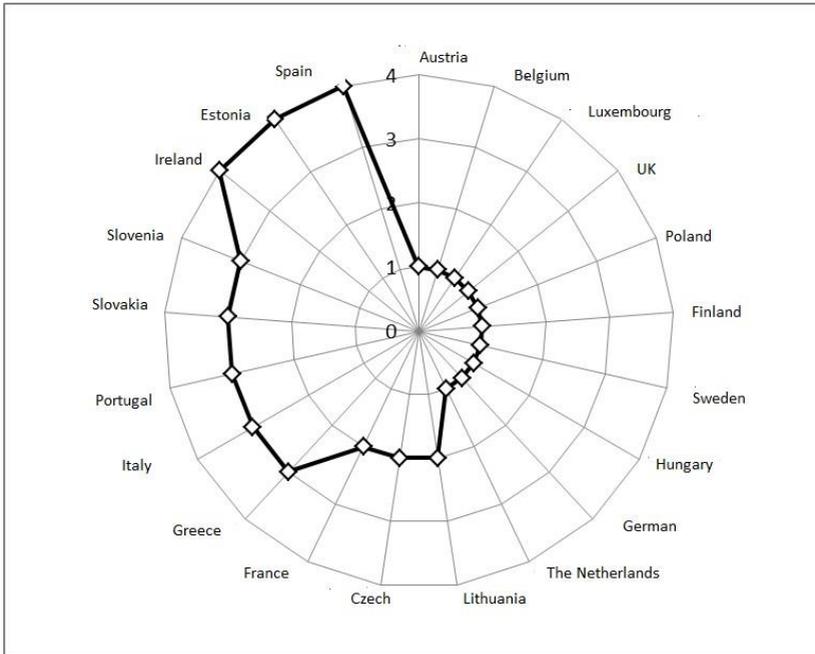
absorbed in the following years;

- a third group of countries, which include countries where technology is absorbed over several years. In these countries, more time is needed to master the technology;
- the fourth group of countries includes countries where technology is absorbed within three years. In these countries, the uptake of technology is slow: the impact of the application of technology is most pronounced only in the third year. In these countries, more investment in technology and less money is spent on research and experimental activities. The imbalance between research and experimental spending or the very low allocation of funds for research and experimental activities can be an important reason for the fact that companies located in such countries need more time to absorb technology and achieve a higher level of productivity.

Looking at the time of technological uptake in the European Union, it has been found that, in most countries that are old European Union countries, technology is absorbed immediately, achieving a higher level of productivity in the same year. It is noted that the level of productivity achieved in Germany can only be maintained by annual investments. In other European Union countries, the impact is most pronounced in the following years (e.g. France or the Czech Republic), year 2 (Portugal or Greece) and third-year (Spain or Ireland). In countries of the European Union where capital uptake is slower, more time is needed to achieve higher levels of productivity (Figure 6.11).

The different rates of technological uptake in countries answer the question of why the level of technological progress varies from country to country. Many technology mastery strategies are distinguished:

- a proactive development strategy. A strategy that requires a leading role in the market;
- a strategy for replicable development. A strategy that requires a leading role for followers in the market;
- adaptive development strategy. A strategy that requires you to keep up with competitors and business partners and absorb technology sooner or later.



**Figure 6.11 Technology uptake period in European Union countries**

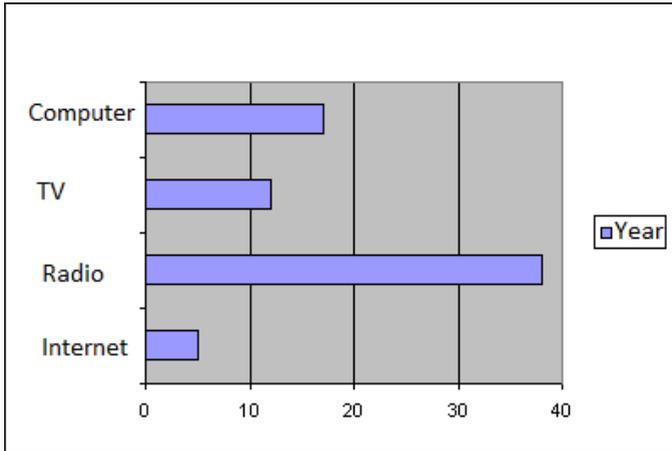
When examining the pace of uptake of different technologies, it is necessary to pay attention to the very rapid pace of uptake of internet technology. EUR 50 million Internet users have mastered internet technology within five years, while it took more than ten years to absorb other technologies (Figure 6.12).

The effects of such exceptional internet technology penetration on world trade were felt several years later (1997-1999) (Freund et al. 2000).

**Transfer, recognition and application of technology.** Technology transfer flows are highly internationalised. Technology transfer processes must be continuous and be carried out consistently. The purpose of technology transfer is to transfer technology to the maximum number of users in the shortest time.

Although each case of technology transfer is unique, clustered and multinational internal transmission systems are most often used

for technology transfer. In historical times, housing construction, drug manufacturing and hunting technologies have been transferred between communities through a cluster system of technology transfer.



**Figure 6.12 Pace of technology uptake (ITU 2005)**

In the case of a cluster system, companies need to develop a balanced strategy consisting of competitive and cooperative strategies designed to strengthen the position of strategic partners and ensure their competitive advantage.

In the case of multinationals, the technology transfer strategy is shaped by the parent company, which is seeking to distribute the technology among its affiliates. Such a technology transfer system may be referred to as an internal transmission system of a multinational enterprise. This system is based on an electronic network ensuring the exchange of information between branches and the parent company. The international company accumulates experience in technology transfer and assimilation, which is hosted on the intranet.

In general, large multinationals are the most advanced technology applications. Technological change is key to shaping the competitive strategy of multinationals. With huge intellectual and financial resources, these companies can be more active in applying new

technologies. In the second half of the 20th century – the end of the 20th century, around 50 000 people were counted worldwide. multinationals with 300 000 employees. foreign branches. The prevailing view is that parent companies are more active in applying new technologies than branches of the same multinationals. Therefore, when analysing the prospects for the application of technology in multinational enterprises, the parent companies of multinational enterprises and their branches should be examined separately. However, it should also be noted that branches of multinationals still far outperform the indicators of national enterprises. They use higher levels of technology to help them establish themselves in the internal market (Ramasamy et al. 2010).

The behaviour of enterprises during technology transfer is examined by the Technology Transfer Theory (abbreviation TTT) and Innovation Diffusion Theory (abbreviation IDT). According to Rogers (1995), “transfer is the process by which companies transfer technology to business partners – companies that pursue common goals using a cluster system”. In such a process, the following elements are important:

- technology;
- communication;
- moment;
- company partners (Hackbarth et al. 1999).

The theory of innovation transfer can be applied to the transfer of various technologies, such as the transfer of information technology. Information technology is a technology for the transmission, processing and data collection of information in book-entry form (these are constructive solutions that do not have a material form).

The transmission of information about a particular technology is called communication. Representatives of businesses are involved in the transmission of information. In addition, it should be noted that information on technology can be transmitted not only to permanent but also to social and technological business partners. When transmitting information, you need to select the right moment. Companies that are among the first to implement state-of-the-art technology should be given such information earlier, while others should be transferred at a later stage. The transmission of information on the technology highlights the advantages of its

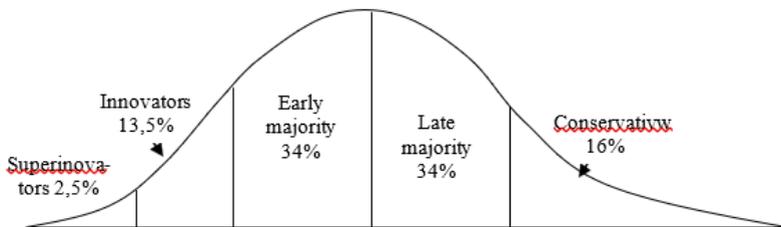
application and identifies complexity.

The recognition of technologies is also of great importance in the process of implementing technologies.

When analysing the recognition of technologies in enterprises, the following types of enterprises are distinguished (Figure 6.13):

- super innovator companies,
- enterprises-innovators,
- innovators follower-early majority enterprises,
- late majority companies,
- conservative companies.

The super innovators are innovating very early. Such enterprises have a significant impact on the development of sectors, as they can share common experiences with other companies in the sector.



**Figure 6.13 Technology Recognition Curve: Rogers (1962) Model (Sanchez 2005)**

Innovators usually face potentially high costs and greater difficulties in the implementation of the technology. We will call the innovator the company that, for the first time, is making a change related to technological change.

Innovators' followers-early the majority of companies are companies that implement technology immediately after enterprise innovators. Proportionally, the number of enterprise innovators is relatively low, while the early majority of enterprises are much larger. For early majority companies, it takes more time to analyze the advantages of technology provision, the capabilities of the company and the influence of technology on the company.

The late majority of businesses are owned by small businesses that are late in introducing technology.

Company-conservatives, are lagging companies. Among companies in the sector, they are deploying their technologies at the latest.

For technologies to be recognized by the late majority, they sometimes need to be modified in such a way as to significantly facilitate their uptake and application.

When discussing the recognition of technologies in enterprises, the recognition of technologies in society should be looked at. I.F.R. Green (2005) presents the main components that make up the recognition of technology: the dissemination of technology over time, the novelty of the technology, the decision-making process of individuals. All these components, according to Green (2005), influence the approach to technological solutions, which lead to their dissemination in society.

The dissemination of technology over some time is the relative time taken by persons influencing social variables. The level of dissemination shall be the ratio of the number of users who have adopted the technology over time to the total number of users.

**Technological novelty.** It is a component that expresses consumers' attitudes towards technology and the decision to apply technology in their daily activities, taking into account their experience

The decision-making process of individuals consists of 5 steps:

1. Knowledge,
2. Conviction,
3. A decision,
4. Performance,
5. Approval.

Supported by the technology recognition model, the following factors are distinguished (Figure 6.14):

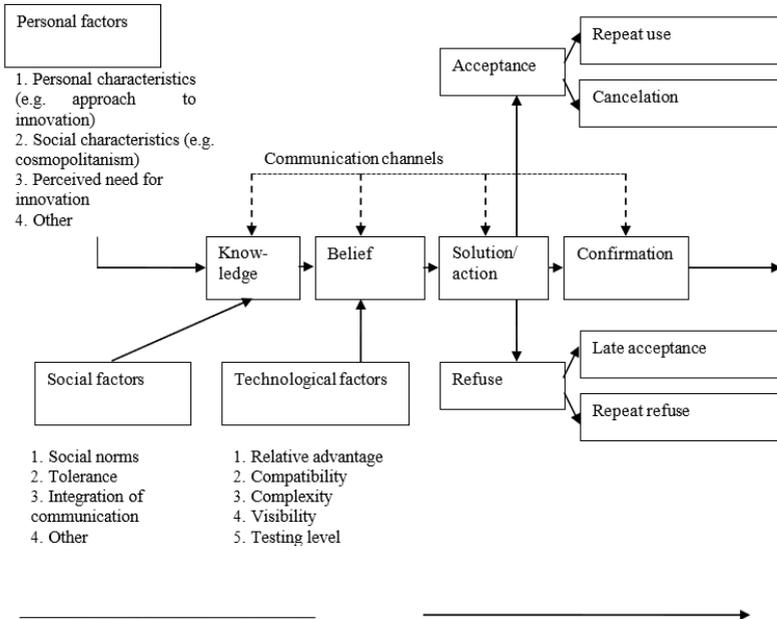
- personal variables,
- social system (social variables),
- technology characteristics,
- communication channels,
- time.

These factors affect the recognition of technologies.

Consumers' attitudes towards technology, the benefits they bring, the importance of smart decision-making and use. Personal variables

are personal, social characteristics and the perceived need for innovation. Cosmopolitanism is one of the social characteristics that influence consumers' attitudes towards technology. Receptivity, a distinctive approach to innovation have a positive impact on the level and application of advanced decision-making.

The second factor influencing the dissemination of smart solutions is the social system. The social system consists of an individual, groups, organizations, etc. Therefore, the dissemination of decisions is influenced by the attitudes, norms, tolerance, integration of communication and other factors of these members. The views of some members may influence the decision of other members and the approach to technological solutions being developed, i.e. the social system influences the development of attitudes and knowledge needed to make technological decisions.



**Figure 6.14 Technology Recognition Model (Rogers 1995)**

Personal and social variables affect users' knowledge of technology. According to M. Sahin (2006), the critical issues to

assess the applicability of advanced solutions are what? how? why?. At this stage, consumers are struggling to understand the essence of the technology, its applications and its benefits. The third factor affecting the dissemination of advanced solutions and consumer confidence is the characteristic of technology: (Cao et al. 2005):

- Relative advantage. The benefits of applying technology and the potential advantages of increasing the competitive advantage are perceived.
- Compatibility. The implementation of advanced solutions is perceived, taking into account the experience and requirements available to the potential user.
- Complexity. The complex use of the technology used is perceived.
- Visibility. Visibility of the proposed technologies to the public.
- Testing. Sufficient research before submitting technological solutions to the public.

Relative advantage, compatibility, visibility and testing positively influence the tendency of consumers to innovate, all of which influence the tendency of business representatives to apply technology to meet users' needs and increase the efficiency of the company's activities, while the implementation and dissemination of technologies are negatively influenced by the complexity of the technologies that lead to the rejection of the presented technology. These factors affect the belief of consumers, which in turn determine the decision to adopt or reject technology.

Knowledge and its influence on consumers' beliefs determine consumers' decision to adopt or reject technology.

Communication channels are the fourth factor in the dissemination of technology. Communication is a process in which users can share information to achieve mutual understanding. Media channels are more effective in developing information, knowledge of technology, while interpersonal channels are focused on communication and the formulation of attitudes that lead to the decision to accept or reject an innovation.

Communication channels and time are factors that influence not only the formation of knowledge and belief but also the decision of users to apply technology.

The use of technology is a key factor in economic growth.

Investment in technology also involves investments in infrastructure which must be sufficiently developed to achieve economies of scale. In addition, it is noted that not only the lack of infrastructure but also the deterioration of economic conditions are reducing the demand for technology.

The application of technology is also conditioned by:

- the business environment in which the companies operate (this may be influenced by both competitors and business partners);
- advantages of applying technology (Lee 2014):
  - o costs of acquiring, operating and maintaining technology. As these costs increase, expected profits decrease and, as costs decrease, expected profits increase, leading to a corresponding increase or decrease in technology procurement volumes. Experts say that each time the installation volumes double, the cost of technology is reduced by 20-30%;
  - o expectations. Expectations of the application of new technologies are expected profits. The expected profits are understood by entrepreneurs as the part of the profits left over after paying taxes.
  - o opportunities and prospects for maximising the practical benefits of technology. Perspectives related to the technology itself, its uniqueness, easy absorption and integration with other technologies. For example, in southern European countries, medium-sized enterprises predominate, so not all technologies can suit the needs of such enterprises.

The application of technology is inseparable from capital increases, but the decision of whether or not to invest in a particular technology is not taken by a private operator. The prevailing view is that an economically strong economic operator who achieves old technology in a competitive struggle usually loses out to the entity applying the more advanced technology since the technological improvements that are being made are relatively more productive.

To encourage companies to apply information technology, it is necessary to invest in information technology, research and experimental development in a complex way. Investment in research and experimental development and the activity of manufacturing companies – investment in information technology – have the greatest influence on the activity of trading enterprises to apply

information technology.

Eurostat (2009) data show that Japan spends the most on the development and development of information technology: investment in information technology accounts for 3.4% of GDP. There is a little less investment in these technologies in the USA: investment in information technology in Japan accounts for 3.3% of GDP (US Census Bureau 2009). In the US, more money for information technology is spent on technology than software. Half of the software's funding is spent on purchasing licenses and maintaining equipment (calculated according to the U.S. Census Bureau).

The European Union invests less in information technology. In the EU, the largest funds for the development and development of information technology are allocated to the United Kingdom and Germany (based on Eurostat (2009) data). The majority of trading companies in the European Union spend 3 % on the acquisition and maintenance of ITT. The US trade sector provides 1.5 % of the funds for the acquisition and maintenance of ITT (US Census Bureau 2017). The analysis of the information on the successful application of ITT in the European Knowledge Base (BEEP) since shows that the main objective of trading companies to use information technology and telecommunications is to become available to consumers in regions where there are no representatives of the company, as well as to sell goods to international distributors. It is noted that there is currently an impact on investment in information technology were carried out in previous years.

### *E-commerce technologies and e-business*

**E-commerce technologies and their dissemination.** More attention is now being paid to the use of e-commerce technologies. The use of e-commerce technologies is increasingly seen not as a competitive advantage, but as a necessity to keep pace with competitors. In the commercial sector, e-commerce technologies have been progressively applied since 1995.

Concerning business processes, e-commerce can be characterized by the use of some electronic networks to simplify and speed up the purchase and sale of goods. E-commerce is an activity in which

electronic networks are used to reach buyers, sell goods and services and pay for them. Such activities are also linked to advertising and the delivery of goods (Bergendahl 2005).

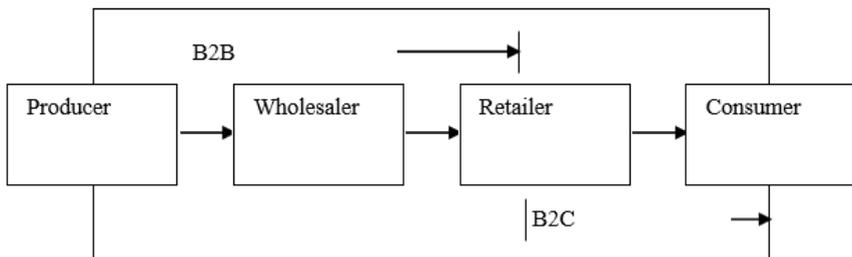
E-commerce can be based on two main business models:

- the business model “business to business”;
- business model “business to the consumer” (Davidavičienė et al. 2009).

“Business to business” often refers to transactions between companies. According to this model, several or more companies carry out trade. It is the most common e-commerce model in the world since the advent of e-commerce technologies. The model covers transactions between companies and is considered to be the most important stimulant of e-commerce development (Kvainauskaitė et al. 2005).

The business model “business to business” also reflects the form of wholesale when goods are ordered electronically (Figure 6.8). To do this, you additionally need to have a customer database that stores data on price discounts granted to each customer (E-Business W@tch, 2008).

The business model “business to consumer” includes transactions between sellers of goods and end-users. Companies, using the technologies “business to consumer”, put a lot of effort into attracting as many customers as possible (Jovarauskienė et al. 2009). The most important form of such a model is the e-shop (Davidavičienė et al. 2009; Kvainauskaitė et al. 2005). The model mostly reflects the retail form (Bohlin 2004) when goods are ordered online (Figure 6.15).



**Figure 6.15 E-commerce business models**

Most of the transactions using e-commerce technologies consist of “business to business” transactions, i.e. inter-business transactions (transactions between legal entities) concluded via the Internet or other electronic networks. “Business to consumer” technologies are better known to the public (Becker 2007). The main feature of the business model “business to consumer” is to provide the current and potential customer with all available information about the goods, offer their order online, payment and service (Barnes 2007).

W. Kesthong et al. (2007) made a comparison of the application of e-commerce technologies. The authors assessed ten e-shops such as Amazon.com, eBay.com, buy.com, etc., and found that e-shops prefer business models “business to business” and “business to consumer” (among which only eBay.com do not apply “business to business”) (Table 6.2). After comparing the application of e-commerce technologies, Mr Kesthong et al. (2007) rated Amazon.com e-shop best (Table 6.2). The authors believe that the more actions shoppers can perform, the more advanced the e-shop is.

Table 6.2

**E-commerce technology application comparison  
(Kesthong et al. 2007)**

Companies	B2B			B2C			C2B			C2C			Overall		
	Score	Max Score	%	Score	Max Score	%	Score	Max Score	%	Score	Max Score	%	Score	Max Score	%
Amazon	18	18	100%	40	46	87%	2	8	25%	20	20	100%	80	92	87%
Overstock	16		89%	34		74%	2		25%	20		100%	72		78%
Office Depot	16		89%	37		80%	4		50%	0		0%	57		62%
Priceline	16		89%	38		83%	6		75%	0		0%	60		65%
eBay	0		0%	32		70%	2		25%	20		100%	54		59%
Buy.com	16		89%	34		74%	2		25%	0		0%	52		57%
Drugstore	14		78%	34		74%	2		25%	0		0%	50		54%
Staples	16		89%	29		63%	2		25%	0		0%	47		51%
GSI Commerce	16		89%	0		0%	2		25%	0		0%	18		20%

Currently, in practice, there are already several ways to develop trade through e-commerce technologies:

- manufacturer on the Internet. On the Internet, consumers of goods can find, choose a seller and even conclude a sales contract directly with the manufacturer. This encourages an increasing number of consumers to buy goods directly;
- trade between companies through electronic networks. An increasing number of permanent businesses use electronic networks to place and receive orders and to transmit transport and payment documents. Data obtained through electronic networks shall be integrated into company information systems;
- online shopping centre. Selling electronically is mainly driven

by convenience and the ability to sell goods at any time of the day. If in a traditional high-profile store the range of goods is limited to 40-60 thousand goods, there are no technological restrictions in the e-shop to have a larger range of goods.

Transferring traditional marketing to the internet network makes it more flexible. The main incentives to order goods electronically are a large assortment, competitive prices, convenience, delivery service and quality (Kornum et al. 2005).

Globally, e-commerce is active in 15 % of all trading companies (i.e. one in eight companies is engaged in e-commerce). Among the 157 countries of the world, e-commerce is engaged by trading companies located in 65 countries of the world. The largest number of companies using e-commerce technologies is located in the UK, USA and Japan (in absolute terms) (based on Planet Retail 2009).

Looking at the prevalence of e-commerce technologies between different continents, e-commerce ranks 3 % among all trading companies in Africa, 11 % in Asia, 13 % in Oceania and Australia, 17 % in Europe, 19 % in America.

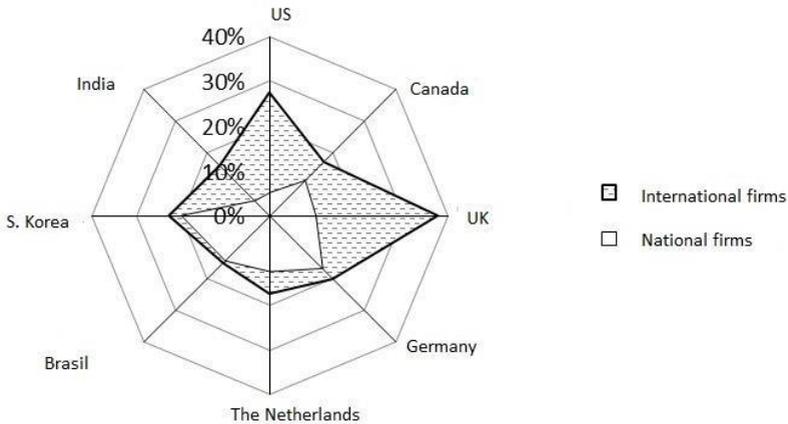
The following trends emerge when assessing the uptake of e-commerce technologies in international and national countries:

- e-commerce technologies are most actively used by international parent companies;
- slightly more passive e-commerce technologies are applied by branches of multinationals;
- the technologies are most passively applied by national enterprises.

The gap between multinationals and national companies is shown in Figure 6.16. In addition, it was found that multinationals are engaged not only in e-commerce but also in traditional retail or even wholesale trade. Globally, it was found that not only e-commerce but also traditional retail and wholesale trade is carried out by 45 trading companies, representing 1.5 % of all trading companies. In this respect, multinationals are more active than national companies, and as many as 80% of such enterprises are owned by multinationals as branches.

Assessing the uptake of e-commerce technologies in U.S. manufacturing and trading companies has shown that U.S. e-commerce is more engaged in manufacturing than trading

companies. U.S. manufacturing companies can sell goods to consumers themselves, which at the same time means that they are abandoning the services of dealers. The assessment of the uptake of e-commerce technologies in manufacturing and marketing enterprises in the European Union has shown that manufacturing companies use e-commerce technologies more passively for the sale of goods than trading companies. At the same time, this means that manufacturing companies in the European Union are making greater use of trade intermediaries (Yahoo Finance, 2009).

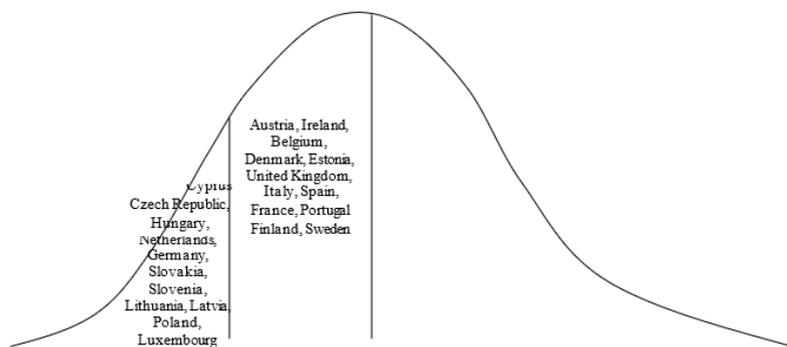


**Figure 6.16 Gap between national and multinational companies when using e-commerce technologies**

Most active e-commerce in the EU is carried out by trading companies located in countries that are superior in terms of common application rates. In these countries, e-commerce is carried out by one in three trading companies.

Looking at the recognition of e-commerce technologies in European Union trading companies, it can be noted that the uptake of technology in most countries of the European Union is halfway through (Figure 6.17): 60% of European Union countries have early adopter e-commerce technologies. E-commerce in the EU is most actively engaged by trading companies located in the UK, Nordic countries. Meanwhile, in central European countries (Slovakia, Poland, Czech Republic, Hungary, Slovenia, Lithuania, Latvia) a

common aberration has emerged – e-commerce in this space is carried out by much more trading companies. To increase the capacity of manufacturing and marketing companies in the European Union to increase the use of e-commerce technologies, integrated investment in information technology and related research and experimental activities should be made. It has been revealed that complex investments in information technology, research and experimental activities have a positive impact on the ability of manufacturing and trading companies to use e-commerce technologies. Most of all, this influence on the aforementioned enterprises, especially manufacturing companies, is manifested in investments in information technology (Burinskienė, 2010).



**Figure 6.17 E-commerce technology recognition curve in the European Union, Rogers (1962) model (Sanchez, 2005)**

The features of the application of e-commerce technologies are fundamental cost differences. E-commerce has certain characteristics: the cost of trading when using e-commerce technologies is usually lower than the costs incurred in traditional trade, since there is no need to invest in-store equipment, to hire employees working in a traditional store. Therefore, for e-commerce trading companies, the labour productivity indicator is often higher than that of traditional retail (sometimes even wholesale) companies.

It is noted that e-commerce companies invest less in tangible fixed assets and incur lower wage costs. Based on the data in Table 6.3, it can be concluded that e-commerce companies employ 3.7 times fewer employees than traditional retail businesses.

Table 6.3

**Comparison of the number of employees in trading enterprises engaged in traditional retail, wholesale or e-commerce**

Enterprises which are involved	Annual sales, mln. Eur	The number of employees involved in trade	Sales unit (1 mln. Eur) earned by one employee
In production (sales branches and offices) (328500 establishments)	1123825	4032780	0.28
In traditional wholesale trade (agents and brokers are not included) (130278 enterprises)	519961	1302115	0.40
In traditional retail trade (639601 enterprises)	925596	7659211	0.12
In traditional trade	2569382	12994106	0.20
In electronic commerce mainly (14017 enterprises)	56617	126966	0.45
In electronic commerce mainly (Amazon.com)	13322	20700	0.64
In electronic commerce mainly (11 enterprises)	7919	14658	0.54

It is also interesting to note that most often e-commerce is carried out by companies with only 10 employees (according to data from the US Bureau of Statistics in 2009). Nevertheless, the characteristics of these enterprises are often better than those of enterprises engaged in wholesale and retail trade.

Meanwhile, Amazon.com, which is a leader among e-commerce companies, employs 5.33 times fewer employees than traditional retail companies and 1.6 times less than wholesalers.

It is also noted that in e-commerce companies, 3.1 times less is invested in tangible fixed assets than in traditional retailing companies.

The substantial cost differences identified usually make e-commerce more efficient than traditional forms of trade.

Analyzing the volume of internet commerce in the USA, it was found that most often companies engage in e-commerce to sell computers, clothing and accessories, software, electronics, furniture, office goods.

A comparison between e-commerce trading companies and companies engaged in traditional retail or wholesale trade. For comparison, indicators of labour productivity and the efficiency of tangible fixed assets are used, allowing to identify when e-commerce is more efficient than traditional retail or wholesale trade.

Based on the overall productivity and long-term material asset efficiency indicators of e-commerce companies, it was found that e-commerce is most worth doing to sell clothes, computers, software or the least worth selling medicines, toys and leisure goods.

Assessment of the effectiveness of the use of e-commerce technologies in the trade. In most cases, the cost of trading when

using e-commerce technologies is lower than the costs incurred in traditional trade, but the overall cost structure increases the share of trading costs resulting from the introduction and maintenance of e-commerce technologies and the delivery of goods.

Companies expect the cost of selling goods over the Internet to be lower than the costs incurred by companies when traditionally selling goods. They also consider that online sales are determined by the price, quality and delivery conditions of the goods. According to K.L. Kraemer (2006), companies that sell goods over the Internet increase revenue, improve customer service, reduce costs and achieve a higher level of efficiency.

Compared to traditional trade, the costs of selling goods over the Internet may be higher or lower. Lower operating costs may be due to: order formation by the buyer (Khosrowpour 2006); lower trading costs; interfaces with other business systems. Companies using e-commerce technologies can spend less money on advertising and display equipment. Higher operating costs can be determined by the delivery of goods, the creation and maintenance of an e-shop. The prices of goods selected by the e-shop can correspond to the prices of the traditional store (Khosrowpour 2006), and the delivery price can cover the cost of delivery of the goods.

The effectiveness of the use of e-commerce technologies in trade can be seen in different ways: as real efficiency and as expected efficiency. To describe real efficiency, indicators describing the efficiency of the use of real-time e-commerce technologies are analyzed. The expected efficiencies shall be determined in cases where the benefits of the use of the e-commerce technologies to be used have to be assessed. Forecasts based on historical data or information reflecting the experience of other companies are used to describe the expected efficiency, designed to assess or increase the efficiency of the use of e-commerce technologies. One way to assess the expected efficiency is to estimate the investment (costs) and benefits (increase in income, decrease in costs) of entities operating or planning to operate in trade.

In literature, investment in e-commerce technologies is examined by MacGregor et al. (2005), Anandarajan et al. (1999). The authors say that investments in e-commerce technologies are long-term. When talking about investments, the authors classify them as initial

(purchase and deployment of technology) and continuous (technological improvement).

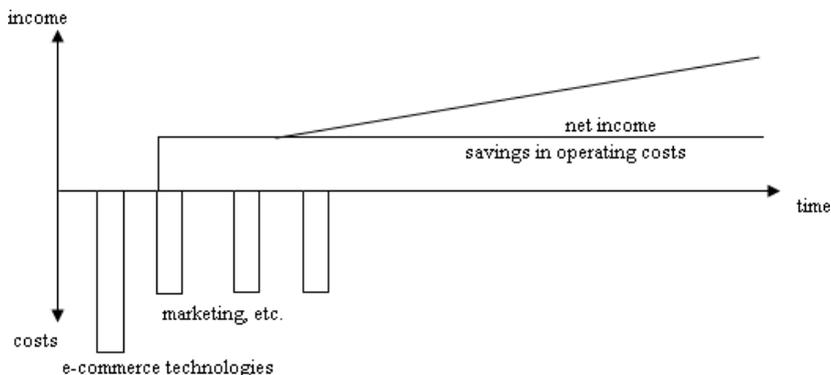
Various models are used to assess efficiency, including models based on cost-benefit analysis logic. These models emphasize the importance of technology deployment. Such models are designed to assess the costs and results of technology deployment in the long term. In practice, such models are used in investment decisions. Such models include the Bergendahl (2005) model, which is designed to assess in a time perspective the benefits of the use of e-commerce technologies by an undertaking applying such technologies (Figure 6.18).

In the Bergendahl (2005) model, sales volume and growth are considered to be among the main factors determining the profitability of investments in e-commerce technologies. There is therefore a need to assess the volume of sales in the long term. Investment income shall be deemed to be generated immediately after the end of the investment process. Over time, sales volumes increase.

In one case, the volume of sales can grow evenly, in another case, it may be unevenly increasing. Bergendahl (2005) observes that the increase in sales volume is due to advertising costs, i.e. the higher the advertising costs, the faster the increase in sales volume.

The Bergendahl (2005) model (Figure 6.18) also assesses investments in e-commerce technologies; and funds provided by the company for e-shop advertising, technology maintenance, sale of goods. First of all, the company invests in e-commerce technologies. The cost of e-commerce technologies depends on their flexibility, functionality, possible number of customers and goods. In this case, it is about one-time investments in technological equipment (server, support infrastructure) and software (e-shop website or extranet, an electronic catalogue of products, technologies guaranteeing secure payment, etc.)

Secondly, the company spends a certain amount of money on advertising. G. Bergendahl (2005) found that an undertaking that had previously carried on its business and marketed goods in the traditional way spends less on advertising than an undertaking that had not previously carried on any activity. It is also stated that more money for advertising is needed until a critical mass of buyers is reached.



**Figure 6.18 Model of cash flows generated by investments in e-commerce (Bergendahl 2005)**

Thirdly, undertakings selling goods via the Internet incur costs approximately 15 % lower than those which use traditional channels to sell goods (Bergendahl 2005).

Well-organised sales of goods via electronic networks can mean additional sales revenues, as the costs of such activities decrease over time. G. Bergendahl (2005) also notes that the added value can be created by increasing revenues or reducing costs. Therefore, to determine the benefits of the application of technology, G. Bergendahl (2005) proposes discounting (discounting is a way of calculating the present value of future money) savings or net income in operating costs. In calculating net income, G. Bergendahl (2005) deducts funds from sales revenue for the maintenance of e-commerce technologies and the sale of goods.

Summing up the model proposed by G. Bergendahl (2005), it can be argued that this model is suitable for assessing the efficiency of the use of e-commerce technologies “business to business” and “business to consumer” when trading is carried out on the open market (via the Internet) and when investments in e-commerce technologies are one-offs.

The literature review has shown that authors also address the following issues when examining the effectiveness of the use of e-commerce technologies:

- the efficiency of the use of e-commerce technologies “business

to business” is examined by Bergendahl (2005), Cullen et al. (2009), Power (2005);

- the effectiveness of the use of e-commerce technologies “business to consumer” is examined by Bergendahl (2005), Cao et al. (2001), Fink (2006), Rao et al. (2003);
- the efficiency of the use of e-commerce technologies in the case of open-market sales is examined by Bergendahl (2005), Cullen et al. (2007), Gottschalk et al. (2002), Kao et al. (2003), Poon et al. (2001), Stockdale et al. (2004);
- the efficiency of the use of e-commerce technologies in closed market trade (closed electronic networks) is examined by Cullen et al. (2007), Hsieh et al. (2004), Jun et al. (2003).

The authors focus on the application of business-to-business technologies, the use of e-commerce technologies when trading is carried out on the open market and cost reduction issues. The authors also mention that investments in e-commerce technologies can be initial and continuous.

It is noted that the literature on the efficiency of the use of e-commerce technologies focuses on new issues, therefore, summing up, it is concluded that it is necessary to develop a model that includes the ideas of the above authors and is designed to assess the effectiveness of the use of e-commerce technologies in trade, which would allow assessing the effectiveness of the use of e-commerce technologies in trade, when trading is carried out in open or closed market technology “business – business” or “business – consumer” conditions of application, as well as where there is a difference like the investment (i.e. the investment in e-commerce is one-off or multiple (continuous)).

**Simulation of investments in e-commerce.** The discounted cash flow method shall be used to model companies’ investments in e-commerce. This approach includes the following four elements: the cash flow element, the real or expected period element, the continuity of investment activities and the ongoing valuation element, the discount rate, which allows the risk premium to be included and is used to calculate the present value of money.

Cash flow is defined as cash and cash equivalent receipts and expenses incurred during a given period in an enterprise as a result of its investments (Mackevičius et al. 2006).

Advantages of the method. The discount rate method is based on the fact that the discount rate may include a general risk premium. Although the method seems straightforward, difficulties arise in trying to financially justify the amount of discount rate to be used for the calculation.

Disadvantages of the method. Factors such as changes in inflation and the solvency of the entity shall not be taken into account in the discounting action. These factors can also influence the determination of the present value of money, but they are not evaluated in the discounting action.

The discounted cash flow method is often mentioned, for example, by H. Levy (2002), G.N. Gregoriou (2008) and other authors.

It should be noted that the evaluation of efficiency using the discounted cash flow method allows the use of historical data of trading companies in the calculations. Such data may be used to calculate the present value of income and investments when their future value is known. It is discounting that evaluates the time factor (Rutkauskas 2000). In addition, MacGregor et al. (2005), Anandarajan et al. (1999) argues that investments in e-commerce technologies are long-term.

G. Bergendahl's (2005) cash flow model is used to model investments in e-commerce. The main components of this model are:

- investments in e-commerce technologies;
- advertising funds;
- operating cost savings;
- net income.

When calculating the investment component in e-commerce technologies, the funds allocated to the purchase of software and technological equipment and the guarantee of the secure settlement are assessed.

The calculation of the operating cost economy component assesses the cost savings associated with the sale of goods (e.g. logistics costs). In a company that has just invested in e-commerce, these costs may be higher but may change (decrease) over time. The decrease in costs (i.e. the average total cost of trade) results in a return on costs that generates appropriate operating cost savings.

As far as return on costs is concerned, it may be increasing, stable

or decreasing. G. Bergendahl (2005) emphasizes a constant return on costs in the model. However, the return on costs should likely coincide with the direction of income, i.e. it should also increase as revenue increases. For example, as regards the economy of the wage fund, it can be said: firstly, the economies of the wage fund are increasing as income increases; secondly, it has been accumulating for years. This is also illustrated by the example of Amazon.com (Amazon.com unit of sales revenue (EUR 1 million) had 2 employees in 2005 and 1.42 employees in 2009).

In calculating the net income component, the current costs associated with the sale of goods are minus the sales of goods, as well as the costs incurred by economic operators in improving logistics solutions, supervising e-commerce technologies. If the average mark-up of goods does not change over time, this component correctly (i.e. without distortions) also reflects the savings in operating costs.

It is proposed to extend the model not only to one-off investments but also to multiple (continuing) investments. It is also proposed to add a new investment component to the Bergendahl (2005) model (for e-commerce companies).

**Investment in logistics.** There may be two cases:

- online sales (open electronic networks). The company engaged in it should invest in logistics solutions for the formation of small shipments. It should be noted that companies engaged in traditional trade and planning to engage in online sales (or even those already engaged in it) can adapt the existing distribution system to new needs, which allows less investment than start-ups, which have to create a completely new distribution system for goods. For example, a company that decides to invest in e-commerce technologies to sell goods to final customers should also invest in logistics solutions for the formation of smaller shipments.
- trade in the closed market (such trading is carried out only by regular business partners). It is noted that sellers and buyers who receive orders and traditionally sell goods and closed electronic networks are guided by the conditions laid down in the sales contract, which also means the place of transfer of goods:
- if the goods are transferred to the buyer's warehouse and the seller

of the goods is obliged to pay import taxes (duties, excise duties, etc.), then the purchase price of the goods is equal to the final purchase price;

- if the goods are handed over in the seller's warehouse, and the seller of the goods is obliged only to load the goods into the vehicle and prepare transportation documents, then the buyer must bear the costs of transporting the goods (if necessary, the declaration), pay import taxes. These costs are included by the customer of the goods in the cost of the item, which is considered the final purchase price of the item.

To determine the benefits of the application of the technology and to calculate its present value, G. Bergendahl (2005) proposes discounting operating cost savings or net revenues.

The cash flow model is universal. The model can be applied when both historical (real) and generated (expected) data are examined.

It should be noted that the cost-effectiveness indicator shows the extent to which the investments made are covered by discounted operating cost savings and/or additional net income. Cash flows generated by the seller of goods' investments in e-commerce are considered positive. However, in the case of a particular seller of goods, there may be fewer components of the model, as well as their size or even directions may change. There is a tendency that statistically there are more e-commerce trading companies with positive cash flows than companies engaged in traditional trade. Such an investigation is based on the work of Mora-Monge et al. (2010), which found that companies using e-commerce technologies tend to have positive cash flows, i.e. companies are more profitable than at a loss.

W. Kesthong et al. (2007) found that Amazon.com applies e-commerce technologies “business to business” and “business to consumer”. For companies wishing to trade with business partners (suppliers, distributors) Amazon.com provide a database creation and file storage service, multilingual information placement and ordering and payment confirmation services (Kesthong et al. 2007). Companies using such services can transfer purchase and sales documents (orders, invoices) to permanent business partners. Attention is drawn to the fact that for companies that trade with permanent business partners, Amazon.com does not sell advertising

of goods or delivery services. In the case of evaluation of the efficiency of the use of e-commerce technologies “business to business”, the components of the model would be less: you should not allocate funds for advertising and invest in logistics.

*Technological progress in developing business-to-consumer solutions*

E-commerce technology opens up more diverse possibilities. Buyers of goods can buy at any time of the day anywhere in the world, without leaving home, can make sales orders, so higher requirements are imposed on international e-shops.

To elaborate on the basic requirements for international e-shops, the report “Mystery shopping evolution of cross-border ecommerce in the EU” (Meier-Pesti et al. 2009) is used. The following requirements can be seen in the above report:

- the e-shop must be available in 4-5 languages and have a customer service centre to advise shoppers in different (4-5) languages;
- it must contain information on taxes (VAT, excise duties, customs duties) to be paid to purchasers in other countries;
- the rates and duration of delivery of goods to different countries must be published in the e-shop;
- it must contain information about the price of the item in different monetary units;
- the final price of the product (including taxes and delivery costs) should be published in the e-shop. This price should be 10 % lower than that of the same good in supermarkets or showrooms in the buyer’s country;
- it must contain information on product warranties and the possibilities of repairing them in the buyer's country.

To compare e-shops operating in different foreign markets, it is proposed to use the following criteria:

- % of orders in which customers are introduced to the conditions of purchase of goods;
- % of orders that specify the possibility to cancel your purchase
- time limit for cancellation of the purchase, in days;
- % of orders indicating the possibility of returning the goods;

- the proportion of orders that do not name whether the original price includes VAT or not, %;
- the proportion of orders that do not specify the final price.

According to the latest statistics published by K. Meier-Pesti, C. Trubenbach report, e-shops were compared. The statistics used include e-shops located in 27 EU countries (the location of the stay was identified based on the company's place of registration if the website name expired “. org”, “. com”, etc.). The study covered 400 different e-shops and tested 10,964 offers. One offer was tested in 52% of e-shops, after two offers (different product groups) were tested in 17% of e-shops, followed by three offers – 31% of e-shops (Meier-Pesti, Trubenbach, 2009).

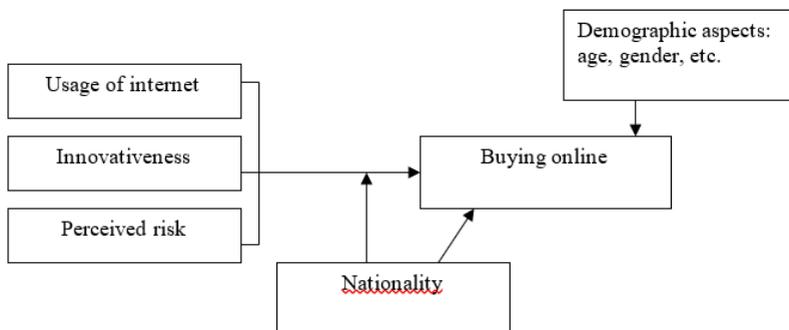
The results of the study show that

- terms and conditions are included in 87% of offers for foreign buyers;
- information about the right to refuse a purchase is provided in 84% of offers for foreign buyers;
- offers that do not detail whether VAT is included in the original price or not accounted for 34% of offers for foreign buyers;
- offers that do not specify the final price accounted for 85% for foreign buyers;
- information about the cancellation of the purchase was provided in 64% of offers for foreign buyers;
- the average cancellation time for a purchase is 13 days (it can be from 7 to 14 days depending on the country where the e-shop is located).

The comparison of e-shops showed that the information is presented more clearly in e-shops located in Slovenia, Germany and France than in e-shops located in other EU countries.

As for the application of e-shop to trade in foreign markets, it should be noted that B.Hernandez, J. Jimenez, M.J. Martin (2009) recommend the creation of a dynamic website that constantly adapts to the changing needs of customers.

C. Park, J.K. Jun (2003) provide a model of factors influencing online shopping (see Figure 6.19). The study of these authors has shown that internet use, innovation and perceived risks when shopping online have a significant impact on consumer behaviour.



**Figure 6.19 Factors influencing online purchases  
(Park et al. 2003)**

The results of the study carried out by N. Guseva (2010) showed that convenience, ease of use, access to a representative of the website are factors that determine the attitude of consumers and the intention to purchase goods online.

Mr Oppenheim, Ms Ward (2006), N. Singh, H. Zhao, X. Hu (2005), R. Nacar, S. Burnaz (2011) provide quality dimensions of the website: presentation elements, content, content, information content, accessibility, navigation, language, protection, privacy, copyright.

Content is one of the most important elements that lead to a positive attitude towards e-commerce. According to H. Liao, R.W. Proctor, G. Salvendy (2008), the content of information is an important component that determines the success of e-commerce. To condition decisions to purchase goods, the website of the online store should provide information to representatives of different cultures. It is about specific elements: language, layout, symbols, colour, image and sound (Tong, 2011). People from different countries are exposed to different aspects, i.e. they have different cultural values and norms, mentality, infrastructure and economic development. All these elements, according to the authors, must be evaluated to create a website focused on a multicultural society. Meanwhile, M. Cao, Q. Zhang, J. Seydel (2005), Y. A. Park, U. Gretzel (2007) provide the following dimensions that focus on information technology capabilities and quality: system quality (searchability, responsiveness, multimedia capabilities, security and functionality), information quality (accuracy of information, relevance of information), quality of services (reliability, empathy).

A study carried out by Ch. H. Lee, U.C. Eze, N.O. Ndubisi (2011) found that perceived value, convenient use, benefits, company image, privacy, trust, reliability assurance and functionality of the website affect the intention of users to visit the website again.

Liao et al. (2009) stress the importance of taking into account political, social, cultural, technical and economic factors to shape an online shop page focused on international trade.

The literature highlights that perceived risks have a significant impact on shoppers' actions when shopping online. S.S. Martin, C. Camarero, R.S. Jose (2011) provide risk dimensions:

- psychological risk in the channel. This risk dimension is also treated as a psychological risk and is associated with tension and anxiety when shopping online.

- risk in the transaction. This type of risk is a concern related to the product or service. Important aspects for consumers are whether the product will meet the buyer's expectations or whether the amount of money spent will match the quality and benefits of the product. This also entails financial and product functional risks.

- social risk. This risk is associated with the opinion of family members, the people around them. Consumers' decision to purchase goods online depends on the people around them, as the acceptance of the latter and the positive assessment of electronic services may lead to the decision to take advantage of e-shops.

The investigation has shown that in Spain the risk impact on the decision to buy online is significantly lower than in Japan (Martin et al. 2011).

During the investigation carried out by V. Davidavičienė, J. Tolvaišas (2011), which aimed to identify factors affecting the quality of the website, it was established that convenient use, page navigation, security assurance, direct help and content influence the quality and positive attitude of the website. In addition, according to the authors, the primary indicator of the quality of the website is the rating of the website. The decreased rating of the website is a sign that it is necessary to identify the causes of the decrease and adjust it.

### *Gender aspects in e-commerce*

The Internet cuts society and shows the differences among genders' perceptions of e-commerce.

On the other hand, gender values about equal rights are spreading through a population. Such request several changes. First, the increase of women shares with high education, commitment to careers outside families, well-paid jobs, and interests in gender equality. Second, the change of gender norms with economic affluence among females and males in diverse positions – for example, at all levels of education. Third, changes, which lead to the adoption of new ideas and values supporting gender equality, which diffuse from innovative, high-education groups to other ones (Pampel, 2011).

The Internet cuts society and shows the differences among genders. The difference in gender specifics is greater in lower-income countries. Dholakia et al. (2004) suggested several directions for the examination of social gender roles in shopping. He suggested terms, such as feminine (female) consumer – the consumer located at home or private domain, and masculine (male) consumer – the producer located in the workplace, factories, offices, the political arena, and public domain. Masculinity and femininity refer to the extent of the distinction of social gender roles (Hofstede, 1984). A masculine society (in West, e.g., Britain) tends to have a greater gender divide, less dominant female shoppers than male shoppers, in contrast, to feminine society (in East, e.g., Taiwan) (Shiu and Dawson, 2002).

Indeed, there is a close relationship between Internet access differences by gender and other variables, such as level of education and income, gender differences can also be observed when it comes to Internet use, activities carried out over the Internet, and frequency of its use.

The difference in gender patterns has been explained using different models and factors herein. The review of models employed to explain information systems usage behaviour (theory of reasoned action, technology acceptance model, theory of planned behaviour, IT diffusion model, and model of Unified Theory of Acceptance and Use of Technology) was delivered. Subsequent validation by V. Venkatesh, M.G. Morris, G.B. Davis, and F.D. Davis (2000) of UTAUT in a longitudinal study found it to account for 70% of the variance in behavioural intention and about 50% in actual use.

Targeting female consumers. Although women shop online less

than men at present, they represent greater growth potential particularly given the fact that women are dominant purchasers in traditional stores. Females have great potential to dominate the future of online shopping. Therefore, improving online shopping environments to attract female consumers should be a top priority for online retailers. Specific marketing strategies targeting female consumers should be carefully designed to achieve this goal.

The literature analysis showed the importance of technology adoption solutions for shopping. Authors, who publish work on the theme in this area, mainly follow three ideas: (1) trends of the adoption of e-commerce, (2) the implementation of technology in actual use, and (3) the contribution of genders to stimulate the adoption of e-commerce.

There are several reasons, which refuse women from shopping online:

- First of all, even now there are patriarchal traditions of our society: “asymmetric” distribution of roles in a family where women are responsible for household purchases, do not stimulate them to purchase online;

- In addition, there are issues associated with the environment, which does not attract women for shopping online: illicit commercial practices, issues with personal data protection and security, widely spread stereotypic view into the technology-oriented habits of females;

- Quite often, the opportunities of women to shop online are limited by information and knowledge, personal experience, and also by a lack of specific habits.

It is evident that the early diffusion of e-commerce and change mostly involve educated and working women. At later stages of change, skills required for e-commerce diffuse vertically from innovative and highly educated groups to less innovative, lower status, and more traditional groups. Thus, such an effect rises from innovative groups with strong interests in e-commerce, which set themselves apart from other groups. In support, several studies describe a process of catching up e-commerce for which formerly wide attitude differences narrow the spread of new skills to less innovative groups.

The results of empirical research show that, in particular, men are

more positive than women towards e-commerce, cross-border shopping, product, and food safety. Women are more likely than men to be concerned about the security of online payments, men spent significantly more time on off-line and online shopping than women do, they also spend more money for online purchases than ladies. Men also shop more frequently online than women. Among frequent online shoppers men tend to pay more attention to price, whereas women more often mentioned 'saving time', flexibility, ability to place the order at any time, and delivery of products to a convenient place. This also shows that women tend to be occasional online shoppers.

But women are more favoured for shopping activity in traditional stores. In future, they could become the dominant customers' online as well. Retailers should therefore improve the online shopping environment to attract more women. Specific marketing strategies focused on women-buyer should be carefully designed to achieve this goal. Empirical researches show that women need to be encouraged to innovate and that gender differences need to be taken into account when thinking about the development of e-commerce.

Men are more likely than women to feel well informed about online transactions. Men are more likely than women to receive all kinds of advertisements and offers discussed here, but they are not more likely to respond to them. Men, in general, are more likely than women to face suggestions. They are also more likely to be exposed to misleading or deceptive advertising, statements or offers.

With the increasing sales on online social networks, the gap between women and men in the European Union is narrowing. There is also a change in roles in the family, where women are responsible for buying a household in traditional stores, and men are more favourable for shopping in online stores. In addition, there are environmental issues that do not attract women to shop online: illegal commercial practices, personal data protection and security issues. Men and women show small differences – but the sex of an online shopper does not explain the choice of payment method.

The review of gender differences showed that households with different cost structures also differ in their response to opportunities and high savings. Each decision-maker has his or her preferences when deciding on the timing of purchases. A woman who is a

household manager can signal the household's alternative costs of time. If a woman is a household manager and does not work or does not work full-time, then there is more time for that household to assess whether the acceleration of purchase would save a lot of money.

Studies also show that women are certainly not riskier than men when making financial decisions. The theory of rational choice says that with several alternatives, the decision-maker would analyze all options and choose an alternative that would better increase productivity. On the other hand, the theory of holism explains the amount of information handled by the decision-maker. Nations think or want to analyze information, but due to its complexity, it is not always possible to maximize production when a satisfactory result leads to a certain decision.

*Criteria for the selection of foreign markets where the use of e-commerce technologies is planned*

The literature mentions various methods that allow comparison of foreign markets: market grouping method, market valuation methods, environmental analysis method, etc. Most market grouping methods are based on a variety of economic indicators. These common country indicators are used to identify and group foreign markets where technological progress differs. Borg (2009) divides markets into technology-intensive (markets that are technology-intensive) and non-technology-intensive markets.

In one case, analysts calculate the average rate of technology spread and compare it with the actual rate of technology spread in each market. In this context, the potential for demand for technology on the market can also be assessed.

Otherwise, such an analysis is based on indicators that characterise an environment conducive to the spread of technology. Economic, demographic, social and cultural, geographical indicators can be used for this purpose (Douglas et al. 2011).

Market valuation methods. They differ and are often based on criteria used to evaluate various indicators. For example, indicators characterizing the spread of technology in the foreign market, research and experimental activities.

Sometimes a market quality index is used in the evaluation. This index includes macro indicators such as national income, the number of technologies in the market, etc.

Environmental analysis method PEST. It is a method of analysis of environmental complexity. This method makes it possible to analyse the components of the environment in the foreign market – political, economic, social and technological environments and their whole.

An analysis of strengths, weaknesses, opportunities and threats (SWOT) can be used to assess the conditions conducive to technological change in the foreign market. During it, the environment is characterized by various relative sizes. Expert assessment methods play a key role.

As regards technological developments related to e-commerce, many criteria should be mentioned to be used to assess ongoing technological developments: the number of internet users on the foreign market (in terms of the total population); the extent to which e-commerce technologies are used in the foreign market. It can also be assessed whether the prevalence of e-commerce technologies is sufficient. The meanings of such a criterion are assessed at a vector distance between the current and the extent of the spread of these technologies on the foreign market. According to Amazon.com practice, the prevalence of e-commerce technologies in the foreign market should be at least 10 % (i.e. at least 10% of companies operating in the foreign market apply e-commerce technology business-to-business solutions).

Factors that influence an enterprise's foreign market choice decision can be divided into two groups:

- environmental factors: market size, potential, level of competition in the market;
- organisational factors: resources available to the company, experience of international activities, etc.

The literature mentions two approaches to foreign markets: reactive attitudes and proactive attitudes. A reactive approach to foreign market choice means that the company acts passively, simply responds to orders from buyers located in foreign markets, allowing buyers to name foreign markets in which the company will engage in e-commerce activities.

A proactive approach to foreign market choice means that the company is actively looking for potential foreign markets.

From a proactive point of view, the sequence of the process of selecting foreign markets would be as follows:

- the company sets criteria for the assessment of foreign markets;
- continue to assess foreign markets and choose the most promising ones based on selected criteria.

A set of criteria to identify priority foreign markets can include:

- common criteria for the entire foreign market;
- specific criteria for a particular company.

The initial selection of foreign markets shall be carried out based on common criteria. Special criteria are used for a more detailed selection of foreign markets.

The convergence approach proposed by R. Kuvykaitė (1997) may also be used for the selection of markets. Foreign markets are selected based on four steps:

- the first step, from the list of all foreign markets analysed, is eliminated in those foreign markets where the legal regulation is weak and the priorities of the administration are not appropriate;
- the second step, from the list of all foreign markets analysed, which was revised during the first step, additionally eliminates those foreign markets that are not economically attractive;
- the third step, from the list of all foreign markets analysed, which was revised during the previous steps, eliminates those foreign markets in which the company does not have a competitive advantage;
- step four, from the list of all foreign markets analysed, which has been revised during the above steps, additionally eliminates those foreign markets where the company cannot engage in e-commerce due to lack of available resources or capabilities.

Malhotra et al (2009) suggest that you also take into account the distances between foreign markets. It is about geographical and cultural distances, the distance between indicators describing technological progress.

Sheng et al (2011) propose using around ten criteria when comparing foreign markets, such as market size, market receptivity, physical infrastructure, geographical and cultural distances, language, religious differences, etc.

It should be noted that a multi-critical solution has been

encountered to compare foreign markets.

Most often, authors chose and applied the COPRAS (the multi-attribute Complex PROportional ASsessment of alternatives) method from many methods of multicritical assessment methods developed and known in Lithuania up to now. The COPRAS approach is also used to address this challenge in this work. In Lithuania, the COPRAS method is well known and is used to solve various tasks (Andruškevičius 2005; Bivainis et al. 2009; Ginevičius et al. 2009; Ginevičius et al. 2008a; Ginevičius et al. 2008b; Ginevičius et al. 2006; Kaklauskas et al. 2007, etc.) or is analysed in search of solutions to a multicritical challenge (Tamošiūnienė et al. 2006).

The comparison of foreign markets is based on the multicritical integrated proportional assessment methodology proposed by E. K. Zavadskas, L. Simanauškas and A. Kaklauskas (1999). This methodology is used to assess different types of criteria (Zavadskas et al. 2004).

To compare foreign markets according to the criterion framework that characterises them, a cross-cutting assessment is applied, which allows:

- use a generalised indicator that characterises the markets;
- assess conflicting criteria;
- take into account the importance of the various criteria for the results of the evaluation.

Most often, the scientific literature proposes to address such challenges in matrix form. First, a matrix is formed that has as many columns as there are criteria and as many rows as there are comparison entities.

For multicritical assessment methods, it is essential to determine the weights(significance) of the criteria (Podvezko 2005). The matrix subsequently formed is normalized (Migilinskis et al. 2007) – converted to one in which the numerical values of the criteria do not contain any units of measurement. Various methods of normalization are mentioned in the literature (Antuchevičienė 2005; Turskis Zavadskas, Peldschus, 2009). In this case, the classic method of normalization is used. The normalised decision-making matrix is recalculated: the values of each criterion are multiplied by the materiality of the relevant criterion; the total materiality of the above criteria is equal to one (Brauers 2007; Turskis et al. 2009).

Table 6.4

**Decision evaluation matrix**

Criteria under consideration			Foreign markets under analysis					Sum of criteria significance
Title	Direction	Significance	1	2	3	...	u	
			Significance of criteria in concrete foreign markets					
X <sub>1</sub>	Max	r <sub>1</sub>	d <sub>11</sub>	d <sub>12</sub>	d <sub>13</sub>	...	d <sub>1u</sub>	$S_1 = \sum_{j=1}^n d_{1j}$
X <sub>2</sub>	Max	r <sub>2</sub>	d <sub>21</sub>	d <sub>22</sub>	d <sub>23</sub>	...	d <sub>2u</sub>	$S_2 = \sum_{j=1}^n d_{2j}$
X <sub>3</sub>	Max	r <sub>3</sub>	d <sub>31</sub>	d <sub>32</sub>	d <sub>33</sub>	...	d <sub>3u</sub>	$S_3 = \sum_{j=1}^n d_{3j}$
X <sub>4</sub>	Min	r <sub>4</sub>	d <sub>41</sub>	d <sub>42</sub>	d <sub>43</sub>	...	d <sub>4u</sub>	$S_4 = \sum_{j=1}^n d_{4j}$
X <sub>5</sub>	Min	r <sub>5</sub>	d <sub>51</sub>	d <sub>52</sub>	d <sub>53</sub>	...	d <sub>5u</sub>	$S_5 = \sum_{j=1}^n d_{5j}$

$$b_{ij} = \frac{d_{ij} \cdot r_i}{\sum_{j=1}^n d_{ij}}, i = \overline{1,5}; j = \overline{1,u} \tag{6.4}$$

where  $d_{ij}$  – is the meaning of criterion  $i$  in the foreign market  $j$ ,  $u$  – is the number of foreign markets to be compared,  $r_i$  – the significance of criterion  $i$ .  $\sum_{i=1}^5 r_i = 1$ .

The sum  $b_{ij}$  for each criterion of the bidimensional meanings is obtained and is equal to the significance  $r_i$  of the specific criterion  $x_i$ .

Foreign market  $j$  is defined by normalised indicators minimizing  $S_{-j}$  and maximising  $S_{+j}$  values:

$$S_{+j} = \sum_{i=1}^5 b_{+ij}, S_{-j} = \sum_{i=1}^5 b_{-ij}, i = \overline{1,5}; j = \overline{1,u} \tag{6.5}$$

In any event, the amounts of all alternative foreign markets shall always be appropriately equal to all maximising  $S_{+j}$  and minimizing

$S_{-j}$  values:

$$S_{+} = \sum_{j=1}^n S_{+j} = \sum_{i=1}^5 \sum_{j=1}^m b_{+ij},$$

$$S_{-} = I - S_{+} \quad \text{or} \quad (6.6)$$

$$S_{-} = \sum_{j=1}^n S_{-j} = \sum_{i=1}^5 \sum_{j=1}^m b_{-ij}, \quad i = \overline{1,5}; j = \overline{1,u}$$

The relative significance  $Q_j$  for the compared foreign markets shall be determined based on their descriptiveness and taking into account the importance of the foreign market with the least minimizing value  $S_{-}$ . The relative significance of each foreign market is determined by the following formula:

$$Q_j = S_{+j} + \frac{S_{-\min} \cdot \sum_{j=1}^n S_{-j}}{S_{-j} \cdot \sum_{j=1}^n \frac{S_{-\min}}{S_{-j}}}, \quad j = \overline{1,u} \quad (6.7)$$

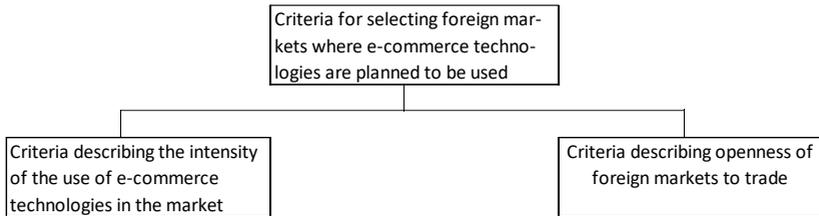
At the last stage, the priority of foreign markets is defined. The higher  $Q_j$  the higher priority. If  $Q_1 > Q_2 > Q_3$ , then the first foreign market should be chosen according to priority.

In the selection of foreign markets where e-commerce technologies are to be used, it is proposed to use a set of the following criteria:

- (a) the volume of market imports in terms of GDP (%);
- (b) number of internet users on the foreign market (%) (calculated for the total population);
- (c) use of e-commerce technologies in the foreign market (%) (enterprises using e-commerce technologies for all enterprises);
- (d) reduced market openness to foreign trade (%). The calculation of the criteria shall measure the change in the volume/GDP volume ratio of imports (%); the criterion acquires values when the named change (in a specific case) is less than zero;
- (e) insufficiency in the prevalence of e-commerce technologies (%). The values of this criterion are assessed at a vector distance

between the current and the extent of the spread of these technologies on the foreign market of interest (which should be at least 10 % according to Amazon.com practice).

The named criteria are divided into two groups. The first group includes criteria determining the intensity of market for uptake for e-commerce technologies (b-c and e); the second includes criteria describing the openness of foreign markets to trade (a and d) (see Figure 6.20).



**Figure 6.20 Set of criteria to be used for the comparison of foreign markets**

In most cases, in practice, the significance of the criteria is determined based on an expert approach. The materiality of the criteria established by expert methods shows how much one criterion takes precedence over another. The criteria are also divided into maximizing and minimizing: a to c is maximizing (their higher value is better) and criteria d and e are minimizing (their lower value is better).

Experts have assessed that the criterion describing the extent to which e-commerce technologies are used in the foreign market is the most important. The compatibility of expert opinions is assessed using a concordat coefficient (Podvezko 2007; Podvezko 2006).

The sum of the ranks of criteria for all experts is calculated:

$$c = \sum_{j=1}^e c_{ij} (i = 1, \dots, 5), \quad (6.8)$$

here  $e$  is the number of experts

The concordation coefficient  $W$  is calculated using the following formulae:

Table 6.5

### Basic information about criteria

Criteria	Direction	Significance of criteria
The volume of market imports in terms of GDP (%)	Max	0,224
Number of internet users on the foreign market (%)	Max	0,157
Use of e-commerce technologies in the foreign market (%)	Max	0,295
Reduced market openness to foreign trade (%)	Min	0,233
Insufficiency in the prevalence of e-commerce technologies (%)	Min	0,090

Table 6.6

### Matrix of expert evaluations

No	Criteria	Experts							Sum of ranks	Deviation from mean	Significance of criteria
		1	2	3	4	5	6	7			
1	The volume of market imports in terms of GDP (%)	4	2	2	5	1,5	5	4	24	6	0,224
2	Number of internet users on the foreign market (%)	2	4,5	3	1	3	2	1	17	20	0,157
3	Use of e-commerce technologies in the foreign market (%)	5	4,5	4,5	4	5	3	5	31	100	0,295
4	Reduced market openness to foreign trade (%)	3	3	4,5	3	4	4	3	25	12	0,233
5	Insufficiency in the prevalence of e-commerce technologies (%)	1	1	1	2	1,5	1	2	10	132	0,090
Total		15	15	15	15	15	15	15	105	271	1,00

$$W = \frac{N}{N_{\max}}, \text{ kai } N = \sum_{i=1}^m (c_i - \bar{c})^2, \quad (6.9)$$

where:  $N$  is the sum of the squares of deviations from the mean,  $N_{\max}$  is the sum of the squares in an ideally harmonised case, the total mean is given by:

$$\bar{c} = \frac{1}{2} e(m+1), m=5 \quad (6.10)$$

The sum of squares is ideally equal to:

$$N_{\max} = \frac{e^2 m (m^2 - 1)}{12}, \quad (6.11)$$

After calculating  $W$ , its significance ( $x^2$ ), is checked, which is calculated as follows:

$$x^2 = We(m-1) \quad (6.12)$$

$x^2$  is distributed by the  $x^2$  distribution with  $v=m-1$  degree of freedom according to the selected materiality level  $\alpha$ . For expert estimates to be matched, the calculated  $x^2$  value must be greater than  $x_{kr}$ , which is taken from the distribution table with  $v=5-1=4$  degrees of freedom and materiality level  $\alpha=0.05$ , equals 9.49. When the significance of the criteria is determined, calculations are made.

The analysis of priority foreign markets should, firstly, collect data on foreign markets; secondly, to compare foreign markets (using a set of criteria); thirdly, to summarise the results; fourthly, to carry out further monitoring of foreign markets.

### *Impact of Covid on e-commerce*

If we look at 2020, we could see that e-commerce flourished during the COVID-19 crisis. As economic activity has slowed, COVID-19 has triggered digital transformation and such accelerated e-commerce. Businesses and consumers have increasingly “switched to digital technology” by providing and purchasing more goods and services online, and increasing the share of e-commerce in global retail to around 27.6 % by 2020. The highest growth was in Latin America (36.7 %) when this growth is followed by North America (31.8 %), Central and Eastern Europe (29.1 %) countries. Similar growth was in the Asia Pacific (26.4 %) and Western Europe (26.3 %) region. And the least growth was in the Middle East and Africa, i.e. 19.8 %. It is expected that during the year 2021 the growth will be lower but will stay around 14.3 per cent and it is projected that by 2021 e-commerce sales will reach 4.88 trillion US dollars.

Technological advances open up trade opportunities for everyone – internationally, anytime, anywhere and by using any device.

Computers are still the most popular devices when buying abroad. In the North American and European markets, mobile devices, especially smartphones, are increasingly buying abroad attraction in mobile regions such as Asia Pacific, Africa and the Middle East. Especially consumers in the Asia Pacific markets are more likely to buy internationally on a mobile device. Buyer behaviour is not the only thing that is changing in the current email. Trading environment: online marketplaces and third-party service sellers are gaining relevance in everyday e-commerce, and marketplaces, in particular, are putting pressure on traditional e-commerce, retailers to adapt to current customer expectations.

The development of e-commerce is strongly associated with ever-improving internet access, especially in mobile internet communities that have long struggled with traditional fixed broadband due to financial or infrastructure constraints but reap the benefits of low-cost mobile broadband.

The average amount of online shopping orders on smartphones and tablets still lags behind desktop orders, but global e-commerce retailers are catching up with mobile e-commerce sales. Mobile phone shopping on a smartphone is especially popular in Asia. 2018 in the third quarter, Indonesia was the leading digital market in terms of the proportion of the population that bought something over the past month, which was bought by more than three-quarters of the population, including also other nearby located Asia region countries.

The findings show that e-commerce is rapidly adopted in all regions, with consumers in emerging economies largely switching to online shopping. For example, in the Latin American online market Mercado Libre in the quarter, twice as many goods were sold per day as in the same period last year. And the African e-commerce platform Jumia reported that in the first six months of 2020, the number of transactions increased by 50 %. From 2019 August until 2020 August, China's share of online retail sales rose from 19.4 % to 24.6 %. In Kazakhstan, the share of online retail increased from 5 % in 2019 up to 9.4 % in 2020. In March 2020 the number of shopping program downloads in Thailand increased by 60% in just one week. The report states that in 2020, the noticeable trend of e-commerce uptake is likely to continue during the recovery. However, in many

of the world's least developed countries, consumers and businesses have not taken advantage of the pandemic's e-commerce opportunities due to persistent barriers. These include expensive broadband services, over-confidence in cash, consumer distrust, poor digital skills of the population and limited government focus on e-commerce.

The corona pandemic has many people's plans for the future prevented, at least for a short time. It also affects everyone's life in almost all areas of life. However, not all generations are the same severely affected by the effects of the pandemic. For one there is the current stage of life is important here, but also on the other hand professional and personal aspects of the lives of those who are not inevitably associated with generation. If regular orders are placed online, Generation Z has an advantage. Even there are often many more under the age of 24. The ordered item then should be stored. But that means it is not the case that stationary retail does not play a role. The proportion who miss the shopping experience of shopping online is not significantly higher in the X Generation than in between Generation Z members.

Most governments have preferred short-term responses to a pandemic, but some have also begun to look for long-term strategic solutions. In Africa, Senegal has launched an information, education and awareness campaign on the benefits of e-commerce for all sections of the population. In Asia, Indonesia has launched a capacity-building program to accelerate the digitization and digitization of micro, small and medium-sized enterprises. More needs to be done to reduce e-trade disparities that currently prevail between countries. All stakeholders are governments and international development partners must ensure that e-commerce plays a positive and powerful role in national and international recovery efforts. Resources should be determined to that end. Advocating appropriate policy approaches, promoting national cooperation and international stakeholders to maximize synergies that can contribute to the development of e-commerce.

The COVID-19 crisis has had a drastic impact on e-commerce, leading to the rise of companies operations. However, 94 % of companies listed in Fortune 1000 suffer from coronavirus supply chain disruptions (Fortune, 2020). This is due to inadequate supply

chain management techniques for crisis management. Due to being lean and globalized in structures, many companies become especially susceptible to coronavirus outbreaks (Ivanov et al., 2020). Today, due to the COVID-19 crisis, global restrictions lead to higher lead times for e-commerce. These problems raise many questions about ways of managing e-commerce in this turbulent environment, such as what if a supplier does not deliver products? What should I do if the products are delivered to e-commerce customers whose demand has changed? Fear may lead consumers to show unstable demand patterns; they may be inclined to save money and buy irregularly. A report published by the World Economic Forum indicates that companies are moving away from globalised, low-cost, localized, resilient, efficient (World Economic Forum, 2020). However, this reduces the size of the economy. For example, if an international company operates in several countries and has a central warehouse on the mainland; it may have separate suppliers offering a better price than several suppliers with a lower price. It is therefore important to establish compromises.

Among technologies, there is an increasing artificial intelligence application in e-commerce. Herein, artificial intelligence could help to identify buyers of e-shop products and provide the forecast of products sales. Payment cards were the most popular payment method for online shoppers, albeit with some regional differences. Payment service providers such as PayPal or Alipay were preferred by a higher percentage of online payments in Europe. In terms of transaction volume, digital and mobile wallet payments accounted for the largest share of online transactions worldwide, particularly in the Asia-Pacific region.

The corona virus pandemic continues to have a major impact on e-commerce and online consumer behaviour worldwide since 2020. In the early 20th century, millions of people stayed at home to stop the virus from spreading, and digital channels became the most popular alternative to crowded stores and shopping in person. 2020 June the global retail e-commerce flow reached a record 22 billion visits per month, and demand for everyday goods such as groceries, clothing, but also retail goods was particularly strong. The use of the Internet, shopping habits and the overall future of e-commerce and global retail will appear to be highly dependent on the further

progression of the corona virus.

Couple of words about different generations. Both shoes and clothing have been mostly bought by all three generations held (X, Y, Z) during the last 12 months, both online and in stores. Generation Z, Millennials, and Generation X were the second most popular pharmacies. Books, movies, music, and games have been especially popular online. Generation X visited “DIY” stores and garden centres, as well as department stores much more often. Bookstores, on the other hand, are even more inclined to use Generation Z.

Due to coronavirus, society spends more on buying health products. Such products are getting a first-place among other buying categories online. The second category is household products, which in some countries descends to the food products category.

Many online users read up to six product reviews before making a purchase decision. Customers can start the payment process but leave the website and do not complete the purchase. In 2020, the average abandonment of a shopping cart online was just under 90 per cent. 2020 the main reason why internet users around the world put a product in their online shopping cart and bought the product was free shipping: just over half of consumers said this benefit would increase their likelihood of buying the product when buying online. Many internet users have also taken into account other customers’ feedback and easy return policies.

The growth in e-commerce had an impact on logistics, the increase of transportation flows, the rapid warehouse network expansion and automatization. The global growth of e-commerce brought retailers together and consumers in various geographical locations in both domestic and international markets, increasing demand for delivery and logistics services.

The business-to-business (B2B) e-commerce scenario has changed rapidly over the past few years. Based on the Accenture report, about 50% of B2B companies around the world have only begun to implement a digital strategy in the last three years, when they were relying on the seller’s relationships with customers (Accenture, 2019). Companies overshadowed their B2B counterparts in terms of venture capital funding, consumer interest, technology adoption, and global visibility. The slow digitization of B2B was due

to complex obsolete technology environments, organizational structures, and information security concerns. Despite significant investment, it is difficult for small businesses to meet basic data protection standards for their users. Data storage IT infrastructure is becoming increasingly complex due to cloud services, and the workforce is accessing core services remotely, driven by a pandemic emergency. Greater flexibility is associated with higher risks and vulnerabilities in terms of cybersecurity and privacy-compliant procedures. If we analyze specific General Data Protection Regulation (GDPR) requirements rather than operations, the right to be forgotten seemed the most difficult aspect of the law. Users can ask organizations to delete data they have. In addition, data subjects have the right to transfer their data from one controller to another one. However, organizations do not transfer these assets easily and tend to accumulate data in a way that cannot be processed in different ways services and organizations. One in two companies disclosed poor and unclear information about data processing, and more than 60 per cent of enterprises did not obtain consumer consent to process their data. The lack of customer data due to the smaller number of customers and highly specialized services is hampering personalization efforts. In addition, the larger size of the sector and other complexities, such as higher-order quantities, variable prices, more goods and shorter delivery times puts strain on existing supply chains.

Another obstacle to industrial growth is that companies often simply expand ERP solutions, thus causing great tension of old platforms. Now B2B businesses need to be agile and emulate B2C shopping experience, flexible and interoperable architecture for trade. The B2B e-commerce market and its growth forecasts put pressure on hosting on legacy platforms that are not designed to adapt quickly and smoothly to the exponential geographic and channel growth experienced by many marketplaces today. In addition, many retailers who rely on home-grown systems spend a lot of time and money on their maintenance and replenishment of technology packages such as better product management, storefronts, partner portals, configuring bidding, and payment gateways. These factors have contributed the most to the growing popularity of cloud platforms that offer the benefits of fast resilience, multiple leases,

and on-demand availability. Although B2C as businesses move faster to the cloud, B2B marketplaces are slowly warming and fostering innovations.

Taking about obstacles the author could name one from logistics. Many third-party logistics providers have also been involved to accommodate last-mile delivery. However, the rising logistics costs associated with the delivery of the last mile, especially due to returns and the general shortage of developed nations infrastructure, especially far from major cities, poses major challenges to B2B regional development.

The main drivers of e-commerce growth are such:

- The huge network of low-cost suppliers who serve the international market.
- The development of the traditional online business ecosystem to create a culture of online shopping and movement of operations to online channels.
- Faster adaptation of digital technologies by consumers, with internet penetration and adoption rates for some devices, especially smartphones.
- Additionally, the size of the population it is possible to reach online.

B2B businesses and consumers trusted online transactions but also created a market in terms of global investment and technology adaptation. Technology allows producers to introduce new products in a shorter period compared to the traditional market.

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**NEW PERSPECTIVE  
ON FAMILY  
BUSINESSES IN THE  
CZECH REPUBLIC**

## **1 Introduction**

In both developing and developed economies, family businesses are the most powerful business influencers. Family businesses account for 70-90 percent of global trade and 70-90 percent of GDP (Pindalo et al. 2012). According to the most recent statistics, they generate 50-80% of all jobs worldwide. Family businesses are even more relevant in Europe, according to (Sáenz and García-Meca, 2014). Family businesses are even more relevant in Europe, according to. They accounted for 70% of the country's gross

domestic product. They also help to expand the economies of South and East Asia, Latin America, and Africa (Villalonga and Amit, 2006).

Their influence on the business climate is likely to rise soon. In recent years, the Czech Republic's first generation of family businesses has had to consider how to pass their businesses on to the next generation. The most difficult period of family business, according to, is the transition from the first to the second generation. According to study from Bennedsen et al. (2007) succession planning will inevitably become a hot topic among family businesses. De Almmeida et al. (2018) demonstrated that succession mechanisms, such as a shift in the debt rate, had a significant impact on overall results. In comparison to family businesses, traditional businesses may experience high staff turnover due to mutual ignorance among employees, especially in a volatile environment.

Fang et al. (2018) investigated the connection between company performance and family business succession planning. The sample base is made up of Italian businesses, and contrasted businesses operated by the founders' heirs to businesses controlled by outsiders. Vilčeková et al. (2018) concluded that keeping family management in place has a detrimental impact on business success. Especially in competitive business sectors, the impact is greater. The findings indicate that the family business system does not have inherent superiority, and they stress the value of performing management research under various institutional conditions.

In the Czech Republic, family business has a long history and is undeniably important to the national economy. Small and medium-sized businesses, as well as micro enterprises, used to play a major role in the Czech economy and politics (Evropský parlament, 2015) Unfortunately, the Czech Republic's centrally planned economy halted the age of family businesses. Until 1989, family enterprises in the Czech Republic were rapidly disappearing. The family business boomed again after the Velvet Revolution, thanks to the transformation of the centrally planned economy into a market-oriented economy. As a result, many family companies have started to reinvest in their operations (Kalls and Probst, 2013)

Using the chosen multiple criteria decision-making process, the main goal of this study is to decide which of the possible variants of

family firms that vary in the legal type of business is the most beneficial for micro family enterprises (Saaty and TOPSIS).

The following is the structure of this paper: Section 2 contains the related literature's conclusions, Section 3 contains the methods used in this study, Section 4 addresses the research's input data, Section 5 contains the study's interpretation and evaluation, Section 6 concludes the study, and Section 7 contains the acknowledgement.

## **2 Literature review**

The concept of “family company” places a high value on the business climate. It assists family businesses in identifying laws that apply to them, allowing the family business management team to respond quickly and flexibly to laws while avoiding needless bureaucracy. After decades of uncertainty over what family business is, a concept of “family business” was eventually introduced to the Czech Republic in May 2019 (Kalls and Probst, 2013). The economic effects of family enterprises can be objectively and realistically evaluated. It also launches structural changes, such as the possibilities of tax relief or value added tax rates changes that have influence on prices of products and services (Chua et al., 2012)

Not only do family businesses contribute to global economies, but they also generate high-quality jobs. Their lack of sustainability, on the other hand, could be cause for concern. It is projected that only 30% of family enterprises survive to the second generation, with even less than 14% surviving to the third generation (Labelle et al., 2018).

According to De Massis et al. (2018) one of the main reasons for the relatively high failure rate on family business is because of the inability of family businesses to be prepared on succession process.

In a family company, the transition of management and the CEO from the current generation to the next generation usually takes many years. Successors are often involved with the business since childhood, as they assist, engage, see, and hear what is being solved in the company (Chua et al., 2018). If the business offers more opportunities for the successors to expand, the younger generations will typically bring new wind and new ventures such as opening e-shops, taking a different marketing strategy, using social networks, and so on. They have the potential to expand the family business.

Samara et al. (2018) discovered that family firms with a higher equity ratio are more likely to endure tough times of recession and deflation. This fundamentally promotes the overall economic stability. They can rapidly adjust to changes in the economic and social climate, and they play an important role in regional growth by establishing long-term relationships with workers, consumers, suppliers, and local communities. Family enterprises exhibit a high level of integrity. They value corporate social responsibility and are strongly involved in environmental and sustainability issues.

Arzubiaga et al. (2018) on the other hand, stressed that while the older generation can have experiences and information, recognizing new business models or opportunities must be done by the younger generation. This may be a problem, as Molly et al. (2019) said, and he suggested that family businesses with significant success employ non-family managers.

### 3 Methodology and Data

The article employs various criteria decision-making approaches, especially for weighting the criteria of the Saaty process. The TOPSIS approach was used to find the best variety. Methods of classification, analysis, synthesis, and comparison are used in addition to these.

#### 3.1 Saaty Pair Comparison Method

Saaty's method is one of the most widely used weight-determination methods (Saaty, 1998). To begin, the pairs of criteria are always compared, and the rating is stored in the Saaty matrix  $S = (s_{ij})$ . The size of the preference is then calculated. The size of the choice is expressed as a set number of points on a point scale with descriptors. As a result, the Saaty approach is distinct from the pairwise comparison method, which compares preferential path.

Use (6.13) to determine the weight of criteria  $v_i$ ,

$$v_i = \frac{G_i}{\sum_{i=1}^n G_i}, \quad (6.13)$$

where:  $G_i$  is the geometric mean of the  $i$ -th criterion. The relevance of evaluating the weight of the criteria is verified by the

consistency factor  $CR$  determined (6.14),

$$CR = \frac{CI}{RI}, \quad (6.14)$$

where:  $RI$  is random index.  $CI$  is the consistency index determined by (6.15),

$$CI = \frac{\lambda_{max} - N}{N - 1}, \quad (6.15)$$

where:  $\lambda_{max}$  is the largest matrix's own number and  $N$  number of criteria.  $\lambda_{max}$  is determined by (6.16),

$$\lambda_{max} = \frac{1}{N} \sum_i^N (S.w)_i / w_i, \quad (6.16)$$

where:  $N$  is the number of criteria,  $w$  is a vector and  $S.w$  is the  $i$ -th element of vector.

### 3.2 TOPSIS Method

TOPSIS is a strategy for separating the negative-ideal solution from the order preference by similarity to an ideal solution. Two co-authors suggested and investigated it (Hwang et al., 1993). Several studies have recently centred on the TOPSIS method and applied it in a variety of fields such as financial performance assessment and organization evaluation, as well as business management. TOPSIS was described by Junior et al. (2014) as a method based on the selection of variants that are closest to the so-called ideal variant. It is distinguished by a vector of the best criterion values that is also the furthest away from the so-called basal variant. The basic variant is the one whose feature is determined by the vector of the worst critical values. The TOPSIS method consists of the following steps:

Elements of matrix  $y_{ij}$  are transformed to the values of the  $r_{ij}$  according to (6.17),

$$r_{ij} = \frac{y_{ij}}{(\sum_{i=1}^n y_{ij}^2)^{1/2}}, \quad (6.17)$$

Calculate the elements of the weighted criterion matrix  $W = (w_{ij})$  as  $w_{ij} = v_j r_{ij}$  where  $v_j$  is the weight of  $i$ -th criterion.

From the elements of the matrix  $W$ , the ideal variant with critical values is determined ( $H_1, H_2, \dots, H_k$ ) and basal variant with values ( $D_1, D_2, \dots, D_k$ ), where  $H_j = \max (w_{ij})$  and  $D_j = \min_i (w_{ij}), j = 1, 2, \dots, k$ .

The distance of the variants from the ideal and basal variants is calculated according to (6.18) and (6.19),

$$d_i^+ = \left[ \sum_{j=1}^k (w_{ij} - H_j)^2 \right]^{1/2} \quad (6.18)$$

$$d_i^- = \left[ \sum_{j=1}^k (w_{ij} - D_j)^2 \right]^{1/2} \quad (6.19)$$

Calculate  $c_i$  (6.20) as the relative distance of the variants from the basal variants:

$$c_i = \frac{d_i^-}{d_i^- + d_i^+}, \quad (6.20)$$

Values  $c_i$  are from the interval  $\langle 0, 1 \rangle$ . they have values of 0 for basal variation and 1 for ideal variant. Variants can therefore be arranged according to decreasing values of indicator  $c_i$  [40].

### 3.3 Input data

The research was conducted between April and June of 2020. Data on micro family businesses (i.e. number of employees 9) is collected for this study with the help of the Family Business Association in the Czech Republic (Machek, 2017).

Even though the concept of family businesses was defined in 2019, the lack of a consistent definition for a long time has resulted in almost no relevant data on the exact number of family businesses in the Czech Republic. As previously mentioned, the research was carried out in the Moravian-Silesian region, which will have 33,867 industrial companies by 2020. As a result, this number is regarded as the scale of the sample base.

To determine the sample size, formula (6.21) is used

$$n = \frac{z^2 \cdot N \cdot r(1-r)}{(d^2 \cdot N) + [z^2 \cdot r(1-r)]} \quad (6.21)$$

where:  $N$  is size of base population,  $z$  is coefficient of confidence,  $d$  is tolerance rate and  $r$  expected deviation rate. The input values were determined according to the methodological instructions and recommendations from the Auditors chamber of the Czech Republic. The number of respondents in questionnaire survey is 30 micro companies.

$$n = \frac{1,96^2 \cdot 33\ 867 \cdot 0,02(1-0,02)}{(0,05^2 \cdot 33\ 867) + [1,65^2 \cdot 0,02(1-0,02)]} = 30$$

### 3.4 Evaluation of Criteria

When assessing the advantages of different legal forms of family businesses, legal, accounting, tax and managerial criteria are considered. In total, five different options are distinguished by the legal form of business.

- $V_1$  – Family businesses in the legal form of self-employed.
- $V_2$  – Family businesses – legal entity in legal form of joint-stock company.
- $V_3$  – Family businesses – legal entity in legal form of limited liability company.
- $V_4$  – Family businesses – legal entity in legal form of limited partnership.
- $V_5$  – Family businesses – legal entity in legal form of public company.

As previously mentioned, selecting the best version affects four classes of parameters. The first collection consists of legal requirements (K1). Legislation such as the Civil Code or the Commercial Corporation serves as the foundation for evaluating the  $j$ -th version while keeping the  $i$ -th criterion in mind. Self-employed companies are more beneficial than other business enterprises because the method of establishing them is simpler. Setting up a joint-stock corporation, on the other hand, is the most difficult of all companies, according to (Urbano et al., 2019).

The accounting principles are the second collection to be considered (K2). If the self-employed person's turnover for the

accounting period does not surpass the turnover determined by the Accounting Act, he or she is permitted to hold tax proof. Tax proof is less demanding than bookkeeping (Krzikallová and Tošenovský, 2020). Legal organizations are required to maintain accounting records as Gonzáles et al. (2020) claims.

Criterion K3 ensures that the tax element of decision making is considered. In terms of taxation, the tax burden is reflected by an income tax – either personal or corporate, depending on the legal type of the corporation (Krajňák, 2019). The tax dimensions should not consider the nominal tax rate. The nominal tax rate does not always represent the true tax burden. As a result, the effective tax rate is needed.

The fourth and final category of four compared is one that focuses on administrative aspects (K4). Managerial elements are given the same weight as all the other parameters. According to this viewpoint, special emphasis was placed on the presumption of family and non-family members for the performance of managerial functions in family businesses, as well as the degree of interest of family and non-family members in the sense of ownership/co-ownership share in family business (Molly et al., 2019). In this scenario, the reviewer maintains the same ranking for all four categories of legal entities. Table 6.7 contains a rundown of the assessment results for the i-th criterion.

*Table 6.7*

**Matrix of absolute utility**

	<b>V<sub>1</sub></b>	<b>V<sub>2</sub></b>	<b>V<sub>3</sub></b>	<b>V<sub>4</sub></b>	<b>V<sub>5</sub></b>	<b>Type</b>
<b>K<sub>1</sub></b>	1	3	3	3	3	MIN
<b>K<sub>2</sub></b>	1	5	4	4	4	MIN
<b>K<sub>3</sub></b>	1	5	4	3	2	MIN
<b>K<sub>4</sub></b>	1	3	3	3	3	MIN

*Source: own calculations*

#### **4 Empirical Results**

The weighting of requirements was calculated in the introduction by using (6.13). The findings in Table 6.8 show that the K4 criterion – administrative aspects – received the most weight. Criteria K2 and K3 have the lowest weight and measure the accounting and tax aspects of the company.

Table 6.8

## Consistency verification

	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	g <sub>i</sub>	v <sub>i</sub>	CR
K <sub>1</sub>	1	2	3	1/3	1,189	0,254	0,064
K <sub>2</sub>	1/2	1	1	1/3	0,639	0,136	0,009
K <sub>3</sub>	1/3	1	1	1/3	0,577	0,123	0,04
K <sub>4</sub>	3	3	3	1	2,279	0,479	0,062
					4,685	1	

Source: own calculations

Formula (6.14) verifies consistency of the data. Since the CR index in all cases are less than 0.1, the data in the matrix is consistent.

Evaluation of the variants is shown in Table 6.9. For best option, it is typical that the value  $c_i$  (6.20) should be as high as possible. This condition is fulfilled in variant V1 – when family business is in a legal form of self-employed person. On the other hand, from the point of view of the considered criteria, joint stock company is the least favourable in micro family business, which is V2. The remaining variants V3, V4 and V5 acquire similar values of  $c_i$ .

Legal forms of public companies, limited partnership and limited liability companies achieved similar results. The reason is because the same absolute utility for K1, K2 and K4 criteria considered. Setting up a company in the legal form of the self-employed is the reason why variant V1 gets in the index of value 1 and therefore is the strongest among the collection of business entities because it has the lowest tax burden and the fewest legal constraints.

Table 6.9

## TOPSIS Method

	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	di+	di-	c <sub>i</sub>
V <sub>1</sub>	0,042	0,016	0,016	0,081	0	0,202	<b>1</b>
V <sub>2</sub>	0,125	0,081	0,082	0,241	0,123	0	<b>0</b>
V <sub>3</sub>	0,125	0,064	0,048	0,241	0,261	0,035	<b>0,125</b>
V <sub>4</sub>	0,125	0,064	0,048	0,241	0,261	0,035	<b>0,120</b>
V <sub>5</sub>	0,125	0,064	0,064	0,241	0,263	0,023	<b>0,08</b>
Ideal	0,042	0,016	0,016	0,081			
Bazal	0,125	0,081	0,081	0,239			

Source: own calculations

## 5 Conclusion

The aim of this article was to test different legal business type variants using a multiple criteria decision-making process (TOPSIS and Saaty). Given that the weight of parameters differed and was greatly affected by the resulting order of variants, the result shows that operating a self-employment corporation is the best option for micro family enterprises; a joint-stock company is the least advantageous option.

From a managerial perspective, the study was primarily concerned with evaluating the efficiency of managerial roles in family enterprises, as well as the degree of participation of family and non-family employees in leadership positions. Management parameters have been given the same importance in all forms of businesses because authority and performance of managerial functions are equally relevant for family businesses in self-employed form as well as those of others. Regardless of the size of the company, the position of manager is critical in all types of companies and leads to its proper operation. It is obvious that family members would be more involved in family businesses than non-family members.

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**COMMERCIALLY  
AVAILABLE WEB-  
BASED IDEA  
MANAGEMENT  
SYSTEMS: THE  
ANALYSIS OF SUPPLY  
ON THE MARKET AND  
TENDENCIES**

## **Introduction**

Web-based idea management systems (IMS), which include a systematic and manageable process of generation, evaluation and development of ideas that help to implement these ideas in organisations to create improvements or innovations. Therefore, this paper aims to highlight the web-based IMS as modern technologies for innovations and compare them with alternatives. It aligns with the tendencies in literature, because – IMS mostly are researched in the open innovation context (e.g., Iversen et al., 2009; Sandstrom et al., 2010) and IT literature (e.g., Nilsson et al, 2002), management literature (e.g., Yu et al, 2006).

Such companies as POLARIS, Rolls Royce, Pfizer through IMS Spigit software have accelerated the introduction of new products on the market by 80%, creating new patents that have brought in more than 50 million US \$100 (Yuma, 2018), while IMS Crowdcity is trusted by such clients as Intuit, P&G, the NHS, which involves employees, partners and clients to address the unique problems of a company (Crowdcity, 2018). Many companies around the world use Internet-based IMS to address their or their customers' problems.

While these systems are increasingly used by companies, there is no single view in literature what is IMS. In the previous study (Mikelsone, Volkova & Liela, 2019), the authors developed the definition of IMS formed on more than 70 literature sources used as the basis for this promotion work. The authors have concluded that the theoretical description of IMS needs to be enriched by an empirical study on IMS – this paper will try to extend it by adding the perspective of a commercially available web-based IMS software research.

In this paper the authors focus on the web-based IMS that are commercially available. These IMS systems provide the systematical and manageable process of IM, but IM is the process of idea generation, evaluation, and repeated idea generation and evaluation (Mikelsone, Volkova & Liela, 2019).

The authors of this paper have created classifications developed on a systematical and analytical literature review and practical case studies that will be applied also in this paper. The authors have selected 2 classifications of IMS:

- 1) based on IMS focus. IMS could be classified as an active and a passive one. This classification reveals that there is an IMS that passively gathers ideas that are not concentrated on a specific purpose, while the active IMS provides functions to gather ideas for specific purposes;
- 2) based on IMS involved sources. IMS could be classified as an internal, external and a mixed one. An internal IMS provides an opportunity for the idea management to involve employees or entire departments. An external IMS provides an opportunity to attract external sources of idea management, such as society, customers, etc. A mixed IMS provides an opportunity to involve internal and external sources (Mikelsone, Volkova & Liela, 2019).

## **1. Methodology and the Number of Web-based Idea Management Systems**

For the assessment of commercially available IMS, the collection of IMS data from the product descriptions available on the home pages was used, but the information was processed through a concessional and thematic analysis. All these elements have been

assessed as. The first step of the study was the selection of commercially available IMS. The first step of the Internet scanning was to conduct a search in Capterra database. This database was selected because it is one of the most extensive databases of corporative IT solutions that are publicly available. In November 2021, a search was conducted in the database by entering the key word “idea management system” (IMS) with a total of 230 systems selected. The search was also carried out in Google, which looked at the first 100 search pages, selecting systems that were not included in the Capaterra database, which was done with a view to examine as many IMS as possible over the study.

For the main methods used to perform the task, see Table 6.10.

*Table 6.10*

**Methods for the empirical research of the ideas management system**

Sub-tasks	Data Acquisition Method	Data Processing Method	Time period	The description of a method used (steps)
<b>The Analysis and classification of commercially available IMS</b>	IMS Technology Analysis to collect information about the most widely used IMS and their features	Content analysis	November 2021	<ol style="list-style-type: none"> <li>1. IM selection;</li> <li>2. A coded IMS protocol creation to summarize the functions offered by IMS based on literature and study objectives;</li> <li>3. IM questionnaires' completion based on home page information;</li> <li>4. Inductive and deductive constables;</li> <li>5. IMS characterisation (a comparative analysis) and classification based on the selected most frequently used functions.</li> </ol>

*Source: created by the authors*

See Table 6.11 for IMS selection stages.

During the second phase of the selection, IMS was selected (installable programs excluded), and the third one excluded duplicates, or systems found in the both searches. In conclusion, 230 IMS were included in the study.

Table 6.11

**Ideas management system selection stages**

	Stage 1 – IMS found during the initial search	Stage 2 – The Selection of Internet-based IMS	Stage 3 – Unique IMS, used during the study
<b>Capaterra</b>	226	220	230
<b>Google</b>	222	200	
<b>Total:</b>	245	202	

Source: created by the authors

A similar study was conducted in 2017, when only 107 such systems with the same methodology were selected. It can be concluded that the availability of IMS has doubled over the years. See Table 6.12.

Table 6.12

**The selection stages of the idea management system (2017)**

	Stage 1 – IMS found during the initial search	Stage 2 – The Selection of Internet-based IMS	Stage 3 — Unique IMS, used during the study
<b>Capaterra</b>	116	98	107
<b>Google</b>	129	104	
<b>Total:</b>	245	202	

Source: Mikelsone (2020)

The second step after data selection: a coded assessment protocol was established on the basis of literature studies and the purpose of the study, or, in order to make the analysis process more efficient and systematic, a special database with the elements to be studied was established. The subjects were selected (both inductive and deductive ones) to answer the study question.

The third step was the collection of data by defined elements. The fourth step included the synthesis of information with a concessional analysis which helped to identify and analyse qualitative data. The study utilized one of the most commonly used constellation models, consisting of 3 steps (the steps based on the Vaismoradi et al., 2013 approaches):

1. Preparation – the sources were prepared for the analysis (used for IMS descriptions on their home pages) and the analysis protocol was established based on the elements derived from

an inductive and deductive approaches, it is elicited from elements discovered in the earlier literature studies, including elements discovered in the course of the study, acquired from data.

2. Organizing – complete protocols, non-linear coding (induction, deductive). The codes were combined into categories and selected, which were important for this study. A 3-category network map with global, organizing, and base categories was created. The decision to use concessional analysis was hinged on the need to process qualitative data and the most frequent use of thematic and concessional analysis for the processing of this data. When comparing the two methods, the authors decided to apply a concessional analysis as it provides an opportunity to explore data not only qualitatively but also quantitatively, which is essential if it is necessary to identify the most common features of the IMS and their differences by creating a characterisation and classification based on an empirical study. See the category map in Table 6.13.

*Table 6.13*

**The network of categories for empirical research of the ideas’ management system**

Global Category	Organizing Category	Basic Category
IMS highlights	Basic features based on IMS descriptions on home pages	Product name, main functions, main benefits, price, customers, main usage targets (also based on the literature analysis);
	Functions and types	The generation and evaluation of ideas, the preservation of ideas/continuation of IM, parallelism, anonymity, internal IM/external IM, transparency, active IM/passive IM;
	The data analysis process updates the features.	Updated IMS features (e.g. dashboards, collaboration functions, status tracking, brainstorming, task formats, discussion function, feedback, game mechanics, rewards, process control, engagement, monitoring).

*Source: created by the authors*

3. Results: described categories relevant for the study, i.e.

## 2. Results

Firstly, on the basis of the studies described in Chapter 1 of IM and IMS literature, IMS features have been identified (a deductive approach) – the generation and evaluation of ideas, the continuation of IM, parallelism, anonymity, internal IM/external IM, transparency, active IM/passive IM. All these elements have been assessed as IMS existing or non-existent during the analysis. Secondly, additional evaluation elements have been identified prior to the study, with elements relevant to describing IMS as products including the basic features derived from IMS descriptions on home pages (a deductive approach) – product name, main functions, main benefits, price, customers, main usage targets. Thirdly, the data analysis process has updated the features. In Table 6.14, see the description of the elements.

The results of the study indicate that the results of the empirical and theoretical studies of IMS are not contradictory in relation to the theoretical definition of IMS compared to the main functions of IMS. Empirically, all functions can also be divided into 3 groups: ideas' generation, evaluation and follow-up functions. In Table 6.15 dominating and interesting approaches' descriptions of IMS systems on the market are presented.

Here are some of the analysed web-based IMS – *Crowdicity*, *Viim*, *IdeasMine*, *Idea Drop*, *Ideanote*, *Receptive*, *CrowdWorx*, *Innovation Engine*, *Ideawake*, *Sideways 6*, *OrganisedFeedback*, *HYPE Innovation*, *MindManager*, *Milanote*, *Innovation Platform*, *Kindling*, *Coggle*, *DataStation Innovation Cloud*, *SprintGround*, *Benovative*, *BrainStorm*, *Idearium*, *Stormboard*, *MangoApps*, *BrightSpars*, *Bubbl.us*, *CogniStreamer*, *De Idee Management Tool*, *e-Zassi*, *easycrit*, *eVSM*, *id-Force*, *ID8 Enterprise*, *Ideabox*, *IdeaBridge*, *Ideafactory*, *Ideakeep*, *IdeaLinker Accelerate*, *Inno360*, *InnoEngines*, *innosabi*, *Innovation Agora*, *Innovation Central*, *InnovationCast*, *InnovationStation*, *Innovbook*, *ITONICS Ideation*, *MindApp*, *Nosco*, *TalkFreely*, *Verve*, *Accept360*, *Idea Glow*, *IdeaSpotlight*, *Brightidea*, *IDEALYST* etc.

Table 6.14

**Ideas management systems as product-specific elements and data-driven elements**

<b>Elements</b>	<b>Explanations</b>	<b>Categories</b>
<b>Product name</b>	IMS Name	Name
<b>Main functions</b>	Main functions for IMS mentioned in IMS descriptions	Descriptive text
<b>Main benefits</b>	Benefits for the IMS – referred to in IMS descriptions	Descriptive text
<b>Price</b>	Pricing approach for IMS	Month/Year/Number of users/Single payment (data driven)
<b>Customers</b>	Main customer groups mentioned in the IMS descriptions	Descriptive text
<b>Main uses objectives</b>	Main uses' targets referred to in the description of IMS	Product/Process/Organization/Marketing IMS (data driven)
<b>Dashboard</b>	Tracking all activities in IMS	Yes/No
<b>Idea status</b>	An ability to track an idea's status in IMS	
<b>Identifying the creators of an idea</b>	An ability to track the creators of ideas	
<b>Cooperation function</b>	The possibility of IM cooperation (with a multi-party involvement)	
<b>Brainstorming</b>	Idea generation function – methods	Descriptive text
<b>Task Formats</b>	Potential idea submission formats	Texts/Photo/Video (data driven)
<b>Discussion function</b>	IMS function that allows you to discuss and/or comment on ideas	Yes/No
<b>Feedback function</b>	Feedback to idea creators and evaluators	
<b>Mechanics of a game</b>	Included game elements in IMS	
<b>Rewards</b>	The integration of rewards in IMS	
<b>Monitoring engagement</b>	IMS function that allows to track engagement	
<b>Process control</b>	Process control function IMS (manual/automatic)	Automatic/Manual
<b>IMS type</b>	IMS type according to classifications	Internal/External/Mixed / Active/ Passive

Source: created by the authors

Table 6.15

**Dominating and interesting aspects of IMS**

<b>Elements</b>	<b>Dominating approach</b>	<b>Interesting approach</b>
<b>Main functions</b>	Idea generation and evaluation	Idea implementation, project planning, innovation management
<b>Main benefits</b>	Idea management improvements, innovation management improvements, cooperation improvements	Motivation increase for participants, Involvement increase, Financial benefits, Establishment for innovation culture
<b>Price</b>	Month/Year/Number of users/Single payment (data driven)	Per generated ideas
<b>Customers</b>	Private sector	Academic and public sectors
<b>Main uses' objectives</b>	Mainly product and marketing ideas	Organisational and process ideas
<b>Dashboard</b>	Yes	–
<b>Idea status</b>	Yes	
<b>Identifying the creators of an idea</b>	Yes	
<b>Cooperation function</b>	Yes	
<b>Brainstorming</b>	Just collecting ideas without creative thinking methods	
<b>Task Formats</b>	Text	The application of creative thinking methods
<b>Discussion function</b>	Yes	Photo and Video
<b>Feedback function</b>	Yes	
<b>Mechanics of a game</b>	No	
<b>Rewards</b>	Yes	
<b>Monitoring engagement</b>	Yes	
<b>Process control</b>	Manual	
<b>IMS type</b>	Internal, External Active	Mixed Passive

*Source: created by the authors*

Interesting trends and market opportunities:

- There are a lot of different benefits described in web-based IMS descriptions, for example, motivation increase for participants, involvement increase, financial benefits, establishment for innovation culture. It aligns with the research results (Mikelsone et al., 2021) that there are a lot of

benefits of web-based IMS.

- There is great potential to adapt these systems not only in private enterprises, but according to IMS descriptions in academic and public organisations.
- More game mechanics are applied in web-based IMS than it used to be. More organisational and process ideas could be created by these systems not only with product and marketing focuses than it used to be.
- The application of creative thinking methods are used in only few web-based IMS, so there is the potential to integrate these systems to create greater value for clients than it used to be.
- Open innovation approach – active external IMS or internal IMS are the most frequent systems on the market, but few of these systems are mixed – that helps to make more focused process by selecting appropriate idea creators and evaluators in each case and process stage. Internal idea contest is the most frequently applied IMS type to organize a wide creativity of enterprises (Hober et al., 2021). Sometimes an external idea management is mistaken as a synonym with ‘crowdsourcing where new idea submissions from outside a firm’s boundaries are obtained, selected, evaluated, coded, and integrated into an organization’ (Christensen, Karlsson, 2019, p. 240). Though, an external IMS includes not only undefined crowds in the processes, but very focused external participants, for example, experts, loyal clients etc. Maybe the future of a web-based IMS is hidden in a mixed IMS, because even at the moment this type is not very widely supplied, but there is growing trend to apply IMS in this way.

## **Summary**

The results of the study demonstrate that there are no significant differences between the theoretical and empirical concept of IMS. In addition, the study of potential uses of IMS has concluded that IMS is universally applicable to different uses and users. The main structural features of IMS are the generation, evaluation and preservation of ideas.

The activities of IMS are becoming more and more significant in companies. This is why companies try to involve IM not only in

internal sources, but also external experts and the public. Van den Ende et.al. (2015) called for studies on the use, construction and deployment of external and internal IMS. The authors have made the first steps to complete this task by classifying the IMS according to the internal, external or mixed IMS of the parties involved in the IM. This classification indicates that IMS can also be studied using the open innovation concept, where both internal and external innovation processes play an important role (Chesbrough, 2005). The results of this section demonstrate that IMS can be an open innovation instrument enabling individuals and businesses to be involved in the innovation process. An internal IMS helps with the involvement of employees in the management of ideas, while the external IMS is based on the possibility of involving experts, loyal customers, suppliers and other sources in the management of ideas. Meanwhile, mixed IMS provides the both approaches. There are wide-ranging IMS options using mixed IMS, for example, internal sources can create ideas for key concepts, but external sources will develop these ideas, so it will be possible to create solutions to their preferred bottom, but already more tailored to external demand. Van den Ende et.al. (2015) revealed that while there are ever new IMS, there are also significant problems. The most important problems in literature are: (1) choosing the most appropriate IMS; (2) IMS can result in many ideas that are difficult to assess and choose. In this case, in practice, these problems can be automatically solved by selecting a complete or extra IMS that includes ideas assessment tests.

The main contributions: (1) it is the most extensive empirical study of web-based IMS, based on the theoretical and empirical approaches to clarify the concept of IMS; (2) it presents the theoretical and empirically based concept of IMS; (3) it highlights the main tendencies in IMS supply in 2021.

A number of future studies have been identified during the study process of this sub-chapter. Firstly, studies could focus on how companies use these systems to figure out how these systems materialize at companies. Secondly, it is recommended to examine how organisations adapt IMS to their needs and implement it in their activities. Further research is needed on how commercially available systems can be adapted and why some companies create their own IMS.

## Aknowledgement

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**ANALYSIS OF  
THE ATTITUDE  
OF UKRAINIAN  
TO REMOTE  
WORK**

**Formulation of the problem.** Scientific and technological progress affects not only the development of the economy of any country, but also causes changes in social and labor relations of people. The emergence of modern information and communication technologies, in particular the World Wide Web, has had a special impact on changes in these relations. With the introduction of these and other technical innovations, the forms of employment of employees are also changing. Transformations of forms of employment encourage, on the one hand, the emergence of new technologies and, on the other hand, the fact that new forms of work have a wide range of benefits that are attractive to both employees and employers.

Among the new forms of employment that are most popular in the labor market are remote work or, alternatively, telecommuting. Along with other positive aspects, this non-traditional form of

employment provides an additional protective privilege in various emergencies, such as a pandemic. In this case, entrepreneurs will be able to continue the common business, and employees – to save their jobs. This format of work is becoming increasingly popular both in Ukraine and abroad. Its volumes increased especially during the global COVID-19 pandemic. This indicates the need for research on this issue, in particular, how the processes related to the organization of remote employment in the labor market of Ukraine.

**Analysis of recent research and publications.** A number of scientific works by both Ukrainian and foreign authors are devoted to the presentation of the results of scientific research related to remote work (in foreign literature the word “telework” is also used). Although among these authors – mostly foreign scientists. This is due to the fact that the concept of employment studied went from the United States to Western Europe and then spread to the east. In Ukraine, Professor A. Kolot and his students are actively researching this issue [1-3]. In addition to these scholars, issues related to remote work have been studied by I. Bezzub [4], V. Vapnyarchuk [5], O. Valetska, O. Prikhodko [6], O. Gerasymenko, L. Shchetinina, S. Rudakova [7], M. Inshin [8], O. Minyuk, D. Minyuk [9], J. Svichkareva [10] and others, most of whom have studied the legal aspects of this work.

The global COVID-19 pandemic has intensified the expansion of telecommuting and the shift of many workers to teleworking. “The pandemic has provoked a long overdue stage of technological and social experiments, which greatly affect the future of office workers. That's why employers and governments around the world are already trying to determine how relevant remote work will be after a pandemic” [4]. This indicates the need for sociological research of the economically active population of each country, including Ukraine, on remote work, and its attitude to the possibility of working remotely after a pandemic. This confirms the relevance of this research.

**Setting objectives.** Given the above, the aim of the article is to study the essence of this type of employment as telecommuting, approaches of scientists to define this concept, study of employment in remote work in Ukraine and analyze the attitude of Ukrainian workers to remote work.

**Presentation of the main material of the study.** The development of information and communication technologies and the formation of a post-industrial society is characterized by deconcentration of industry, priority of service production, introduction of intellectual innovations and other theoretical knowledge, and the emergence of a new paradigm of labor among the main defining components of which are a flexible labor market and flexible forms of employment. Flexibility is a novelty in the field of labor relations. Flexibility of the labor market is understood as its ability to respond to external changes, to adapt to the transformation of market conditions, and flexible forms of employment are those that in today's economic and social development are more beneficial for both employers and workers. Unlike traditional employment, which is characterized by rigid links between the employer and the employee, flexible employment does not provide for such links.

A prominent place among flexible forms of employment is occupied by remote employment or teleworking. This job allows you to perform professional duties outside the company's office. It can be performed at home or in another place that suits the employee with the use of certain information and communication technologies. This form of employment allows employees to flexibly manage their work, as they can choose where and when to do their job. This mode requires a computer, and in exceptional cases a telephone, fax, and Internet connection.

The most important features of remote employment A. Kolot calls the remoteness of the workplace, irregular working hours, the virtuality of the environment in which work takes place, the use of information and communication technologies, flexibility of social and labor relations. Remote employment is a non-standard form of employment, which is based on flexible social and labor relations between employee and employer and takes place in a virtual environment using information and communication technologies [1].

O. Gerasymenko rightly considers remote employment not only from the standpoint of non-standard, but also from the point of view of innovation, as this form of social and labor relations provides a set of innovations on interaction between government, employees, employers, which in practice generates a number of socio-economic benefits organizational and legal certainty [3].

It should be noted that today in Ukraine the remote labor market shows small activity. The effective operation of this mechanism is hampered by a number of problems that need to be addressed, namely:

1) lack of officially registered remote employment technologies in Ukraine;

2) lack of legislative initiative to introduce and legalize distance employment in Ukraine;

3) non-adaptation of Ukrainian legislation to international standards;

4) unfinished legislation on issues of remote work, wages, work regimes, social security, taxes;

5) uneven degree of development of IT technologies;

6) inequality of remote workers with ordinary ones;

7) insufficient awareness of the population and employers of Ukraine about the possibility of using remote forms of employment;

8) the existence of risks of dubious employers and dishonest employees;

9) problems of protection of information and results of work (viruses, hacking, theft of money);

10) problems of Ukrainians entering the international labor market, complex and controversial problems of settlement of international relations in this area due to increasing inequality of economic development of the world;

11) risks of unintentional and intentional violation of the rights of third parties, in particular, intellectual property;

12) distrust of virtual agencies and their work outside the legal framework;

13) lack of communication and exchange of experience of remote workers;

14) there is no legal responsibility of employers for the relevant working conditions and health insurance of the employee;

15) insufficient level of information and dissemination of new information technologies and non-allocation of a set of information industries in a particular sector of the economy (such as construction, transport, etc.);

16) improper dissemination of the interdisciplinary research base;

17) differences in socio-political and economic situations in different countries, differences in the scale of prices and their instability [11, p. 123-128].

Ukrainian legislation attempts to regulate some forms of remote work. In particular, in February 2021, due to the adoption of the Law of Ukraine “On Amendments to Certain Legislative Acts of Ukraine on Improving the Legal Regulation of Telework, Homework and Flexible Working Hours”, the terms “homework” and “teleworking” were defined. Therefore, home-based work is a form of work organization when the work is performed by the employee at his place of residence or in other premises designated by him, which are characterized by the presence of a fixed area, technical means (basic production and non-production assets, tools, devices, inventory) or required for the production, provision of services, performance of works or functions provided by the constituent documents, but outside the production or working premises of the owner of the enterprise, institution, organization or its authorized body [12].

Remote work is a form of work organization in which work is performed by an employee outside the work premises or territory of the owner or his authorized body, in any place of the employee’s choice, and with the use of information and communication technologies [12].

We agree with the opinion of K. Gorbacheva, V. Nezhevelo, and E. Mishchenko that a significant achievement in the field of legal regulation of such forms of a labor organization as homework, telecommuting, flexible working hours, is their clear legislative delimitation on the relevant grounds, the most significant of which is the place of performance of the employee’s job function. In the conditions of aggravation of a pandemic and a wide range of applications of such forms of work, the important characteristic of legal regulation in the specified sphere remains its timeliness [13].

The study of the attitude of the population of Ukraine to remote work was conducted using the survey method, and a questionnaire was used as a research method, because, in our opinion, a professionally designed questionnaire allows scientists to obtain qualitative information for further processing and analysis. A smaller sample of respondents can be used to apply it, but the results obtained during the survey are also representative of the whole

population.

A questionnaire was developed to interview respondents, which included 20 closed-ended questions divided into four main sections. Among the questions asked in the questionnaire were also questions in which you could indicate your answer.

It was assumed that the achievement of the above research goal can occur only after receiving answers to the following research questions:

1. Analysis of remote employment in Ukraine:
  - a) what is the experience of respondents in remote work and what field does it relate to;
  - b) what is the experience of the respondents' close environment in performing remote work and what field does it relate to.
2. Analysis of the use of remote work at specific enterprises (an important element in this section of questions is whether the respondent is currently working, if not, go to section 3):
  - a) in which field the respondent is employed;
  - b) whether the employer allows the duties to be performed remotely, and if so, whether the employee wants to use such a solution;
  - c) whether the employer allows remote work in accordance with the requirements of the employee (so-called home office), if so, whether the person uses this opportunity and how often.
3. Analysis of interest in remote employment:
  - a) under what circumstances or for what reasons the employee is ready to work remotely;
4. Analysis of beliefs about remote work:
  - a) which social groups can be affected by online work as a form of professional activation;
  - b) what are the prospects for the development of teleworking in Ukraine.

Age, gender, and level of education were used as criteria for dividing respondents into groups.

Substantiating the choice of the research problem, and then preparing to conduct research, the following research hypotheses were adopted:

1. The level of remote employment in Ukraine is high;
2. Telework is the most common in the IT industry;

3. Most Ukrainian employers do not use the system of remote work in enterprises;

4. Remote work on order (home office) is widely used by both employers and employees;

5. The main reason for the willingness to work remotely is the adaptation of work to their own needs – the balance of work and personal life;

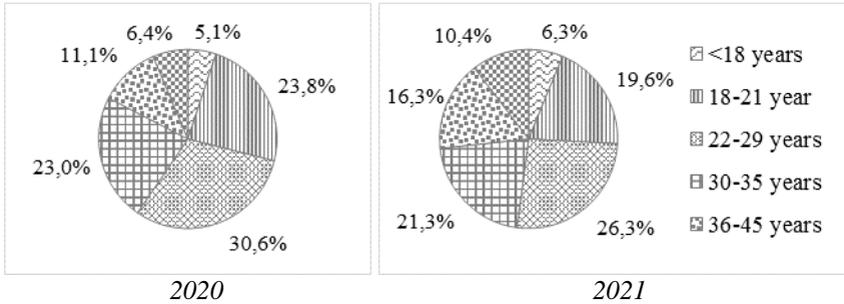
6. Remote work is seen as a positive aspect of activating the employment of people with disabilities, mothers, reducing unemployment in a pandemic;

7. Active development and implementation of remote work in Ukraine are forecasted in the near future.

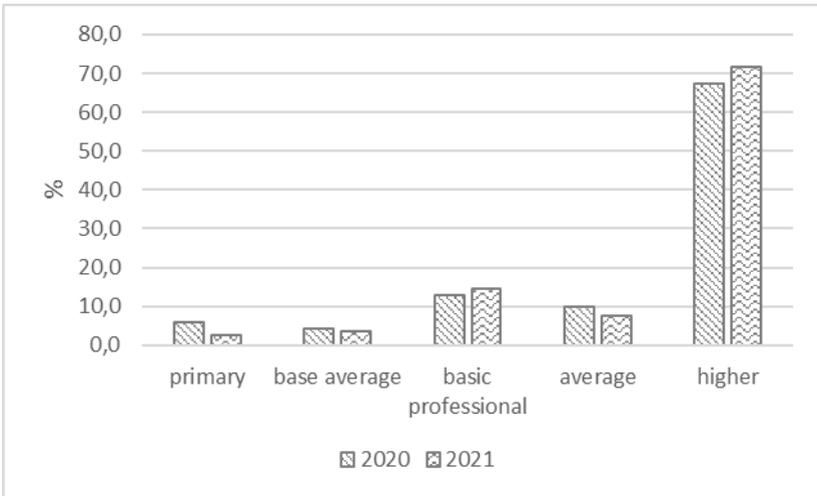
The survey was conducted among the economically active population of Ukraine in two stages: in early 2020 and late 2021. The results of the survey differed significantly, due to changes in the labor market under the influence of the pandemic. In 2020, 72% of respondents (169 people) said they had no online experience, and in 2021, 62.5% of respondents (147 people) said that they work partially or completely remotely. Similarly, 17% (29 people) in 2020 and 39% (42 people) in 2021 said they wanted to work remotely.

In 2020, 235 respondents were interviewed, including women (n1 = 125) and men (n2 = 110) with different levels of education (primary – n3 = 14, basic secondary – n4 = 10; basic professional – n5 = 30; secondary – n6 = 23; higher – n7 = 158) and from different age groups (<18 years – n8 = 12; 18-21 years – n9 = 56; 22-29 years – n10 = 72; 30-35 years – n11 = 54; 36-45 years – n12 = 26; > 45 years – n13 = 15). And the 2021 study involved 240 respondents (123 women (n1) and 127 men (n2)) with different levels of education (primary – n3 = 6, basic secondary – n4 = 9, basic professional – n5 = 35, secondary – n6 = 18; higher – n7 = 172) and from different age groups (<18 years – n8 = 15; 18-21 years – n9 = 47; 22-29 years – n10 = 63; 30-35 years – n11 = 51 ; 36-45 years – n12 = 39; > 45 years – n13 = 25) (Figures 6.21, 6.22).

Examining the spheres of activity of respondents and their immediate environment in 2020, the answers of 195 respondents on the use of remote work in specific enterprises were analyzed and found that remote work is most often used in IT (57.1%) and marketing (21.4%).

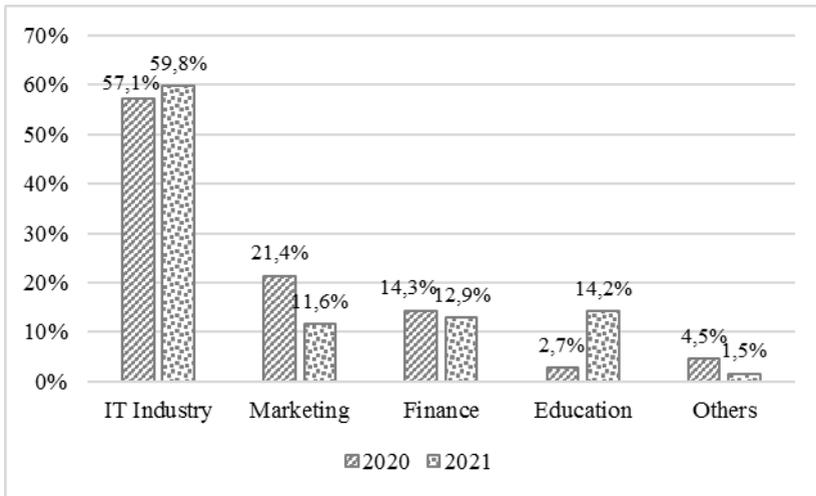


**Figure 6.21 Distribution of respondents by age**



**Figure 6.22 Distribution of respondents by the level of education**

In 2021, 207 people employed during the pandemic took part in this part of the survey. The study showed that under quarantine restrictions, the share of respondents who worked remotely increased and the largest representatives of the financial (12.9%) and IT (59.8%) sectors were joined by representatives of higher and professional education (14.2%). The share of employed respondents in marketing decreased (11.6%). The “others” include industries that have very rarely used telecommuting, such as culture, photography, holidays, etc. (Figure 6.23).



**Figure 6.23 Industries that used remote work in 2020-2021**

An important area of research is the analysis of the situation at Ukrainian enterprises on the interest of employers in the use of remote employment, the availability of opportunities for employees to perform professional duties remotely. The survey showed that employers also differed in 2020 and 2021. Representatives of business structures at the beginning of 2020 had a negative attitude to online work, as 72.1% said they were not interested in this form of employment. However, 31.4% stated that they are ready to provide such an opportunity to their employees if necessary (illness, family circumstances, etc.). In 2021, already 53.7% of respondents in management positions answered positively that they use the “home office” as an alternative form of employment.

Regarding the availability of remote employment in enterprises, in 2020 only 14.8% of respondents answered positively, and 16.9% do not know whether their company can provide such an opportunity. In 2021, the situation improved, as 47.3% of respondents said that the company can give them the opportunity to work remotely.

The development of telecommuting in the labor market should be based not only on the desire and willingness of employers to implement such a solution in enterprises but also on the demand of potential employees. In our opinion, one of the reasons for the slow

development of telecommuting in Ukraine is the psychological resistance of society and the lack of legal regulation of teleworking. The majority of the economically active population has a low level of responsibility, insufficient skills in the use of information and communication technologies, employees often do not know how to work independently, used to work in a team and exchange ideas and make decisions in direct communication with colleagues and management.

However, the study showed that a significant part of the population of Ukraine is still positive about remote employment and among them the most interested are:

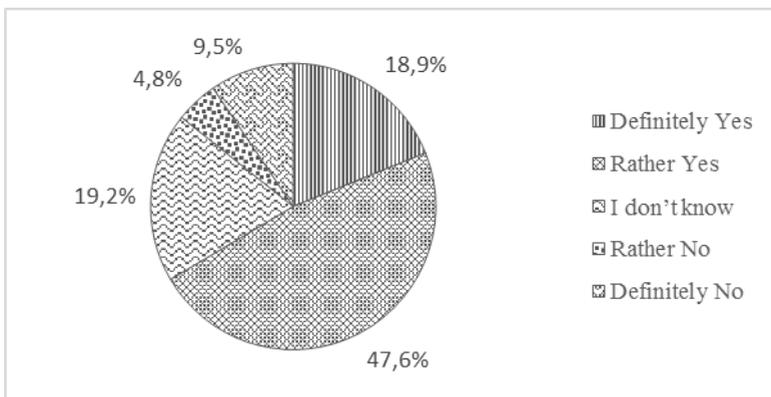
1) Students. This applies not only to first-time or higher education students, but also to those who are getting a second/third education, upgrading their skills or retraining, and so on. When working online, work and study can be easily combined.

2) Young people. The current generation Z is mastering modern technologies from an early age and is beginning to enter the modern labor market, presenting great competition for other generations. Generation Y has fewer problems with mastering new software and can adapt more quickly to changes in the current labor market than older generations.

3) Women during pregnancy and childbirth. "Home office" is an opportunity to activate mothers and to conduct uninterrupted business activity. Thanks to the possibility of flexible adjustment of working conditions, women can reconcile family and professional responsibilities.

Another block of questions was aimed at examining respondents' beliefs about the impact of remote work on reducing unemployment among people with disabilities and mothers. It is proved that remote work has a positive effect on the presented aspects, expanding employment opportunities for people with disabilities in the open labor market (Figure 6.24).

Increasing maternal employment in the labor market is a common problem not only in Ukraine. This is because women are afraid to get pregnant and end their careers. The majority of respondents (52.4%) believe that remote work provides an opportunity to permanently fulfill family responsibilities and continue working for women raising young children.



**Figure 6.24 Activation of people with disabilities in the labor market through remote work**

**Conclusions and prospects for further research.** The results of the study prove that remote work is an important element in the development of the information society in modern conditions. The development of information technology, software, and telecommunications affects the efficiency of all processes taking place in the market, including the labor market.

The survey showed that the economically active population of Ukraine has a positive attitude to the performance of professional duties remotely, as teleworking is one of the flexible forms of employment, which gives employees the opportunity to adapt work to their own needs, can solve some employment problems in society and even ecology or politics. However, employees say they often face opposition from management because employers and company managers are accustomed to standard, well-established management, and business decisions, and only a small proportion of company executives have information about current legislation on teleworking.

The study showed that we should expect dynamic changes in the labor market, which will be to maximize the flexibility of the labor market and the introduction of remote work in a growing number of enterprises around the world. However, despite the positive aspects, the legal regulation of home and distance work in Ukraine needs further refinement.

Further research is also needed on modernization and active development of the world labor market, the use of new technological

solutions that will help eliminate the constraints and enable the effective implementation of flexible forms of employment, open opportunities for remote work, which is objectively necessary in a pandemic and quarantine restrictions worldwide.

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# FORECASTING IMPACTS OF THE PANDEMIC ON SOCIO-ECONOMIC PROCESSES

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**IMPACT OF THE COVID-19 PANDEMIC ON THE LITHUANIAN ROAD FREIGHT TRANSPORT SECTOR**

## INTRODUCTION

The global, regional or national economy and individual sectors of the economy are affected by crises. Economic changes and consequences persist for a relatively long periods of time, therefore, the analysis of an individual sector on the basis of different data shows a retrospective situation and provides prospects for the future.

The communication system is a key element in the development of the global world, which determines social and economic well-being. The activity and importance of the transport sector in Europe is constantly growing: there are 1.2 million companies operating in the transport services sector in Europe employing 11 million people [6].

Due to its geographical location, Lithuania has been positioned as a strategically important country in the European transport system since regaining its independence. This is also reflected in the composition of Lithuania's GDP – in 2020, the share created by the transport and logistics sector comprised 13%, and it employs about 8 per of all persons employed in the country. It is one of the most important sectors alongside construction, industry and agriculture and is extremely important for the Lithuanian economy and its consistent growth [12].

The article provides an overview of the scientific literature and a systematic and comparative analysis of Lithuanian transport sector statistics for 2016-2020 in order to assess the impact of the Covid-19 pandemic on the Lithuanian road transport.

### **Review of crises from a scientific/theoretical point of view.**

Fink (1996) argues that a crisis is a critical moment caused by random or certain factors in the development process that disrupts the normal functioning of the system and prevents it from developing into the desired trajectory [8]. The economic crisis is described as a sharp deterioration in the country's economy, characterised by declining production, the breakdown of existing production links, bankruptcies and rising unemployment. In reviewing past financial crises, Reinhart and Rogoff (2008) and Razin (2021) discovered exceptional qualitative and quantitative parallels between many standard indicators of the financial crisis during the 18 post-war banking crises. They found that the banking crises were a prolonged phenomenon (production had been declining for an average of two years); property prices and housing fell sharply, and stock prices fell by 55% in 3.5 years. Unemployment rose seven percentage points in four years, while production fell by 9% [14, 15].

Europe has recently experienced several crises: In 2008 – the global economic crisis, and in 2015 – the migrant crisis. Scientific sources usually analyse the global economic crisis. The authors Hennessey, Holtz-Eakin, and Thomas (2010) cite the impact of the globalisation process as one of the main causes of the global economic crisis of 2008-2009 and link this crisis to the financial crisis in the United States [9]. Other researchers like Allen et al. (2009), who analysed the economic crisis of 2008-2009, state that the causes of the crisis are not strictly exogenous. According to them, the economy is slowing down due to fluctuations in the economic cycle [1].

The crisis caused by the Covid-19 pandemic and its management, and its impact on individual countries, business sectors and populations are of a different nature. The epidemic outbreaks and government restrictions aimed at slowing the spread of these outbreaks are worsening economic activity. The impact of the pandemic on road, sea, rail and air freight has been studied by Jones

et al. (2008), the effects of trade restrictions, declining demand and shortages of skilled labour force on supply chains and, consequently, freight volumes, were analysed by Jones et al., (2008), Luke and Rodrigue, (2008) [11]. Modelling of the impact of epidemics on global supply chains and in the context of COVID-19 was presented by Ivanov (2020) [10].

### **Impact of the Covid-19 pandemic on the Lithuanian transport sector.**

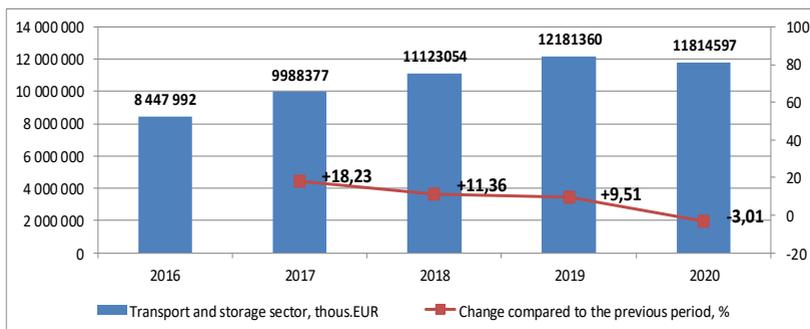
The shock caused by the COVID-19 pandemic has completely changed the prospects for economic development in the world and in the EU bloc countries, which Lithuania is a part of. Not only the COVID-19 pandemic, but also the conditions for the UK's exit from the EU, the US presidential election, and the political events in Belarus in 2020 posed and continues to pose additional political and economic risks. However, Lithuania's economic indicators show that they were much better than the forecast at the beginning of the year in the context of the first wave of the COVID-19 virus [5].

In 2020, Lithuania was one of the EU countries least affected by COVID-19. Prior to the COVID-19 pandemic, the Baltic economies, which are more focused on producing goods with a more stable demand and are less dependent on the most affected services sectors, grew faster than the euro area average. In 2020, a weaker GDP contraction was recorded in these countries than in most euro area countries.

The transport sector is the third largest sector of the Lithuanian economy after manufacturing and trade, surpassing such sectors as construction and real estate operations. 2020 was a challenging year for the transport sector, with the COVID-19 pandemic severely hampering transport and some of the new provisions in the EU's Mobility Package coming into force.

According to statistics for 2016-2020, the analysis of the total turnover of the transport sector shows that until 2019 it has been increasing: in 2017, compared to 2016, the growth amounted to 18.23%; in the following period – to 11.36% and in 2019, compared to 2018, the freight turnover increased by 9.51%. However, in 2020, the turnover decreased by 366,763 thousand euros or by 3.01%. This was due to the restrictions caused by the pandemic, reduced

production rates, and disruptions in the supply chains. Comparing the entire analysed 5-year period (2016-2020), the turnover increased by 3.37 billion euros or by 39.85% [3].



**Figure 7.1 Turnover dynamics of transport and storage sector in 2016-2020, thous. EUR, and change compared to the previous period, %**

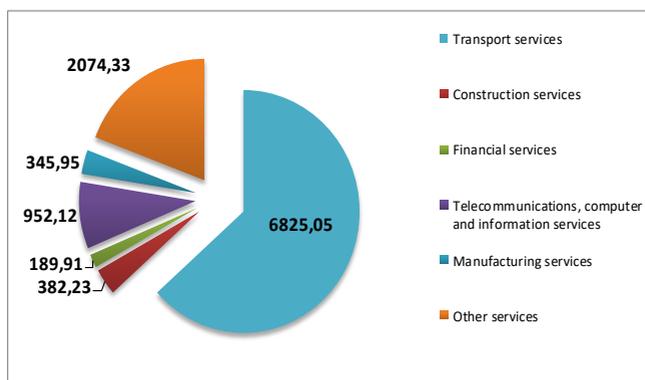
In 2018, based on Eurostat data, in the Lithuanian transport and storage sector, 42.5% of all employees worked in small businesses, approx. 20% – in medium-sized businesses and 37.5% – in large companies [7].

In 2019, 8.6 thousand economic operators carried out activities in the economic field of transport and storage in Lithuania, i.e., approx. 8% of all economic operators in the country [3]. Compared to 2018, the number of economic operators increased by 204 units, or 2.4%. Although trends show that since 2012 the number of entities operating in the transport and storage sector grew steadily, a decrease in the number of enterprises has been observed (-0.7%) in 2020. Part of the small businesses were unable to withstand the competition and went bankrupt during the pandemic.

In 2020, the sector employed 127,520 people (full-time). Their number in 2017, compared to the previous period, grew by 7.3%, the following year by about 10%, and in 2020, compared to 2019, by approx. 3.7%. Many countries in the European Union are facing the deficit of transport services and shortage of drivers; in September 2020, 9.7 thousand vacancies for truck drivers were registered in

Lithuania [3]. The situation has been exacerbated by the tense situation in Belarus, which has a significant share of third-country workers, as well as a rather complicated recruitment procedure for non-EU residents.

Export is the engine of stable economic growth. The country always benefits from having a large share of exports in the gross domestic product. The transport sector continues to be an important sector of the economy for our country, contributing to the improvement of the current account balance. In 2020, transport services accounted for 63% of the total export of services, and the export/import surplus – as much as 73.48% [3].

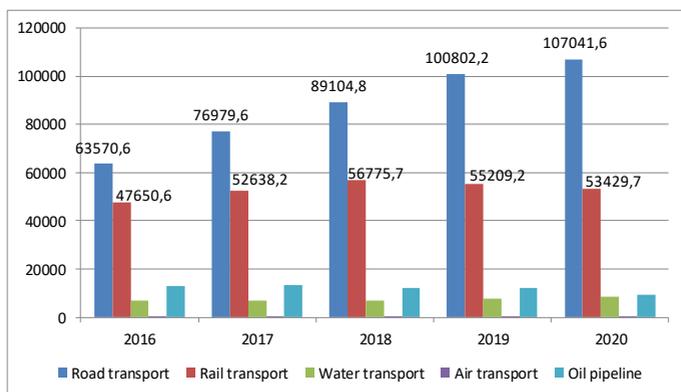


**Figure 7.2 Structure of services export in 2020, mln. EUR**

In 2020, for the first time since the financial crisis, the decline in Lithuanian exports of services was recorded, with a decrease of 9.04% from 11,840.5 million euros in 2019 to 10,769.59 million euros in 2020. The main transport export markets remained unchanged, the largest of which were Germany, France, Russia, the Netherlands and Denmark. In January-September 2020, compared to the corresponding period in 2019, there was a growth of exports of transport services to Germany (+4.8%) and the Netherlands +5.4%, while activities of the Lithuanian companies shrank in the Russian (-12%) and Latvian (-10%) markets. Exports of services to the United Kingdom fell the most due to the impact of Brexit (-27%) [3].

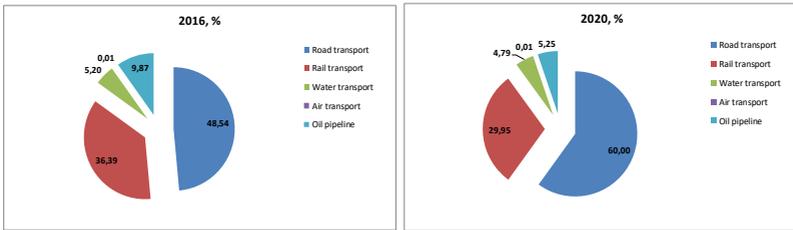
## Impact of the Covid-19 pandemic on road freight transport.

The analysis of the dynamics of individual modes of transport in Lithuania in 2016-2020 demonstrated that the pre-crisis period until 2018 was favourable for the growth of all modes of transport, except for oil (the decrease in transport in 2020, compared to 2019, amounted to 23.5%). In the crisis period in 2020, compared to 2019, transport by rail decreased due to a decrease in the transit of cargo in the directions of Klaipėda and Kaliningrad region. The growth of road freight transport in 2020, compared to 2016, amounted to 68.4%, and was mainly due to the performance of carriers established in the European markets [3].



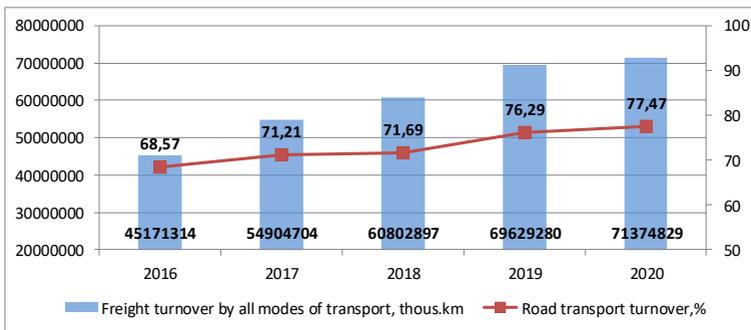
**Figure 7.3 Freight transport by all modes of transport in 2016-2020, thous. t**

The analysis of the structure of individual modes of transport by freight transport in Lithuania in 2016 and 2020 demonstrated that freight of all modes of transport decreased, except for road transport, the volume of which in the total structure of all types of freight transport increased by 11.46%. The largest positive change (21.1%) was in 2017, compared to 2016; the volume of road transport increased by 15.8% in the following period; in 2019, compared to 2018, the change amounted to 13.13%. Base on the statistical data, the lowest growth was reported in 2020, compared to 2019, reaching 6.2% [3].



**Figure 7.4 Structure of modes of transport by freight in 2016 and 2020, %**

During the 5 years analysed, the turnover of freight transport by all modes of transport in Lithuania increased by 36.7%, and the change in the turnover of road transport amounted to almost 10%. The highest growth is observed in 2018, compared to 2019, as demand for transportation increased, despite the contraction of some sectors of the economy.

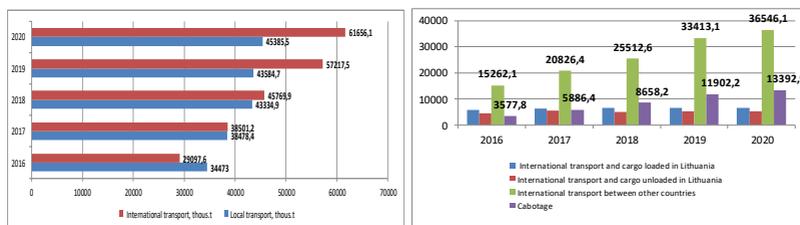


**Figure 7.5 Freight turnover dynamics in 2016-2020, thous. km and road transport turnover, %**

In 2016-2020, truck mileage (thous. km) increased by 70.2% from 128618.5 thous. km to 4055870.2 thous. km for both local and international freight [3]. Uneven growth in mileage is observed in individual periods: in 5 years, the smallest change (5.5%) was in 2020, compared to 2019. In the pre-crisis period, for example, growth amounted to 21.3% in 2017, compared to 2016, and 20.2% in 2019, compared to 2018.

With the growing importance of foreign markets, companies are investing more and more in the acquisition of vehicles in order to remain competitive, as evidenced by the decreasing age of the transport fleet, especially in case of towing vehicles and semi-trailers, which are most commonly used for international freight. The analyses of the number of trucks, showed that since 2016, the number has increased by 24.6% in 5 years since 2016 – up to 101,287 units. A growth of approx. 4-6% is observed in individual periods of each year [3].

Both local and international transport are very important for the country’s economy. A growing trend was observed throughout the analysed period: local transportation in Lithuania increased by 31.7% in years, and international transportation – by as much as 111.9% [3]. The growth of local transport was conditioned by the growing income of the population and increasing purchasing power, as well as the intensifying pace of online shopping, while the development of international transport was influenced by the establishment of large Lithuanian road transport companies in the European market.



**Figure 7.6 Local and international transport, thous. t and dynamics of international transport by different forms of transport, thous. t**

The volume of cross-trade operations has been steadily increasing since 2004. In 2004, they accounted for more than 26% of all international shipments, and in 2018 – more than half of all international operations. If the period 2004-2011 the volume of cabotage fluctuated at 2% of the limit of all international operations, the volume of freight transported during cabotage operations has grown very rapidly since 2012 and in 2020 accounted for nearly

21.7% of all international transport operations [2]. This feature of the Lithuanian road freight transport sector makes this sector quite diversified in terms of markets and services provided.

### **Perspectives of the Lithuanian road freight transport.**

Transport is a sector of the economy that is currently undergoing major changes: COVID-19 pandemic, digital evolution, green agreement on climate change, changes in legislation, etc. All of these factors will have a significant impact on what transport will look like in the future. Diversification is an important element in ensuring transport performance.

The Lithuanian road freight transport sector has become one of the fastest growing job-creating sectors in Lithuania, as well as one with the fastest growing in productivity compared to the road freight transport sectors in other EU Member States. The Lithuanian freight transport companies, which had expanded and renewed their fleets prior to the COVID-19 pandemic, were able to take advantage of the growing demand for transport services due to growing international trade. The fact that companies were able to find new trading partners in Western markets also contributed to the good performance in this area.

The economic development scenario presented by the Ministry of Finance of the Republic of Lithuania forecasts a 4% GDP growth in 2022 [13]. With the increase in the income and purchasing power of the population, the volumes of both local and international transport can be expected to increase.

In order to remain competitive in the market and maintain the volumes of services exports, companies need to respond quickly to the changing environment, technological progress, automation of processes and investment in the development of smart systems. In the field of road transport, information and communication technologies are used, which include infrastructure, vehicles and users, traffic and mobility management, and interfaces with other modes of transport. During the Covid-19 pandemic, companies invested heavily in the development of digitisation to avoid business disruption and improve communication with customers, suppliers and employees.

Rapid economic and social development offers the road freight

transport sector various solutions and opportunities to take advantage of new methods, technologies and process management systems. Big Data is being used more widely, the sharing economy is becoming more popular, and digitization is accelerating. Businesses are increasingly turning to the environmental aspect and principles of the circular economy. Modern trends encourage the transport sector to take quick and efficient decisions to ensure sustainable development.

## CONCLUSIONS

During the COVID-19 pandemic, the Lithuanian transport and storage sector faced significant challenges. In order to limit the spread of the epidemic, state authorities have introduced restrictions that have led to disruptions in production and supply chains, declining exports, and diminished demand for transport services.

The analysis of the road freight transport data demonstrates that the sector did not experience significant declines during the COVID-19 pandemic, the growth of freight turnover, the renewal of the transport fleet and the introduction of new technologies, as well as the increase in the number of employees are observed. Throughout the period under review, local and international transport grew, especially in cabotage and cross-trade operations. Investments in the renewal of the road vehicle fleet and introduction of new technologies have increased.

With the recovery of the EU foreign trade from the COVID-19 pandemic, persistence of domestic consumption and growth of transport capacity, the development perspective of the Lithuanian road freight transport sector remains favourable.

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**QUARANTINE IN A  
FRONTLINE CITY: A  
PERSONAL  
DIMENSION**

**INTRODUCTION**

The choice of the article subject is not accidental to the authors. They represent Horlivka Institute for Foreign Languages, one of the 19 relocated educational institutions, which were forced from their educational buildings as the result of the military conflict in the Donbas (eastern Ukraine) and moved to the territory controlled by the Ukrainian authorities in 2014. Today, the Institute has some educational buildings at its disposal in the new place, but most of the Institute staff still have the status of internally displaced persons (IDPs). Hence, the relevance of the chosen topic is determined by scientific (to analyse the current situation in the Donbas and to outline the ways of its further development) and journalistic aspects (to convey an understanding of the inadmissibility of solving any

issues by military methods) and the subjective-objective perception of the events in 2014-2021 by the authors themselves.

The aim of the article is to analyse the situation in eastern Ukraine during the military conflict and its development in the pandemic conditions and perform the comparative analysis of the surveys results carried out in 2020 and 2021 to find out presence / absence of changes in ordinary citizens' assessments of the quarantine situation in the context of hostilities. The analysis is carried out on the background of government decisions and at the level of everyday life of ordinary citizens, which is characterized by the complex coexistence of neglected security rules, discomfort over mobility restrictions, distrust to the government and at the same time active practices of volunteering and charity. The study seeks to analyse the ongoing changes from the values of comfort and mobility to the growing concerns about – and demands for – public safety and new rules of health protection. At the same time, there is a growing need to increase the media literacy of a large part of the population as a guarantee of making balanced and relevant decisions.

The source basis of the research work includes documents of the governments on quarantine measures (bills, government decrees, decisions of local authorities) and the results of the surveys “Quarantine through the eyes of an average citizen”, which were conducted with an interval of one year: in the summer of 2020 and in the summer of 2021. The results of the surveys are presented in circular charts in the appendixes to the article.

The methodological basis of the research have become the latest works by the famous Israeli researcher Yuval Noah Harari, to wit, his article for the Financial Times about the coronavirus, in which the author raises the question of the possibility or impossibility of further globalization (Harari 2020), as well as the provisions from the speech of Stanford University professor, American philosopher Francis Fukuyama at the inaugural summit of the Crimean Platform in Kyiv on August 23, 2021. The famous scientist identified Ukraine's place as the main front of all countries against the growing threat of authoritarian-kleptocratic dictatorship. He described the current geopolitical situation as a competition between an authoritarian-kleptocratic system of government on the one hand and liberal democracy on the other one (Suspilne 2021).

## **THE IMPACT OF THE PANDEMIC ON THE SITUATION AT THE DELIMITATION LINE**

To understand the perception of an individual person of decisions on the introduction of quarantine, we give a brief analysis of the chronology and content of decisions taken at the governmental level.

Ukraine was among the first European countries to introduce quarantine measures. As early as March 12, 2020, the quarantine was imposed in educational institutions and some other measures were introduced to counter the spread of coronavirus infection COVID-19. On March 25, 2020, a state of emergency was imposed throughout Ukraine, and the quarantine was extended until April 24. The legal basis for these measures was the draft law adopted by the Verkhovna Rada on March 17, 2020, amending some legislative acts of Ukraine aimed at preventing the emergence and spread of coronavirus disease (COVID-19). In particular, the law defined new approaches to the organization of medical work, increased responsibility for the violation of quarantine norms, control over the prices of goods from the category of priority because of the situation, simplified some state procurement procedures, etc. (Verkhovna Rada of Ukraine 2020). 2021 has become a period of wave-like intensification and mitigation of quarantine regulations. In September, the Cabinet of Ministers of Ukraine adopted amendments to Resolution № 1236, which establish new quarantine restrictions to prevent the spread of COVID-19, which directly depend on the number of vaccinated population (Ministry of Health of Ukraine 2021).

To trace the situation on the ground we should return to spring 2020. In Donetsk Oblast, according to the decision of the Regional State Administration, since March 21, 2020, the emergency state has been declared because of coronavirus (Hromadske 2020), and on March 28, entry and exit restrictions were imposed in Luhansk and Donetsk Oblasts to counter the spread of coronavirus (Pravda 2020). But the most painful issue for the residents of the eastern regions was the operating of the checkpoints along the delimitation line. On March 7, 2020, there was introduced the measurement of body temperature of persons who cross the checkpoints from the so-called DPR (Donetsk People's Republic) and LPR (Luhansk People's Republic). This innovation has complicated the already lengthy verification procedure for citizens. On March 13, 2020, the

Ukrainian side imposed an entry ban on residents of temporarily uncontrolled territories and foreigners. The next day, mirror measures were introduced by the DPR and LPR, and on March 18, 2020, the latter announced the closure of all checkpoints due to the coronavirus epidemic in (LB.ua 2020). The situation has not changed as of the end of August 2021.

It should be noted that the introduction of quarantine led to increased difficulties in the region. Restrictions on the operating of checkpoints resulted in decrease of crossings along the delimitation line 56 (!) times (LB.ua 2020). The situation has not changed during the year and the tendency for the PDDL (Particular Districts of Donetsk and Luhansk Oblasts) to unblock the work of the entry-exit checkpoints in the near future is still absent today. On the Ukrainian side, since the autumn of 2020, all entry-exit checkpoints have been opened daily. But on the PDDL side, the checkpoint “Stanitsa Luganskaya” (Luhansk Oblast) is the only one working periodically. The checkpoint “Novotroitskoye” (Donetsk Oblast) works only twice a week (Mondays and Fridays), because on these days the so-called DPR representatives open their checkpoint “Olenivka” on this transport corridor. Up to 100 people a day are passed through the checkpoints according to the lists. To be included in these lists people have to wait for months. All the other checkpoints are closed by the PDDL authorities. Residents of the occupied part of Donetsk Oblast cannot use the checkpoint “Stanytsia Luhanska”, because the “border” between the DPR and the LPR has been closed for more than a year. In view of this, a departure from the occupied part of Donetsk Oblast to the territory controlled by Ukraine is possible through the territory of Russia.

Human rights activists are of the opinion that there are several reasons for not reopening the checkpoints by the authority of the PDDL. In addition to epidemiological measures, the closure of the checkpoints brings an economic benefit. Pensioners receiving Ukrainian pensions cannot travel to Ukrainian-controlled territory to cash in their bank cards. In this regard, the PDDL have expanded centers for cash transfers and their total monthly income has grown up to \$ 7 million due to the closed checkpoints (Ukrinform 2021).

The situation described clearly demonstrates that the pandemic has significantly worsened the communication on the delimitation

line, which, of course, negatively affected the state of citizens in the region.

## **QUARANTINE THROUGH THE EYES OF AN AVERAGE CITIZEN**

Decisions made at all levels are aimed at average citizens forced to adapt to the conditions of their environment, to pass through their consciousness and emotions all these decisions and find a way to survive. That is why the authors of the article resorted to communication with ordinary citizens through questionnaires and present the comparative analysis of the results of the surveys carried out on the GOOGLE platform in June 2020 (188 respondents) and in June 2021 (197 respondents) in the city of Bakhmut (Donetsk Oblast), located 30 km from the front line, where a third of the population are internally displaced persons. The majority of respondents are the academic staff and students of Horlivka Institute for Foreign Languages and members of their families.

The 2020's age characteristic was the following: the bigger part of the surveyed represents the youth under 21 – 44.1%, age groups of 22 to 35 and from 35 to 60 have equal representation of 26.2%, senior age group, above 60, has not even reached 4%. There have not been substantial changes in 2021: young audience predominate again – 37.6%, the two following categories are very close in numbers – 27.9% and 33%. The part of the surveyed who are above 61 has reduced to 1.5%. The authors consider such data positively, that is the survey is conducted in the boundaries of the same age characteristics which increases the level of objectivity. The majority of young and middle aged among the surveyed is also considered a positive fact, because it is for them to solve the problems of reintegration of occupied at present part of Eastern territories.

Respondents were suggested to give answers to ten questions the major part of which concerned the realization of anti-epidemic measures and an attitude towards them. The questions were not changed because of the aim of tracking the context of the responses during first months since quarantine start and at present stage when there is a grievous statistic of the dead and when a certain social and individual experience is gained.

The first issue the authors turned their attention to was relatively small range of variations in the quantitative results of the responses

from 0.3% to 13.3% which, on the one hand, is possible to assess as a stability of social thought, but, on the other hand, the annual experience of existing under the quarantine conditions could change assessment and impression. Nevertheless, some of the specific changes in the responses demand some commentaries.

The authors of the article are currently participants in the Erasmus+ program “Academic Counteraction to Hybrid Threats”, so the survey starts with the question “Can the COVID-19 pandemic be viewed as a hybrid threat?” (Chart 1). The results show that 36.7% of respondents in 2020 and 45.2% in 2021 define Covid-19 as a hybrid threat while 43.1% (2020) and 35.5% (2021) of them could not answer this question. Such answers confirm the relevance of the Erasmus+ program and the need to explain to the population the possible accompanying threats, for example in the information or political sphere, in addition to the threat to health.

The introduction of quarantine was supported by 63.8% of respondents in 2020 and 67% in 2021 (Chart 2). Such significant support for the introduction of quarantine at the beginning of the pandemic and an increase in supporters of quarantine measures in a year indicate a high level of responsibility among the respondents for their own health and the health of others.

The majority of changes (by 10% and more) are traced in the responses to questions #3, #5, #6, #9. Thus, to the question “Who was the main burden of implementing quarantine measures laid on?” (Chart 3), 46.2% (contrary to 35.1% in 2020) of respondents said that “on the local authorities” and it gives us grounds to come to the conclusion that the respondents mainly rely on the Bahmut local authorities who have to work under the double threat. Moreover, more than half of the respondents (53.2% in 2020 and 61.4% in 2021) found anti-epidemic measures ineffective (Chart 4), which is a message for the state and local authorities to analyze the situation and find new decisions.

At the same time, the number of respondents, who assess the actions of authoritative structures in the conditions of the quarantine as too harsh, reduced more than twice, which testifies to the benefit of understanding the importance and necessity of such actions (18.1% in 2020 and 7.1% in 2021) (Chart 5). A 13.3% increase of respondents (44.7% in 2021 against 31.4% in 2020), who

characterized the level of safety measure observance by population as inadequate, looks very curious (Chart 6, 7). They also said that the majority of population did not observe the quarantine restrictions. Such response is a reason for sorrowful reflection, though it witnesses to an increase of demands among the population to the people around, to aspiration to notice violations and, let us hope, to react to them.

The number of responses “It is difficult to answer” generally declined, which, and most likely, is the result of the increase of information awareness level of the citizens and their desire to receive information and preferably from different sources. The question “Which channels of information about the epidemic did you use most often?” (Chart 8) proved the desire of a quarter of respondents (25.5% in 2020 and 24.9% in 2021) to use several sources to get the most reliable information, almost equally, about a third of the respondents, relied on the official sources (39.4% in 2020 and 33% in 2021) as well as social networks (34.6% and 37.6% respectively). In the last example the decrease of the official source usage draws attention.

The most positive result, in our opinion, must be the increase of respondents by 10.4% (80.9% in 2021 against 50.5% in 2020), who took to the restrictions of their private space with understanding of their necessity, especially to the restriction of free movement (Chart 9). Almost 61% of respondents soberly assessed the situation, and if to this number to add 35.5% of those who did not like the restrictions, but they had to endure them, then the prevailing majority of the respondents (96.4%) took to the quarantine measures and restrictions, which appeared consequently, with understanding and responsibility.

A rather ambiguous material for analysis was given by the answers in the rubric “another answer” (the authors retain orthography, language and style) – from complete denial of quarantine measures (*What measures are we talking about? I do not see them at all...*) to realistic awareness of annual experience (*I believe that in the beginning there were only words about the virus but later on, when everything became worse, people panicked... And now we are at the stage of acceptance that this can happen to anyone...*) 45.5% of people consider the COVID phenomenon in

2021 the next hybrid threat, and the others – genocide (*I don't know who started it, but ... it's genocide. There is overpopulation on the planet, that's why somebody decided somehow "to reduce" human population globally.*) by economic and political manipulation etc. There are recommendation responses (*It's possible to strengthen the quarantine norms (the distance between people obligatory hand washing free masks, which are changed every 3 hours), but not the strengthening of the quarantine*) and responses which call for responsibility and consciousness of people (*A person who reached 18 has to bear responsibility for themselves; Is there a purpose in the quarantine? – yes, but only in symbiosis with responsible actions of the humans; A person must decide for themselves whether they want to get infected*).

The authors consider a total answer to the last question (Chart 10), where prevailing majority (67% in 2020 and 73.1% in 2021) of the surveyed determined the aim of implementing quarantine measures as preservation of as many human lives as possible. We think that such an idea is very optimistic and that it was expressed by the residents of near-the-front zone additionally testifies in favor of life-asserting disposition among them.

Striving for peace has transformed into the main idea of social life not only in the East of the country but in the whole of Ukraine. According to the results of the survey in the limits of a social survey “Thoughts and opinions as to the military conflict on the territory of Ukraine” 54% of Ukrainians believe that the country’s plan of action of transition from the state of military conflict to peace must be devised now in order to be ready for the processes of deoccupation (Ukrinform 2021a). Significant importance of these processes in undertaken, as in the first years of military conflict, by the civil society, in particular National platform “Peace Dialogue and Safe Reintegration” is created as the ground for seeking consensus as to peaceful process in the East of Ukraine and for the development recommendations for government agencies. The Project provides for the coming to agreements with the help of expanding public participation in the peaceful process; providing government with proposals for creating corresponding politics. Including the problems of safe reintegration and national unity as well as ensuring social cognizance of these processes (UCIPR).

## CONCLUSIONS

Summarizing the results of the survey, we pay attention to the following aspects:

Firstly, the question connected with hybrid threats was not accidentally included in the questionnaire as residents of the frontline city often hear and most already understand concepts such as “hybrid war” and “hybrid threat”, but the results of the survey showed that it is necessary to conduct extensive educational activities among the population to overcome the infectious threat and prevent manipulations in the media. The glossary on hybrid threats, in the creation of which the authors of this study participated, can also serve this purpose (Glossary).

Secondly, living in the frontline zone, where there are objective restrictions in the life of its population, the respondents showed a calm balanced attitude to new restrictions related to anti-epidemic measures. Unlike a large part of the population of other European countries and other Ukrainian regions, residents of the front zone did not organize any protests or mass disagreement with such measures.

Third, the vast majority of answers indicate that the greatest value for the inhabitants of this area is human life because the many respondents have already had the sad experience of losing their loved ones and acquaintances as a result of hostilities and they demonstrate a willingness to act responsibly in a pandemic time.

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## Appendix

### Survey “Quarantine through the eyes of an average citizen”

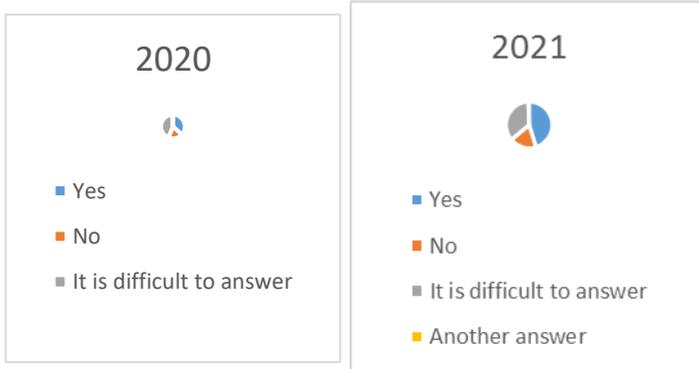


Chart 1: Can the COVID-19 pandemic be viewed as a hybrid threat?

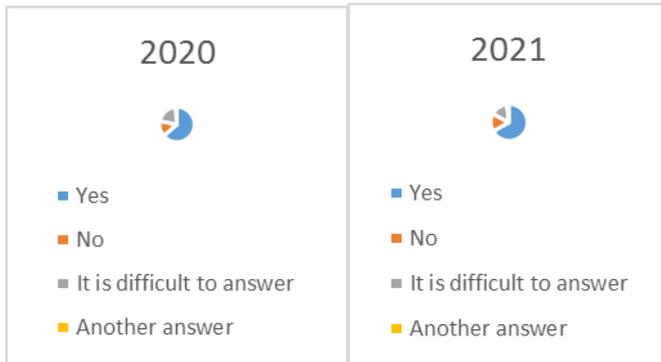


Chart 2: Do you support the introduction of the quarantine?



Chart 3: Who was the main burden of implementing quarantine measures laid on?



Chart 4: Were the anti-epidemic measures carried out by the authorities effective?



Chart 5: How do you assess the actions of the government under the conditions of quarantine?

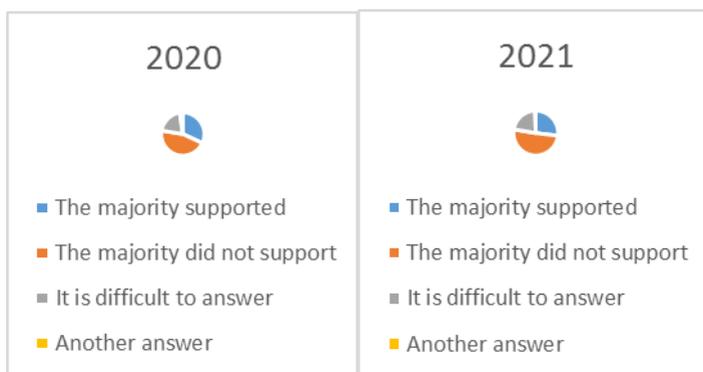


Chart 6: How did the population perceive the implementation of quarantine measures?

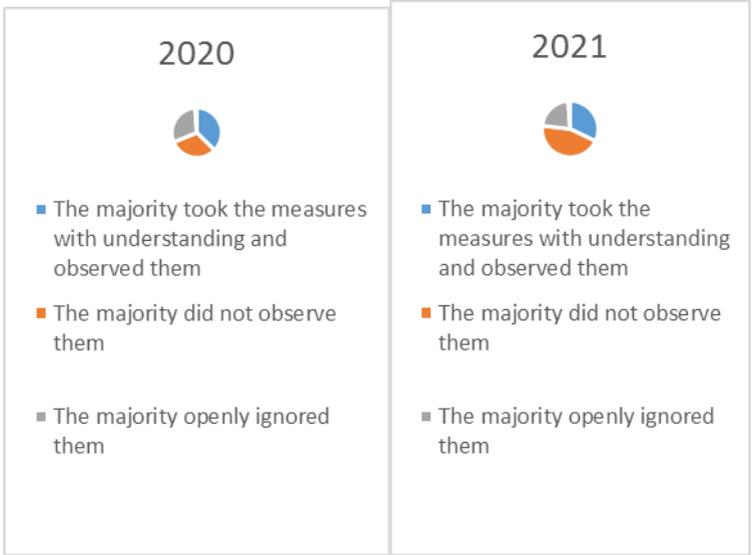


Chart 7: How would you assess the public compliance with quarantine security measures?

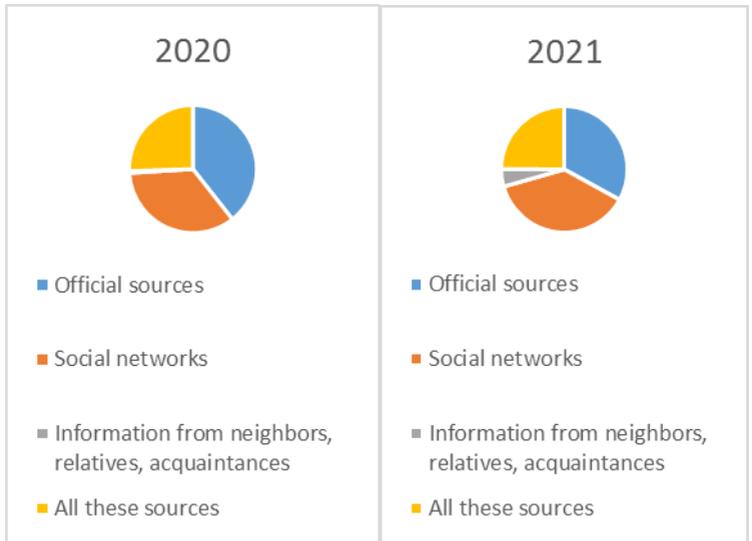


Chart 8: Which channels of information about the epidemic did you use most often?

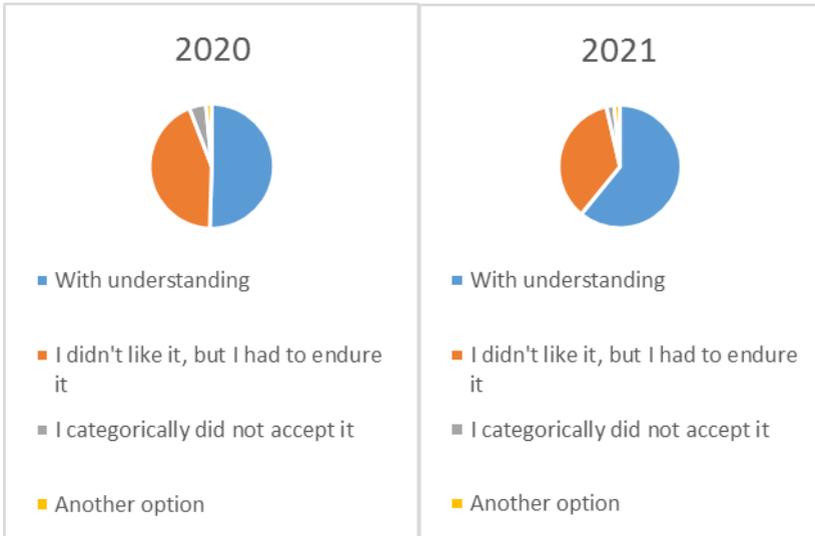


Chart 9: How did you react to the restriction on your personal liberty, in particular, freedom of movement during the quarantine?

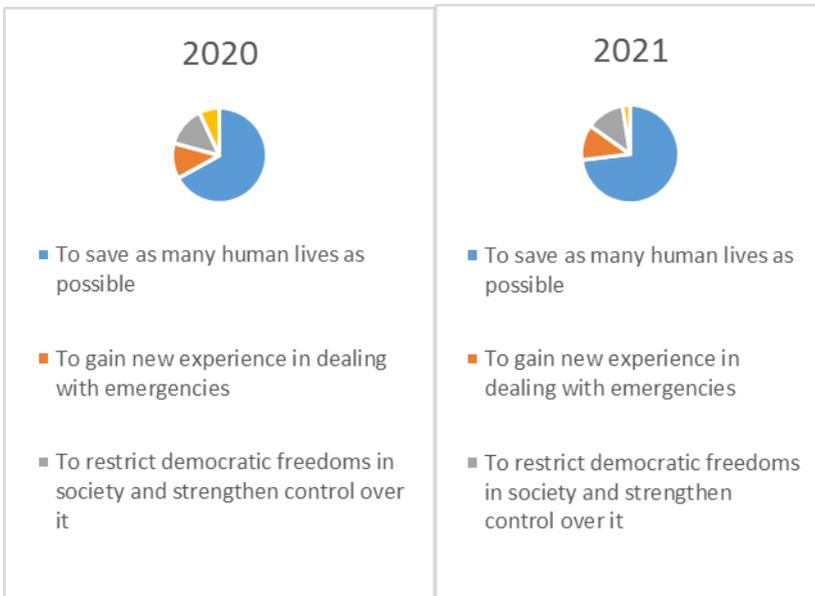


Chart 10: In your opinion, what is the main purpose of the quarantine measures?

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**SMOOTH TRANSITION  
REGRESSION APPROACH  
TO THE ANALYSIS OF  
SUSTAINABILITY OF  
FISCAL POLICY IN THE  
UNITED STATES OF  
AMERICA**

## **1 Introduction**

The literature on the sustainability of fiscal policy encompasses various approaches, ranging from models based on the government's intertemporal budget constraint (Bohn, 1998; Bohn, 2008) or cointegration in fiscal time series (Bartoletto, Chiarini & Marzano, 2012), to testing the stationarity of fiscal time series (Simo, 2021). However, most of these models largely ignore different possible fiscal regimes.

In this paper, we analyze the relationship between the primary surplus/deficit and debt for the United States of America. We consider a nonlinear approach using the smooth transition regression (STR) model, which is a generalization of discrete switching models with a finite number of different regimes.

We base our empirical study on the work of Piergallini and Postigliola (Piergallini & Postigliola, 2013; Piergallini & Postigliola, 2016; Piergallini and Postigliola, 2020). Piergallini and Postigliola (2020) examine historical budget data for Italy for the period from 1861 to 2016 and draw two important conclusions. First, the nonlinear surplus-debt relationship performs better than the linear model. Second, the authors identify a threshold level of the debt-GDP ratio (around 105 %) above which there is a significant positive response of the primary surplus to an increase in debt.

Bohn (2008) studies the sustainability of fiscal policy in the United States for the period from 1792 to 2003. The author argues that the most credible evidence in favour of fiscal sustainability is the robust positive response of primary surplus to changes in debt-GDP ratio.

This paper is structured as follows. First, we describe the methodological approach of smooth transition regression (STR) models. The logistic STR model is applied to the fiscal data for the US to study the sustainability of fiscal policy. The results obtained are analysed and compared with empirical studies by other authors.

## 2 Methodology

The following description of the smooth transition regression modelling approach is taken from Kavkler and Böhm (2003) and Kavkler (2006), where it is summarized from Teräsvirta (1998) and Teräsvirta (1994).

Many elements of economic theory mention the idea that the economy behaves differently when the values of certain variables lie in one region than in another, or, in other words, follow different regimes. The first attempt to model such phenomena is represented by discrete switching models, where a finite number of different regimes is assumed. The central tool of this class of models is the so-called switching variable, which can be either observable or unobservable.

Since a smooth transition between regimes is often more convenient and realistic than just a sudden change, several scholars have proposed a generalization of discrete switching models in the following form:

$$y_t = x_t \varphi + (x_t \theta) G(\gamma, c; s_t) + u_t, \quad t = 1, 2, \dots, T \quad (7.1)$$

where:  $\varphi = (\varphi_0, \varphi_1, \dots, \varphi_p)^T$  and  $\theta = (\theta_0, \theta_1, \dots, \theta_p)^T$  are the parameter vectors,  $x_t$  is the vector of explanatory variables containing the lags of the endogenous variable and the exogenous variables (i.e.  $x_t = (1, x_{t1}, \dots, x_{tp}) = (1, y_{t-1}, \dots, y_{t-m}, z_{t1}, \dots, z_{tn})$ ), whereas  $u_t$  denotes a sequence of independent identically distributed errors.  $G$  denotes a continuous transition function that is usually bounded between 0 and 1. Because of this property not only the two extreme states can be explained by the model, but also a continuum of states that lie between these two extremes. The parameter  $\gamma > 0$  is an indicator of the speed of the transition

between 0 and 1, while  $c$  indicates where the transition occurs. The transition variable  $s_t$  is usually one of the explanatory variables or the time trend.

The most common functional forms of the transition function are as follows:

- LSTR1 model:  $G_1(\gamma, c; s_t) = \frac{1}{1 + e^{-\gamma(s_t - c)}}$

- LSTR2 model:  $G_2(\gamma, c_1, c_2; s_t) = \frac{1}{1 + e^{-\gamma(s_t - c_1)(s_t - c_2)}}$

This is a non-monotonic transition function that is particularly useful in reswitching.

- ESTR model:  $G_3(\gamma, c; s_t) = 1 - e^{-\gamma(s_t - c)^2}$

The function is symmetric about  $c$  and very similar to the LSTR2 case with  $c_1 = c_2$ . Therefore it is sometimes difficult to distinguish between an ESTR and an LSTR2 model.

## 2.1 Testing linearity against STR

Let us start by defining a more convenient notation:  $G_i^* = G_i - 0.5$  for  $i = 1, 2$  and  $G_3^* = G_3$ . Obviously,  $G_i^* = 0$  for  $\gamma = 0$ . The null hypothesis of linearity for the model (3) can be expressed as  $H_0 : \gamma = 0$  against  $H_1 : \gamma > 0$  or as  $H'_0 : \theta = 0$  against  $H'_1 : \theta \neq 0$ . This indicates an identification problem, because the model (3) is identified under the alternative but not identified under the null hypothesis. Namely, the parameters  $c$  and  $\theta$  are nuisance parameters that are not present in the model under the null hypothesis and whose values do not affect the value of the log – likelihood. Consequently, the likelihood ratio test, the Lagrange multiplier and the Wald test do not have their standard asymptotic distributions under the null hypothesis and one cannot use these tests

for a consistent estimation of the parameters  $c$  and  $\theta$ . To overcome this problem, Luukkonen, Saikkonen and Teräsvirta (1998b) replaced the transition function with its Taylor approximation of a suitable order. The first order Taylor approximation around  $\gamma = 0$  for the logistic transition function  $G_1^*$  is of the form:

$$T_1 = a_0 + a_1 s_t + R_1(\gamma, c; s_t). \quad (7.2)$$

After replacing  $G_1^*$  by  $T_1$  in equation (7.1), one obtains:

$$y_t = x_t b_0 + (x_t s_t) b_1 + u_t^*, \quad (7.3)$$

where:  $b_0, b_1$  are  $(p+1)$ -dimensional column vectors of parameters and the null hypothesis of linearity can be expressed as  $H_0'' : b_1 = 0$  against  $H_1'' : b_1 \neq 0$ .  $H_0''$  can be tested by a straightforward Lagrange multiplier test. The test statistics is asymptotically  $\chi^2$ - distributed with  $p+1$  degrees of freedom. We have to emphasize that the auxiliary regression (7.3) is suitable only if the transition variable  $s_t$  is not an element of the vector  $x_t$ . Otherwise, the variable  $s_t$  appears twice on the right-hand side of the equation (7.3). The problem is solved by substituting  $x_t$  with  $\tilde{x}_t = (x_{t1}, \dots, x_{tp})$  in the second term of (7.3).

To avoid problems with low power in some special cases, the third order Taylor polynomial is usually applied. This leads to the following auxiliary regression:

$$y_t = x_t b_0 + (x_t s_t) b_1 + (x_t s_t^2) b_2 + (x_t s_t^3) b_3 + u_t^*. \quad (7.4)$$

Additionally, F-version of the test is preferred because of its better small sample properties. Comprehensive discussion on these issues can be found in Teräsvirta (1998) and in Luukkonen, Saikkonen and Teräsvirta (1998a).

## 2.2 Model specification

If the null hypothesis of linearity is rejected for several potential transition variables, Teräsvirta (1998) suggests selecting the variable with the strongest rejection of linearity (i.e. with the smallest p-value). This is a heuristical procedure, but nonetheless successful in the praxis. Next, one has to determine the type of the transition function. For this purpose, the following sequence of hypotheses concerning the parameters of the auxiliary regression (7.4) is tested:

$$\begin{aligned} H_{04} : b_3 &= 0 \\ H_{03} : b_2 &= 0 | b_3 = 0 \\ H_{02} : b_1 &= 0 | b_2 = b_3 = 0 \end{aligned} \quad (7.5)$$

The F-tests for testing the above hypotheses are denoted by F4, F3, and F2, respectively. Provided that the hypothesis  $H_{03}$  is the one with the strongest rejection, an LSTR2 or an ESTR model is indicated as the best choice. In all other cases, Teräsvirta suggests choosing an LSTR1 model. The STR modelling technique is described in detail in Teräsvirta (1998).

## 2.3 Misspecification tests

The misspecification tests were first developed by Eitrheim and Teräsvirta (1996) for univariate time series, i.e. smooth transition autoregressive (STAR) models, but the generalization to STR models is straightforward. Three tests are usually performed, namely the test of no error autocorrelation, the test of no remaining nonlinearity and the parameter constancy test. For detailed description of these tests, see Eitrheim and Teräsvirta (1996) and Lin and Teräsvirta (1994).

## 3 Data

The fiscal time series needed for our study are from the Federal Reserve Bank of St. Louis database FRED (2021). We used annual data for the period from 1939 to 2019, which is the widest range of data available on the website FRED for all the time series needed. Following Piergallini and Postigliola (2020), the following time series were used in our analysis:

1. The surplus or deficit as a percentage of gross domestic product (GDP), called *surplus* in our analysis.

2. The debt as a percentage of gross domestic product, referred to in our analysis as *debt*.

3. The growth rate of real GDP (percentage change from the previous period). The temporary output variable (denoted *temp\_output* in our analysis) was obtained by detrending the real GDP growth rate with the Hodrick-Prescott filter, as suggested by Piergallini and Postigliola (2020).

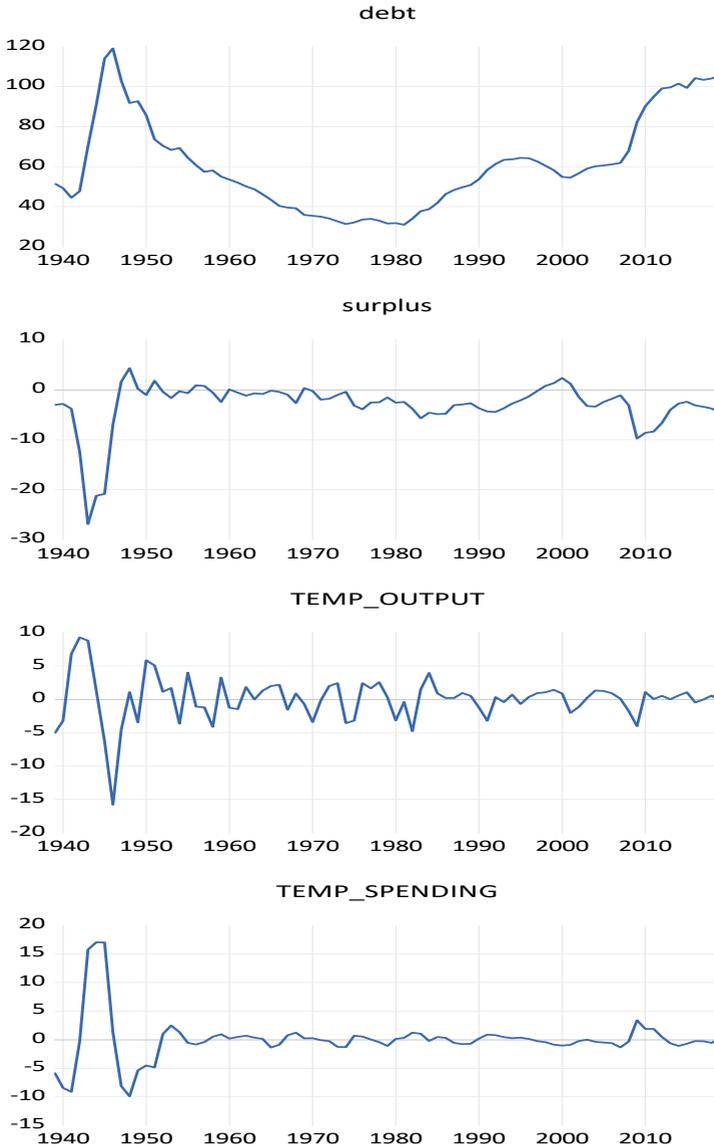
4. Expenditure as a percentage of GDP. The temporary spending variable (denoted *temp\_spending* in our analysis) was obtained by detrending the time series of spending relative to GDP using the Hodrick-Prescott filter, as suggested by Piergallini and Postigliola (2020).

Piergallini and Postigliola (2020) describe the rationale for constructing the last two time series using the Hodrick-Prescott filter and refer the reader to Bohn (2008) and Mendoza and Ostry (2008) for a more detailed explanation. Piergallini and Postigliola (2020) argue that therefore “temporary variations in output and spending are assumed to be generated by and ex post filtering”. For the empirical analysis in the next section, the software packages EViews and JMulti were used, Eviews for estimating and testing the basic linear model and JMulti for the smooth transition regression modelling approach.

Figure 7.7 shows the plots of all four time series used in our analysis, namely *debt*, *surplus*, *temp\_output* and *temp\_spending*. At the beginning of the observation period (from 1939 to 1945), there are abrupt changes in all four time series, so we decided to adjust our sample and estimate the models for the period 1946-2019.

#### **4 Empirical results**

The descriptive statistics for the four variables can be found in Table 7.1. As explained earlier, we base our analysis on the period from 1946 to 2019.



**Figure 7.7** The graphs of the variables in the model (debt, surplus, temp\_output, temp\_spending)

Table 7.1

## Descriptive statistics for the variables in the model

Statistic	Variable			
	<i>debt</i>	<i>surplus</i>	<i>temp_output</i>	<i>temp_spending</i>
Mean	61.26787	-3.101559	-2.71E-14	-1.60E-13
Median	58.12202	-2.463130	0.321012	-0.076608
Maximum	119.1026	4.297770	9.254145	17.02482
Minimum	31.01924	-26.86278	-15.80677	-9.896742
Std. Dev.	23.45690	4.765320	3.314975	4.045805
Skewness	0.718052	-2.901250	-0.915548	1.981840
Kurtosis	2.532589	13.35221	8.948746	12.21565
Jarque-Bera test	7.697925	475.3260	130.7492	339.6562
Probability	0.021302	0.000000	0.000000	0.000000
Sum	4962.697	-251.2263	-2.20E-12	-1.29E-11
Sum Sq. Dev.	44018.08	1816.662	879.1250	1309.483
Observations	81	81	81	81

#### 4.1 Linear model

In the first step of our analysis, we estimate the linear model with *surplus* as the dependent variable and lagged *surplus* ( $surplus(t-1)$  and  $surplus(t-2)$ ), lagged *debt* ( $debt(t-1)$ ), *temp\_output*, *temp\_spending*,  $temp\_output(t-1)$  and  $temp\_spending(t-1)$  as explanatory variables. The specification of the model is the same as in Piergallini and Postigliola (2016, 2020). The authors strive for a parsimonious specification, consistent with misspecification tests, and therefore set the number of lags of the dependent variable ( $p$  in their notation) to 2 and the number of lags of the *temp\_output* and *temp\_spending* variables ( $q$  and  $r$  in their notation) to 1. The estimation results are presented in Table 7.2.

All variables except lagged *debt* and *temp\_output* variable are significant at the 5% level of significance. As can be seen from Table 7.3, the linear model obtained proved satisfactory after testing for normality (Jarque-Bera test), autocorrelation of the residuals (Breusch-Godfrey Serial Correlation LM Test) and homoscedasticity of the residuals (White test and Breusch-Pagan-Godfrey test).

Table 7.2

## Estimated linear model

Dependent Variable: <i>surplus</i>				
Method: Least Squares				
Sample: 1946 2019				
Included observations: 74				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
<i>const</i>	-0.442285	0.267274	-1.654803	0.1027
<i>surplus(t-1)</i>	1.017214	0.068716	14.80310	0.0000
<i>surplus(t-2)</i>	-0.125186	0.052006	-2.407148	0.0189
<i>debt(t-1)</i>	0.003017	0.004661	0.647230	0.5197
<i>temp_output(t)</i>	0.025115	0.039512	0.635618	0.5272
<i>temp_output (t-1)</i>	0.264908	0.036788	7.200977	0.0000
<i>temp_spending(t)</i>	-1.058707	0.076168	-13.89963	0.0000
<i>temp_spending(t-1)</i>	0.906864	0.070074	12.94152	0.0000
R-squared	0.915562	Mean dependent var	-2.165670	
Adjusted R-squared	0.906607	S.D. dependent var	2.506654	
S.E. of regression	0.766040	Akaike info criterion	2.406642	
Sum squared resid	38.72997	Schwarz criterion	2.655730	
Log likelihood	-81.04575	Hannan-Quinn criter.	2.506006	
Durbin-Watson stat	1.751339			

Table 7.3

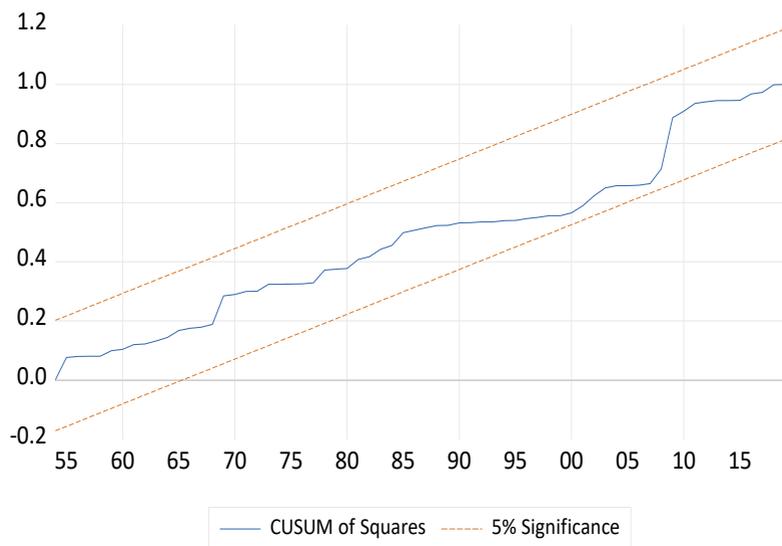
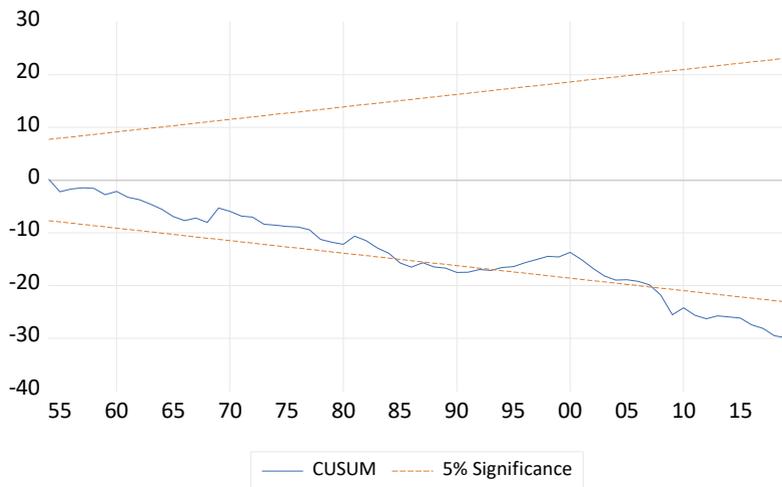
## Diagnostic tests

Test	Null hypothesis	Test statistic	p-value
Breusch-Godfrey Serial Correlation LM Test	No serial correlation at up to 12 lags	F-statistic 0.710911	Prob. F(12,54) 0.7341
Jarque-Bera test	Normal distribution of residuals	2.184421	0.3355
White test	Homoskedasticity of residuals	F-statistic 0.848711	Prob. F(7,66) 0.5515
Breusch-Pagan- Godfrey test	Homoskedasticity of residuals	F-statistic 0.852945	Prob. F(7,66) 0.5481

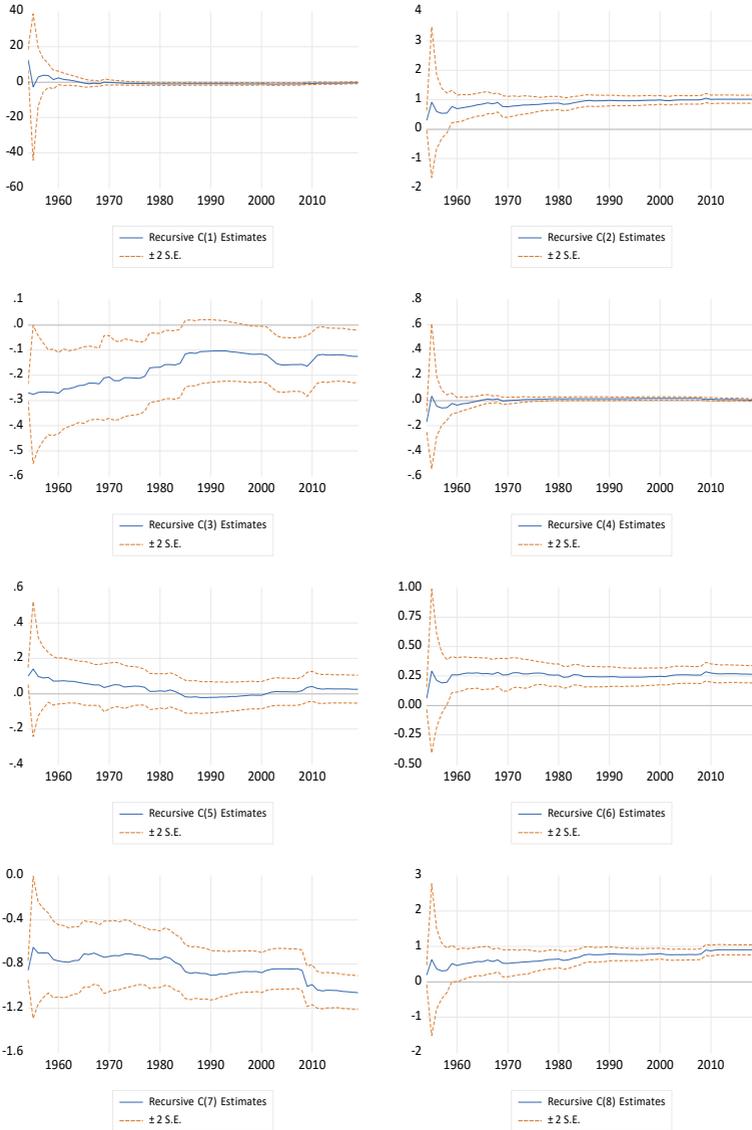
Figure 7.8 shows the results of the CUSUM and CUSUM of squares tests for the estimated linear model. The CUSUM test is significant at the 5% level for the period from 1985 to 1992 and from 2008 onwards, while the CUSUM of squares test is not significant. Ploberger and Kramer (1992) argue that the CUSUM test, which tests the stability of coefficients over time in a linear regression model and is usually based on recursive residuals can also be applied to ordinary least squares residuals. Caporale and Pittis (2004) provide a Monte Carlo simulation study that examines the robustness of the CUSUM and the CUSUM of square test to autocorrelation and endogeneity. It is found that the empirical sizes of both tests are close to their nominal sizes. Thus, in our case, the CUSUM test reveals problems with the stability of the coefficients of the linear regression model. A similar conclusion can be drawn from Figure 7.9 with the plots of the recursive coefficients of the linear model. All eight coefficients exhibit instability at the beginning of the period, i.e., before 1960. The coefficients C(3) and C(7) of the variables *surplus (t-2)* and *temp\_spending* show a continuous change over time. To improve the specification, we need to investigate the influence of nonlinearities, which we assume to be of the smooth transition kind.

## 4.2 Nonlinear model

The first step in modelling the nonlinear relationship is to find a suitable transition variable. To this end, the linearity test described above is performed for each of the possible transition variables in turn. The null hypothesis of linearity is tested against the alternative of a smooth transition regression model. As you can see from Table 7.4 showing the results of the linearity test, the null hypothesis of linearity is rejected for all but the *temp\_output* variable. Following Piergallini and Postigliola (2016, 2020), we choose the *debt* variable as the transition variable. Next, we compute and compare the p-values of tests F4, F3, and F2 (Table 7.4). Since the p-value of F2 is the smallest, we choose the LSTR1 model.



**Figure 7.8 CUSUM and CUMSUM of squares tests**



**Figure 7.9 Recursive coefficient estimates of the linear model**  
*Notes: coefficients C(1) to C(8) follow the order of the variables in Table 7.2*

Table 7.4

## Linearity tests

Transition variable	F	F4	F3	F2	Suggested model
<i>surplus(t-1)</i>	9.5070 e-03	1.0538 e-01	5.0965 e-01	2.7331 e-03	LSTR1
<i>surplus(t-2)</i>	3.2031 e-02	5.4899 e-02	2.2171 e-01	1.2448 e-01	LSTR1
<i>debt(t)</i>	1.6926 e-02	3.0786 e-01	1.6617 e-01	7.0640 e-03	LSTR1
<i>temp_output(t)</i>	8.3736 e-02	3.8500 e-01	4.9730 e-01	1.4634 e-02	Linear
<i>temp_spending(t)</i>	5.9180 e-04	1.3188 e-01	1.2875 e-02	4.1586 e-03	LSTR1
<i>time trend</i>	8.9058 e-15	1.5989 e-04	8.5993 e-08	3.5464 e-07	LSTR2

After experimenting with different specifications of the nonlinear equation, the model with the explanatory variables *surplus(t-1)*, *surplus(t-2)*, *debt*, *temp\_output* and *temp\_spending* was chosen. The estimated nonlinear model is shown in Table 7.5.

The *debt* variable is not significant in the linear part of the equation and significant in the nonlinear part with a positive coefficient of about 0.10. The high value of the slope parameter  $\gamma$  (34.50) indicates a rapid transition between the two extreme regimes. The large p-value of  $\gamma$  should not be interpreted as a weak indication of nonlinearity.

The threshold parameter *c* indicates the debt ratio threshold of about 74.5%, above which there is a significant positive response of the primary surplus to an increase in debt. Our main results are thus consistent with those of Piergallini and Postigliola (2016, 2020) for Italy and with Bohn (2008) for the United States, and confirm the sustainability of fiscal policy in the United States.

From the estimated coefficients of the lagged *surplus* and *debt* variables, we can compute the long-run response of the *surplus* variable to the change in the *debt* variable in the high-debt regime as  $(0.01617+0.10473)/(1-(0.63940+0.05896-0.23361-0.15790)) = 0.17$ .

The resulting coefficient is again positive.

Table 7.5

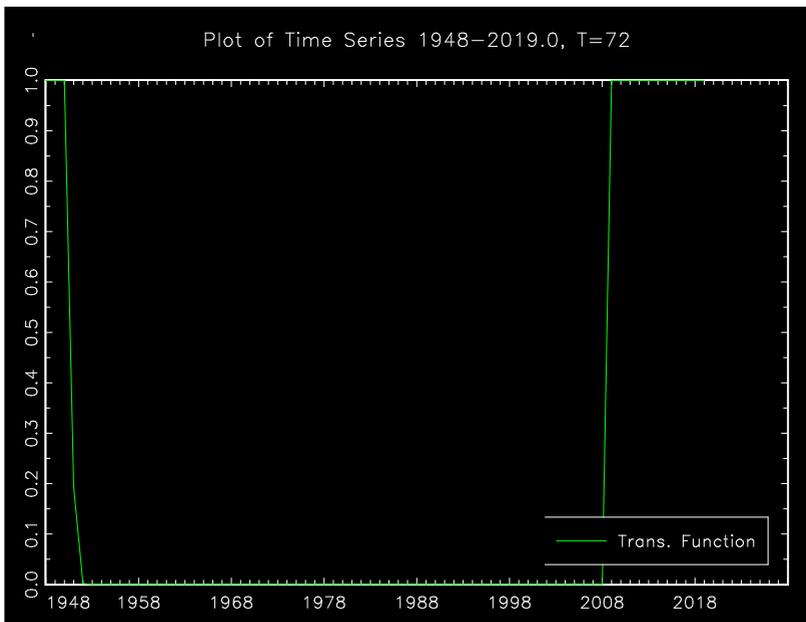
## Estimated nonlinear model

dependent variable:	$surplus(t)$				
transition variable:	$debt(t)$				
sample range:	[1948, 2019], T = 72				
transition function:	LSTR1				
number of iterations:	28				
variable	start	estimate	SD	t-stat	p-val.
<b>linear part</b>					
$const$	-1.4303	-1.39879	0.6087	-2.2980	0.0252
$surplus(t-1)$	0.6549	0.63940	0.1257	5.0872	0.0000
$surplus(t-2)$	0.0477	0.05896	0.1203	0.4900	0.6260
$debt(t)$	0.0172	0.01617	0.0112	1.4438	0.1542
$temp\_output(t)$	-0.0212	-0.02369	0.0713	-0.3320	0.7411
$temp\_spending(t)$	-0.7292	-0.76260	0.1892	-4.0311	0.0002
<b>nonlinear part</b>					
$const$	-15.617	-13.8894	4.5384	-3.0604	0.0033
$surplus(t-1)$	-0.2970	-0.23361	0.2754	-0.8482	0.3998
$surplus(t-2)$	-0.1264	-0.15790	0.1954	-0.8082	0.4223
$debt(t)$	0.1198	0.10473	0.0460	2.2771	0.0265
$temp\_output(t)$	0.2486	0.26020	0.2122	1.2264	0.2250
$temp\_spending(t)$	-0.0206	0.06964	0.3002	0.2320	0.8174
$gamma$	10.0000	34.49697	221.93	0.1554	0.8770
$c$	77.4150	74.50274	6.0184	12.3792	0.0000
AIC:	1.8142e-01				
SC:	6.2410e-01				
HQ:	3.5765e-01				
R2:	8.6102e-01				
adjusted R2:	0.8630				
variance of transition variable:	481.8508				
SD of transition variable:	21.9511				
variance of residuals:	1.0088				

Notes: SD denotes standard deviation, and p-val. stands for p-value

In the linear part of the equation, the regression coefficient of the temporary government spending variable (*temp\_spending*) is negative (-0.73) and significant, providing empirical support for the tax smoothing theory. In the nonlinear part, both the *temp\_spending* and *temp\_output* variables are not significant.

Figure 7.10 shows the plot of the transition function against time. The model resembles a switching regression with rapid transition between the two extreme regimes (with  $G$  equal to 0 and  $G$  equal to 1). The transition function is 1 or close to 1 in the pre-1952 and post-2008 periods, capturing the turbulent post-World War II period and the period from the Great Recession onward in the high debt regime.



**Figure 7.10 Graph of the transition function against time**

## 5 Conclusion

In this paper, we have analysed the relationship between primary surplus/deficit and debt for the United States of America. We considered a nonlinear approach using the smooth transition regression (STR) model which is a generalisation of the discrete

switching models with a finite number of different regimes. In this way, we enabled smooth transition between the two extreme regimes and allowed different values for the slope and threshold parameters. Several possible nonlinear smooth transition specifications were considered, including both logistic (LSTR) and exponential (ESTR) transition functions. Linearity was strongly rejected and the *debt* variable was chosen as the transition variable. Our analysis revealed the nonlinear relationship between the surplus/deficit and debt in the United States during the observed period and a the debt-to-GDP ratio threshold of about 74.5%, above which there is a significant positive response of the primary surplus to an increase in debt, providing empirical support for the sustainability of fiscal policy in the United States.

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## Chapter 8

# DEVELOPMENT STRATEGIES OF SOCIO-ECONOMIC SYSTEMS IN TERM OF THE PANDEMIC

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## EVALUATING ENERGY SECURITY OF THE EUROPEAN UNION AND OVERCOMING CURRENT CHALLENGES

### **Introduction**

The European Union (EU) has been experiencing an unprecedented energy crisis for the last 50 years, with severe economic, social and political consequences. Rising energy demand, extreme weather events (unprecedented heat and long winters), disruptions in supply chain and poor regional and global reserves have all contributed to the current energy crisis in the EU.

Prices on natural gas in the EU are rising as demand around the world increases. Prices on the gas rose by more than 800 percent year-on-year and prices on the electricity by about 500 percent. Rising prices on gas are due to low stocks in European storage facilities and pressure from Russia, which is trying to speed up the launch of the Nord Stream-2 pipeline.

Also in the EU, there is reduction the production of coal and natural gas, reducing the capacity of wind farms.

As natural gas plays a significant role in shaping the prices on electricity, electricity has also risen in price. As prices on gas is rose, prices on oil and coal is rose significantly.

Demand for energy consumption has also increased due to weather conditions – cold winters and periods of abnormal heat in summer.

The largest consumers of gas and electricity in the EU are suffering heavy losses due to rising prices on energy. Industrial giants have begun to cut production, threatening economic recovery.

The world economy is recovering from the crisis caused by the coronavirus pandemic, and the EU countries are increasingly in need of energy for industry and the population.

An unbalanced transition to renewable energy has become a particular problem for the EU. Calmer weather this year has led to lower energy production using wind turbines. And old European nuclear power plants are gradually being decommissioned. Green energy is not able to cover all needs, so the continent has risen sharply demand on gas.

All the above-mentioned problems have certainly affected the further ensure energy security of the EU and require the developing of appropriate mechanisms to overcoming current challenges.

## **Methodology**

Research methods used of dynamic and comparison of values to assess indicators (energy efficiency and productivity, energy consumption, energy import, renewable energy, greenhouse gas emissions intensity). Research period covers 2015-2019.

## **Results research**

Energy security in the EU is a state, which guarantees uninterrupted access of various categories of consumers within the framework of a properly functioning internal energy market to a sufficient number of energy resources under the following conditions:

– diversification of energy sources, their suppliers and supply routes;

- increasing the share of renewable sources in the energy balance;
- stability of energy networks of member states, their complementarity and constant development;
- increasing energy efficiency;
- reduction of harmful effects on the environment;
- implementation of an effective foreign energy policy based on the solidarity of its member states.

To evaluation the current state of energy security in the EU, it is necessary to conduct research on efficiency and productivity indicators. The evaluation of energy efficiency in the EU (Table 8.1) shows that primary energy consumption has decreased within the EU countries. Consumption volumes increased in such countries as Belgium, Greece, Malta (in 2019 compared to 2018 – 4.6%; 7.4%; 6.1%). Estonia has a significant reduction in energy consumption (22.3%). In the EU as a whole, energy efficiency is declined.

*Table 8.1*

**Energy efficiency in the EU**

<b>Country</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
European Union - 27 countries (from 2020)	1 353,52	1 364,76	1 384,55	1 375,58	1 351,93
European Union - 28 countries (2013-2020)	1 535,98	1 544,20	1 561,82	1 552,80	1 526,12
Euro area - 19 countries (from 2015)	1 083,33	1 087,48	1 097,75	1 085,94	1 068,42
Belgium	46,03	49,15	49,14	46,93	49,11
Bulgaria	17,96	17,67	18,32	18,37	18,22
Czech Republic	39,44	39,74	40,35	40,39	40,11
Denmark	16,9	17,34	17,42	17,4	16,83
Germany	295,93	297,63	298,12	292,15	282,71
Estonia	5,34	5,9	5,65	6,06	4,71
Ireland	13,96	14,64	14,45	14,67	14,66
Greece	23,39	23,06	23,24	22,59	24,26
Spain	118,04	118,73	125,22	124,59	120,75

<b>Country</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
France	244,35	239,95	239,22	238,94	235,26
Croatia	7,96	8,05	8,33	8,18	8,21
Italy	149,12	147,97	148,95	147,24	145,89
Cyprus	2,28	2,43	2,53	2,55	2,54
Latvia	4,27	4,29	4,47	4,69	4,56
Lithuania	5,79	6,04	6,16	6,37	6,28
Luxembourg	4,14	4,15	4,29	4,46	4,5
Hungary	23,3	23,65	24,46	24,48	24,57
Malta	0,75	0,71	0,81	0,82	0,87
Netherlands	63,9	64,89	64,92	64,23	63,46
Austria	31,65	32,04	32,81	31,8	32,2
Poland	90,05	94,83	99,1	101	98,13
Portugal	21,65	21,77	22,82	22,65	22,08
Romania	30,75	30,65	32,46	32,57	31,97
Slovenia	6,34	6,55	6,73	6,65	6,52
Slovakia	15,22	15,37	16,15	15,79	15,98
Finland	31,19	32,22	32,09	32,74	32,06
Sweden	43,84	45,35	46,35	47,25	45,78
Iceland	5,8	5,49	5,84	6,4	6,2
Norway	27,04	26,08	27,24	27,54	25,25
United Kingdom	182,47	179,44	177,27	177,22	174,18
Montenegro	0,99	0,95	0,99	1,04	:

Source: [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_07\\_10/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_07_10/default/table?lang=en).

Note: Energy balance: primary energy consumption (Europe 2020-2030)

Unit of measure: million tons of oil equivalent

The indicator of energy productivity evidences the level of use energy resources. This indicator indicates the amount of GDP produced per unit of energy consumed. Energy productivity in the EU is shown in Table 8.2. In 2019, the high level of energy productivity have countries such as Ireland (19.64), Denmark (16.02), Norway (12.79), United Kingdom (11.88), and Luxembourg (11.45). The dynamics of the indicator has a tendency to increase. The lowest level have countries such as Iceland (2.21), Bulgaria (2.52), Malta (3.51), Estonia (4.17) and Poland (4.80). Rapid growth of energy productivity in 2019 compared to 2015 has countries such as Ireland (by 21.3%), Bulgaria (by 14.0%), and Denmark (by

12.1%). Slowdown in energy productivity is observed in countries such as Malta (by 9.3%) and Belgium (by 1.7 %). In the EU as a whole, energy productivity is increased.

*Table 8.2*

**Energy productivity in the EU**

<b>Country</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
European Union - 27 countries (from 2020)	7,74	7,83	7,88	8,10	8,37
European Union - 28 countries (2013-2020)	8,08	8,19	8,26	8,48	8,76
Euro area - 19 countries (from 2015)	8,27	8,38	8,46	8,71	8,97
Belgium	6,47	6,15	6,17	6,30	6,36
Bulgaria	2,21	2,35	2,35	2,41	2,52
Czech Republic	4,08	4,23	4,26	4,38	4,55
Denmark	14,29	14,47	14,91	15,19	16,02
Germany	8,70	8,83	9,02	9,35	9,70
Estonia	3,06	2,88	3,13	3,07	4,17
Ireland	16,19	15,71	17,39	18,58	19,64
Greece	7,05	7,16	6,93	7,18	7,30
Spain	8,22	8,38	8,27	8,46	8,85
France	8,02	8,26	8,44	8,61	8,87
Croatia	5,26	5,39	5,39	5,66	5,75
Italy	9,88	10,08	9,91	10,14	10,27
Cyprus	7,01	6,90	7,06	7,23	7,44
Latvia	4,60	4,64	4,69	4,86	4,84
Lithuania	4,65	4,60	4,59	4,67	4,90
Luxembourg	11,07	11,54	11,39	11,28	11,45
Hungary	4,38	4,42	4,41	4,64	4,86
Malta	3,87	3,73	3,38	3,45	3,51
Netherlands	7,51	7,54	7,71	8,06	8,26
Austria	9,24	9,30	9,35	9,82	9,76
Poland	4,36	4,29	4,29	4,45	4,80
Portugal	7,11	7,23	7,15	7,53	7,71

Country	2015	2016	2017	2018	2019
Romania	4,53	4,75	4,84	5,04	5,33
Slovenia	5,66	5,61	5,69	5,93	6,26
Slovakia	4,76	4,84	4,72	4,95	5,08
Finland	5,73	5,69	5,79	5,77	5,95
Sweden	8,54	8,33	8,29	8,42	8,78
Iceland	2,02	2,22	2,18	2,07	2,21
Norway	11,50	12,09	11,86	11,68	12,79
Switzerland	:	:	:	:	:
United Kingdom	10,69	11,01	11,35	11,51	11,88
Montenegro	3,36	3,56	3,56	3,61	:

Source: [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_07\\_30/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_07_30/default/table?lang=en)

Unit of measure: EUR per kilogram of oil equivalent

The amount of final energy consumption in the EU is shown in Table 8.3. It should be noted, that the total volume of energy consumption in the EU in 2019 compared to 2017 and 2018 decreased due to lower consumption of energy resources by industry during the pandemic. In 2019, the largest amount of energy consumption have countries such as Germany (214.5), France (145.5), United Kingdom (134.1) and Italy (115.5). Countries such as Malta (0.7), Cyprus (1.9), Estonia (2.9) and Iceland (3.3) have the lowest energy consumption.

Table 8.3

### Final energy consumption in the EU

Country	2015	2016	2017	2018	2019
European Union - 27 countries (from 2020)	958,5	977,7	989,7	989,8	983,6
European Union - 28 countries (2013-2020)	1 091,1	1 111,5	1 123,3	1 124,9	1 117,7
Euro area - 19 countries (from 2015)	770,7	783,2	787,9	787,2	782,2
Belgium	35,9	36,4	36,1	36,4	35,8

<b>Country</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Bulgaria	9,5	9,7	9,9	9,9	9,8
Czech Republic	24,2	24,8	25,5	25,3	25,2
Denmark	14,2	14,5	14,6	14,6	14,3
Germany	212,7	216,8	218,6	215,5	214,5
Estonia	2,8	2,8	2,9	3,0	2,9
Ireland	11,3	11,7	11,9	12,4	12,4
Greece	16,6	16,8	16,4	15,9	16,2
Spain	80,6	82,5	84,9	86,9	86,3
France	148,4	150,4	149,4	146,8	145,5
Croatia	6,6	6,6	6,9	6,9	6,9
Italy	116,2	115,9	115,2	116,4	115,5
Cyprus	1,7	1,8	1,9	1,9	1,9
Latvia	3,8	3,8	4,0	4,2	4,1
Lithuania	4,9	5,1	5,3	5,6	5,6
Luxembourg	4,0	4,0	4,2	4,4	4,4
Hungary	17,4	17,8	18,5	18,5	18,6
Malta	0,6	0,6	0,6	0,7	0,7
Netherlands	48,8	49,9	50,2	50,7	49,9
Austria	27,5	28,1	28,5	27,8	28,3
Poland	62,3	66,6	70,9	71,8	71,0
Portugal	16,0	16,2	16,6	16,9	17,1
Romania	21,9	22,2	23,3	23,6	23,9
Slovenia	4,7	4,9	5,0	5,0	4,9
Slovakia	10,1	10,4	11,1	11,1	11,2
Finland	24,2	25,2	25,3	25,8	25,3
Sweden	31,8	32,3	32,1	32,0	31,6
Iceland	3,1	3,1	3,2	3,5	3,3
Norway	18,7	18,9	18,8	19,0	19,0
Switzerland	:	:	:	:	:
United Kingdom	132,6	133,8	133,6	135,1	134,1
Montenegro	0,7	0,7	0,8	0,8	:

Source: [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_07\\_11/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_07_11/default/table?lang=en)

Unit of measure: mln. tons of oil equivalent

Depending on the population density and natural-climatic conditions of the country presented final energy consumption in households per capita in the EU (Table 8.4). For the research period,

in the EU as a whole, energy consumption in households per capita has hardly changed on average. Data table show that the largest volume of energy consumption in households per capita is accounted by Iceland, Finland, Austria, Luxembourg and Estonia. In 2019 compared by 2015 increased energy consumption in households per capita in countries such as Slovakia (32.5%), Finland (12.8%), Malta (12.3%), Latvia (11.1%) and Lithuania (10.7%). In countries such as Luxembourg (17.1%), Slovenia (10%), Montenegro (8.2%), Greece (6.8%) and Belgium (6.3%) consumption has decreased.

*Table 8.4*

**Final energy consumption in households per capita in the EU**

<b>Country</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
European Union - 27 countries (from 2020)	552	566	565	553	550
European Union - 28 countries (2013-2020)	554	568	564	556	553
Euro area - 19 countries (from 2015)	558	572	569	557	559
Belgium	734	734	719	710	688
Bulgaria	306	316	328	317	310
Czech Republic	642	671	680	663	657
Denmark	782	801	780	767	752
Germany	673	692	687	673	695
Estonia	652	707	714	712	717
Ireland	594	603	577	609	584
Greece	412	404	410	365	384
Spain	323	327	314	321	313
France	604	631	619	596	593
Croatia	577	577	579	562	550
Italy	535	531	543	528	521
Cyprus	385	394	402	388	411
Latvia	559	584	616	639	621
Lithuania	468	500	515	540	518
Luxembourg	897	906	896	822	744

Country	2015	2016	2017	2018	2019
Hungary	607	629	643	595	581
Malta	179	170	195	192	201
Netherlands	564	578	562	560	537
Austria	767	791	791	740	750
Poland	501	524	528	512	479
Portugal	266	273	272	280	281
Romania	372	376	395	399	400
Slovenia	565	575	560	523	506
Slovakia	366	374	388	378	485
Finland	904	972	1 046	1 032	1 020
Sweden	756	772	765	736	716
Iceland	1 186	1 262	1 230	1 433	1 259
Norway	847	853	860	863	854
Switzerland	:	:	:	:	:
United Kingdom	572	579	557	576	571
Montenegro	427	425	423	399	392

Source: [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_07\\_20/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_07_20/default/table?lang=en)

Unit of measure: kg. of oil equivalent

Energy security of the EU is directly dependent on energy import. The share of energy import in the EU is presented in Table 8.5. In general, the share of energy import in the EU, depending on the countries is 60-65%. In 2019, the most energy-dependent remain the countries such as Malta (97.1%), Luxembourg (95.1%) and Cyprus (92.8%). Less dependent on energy import are countries such as Estonia (4.8%), Iceland (16.1%), Sweden (30.2%) and Romania (30.4%). Norway is a self-sufficient country in terms of production and consumption of its own energy and is independent of import. For the research period, dependence on energy import in the EU increased by 8%. In 2019 compared by 2015, increased energy import the countries such as Denmark (in 2.9 times), Romania (82.0%), Poland (56.9%), Netherlands (32.9%), Hungary (29.4%) and Czech Republic (27.4%). Decreased the dependence of energy import in such countries as Estonia (51.9%), Ireland (22.9%) and Latvia (14.1%).

Table 8.5

**Energy import dependency by products in the EU**

<b>Country</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
European Union - 27 countries (from 2020)	56,005	56,122	57,530	58,192	60,704
European Union - 28 countries (2013-2020)	53,891	53,811	55,124	55,695	57,859
Euro area - 19 countries (from 2015)	62,094	61,898	63,070	63,278	65,316
Belgium	83,373	74,956	74,404	82,318	76,676
Bulgaria	36,446	38,472	39,362	36,325	38,102
Czech Republic	32,089	32,800	37,162	36,879	40,894
Denmark	13,156	13,651	11,488	22,951	38,781
Germany	62,132	63,752	63,959	63,441	67,610
Estonia	10,034	8,105	4,691	1,011	4,829
Ireland	88,745	69,004	67,135	67,695	68,395
Greece	71,047	72,911	71,282	70,681	74,110
Spain	72,799	71,317	73,718	73,451	74,955
France	45,934	47,414	48,811	46,802	47,595
Croatia	48,786	48,430	53,152	52,691	56,224
Italy	77,030	77,653	76,979	76,338	77,484
Cyprus	97,319	95,841	95,927	92,491	92,805
Latvia	51,179	47,152	44,053	44,313	43,963
Lithuania	75,452	74,784	71,965	73,897	75,217
Luxembourg	95,914	96,149	95,631	95,161	95,129
Hungary	53,875	55,823	62,645	58,123	69,704
Malta	97,296	101,076	103,052	97,513	97,172
Netherlands	48,704	45,921	51,918	59,549	64,721
Austria	60,371	62,099	63,928	64,231	71,727
Poland	29,848	30,760	38,269	44,763	46,818
Portugal	76,293	72,210	77,936	75,618	73,848
Romania	16,687	21,901	23,295	24,291	30,371
Slovenia	49,304	49,017	50,769	51,213	52,140
Slovakia	60,102	60,551	64,845	63,679	69,762
Finland	47,964	46,196	43,982	44,878	42,092

Country	2015	2016	2017	2018	2019
Sweden	30,061	33,301	26,658	29,059	30,244
Iceland	16,418	18,981	18,395	19,143	16,106
Norway	-576,312	-610,665	-601,050	-554,805	-575,260
Switzerland	:	:	:	:	:
United Kingdom	37,638	35,639	35,575	35,513	34,829
Montenegro	30,080	34,590	40,486	31,060	32,862

Source: [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_07\\_50/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_07_50/default/table?lang=en)

Unit of measure: percentage

In order to diversify energy supply (energy import) and reduce dependence on supplies from Russia in the EU, renewable energy technologies are being introduced. Such technologies are an alternative to generating electricity and further reducing dependence. Advanced technologies in the EU allow countries to produce renewable energy more cost-effectively, and the electricity produced by these sources continues to increase. In 2019, share of renewable energy in gross final energy consumption by sector in the EU average is 18-19% (Table 8.6). For the same period, the largest share of renewable energy in gross final energy consumption by sector have such countries as Iceland (78.2%), Norway (74.6%), Sweden (56.4%), Finland (43.1%) and Latvia (41%). In 2019 compared by 2015, countries such as Netherlands (54.7%), United Kingdom (47.1%), Luxembourg (41.3%), Cyprus (39%) and Ireland (32.5%) have increased the share of renewable energy in gross final energy consumption by sector, thereby reducing dependence on energy import and strengthening its own energy security.

Table 8.6

**Share of renewable energy in gross final energy consumption by sector in the EU**

Country	2015	2016	2017	2018	2019
European Union - 27 countries (from 2020)	17,841	18,029	18,467	18,909	19,730
European Union - 28 countries (2013-2020)	16,734	16,982	17,482	18,012	18,877

<b>Country</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Euro area - 19 countries (from 2015)	16,446	16,697	17,271	17,773	18,576
Belgium	8,026	8,752	9,113	9,478	9,924
Bulgaria	18,261	18,760	18,701	20,592	21,564
Czech Republic	15,067	14,924	14,796	15,138	16,244
Denmark	30,866	32,052	34,677	35,413	37,204
Germany	14,906	14,889	15,476	16,673	17,354
Estonia	28,528	28,715	29,168	29,993	31,889
Ireland	9,044	9,165	10,465	10,888	11,984
Greece	15,690	15,391	17,300	18,051	19,677
Spain	16,259	17,423	17,563	17,454	18,362
France	14,861	15,501	15,904	16,444	17,216
Croatia	28,969	28,267	27,280	28,047	28,466
Italy	17,526	17,415	18,267	17,796	18,181
Cyprus	9,929	9,859	10,503	13,898	13,800
Latvia	37,538	37,138	39,019	40,029	40,975
Lithuania	25,750	25,613	26,039	24,695	25,461
Luxembourg	4,987	5,361	6,198	8,973	7,047
Hungary	14,495	14,377	13,543	12,535	12,614
Malta	5,119	6,208	7,219	7,968	8,488
Netherlands	5,668	5,802	6,456	7,340	8,768
Austria	33,502	33,374	33,141	33,806	33,626
Poland	11,888	11,400	11,117	11,477	12,164
Portugal	30,518	30,868	30,614	30,206	30,619
Romania	24,785	25,032	24,454	23,875	24,290
Slovenia	22,880	21,977	21,658	21,378	21,974
Slovakia	12,883	12,029	11,465	11,896	16,894
Finland	39,321	39,013	40,917	41,160	43,081
Sweden	52,947	53,328	54,157	54,651	56,391
Iceland	71,518	74,824	73,487	76,690	78,196
Norway	68,212	69,065	70,595	71,803	74,625
Switzerland	:	:	:	:	:
United Kingdom	8,385	9,032	9,858	11,138	12,336
Montenegro	43,073	41,549	39,708	38,797	37,373

Source: [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_07\\_40/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_07_40/default/table?lang=en)

Energy balance: renewable energy sources

Unit of measure: percentage

Renewable energy is considered the only long-term solution to the problem in Brussels. Executive authority in the EU is considering directions that will help speed up and support the transition of different sectors to green energy in perspective, and notes that this is the best of future shocks.

To overcoming the current energy crisis and ensure energy security, the European Commission has developed a number of priority measures. The short-term measures are aimed primarily at overcoming current challenges associated with high prices on energy resources for consumers and industry in the EU. These include social support for people who cannot pay for energy resources, for example in the form of vouchers, partial payment of utility bills or deferred payment. Measures for industry in the EU are the reduction of energy taxes, protection against disconnection from energy networks.

The main points of short-term measures adopted by the European Commission include:

- exemption from taxes or reduction of tax rates;
- tax benefits for households and industry, provided they are compatible with state aid rules;
- support for various industries in the transition to renewable energy;
- encouragement to concluding long-term contracts for the purchase of electricity from renewable sources;
- administrative restrictions of prices;
- emergency financial support for the most vulnerable.

The European Commission also plans to improve the efficiency of the gas storage system – updating the regulations on security of gas supply, facilitating cross-border access to storage. The problem is that if some countries in the EU have large gas storage facilities, others do not.

The implementation as soon as possible of the above measures will contribute to energy security in the EU and gradually reduce dependence on import.

## **Conclusions**

Energy security in the EU is characterized by the ability to compete to attract energy resources and use those most effectively to meet the needs of society and realized national interests. Ensuring

energy security in the EU is influenced by political, economic, technological, climatic, social and other factors.

The emergence of new challenges and threats from Russia has a negative impact on energy security in the EU. Such current challenges include the proliferation of hybrid methods of warfare and the use of energy as a weapon to achieve political goals, as well as the need for legislation to regulate the activities of various actors involved in ensuring energy security of the country.

National regulators on energy are responsible for regulating the security of energy supply, general oversight of maintaining the stability of energy networks, setting rules for the transportation and storage of energy, and developing competition. Independent national operators carry out the current management of national energy networks that operating based on special state licenses and in their activities strictly adhere to the requirements of the Third Energy Package of the EU.

Public authorities of the EU play an important role in creating the necessary legal framework for the implementation of government-defined strategic objectives aimed at the effective implementation of each of the elements of energy security. National energy regulators also have an important role to play in ensuring fair competition, which promotes fair prices on energy for consumers and improves the quality services of energy companies.

Research of the state energy security in the EU show a stable energy consumption, dependence import on energy, growth of renewable energy, government regulation and legislation by energy security of each country in the EU.

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**PANDEMIC AND  
WORKFORCE SOCIAL  
PROTECTION**

Among the main consequences of the forced implementation of large-scale anti-epidemic measures in the COVID-19 pandemic' conditions – the continuing practice of a number of social distancing' regimes and forms (up to lockdown); restrictions on the functioning of the range of economic activities (especially numerous and severe in relation to enterprises and institutions of services, public and intercity transport, travel and recreation abroad, as well as to the requirements for consumer access to these services); forced downtime in the real sector and export-oriented branches of resource and raw materials' and semi-finished specialization due to the decline in their products' demand in the national and foreign markets; reduction of labor incomes of broad employees' and self-employed strata (including individual entrepreneurs) that relates to the above-mentioned factors; narrowing of the workforce demand in the labor market, especially noticeable in service units, construction, resource' and raw materials' export-oriented activities; growth of the unemployed contingent, the spread of shadow employment, including due to the cross-border labor migrants' return to Ukraine (both legal and illegal), who, while increasing the labor market burden, continue to be skeptical about a significant part of domestic employment offers, especially on the proposed salary parameters.

For the second year in a row, the challenges facing the state that concern the impossibility of avoiding these forced and mostly negative trends in socio-economic development are combined with the urgency of mitigating their multiplied effects on social protection, income and living standards of employees and the self-employed. Thus, it is important to assess the relevant achievements, problems and shortcomings of the employment' and the labor

market' regulation in the context of their timeliness, complexity, consistency.

Given the level of threats posed by the COVID-19 pandemic on the existence of human civilization, separate countries and their regional political and economic groups, as well as the non-standard nature of this crisis in the global development' latest period, the issues of the powerful viral threat and its consequences for demographic and labor potential preservation, on the one hand, and large-scale anti-epidemic measures, their contradictory impact on the socio-economic situation and the conjuncture, on the other hand, are widely covered in the scientific literature and periodicals. In particular, in the context of employment and labor market study we should notice:

- the analysis of the content, feasibility, balance of measures for: implementation of a number of social distancing regimes (up to the lockdown) at enterprises of critical infrastructure, the real sector of the economy and those where remote work can be organized; restrictions on the work of enterprises, institutions, certain activities in the services' sphere (trade and catering, transport, education, culture, health protection, recreation, etc.), including due to stricter regulation of consumers' access to them; compensation to employees and business entities (including individual entrepreneurs and other self-employed) for wages' and income' loss from forced downtime, underemployment, reduction of working hours and week [1-4];

- the study of world experience in regulating the workers' and employers' rights and responsibilities in the conditions of a strong epidemic threat, as well as prospects for its spread in Ukraine [1; 4-6];

- the substantiation of approaches to increasing the national economy' and socium' crisis resilience in the short- and long-term prospect in conditions of the range of probable problems for ensuring an acceptable life quality (labor, non-labor) under the influence of threats to sanitary and epidemiological security and large-scale geoclimatic changes [5; 7-10].

The functioning of national economies, including Ukrainian one, in the context of large-scale (macro-regional, global) anti-epidemic measures caused by the COVID-19 pandemic, proved once again that the effectiveness of implementation and coordination of

measures to mitigate and prevent the rapid spread of new dangerous infectious disease, as well as any other large-scale crisis (devastating natural disasters, man-made threats, global and macro-regional economic crises, armed conflicts, etc.) directly depends on balancing, consistency and systematizing of regulatory mechanisms and actions applied by authorities at all levels.

At the same time, pandemic situations (as well as other large-scale crises) in the neo- and post-industrial market economy' conditions, along with the problems and threats, create a number of opportunities for entrepreneurs' financial and economic growth related to:

- the capitalization of information on urgent needs for equipment, consumables, works, including those financed through public procurement, and those that will be accumulated in state reserves and public consumption funds; the involvement in appropriate measures within the framework of state programs to stabilize the sanitary and epidemiological situation, to strengthen the material and technical base and personnel of public health and labor protection;

- the production, sale, logistics of consumer goods and services demanded by the mass public strata at all times, even in various forms of social distancing, due to the national and globalized socially acceptable ideas of living standards (as we know from actively disseminated information about further property stratification of the richest and the poorest in the global pandemic, richest entrepreneurs and biggest wealth fortunes have obtained a large part of the profits namely due to the trade and transit of such goods and services involving electronic networks and other modern technologies);

- the manufacturing and export of products, in which national economies specializes and the demand for which has not decreased under the influence of the pandemic (hence, that are mainly products of a range of science-intensive machinery, electricity, food, agro-processing, pharmaceuticals, high-tech services, etc.); the imports of goods and services that are critical and recommended for consumption in the context of modern ideas about a life' decent standard and quality.

Such an approach to studying the impact of the COVID-19 pandemic on the employment and labor market of Ukraine requires

not only assessing the validity and balance of measures for mitigating and leveling of losses from forced restrictions on legally paid employment and hire, reduction of labor incomes in the context of expenditures' growth on the so-called mandatory services (housing, communications, partially transport) and food, narrowing the demand for a number of professions and activities, but also a study of the government activities' effectiveness to implement corporate and individual opportunities to expand supply and production of the above-mentioned popular products.

In general, since the beginning of large-scale anti-epidemic measures in Ukraine (quarantine in the emergency situation' regime, including lockdown, restrictions on social interactions and movement, etc.), a number of urgent actions have been taken to, such as: regulation of labor process' organization in the economy' sectors and branches; mitigation of income losses for employees, self-employed, medium and large businesses; prevention of sharp fluctuations in the unified social tax' payment level and the Pension Fund' filling due to forced downtime, temporary and total unemployment; preservation of personnel resources and increase of the remuneration level in the spectrum of public health activities; stimulation of the economic activity of people who have lost their jobs, including cross-border labor migrants who have returned home due to similar quarantine restrictions in other countries. At the same time, systematic steps to reform labor legislation in favor of expanding employers' economic rights and freedoms, reducing their social burden were continued.

Among the measures to mitigate the quarantine measures' negative impact on the level of employment and workers' earnings it should be noted, in particular:

- further standardization of the principles for organizing the employees' working week, shift work and reduced working hours, providing them with leave' various categories (paid and at their own expense);
- accelerated development of approaches to the remote work regulation (including online) as a form of the labor process organization, clearly regulated in national legislation only in April 2020 under the anti-epidemic restrictions' pressure;
- improvement of methods and practices of unemployed

registration the and unemployment benefits (in particular, for partial unemployment as a quarantine restrictions' result), as well as filling the mandatory social insurance funds and the Pension Fund due to increasing the payment level of unified social tax by individual entrepreneurs and self-employed;

- increase of the unemployment benefits' minimum amount, including partial ones;

- preservation of the right to housing and communal services' use in case of problems with their payment due to income lack;

- implementation of a number of programs to compensate businesses' losses from forced closures and downtime, restrictions in the enterprises' operation regulations through: the providing employers who were forced to stop working during anti-epidemic measures by state compensation for pay employees' salaries during the relevant period; the compensation of income loss from the funds' amount determined by the government in case of confirmation of economic entities' certain activities (primarily in service branches) and reliability in fulfilling obligations to pay unified social tax in the pre-quarantine period of specified duration; the government allocation of targeted resources to provide cheap bank loans to entrepreneurs who did not work during quarantine, to facilitate their access to credit resources at relatively lower rates; the stimulation of the immunized population to use the financial bonus promised for two coronavirus vaccination procedures for the approved list' services.

Along with specific measures that are important for the implementation of systematic anti-epidemic actions to protect workers and aggregate labor potential, changes in labor legislation and a number of basic social protection normative documents, aimed in fact at reducing the employers' (especially large businesses') social burden, were actively continued to promote. The resource and raw materials' and semi-finished products' export orientation of the national economy, the development of trade, restaurants and catering, as well as various recreational branches against the background of the destruction of a wide range of closed production cycles (both in high-tech and in agro-processing, food, light industry) has led to significant demand for workers without long professional experience, low-skilled and unskilled labor force.

As a result: motivations of Ukrainian employers (state, private structures, economic entities of other ownership forms) to implement and improve standards of remuneration, reproduction, livelihood, and other aspects of the total workforce' social protection continue to collapse; the active social demand of the pro-government, the most well-off and influential population strata for the mechanisms of rapid and tangible savings on direct and indirect labor costs is forming and legislatively settling. Among such tendencies and actions are: the unsatisfactory elaboration and incoordination of the set of basic state social standards and guarantees, which lasts for decades; the elimination of the subsistence level as a basic indicator in the methods of calculating the minimum wage, minimum salary, a number of social benefits; the use of official and actual subsistence minimums; the dissemination of split labor relations' practices (the employer' functions are performed by an intermediary structure), non-standard employment forms with minimized social and labor guarantees (among all, applied to employees' contingents, which were withdraw from the large and medium enterprises' staff), non-tariff and contractual pay systems, supplemented by the latest innovations of the so-called "zero" employment contracts, payment only for actual working time that allowed in the amount less than the minimum wage and official salary, as well as the employers' rights to extend working hours and week due to production needs without increasing wages.

Such approaches to the social policy' implementation exacerbate the problems of decent wages, reproduction of skilled workforce potential, economic diversification, productive employment, significant and unjustified population' property stratification, a number of the labor market' negative trends (including the growing shortage of specialists in technical and narrow specialties; the cross-border labor migration and emigration of these professionals and other categories of competitive working-able population; the difficulty of a job finding for able-bodied persons 40-55 years old, not to mention the elderly, regardless of their labor experience, length of work and qualifications).

A clear side effect of resource and raw materials' and semi-finished products' specialization of Ukraine' unsatisfactorily diversified economy, which has consistently lost the material and

technical base of processing and high-tech branches in the last 3 decades, was the aggravation of public health supply with domestic machinery, equipment, supplies (components and consumables) required for anti-epidemic measures, because it was impossible to revive / start their production quickly and without significant targeted investments and organizational efforts even with sufficiently qualified staff.

Analysis of information reviews of state support for employment and related aspects of national security in several countries around the world [1; 4-6] shows a slightly higher focus on measures to preserve the workforce physically and to support business entities, primarily at the employers' request (often with the obligatory condition to provide certain evidences of benefits' shortfall and losses). The most common measures were: the transfer of staff and contract employees to remote work; the development of goods' and services' online – offers; realization of rights to more or less long paid and unpaid leave for employees; partial compensation to employees and the self-employed for loss of income through employment services; the realization of the rights to more or less long paid and unpaid employees' vacations; partial income loss' compensation to employees and the self-employed through employment services; the participation in government aid programs for employers in order to save jobs. At the same time, the regional peculiarities of meeting the workforce' demand in the national labor markets led to entrepreneurs' initiatives to expand the vacancies' supply in areas that are critical to maintaining a decent living standard and combating epidemic threats.

In the formal view, the comparison of the quality of organization, provision and implementation of anti-epidemic measures in the economy and employment sphere of a number of developed countries and Ukraine shows this measures' sufficient systematicity, which should be the key to efficiency. However, the trivial reasons for numerous miscalculations and failures – lack of funding, voluntarism in decision-making, corruption in the allocation of targeted programs' funds – have led to insignificant or even unsatisfactory results. The most notable examples are the problems of raising salaries and surcharges for workers of public health and critical infrastructure, improving their material and technical base

associated with these funds' reallocation for construction programs (including road construction); the process of paying compensation to business entities in a number of service activities in the amount of UAH 8,000, which was extremely low, given the incurred losses and lost income in 2020, especially with unreasonable approaches and procedures to prove the right to receive these funds; more than a modest amount of partial unemployment benefits during the quarantine period for persons registered with the State Employment Service (the amount of the minimum benefit was increased from 650 to 1,000-1,800 UAH, depending on the unemployed person' length of work); the uncertainty of obligations and procedures for bonus compensation of a number of services worth UAH 1,000 for those persons who were vaccinated against coronavirus twice).

Unsatisfactory wages in Ukraine, the formality of a significant part of employment incentive programs (in particular, the program for small businesses "Affordable Loans 5–7–9%" under the working title "Return and stay", launched in February 2020) also negatively affected the results of government measures to create in Ukraine jobs for cross-border migrant workers, whose mass return took place in the first months of macro-regional and global anti-epidemic measures. With the easing of quarantine bans on the moving and conducting certain economic activities in countries – recipients, the bulk of these workers went abroad in work search again, and the scale of cross-border labor migration began to grow rapidly. This tendency was significantly facilitated by the renewed active promotion of employment proposals in services, agriculture, agro-processing, construction, public transport, and health care by foreign government structures and international staffing agencies.

In general, the scenario of economic decline in early 2020 was not considered by government, and the policy of the state budget' filling continues to wish for better; thus, the social benefits provided in the emergency situation have already acquired and will continue to have a significant burden on the state budget and social protection' extrabudgetary funds. In particular, the Fund of Compulsory State Social Insurance of Ukraine in the Event of Unemployment lost a part of the income expected from the beginning of 2020 due to the exemption of entrepreneurs from paying the unified social tax during strict quarantine (as practice has shown, at least for 2 months) and to

the suspension of activities or liquidation of a wide range of small and medium-sized business entities that was also caused by consumer demand' restrictions.

Given the status and specialization of the national economy in the international labor division, low prestige and the practice in defending national interests by state structures, the impact of above-mentioned negatives also will continue in the post-crisis period, because the pandemic effects have already led to the global recession, which recognized as the deepest since World War II (according to UNO General Secretary A. Guterres). Such environment promotes poverty, inequality, instability, and strengthens the role of conjuncture factors and tools in the competition of countries and producers in goods' and services' foreign markets.

Assessing the prospects for the development of employment and labor market in Ukraine during the extension of quarantine and the completion of restrictive measures, it is reasonable to expect unemployment rise as a result of the national economic crisis – a part of the global phenomenon caused by falling in production and consumption (including by their resources' reduction at the level of the state, business entities – from large to small businesses, as well as households), restrictions on the transit of goods, services and the population (tourist flows, legal and illegal workforce). Among the reasons for the growing impact of these negative trends on the employment and labor market, first of all, it should be noted:

- the significant deficit of the Ukraine's state budget and reduction of revenues of domestic enterprises – exporters due to unreasonable dynamics of exchange rates;

- rather low, especially in comparison with neighboring countries and developed countries of foreign countries of far abroad, the wages' level of skilled workers and professionals combined with significant unmet demand for them in a wide range of economy activities;

- reduction of raw materials' demand on world markets;
- strengthening expectations of a strong crisis of stock markets and economies of some developed countries, in particular, due to the overstated capitalization of their total market assets (shares of national economic entities) in comparison to quarterly and annual

gross domestic product.

Thus, the prospects for stabilization and further development of Ukraine's employment in the post-quarantine period are closely interrelated with systemic measures to: revive and innovatively modernize the economy's real sector (in particular, its export-oriented branches); raise the minimum wage / salary, directly coordinated with the social subsistence level, as an important factor to improve the population's purchasing power; balance supply and demand in the labor market in the framework of diversification and de-shadowing of employment; implement targeted programs for supporting the unemployed, as well as active programs for stimulating employment and self-employment.

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**METHODOLOGICAL  
APPROACH OF  
CHINA IMPACT TO  
GREEN SUPPLY  
CHAIN IN GLOBAL  
AND SUSTAINABLE  
TRANSPORT  
MARKET  
DEVELOPMENT**

## **Introduction**

Balancing economic and environmental performance has become increasingly important for organizations facing competitive, regulatory, and community pressures (Shultz and Holbrook, 1999). With increased pressures for environmental sustainability, it is expected that enterprises will need to implement strategies to reduce the environmental impacts of their products and services (Lewis and Gretsakis, 2001; Sarkis, 1995, 2001). To establish their environmental image, enterprises have to re-examine the purpose of their business (Hick, 2000). Success in addressing environmental items may provide new opportunities for competition, and new ways to add value to core business programs (Hansmann and Claudia,

2001). Approaches, such as cleaner production, environmental management systems and eco-efficiency, have been implemented for green management practices. In 1994, the Confederation of British Industries (CBI) identified the factors driving the competitive advantage through environmental performance as market expectations, risk management, regulatory compliance and business efficiency. Green supply chain management (GSCM) has a key role in ensuring that all of these factors are addressed (Hutchison, 1998). Environmental impacts occur at all stages of a product's life cycle. Therefore, GSCM has emerged as an important new archetype for enterprises to achieve profit and market share objectives by lowering their environmental risks and impacts and while raising their ecological efficiency (van Hock and Erasmus, 2000). As a major manufacturing country, China has many opportunities, but they also face substantial environmental burdens with this opportunity (Rao, 2002). Moreover, developing countries such as China are becoming increasingly industrialized. As part of supply chains, China has been used as a point of disposal of end-of-life products for multinational organizations and developed countries. For example, the end-of-life products have been shipped to developing countries, such as China, where these developing countries do not have the infrastructure or tools available to care for the end-of-life products (Puckett and Smith, 2002), causing greater environmental burden on these nations.

### **Literature review analysis**

The literature in GSCM has been growing as organizations and researchers begin to realize that the management of environmental programs and operations do not end at the boundaries of the organization. Overall, research in corporate environmental management and its operations relationships have been growing in recent years with a number of papers outlining these relationships (Angell and Klassen, 1999; Geyer and Jackson, 2004; Gupta, 1995; Hanna and Newman, 1996; Sarkis, 2001; Melnyk et al., 2002), including the identification of a need to investigate GSCM. GSCM is strongly related to inter-organizational environmental topics as industrial eco-systems, industrial ecology, product life cycle analysis, extended producer responsibility and product stewardship. In a broader sense, GSCM also falls within the purview of the burgeoning

literature of ethics and sustainability which incorporates other social and economic influences. Research is increasingly investigating many of these “triple bottom-line” issues (Carter, 2000; Zaklad et al., 2004). GSCM’s definition has ranged from green purchasing to integrated supply chains flowing from supplier, to manufacturer, to customer and reverse logistics, which is “closing the loop” as defined by supply chain management literature (Zhu and Sarkis, 2004). Similar to the concept of supply chain management, the boundary of GSCM is dependent on the goal of the investigator. In this case, for our paper, we shall focus on a single level supplier-manufacturer-customer relationship. The research in GSCM addresses a variety of issues ranging from organizational research and practice in GSCM (Geffen and Rothenberg, 2000; Hall, 2001; Theyel, 2001; Zsidisin and Siferd, 2001) to prescriptive models for evaluation of GSCM practices and technology (Faruk et al., 2002; Handfield et al., 2002; Sarkis, 2003).

### **China green supply chain management**

Overall, research in corporate environmental management and its operations relationships have been growing in recent years with a number of papers outlining these relationships (Angell and Klassen, 1999; Geyer and Jackson, 2004; Gupta, 1995; Hanna and Newman, 1996; Sarkis, 2001; Melnyk et al., 2002), including the identification of a need to investigate GSCM. GSCM is strongly related to inter-organizational environmental topics as industrial eco-systems, industrial ecology, product life cycle analysis, extended producer responsibility and product stewardship. In a broader sense, GSCM also falls within the purview of the burgeoning literature of ethics and sustainability which incorporates other social and economic influences. Research is increasingly investigating many of these “triple bottom-line” issues (Carter, 2000; Zaklad et al., 2004). GSCM’s definition has ranged from green purchasing to integrated supply chains flowing from supplier, to manufacturer, to customer and reverse logistics, which is “closing the loop” as defined by supply chain management literature (Zhu and Sarkis, 2004). Similar to the concept of supply chain management, the boundary of GSCM is dependent on the goal of the investigator. In this case, for our paper, we shall focus on a single level supplier-manufacturer-

customer relationship. The research in GSCM addresses a variety of issues ranging from organizational research and practice in GSCM (Geffen and Rothenberg, 2000; Hall, 2001; Theyel, 2001; Zsidisin and Siferd, 2001) to prescriptive models for evaluation of GSCM practices and technology (Faruk et al., 2002; Handfield et al., 2002; Sarkis, 2003). For example, Christmann and Taylor (2001) suggested that export and sales to foreign customers are two major drivers for improving the environmental performance of enterprises in China. Chinese enterprises have started to experience pressures from green barriers when exporting their commodities. During the three years from 1997 to 1999, the value of the commodities that were rejected because of such barriers has been estimated to be approximately 20 billion US dollars (Xinhua News Agency, 2001). Consumer pressures and drivers may also exist, but are still evolving. For example, Chan and Lau (2001) compared green purchasing behaviors between American and Chinese consumers, and concluded that the translation of green purchasing intention to corresponding behavior is more effective among American consumers. However, Chinese consumers, especially younger consumers are developing an increasingly heightened environmental awareness and are starting to prefer “green” products (Lo and Leung, 2000). China has received substantial direct foreign investment in the last five years, and China should be able to attract increasing foreign investments after joining the WTO. However, most joint ventures or foreign direct investment (FDI) enterprises in China purchase key raw materials and components mainly from their home countries, or from upstream enterprises in their supply chains already operating in China, mainly due to Chinese enterprises’ inability to provide materials and products that meet these foreign enterprises’ environmental requirements (Zhu and Geng, 2001). In this regard, it is noteworthy that in their investigation Walton et al. (1998) put forward ten top environmental supplier evaluation criteria and that, among these, environmentally friendly practice evaluation of second-tier suppliers is the second most important criterion. To control over-exploitation and over-consumption of resources, the Chinese government has levied resource taxes and implemented quota-pricing systems for some resources such as water (Bai and Hidefumi, 2001). These four areas represent some of the main internal and external activities and

functions within organizational supply chain management (Zhu and Sarkis, 2004). There is consensus within the literature that internal environmental management is a key to improving enterprises' performance (Carter et al., 1998). It is well known that senior managers' support is necessary and, often, a key driver for successful adoption and implementation of most innovations, technology, programs and activities (Hamel and Prahalad, 1989). To ensure complete environmental excellence, top management must be totally committed (Zsidisin and Siferd, 2001; Rice, 2003). Carter et al. (1998) concluded that support from mid-level managers is also key to successful implementation of EMS practices. Bowen et al. (2001) used middle managers to find positive relationships between middle managers' perceptions of corporate environmental proactivity and environmental management. Communication between business managers and environmental professionals is also important in the successful business and environment relationship (Aspan, 2000). External GSCM practice (in what traditionally is viewed as the scope of supply chain management) has also grown in importance. By investigating purchasing managers in Germany, the UK and the USA, Zsidisin and Hendrick (1998) identified key factors for environmental purchasing such as providing design specification to suppliers that include environmental requirements for purchased items, cooperation with suppliers for environmental objectives, environmental audit for supplier's internal management and suppliers' ISO14001 certification. Investment recovery and eco-design are two emerging environmental practices in China that have significant internal and external influences on GSCM. Both United States and European enterprises have considered investment recovery as a critical aspect for GSCM (Zsidisin and Hendrick, 1998), which may occur at the back end of the supply chain cycle. No matter where in the product life cycle a product or process lies, most of the environmental influence is "locked" in at the design stages when materials and processes are selected and product environmental performance is largely determined (Lewis and Gretsakis, 2001). However, it has been found elsewhere, and may be true in China, that there seems to be a gap between the desirability of GSCM in awareness or theory and the slow implementation of GSCM at the aggregate level across enterprises (Bowen et al., 2001).

However, through examination, Bowen et al. (2001) suggested economic performance is not being reaped in short-term profitability and sales performance. Limited research still indicates a positive relationship between environmental management and operational performance. Szwiłski (2000) put forward that an environmental management system is an innovative environmental policy and information management tool for industry to improve organizational operational performance. Using a case study of the first Japanese integrated mill of pulp and paper that gained the certification of ISO14001, Tooru (2001) demonstrated that environmental management systems can improve operational performance of a firm. Hanna et al. (2000) found a strong relationship between meeting operational goals and staff involvement on environmental management.

Sustainability refers to the ability of being durable that persists with time. So, in (Shuo, Wei, 2013) "...The essence of sustainable development is creating environmental and social conditions for earth enduring system, so that can benefits mankind. It clearly indicates the absolute dependence of human on earth enduring system". The sustainability development can be seen as an additional requirement in the development of organization processes and achieving the objectives of the enterprise (Ivascu et al., 2014; Moraru et al., 2010). The concept of sustainable development leads to the analysis of the factors which contributed to the changes in the environment and in the health of the population due to polluting of the water, air, ground and others. These decisive factors are especially the greenhouse gases which release carbon dioxide and methane into the atmosphere. Greenhouse gases (GHG) are developed in the environment following natural processes and human activities. Water steam is the most frequent in the atmosphere.

Supply chain is defined and interpreted within the literature by several authors. Ganesh and Harrison (1995), define the supply chain as "a Network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers". Chopra and Meindl (2003) highlight that "a supply chain consists of all stages involved, directly or indirectly, in fulfilling a customer request. The

supply chain not only includes the manufacturer and suppliers, but also transporters, warehouses, retailers, and customer themselves”. In 2011, based on Hugos, five major factors within the supply chain which interact amongst them are presented. Green supply chain management (GSCM) has already won an increased interest within researchers and companies (Ojo, 2013; Darnall, 2008; Sheu, 2005). The growing importance of this concept is due primarily to the deterioration of the environment, inefficient waste management and diminishing raw material resources. Adding the term “green” to supply chain implies approaching the supply chain from the traditional perspective by corroboration/combination with the natural environment. Zhu et al. claims that GSCM can be considered as an environment innovation. Zhu and Sarkis highlight that GSCM has ranged from green purchasing to integrated supply chains starting from supplier, to manufacturer, to customer and reverse logistics, which is “closing the loop”. Srivastava (2007) said that GSCM can be defined as “integrating environmental thinking into supply chain management, including product design, material sourcing and selection, manufacturing process, delivery of the final product to the consumers as well as end-of-life management of the product after its useful life”.

Transportation, as a component of supply chain has a significant impact on the environment (Coyle et. al., 2010; Cioca et al., 2015). Transportation is a complex contributor to national greenhouse gas emissions, and can be part of the Nation’s solution to the climate change challenge. The Intergovernmental Panel and Climate Change (IPCC) estimates that in the absence of adopting some policies and solutions to reduce GHG, emissions will increase to 110% between the years 2000 and 2030. The IPCC projects that global temperatures will rise between 2°F to 11.5°F by 2100, and global sea level will rise between 7 to 23 inches. More recent estimates that include the effects of polar ice sheet melting suggest a possible 3 to 4 foot sea level rise. IPCC said that, global GHG emissions must be reduced to 50 to 85 percent below year 2000 levels by 2050 to limit warming to 2.0°C to 2.4°C (3.6°F to 4.3°F). To reach this target, GHG emissions from all sectors must be reduced through a multi-generational effort (Report US, 2010).

## Conclusions

China's consumer green product consumption. To fully consider the urgency reality of the construction of the green supply chain, improvements will be needed in the following aspects: improve and strengthen the understanding of the green supply chain management, accelerate the implementation and promotion. At present, the understanding of green standards by government, enterprises, consumers, industry associations, social organizations and other aspects has not yet to be enough. Integrating the existing standards, laws and regulations relating to environmental management, and establishing and improving the standard system of green supply chain with strength and effort of all aspects can vigorously promote and implement on a national scale. Strengthen the construction of standard system and talent cultivation. The standard construction of green supply chain is very difficult and involves many factors, such as policy level, legal level, professional level and so on. It is necessary to establish a set of norms, integrity, strong operational procedures. To implement and promote these, a large number of highly qualified professional and standardized talents are also needed. With the sustainable development of economy in our country, the enterprise's demand for green technology and talent is increasing. So it is urgent to guarantee the organization and personnel strength. Improve the standard system of China's green supply chain. Sort out the existing green supply chain management related standards to preliminary establish China's green supply chain standard system. Achieve collaborative development and coordination through the government and market predominantly formulating. It is necessary to make full advantage of enterprises standards and group standards to shorten the average standard development period and to speed up the improvement of the standard system of China's green supply chain. Accelerate the access of China's green supply chain standards to international standards. Under the background of the speeding up of Globalization, the environmental compatibility of manufacturing industry is a significant prerequisite.

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**DEVELOPMENT  
OF RESTAURANT  
AND HOTEL  
BUSINESS IN THE  
CONDITION OF  
THE COVID-19  
PANDEMIC**

Due to the crisis caused by the COVID-19 pandemic, Ukrainian business in 2020 is on the verge of survival. The economic downturn, declining purchasing power and changing behavior of citizens, inefficient support from the state have led to a reduction in production, or even the shutdown of entire sectors of the economy [8].

One of the economy's sectors that has suffered the most from the strict quarantine restrictions caused by the spread of COVID-19 is the hospitality industry. Closure of state borders, cancellation of air connections, restriction of movement within Ukraine, between regions and absolute isolation of countries from each other have provoked many problems in the hotel sector [6]. While the needs of social distancing, the ban on visiting public places to prevent congestion, reduce its solvency, restrictions on travel and mobility, have led to the temporary closure of many restaurants [13]. Over time, the process of resuming hospitality and slightly easing quarantine restrictions has begun: for example, allowing restaurants, cafes, and low-capacity bars to operate in strict compliance with social distance guidelines, and gradually reducing restrictions on domestic and foreign travel [13], however the demand for hospitality services has decreased significantly.

The hotel industry was the first to feel the effects of the active phase of quarantine. The hotels were completely closed for two months. The hotel business has suffered significant losses due to the

need to refund for canceled bookings (for chain hotels the amount was millions UAH) [8, 12]. The quarantine restrictions also affected tourist, resort, recreational and health facilities (camps, sanatoriums, boarding houses, health complexes), which almost completely ceased their activities [2].

During the quarantine period, hotels tried to reduce the cost of maintaining the number of rooms (by closing the floors, turning off the elevators), but this did not significantly reduce the cost of utilities. In addition, hotel owners have been forced to reduce costs by implementing measures such as staff reductions and/or salaries, forced leave [14]. Unfortunately, up to 25 % of staff who were not satisfied with such working conditions resigned and changed their field of activity, realizing the vulnerability of the hotel and restaurant business during such a crisis [8].

Analysis of the results of the survey from Colliers International (Ukraine) and Vertex Hotel Group showed that the losses from quarantine from March 13 to April 3, 2020 are estimated at significant amounts: 40 % of 5\* hotels mentioned losses of 3 million UAH, 10 % – more 8 million UAH. More than half (60 %) of representatives of 3\* and 4\* hotels estimate economic losses from 500,000 UAH up to 3 million UAH, 70 % of respondents representing hotels of other categories estimate losses up to 500 thousand UAH [6].

During the period of adaptive quarantine (from June 2020), tourism gradually began to recover. Restrictions on movement (closed borders) have contributed to an increase in demand for holidays in Ukraine, which has led to a slight improvement in the occupancy of accommodation in traditional Ukrainian resorts. However, an important deterrent to domestic tourism was the psychological factor (fear of COVID-19 infection) [2]. The results of a study conducted by the editorial team of the Journal of Hospitality Marketing & Management [13] show that only 18 % of hotel consumers feel comfortable when staying at a hotel when traveling, when the incidence of coronavirus is low in this locality. About 17 % of respondents said they would use hotel services when the COVID-19 vaccine became available. The main trends in the hotel business, which took place during the quarantine restrictions, according to the research presented in [15], include:

- 1) the segment of five-star hotels suffered more than four- and three-star hotels, due to a sharp drop in the flow of foreign tourists to Ukraine;
- 2) during the second wave of the crisis, urban business hotels, which lost 75 to 90 % of their guests, and hostels, which did not have the opportunity to comply with anti-epidemic requirements, had the hardest time;
- 3) almost complete reduction of conference services due to the lack of adequate halls (20 square meters per a person in the “orange” zone) and a high risk of organizing large-scale events due to the risk of getting into the “red” zone at any time;
- 4) quite good results of country hotels, where guests spent their holidays. Many of them were loaded by 80-100 % actually from the beginning of quarantine until the end of the summer;
- 5) hotels in Yaremche, Slavske, Verkhovyna, Bukovel functioned with good net profit indicators;
- 6) the season was successful for the objects of the Black Sea coast of the segment “medium plus” and above. There was also a high demand for domestic leave from mid-June to the beginning of the school year in Ukraine. In summer, the average occupancy of hotels in Odessa was from 60 to 75 %. Hotels on the Sea of Azov also had a significant occupancy rate, and those that were able to provide nominally separate accommodation (cottages or houses) were generally loaded at 70-85 % [15].

Restaurant business in Ukraine, unlike a number of other countries, did not receive state aid, entrepreneurs were alone with the crisis [5]. Due to the coronavirus pandemic from March to May 2020, a large number of domestic restaurants were temporarily closed, only some continued to work exclusively in the mode of delivery or issuance of orders “to go” [2]. The introduction of targeted delivery services for food companies did not significantly affect their income under quarantine – delivery allowed to compensate only up to 5 % of total profits. The situation was a bit better with establishments that had a car service line (like McDrive of McDonald’s). At the beginning of the quarantine, their profits decreased by only 25 % due to a significant increase in car traffic [8]. At the same time, due to the decline in the solvency of the

population, instead of visiting restaurants, a significant number of Ukrainians began to prefer home-cooked meals [2].

The opening of summer terraces in mid-May, according to a survey of restaurateurs, allowed to restore about 20-30 %, and by the end of the summer – up to 50 % of revenues compared to the planned figures. However, restaurants operating on the basis of shopping centers were closed for the longest time - almost 6 months of quarantine. The dynamics of profitability of such institutions after the opening showed a decline of up to 60 % compared to last year [8]. At the beginning of July, only 86 % of pre-crisis cafes and restaurants in Ukraine resumed operations [2]. Until the end of 2020 and in January-February 2021, the network of restaurants continued to face a large number of visitors due to quarantine restrictions, periodic lockdowns, the departure of a significant number of people from regional centers to other regions, their transition to remote work, etc.

The state of hotel and restaurant business in modern conditions is of considerable scientific interest. In today's environment, the focus of research by researchers in marketing and management in the field of hospitality, as well as specialists in this field, is aimed at developing new solutions to maintain competitiveness and ensure the efficiency of the hotel and restaurant industry.

Thus, the critical situation determines the search for ways to restore the effective operation of enterprises, one of which may be the growth of innovation activity. In the hotel and restaurant industry, innovative business models cover the full range of traditional business upgrades, including new product and service offerings, as well as technological, managerial and marketing innovations [3].

For hotel and restaurant enterprises, hygiene and safety are the most important factors in shaping future demand. The availability of disinfectants (such as sanitizers at the entrance, staff in masks and gloves), social distancing, limiting customer service, more thorough and frequent cleaning of surfaces in public areas, employee training are the most important safety measures that consumers expect from the restaurant and hotel [13; 14]. These safety measures increase the cost of labor protection; however, hoteliers and restaurateurs cannot compromise on these costs to support their business. Thus, according

to opinion polls [14], about a third of visitors to restaurants and about 40 % of hotel guests are willing to pay more for improving safety.

Quarantine restrictions have also significantly affected the digital transformation of the hotel business through the introduction of electronic document management and an increase of up to 50 % in the number of online bookings through external services [8] order to preserve the hotel business and its development in the face of the loss of a large number of potential consumers, it is necessary to properly select the hotel strategy, which is based on a correct assessment of the price-quality ratio of the proposed hotel product. According to research by scientists [6], such strategies include:

1) differentiation of the hotel product, i.e. adding to the existing basic and additional services of new consumer properties, the most valuable in terms of potential guests;

2) diversification of the hotel product, namely increasing the level of quality and safety of hotel service; simplification of the algorithm of booking, registration, as well as settlements with customers; ensuring compliance with modern environmental, sanitary-epidemiological and other norms; providing the hotel product with new consumer properties that increase social status, prestige for the guest;

3) search for opportunities to simultaneously reduce costs and differentiate the hotel product or provide potential consumers with hotel services with greater consumer value without changing the pricing policy;

4) meeting the needs of certain target groups of consumers of hotel services, for example, in accordance with the geographical location or classification of the hotel enterprise to a separate type, category (for small capacity hotels);

5) the formation of strategic alliances of hotel enterprises through the conclusion of a cooperation agreement that goes beyond the contractual relationship between the two means of accommodation – partners, but does not provide for the merger of the hotel enterprises;

6) the presence of standardized algorithms for the production and sale of hotel products, as well as operational hotel management in the form of a management agreement or franchise agreement between the hotel operator and the owner at the expense of accommodation [6].

It should be noted that in modern conditions the application of these areas of strategic planning is promising in the activities of not only hotel enterprises but also restaurants..

One of the effective way to revive the restaurant business in a pandemic is to organize quality and safe services of targeted delivery of products [7]. According to the Rewards Network, the cost of running an in-house delivery service generally ranges from 0 \$ to 10,000 \$, averaging 1,923 \$. However, the use of third-party delivery services for some restaurants is not cost-effective due to exorbitant fees, which are usually charged by companies and some other factors [11]. For example, in Ukraine, delivery services have too high prices – on average 30 % of the order amount. Marketing research has shown that the UberEats delivery service has left Ukraine, there are many complaints about Glovo, Raketa is still the strongest delivery service, but has set a high percentage for services – almost 40 % [5].

Among the new trends in the activities of restaurants using the service of targeted delivery of culinary products or “take away” are relevant to the following marketing tools [7; 9; 10]:

1) stimulating “take away” – providing significant discounts, adding free meals or gifts for consumers who pick up orders directly at the restaurant;

2) encouraging guests to the next visit – with each delivery or order “take away” establishments recommended to include in the order a coupon or gift card, the use of which is possible during the next visit to the restaurant;

3) free dishes for children – offering free meals from the children's menu when ordering food for adults is a great tactic to increase the amount of the check, especially during distance learning in schools and closing kindergartens for quarantine. Yes, parents may be more inclined to choose such a restaurant instead of a competitor's restaurant, if they know that the child's food does not require additional costs;

4) “more - better” – an offer for consumers to order food in bulk with delivery or "takeaway" with explanations of how to store them and add instructions for heating, which is a stimulus to make large orders;

5) delivery without contact with the courier – a service that was popular during the strict quarantine, still remains relevant. When

providing it, the employee leaves the package with the order on the hood of the car or at the door, having previously called or rang the doorbell;

6) the evolution of packaging design for branding and protection against courier encroachment – back in 2017, a US Foods study found that almost 30 percent of drivers who deliver food have tasted the food for which they are responsible. However, during the COVID-19 era, secure packaging became an extremely important necessity for restaurants and food delivery services.

An integral part of the operation of restaurants and hotels in the current realities and the near future is the integration of digital technologies in the hospitality industry. Their use for the provision of restaurant and hotel services in the COVID-19 environment is due to the need to minimize human contact. In particular, such technologies include: office work, contactless payments, such as Apply pay or contactless bank cards, digital menus that can be viewed on personal mobile devices using QR-codes, contactless digital payments, organization of “electronic tips”, keyless entry, contactless elevators, etc. [13].

In a pandemic, restaurateurs should pay more attention to Internet marketing tools that promote the restaurant product, the company itself and its brand through the use of social media (SMM) [7]. The implementation of effective SMM today is an important factor in the successful operation of hospitality companies to attract more fans, expand the target audience, develop, improve and protect the reputation through the formation of consumer loyalty to the brand. Popular platforms used by the population include social networks (Facebook, Instagram, Twitter, LinkedIn), video hosting (YouTube), individual messengers (Telegram, Viber, WhatsApp) and others [1; 4].

In the management of crisis management, restaurant businesses are promising to use digital marketing methods such as contextual advertising Google Adwords (various ads (text, graphics, video), which are displayed to users according to their search queries, interests or behavior on the Internet) and retargeting. That is, advertisements are aimed at the target audience of users who have already interacted with the restaurant business: visited the site, browsed the restaurant menu, began to place an order, but did not

make a positive decision to order [4].

In order to minimize the consequences of losing visitors, some restaurant chains under strict quarantine have expanded their offerings by developing and launching their own brand of semi-finished products (Lviv chain “! FEST”) [8], which is relevant given that a large proportion of the population began to give preference for food at home.

The use of remote technologies is effective to keep restaurants in touch with consumers during a pandemic. For example, services of this format include interactive cooking classes online or on social networks, where it is possible to communicate with chefs without leaving your home; virtual themed events, including online themed parties, virtual game evenings or quizzes with themed recipes that viewers-consumers of a restaurant, cafe or bar can prepare at home [9].

An important activity of the hotel and restaurant business is also their social orientation, which is to inform the customer base about the security measures taken, special offers, as well as the adaptation of institutions to the situation in the industry, which is constantly changing [7].

Thus, the hospitality industry is now facing the biggest test in recent times. The changes taking place in the modern world as a result of the coronavirus pandemic are causing a transformation in the behavior of consumers of hotel and restaurant services, which are becoming more cautious and demanding. The issue of finding optimization of the functioning of hotel and restaurant facilities during quarantine restrictions is quite acute. Summarizing the results of the study suggests that in a pandemic COVID-19 the most effective tools for crisis development of the hospitality industry is the development and implementation of plans for innovative strategic activities, namely the differentiation and diversification of hotel and restaurant services, cooperation between institutions, modeling new ways, organization of safe customer service, providing quality delivery, active use of Internet marketing and remote technologies.

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## CONCLUSION

The unexpected global coronavirus pandemic COVID-19 has brought about rapid changes in the global economic and social environment. Authorities in various countries have imposed emergency measures in the field of health care, severe restrictions on social communication, economic activity and isolation of the population to counter the spread of coronavirus. Such measures have dramatically affected the functioning of socio-economic systems, economy, employment. There was a decline in national economies and a growing recession. Large-scale quarantine restrictions in many countries, the cessation of business, the collapse of economies and international trade – all this can be described as pandemic shocks, significant changes in the conditions and content of economic and social activities.

Economic shocks arose as a result of the simultaneous action of a natural factor – coronavirus – and the resulting reactions of governments, international spread. To some extent, the economic shocks are the result of the reaction of the population, economies and government policies to the unexplored threat of coronavirus COVID-19. At the same time, economic shocks are closely linked to other risks, which in turn affect the state of national and international economies, uncertainty of economic processes and regulatory measures. Pandemic economic shocks have provoked an economic recession in the world and require the developing of new approaches, strategies and mechanisms for managing socio-economic systems.

The results of the authors' research in the scientific monograph are devoted to solving problems transformation of management of socio-economic systems, forecasting the impact of the pandemic on socio-economic processes, the formation of modern strategies to overcome challenges and threats to society and economic entities.

An important component of the scientific monograph is the formation of anti-crisis system management and innovative business models, social responsibility of trade and consumer loyalty in a pandemic, the use of modern information technology in education and the creation of innovative entrepreneurial universities, development of logistics infrastructure, adaptive

management and economic behavior modeling of economic entities, formation of the tax system and fiscal policy, further development of industry and competitiveness, the impact of the pandemic on further European integration ties, widespread use of e-commerce and Internet-marketing, further development of various businesses, the impact of the pandemics on various sectors of the economy (trade, road transport, restaurant and hotel business, energy, etc.).

The research results presented in the scientific monograph reflect the theoretical and practical aspects of implementing modern developments and approaches to further recovery of socio-economic systems and ensure their effective management in today's global challenges, adaptation to unstable environmental conditions and market conjuncture, optimization of the resource potential of economic entities, the introduction of modern innovation processes, digitalization of socio-economic processes, the use of marketing tools, and modern forecasting methodology and build of economic-mathematical models.

It is established that the effective use of modern approaches to management of socio-economic systems is an important element of introduction of innovative processes by economic entities, formation of their competitive advantages, which allows to improve anti-crisis and adaptive management based on controlling, transformation of accounting and analytical support system of economic entities, diagnostics of resource potential of economic entities.

Overcoming the crisis of socio-economic processes in the context of modern world challenges provoked by the COVID-19 pandemic, and creating conditions for sustainable further recovery of economic entities are aimed at structural changes in promising sectors of the economy. At the same time, economic diagnostics of the existing potential of socio-economic systems, rational use of available resources, which demonstrates the real state of problems and allows to develop organizational-economic mechanisms for ensure competitiveness and marketing management, developing strategies to overcome pandemic crises based on modern socio-economic forecasting methodology.

The scientific monograph uses modern methods and

technologies for assessing crisis phenomena and threats, as well as crisis modeling, and developed scenario forecasts for effective management of socio-economic systems in the post-pandemic period. Innovative business models of the circular economy, modeling the behavior of economic entities, regression approach to the analysis of sustainability of fiscal policy, web-based management systems, LEAN method in the study process have found their application.

Developed and proposed practical recommendations for overcoming the negative consequences of the pandemic and further recovery of socio-economic systems, in particular, the development of nanoinnovation processes in modern socio-economic systems, mechanisms for consumer loyalty and consumer behavior, ideas management, financial stability, social protection.

Promising directions for overcoming the pandemic economic crisis in the future, according to research in a scientific monograph, are the implementation of strategies for forming new innovative business structures, energy security, supply chain optimization, development of the most affected sectors of the national economy from the pandemic, ect.

The pandemic created uncertainty about the situation with COVID-19 in each country, as well as about the possibilities of overcoming the pandemic. Uncertainty remains a fundamental systemic feature of the current situation. In order to counter global pandemic shocks, current policies must focus on preventing the spread of coronavirus and gradually reducing restrictions on businesses and populations. Short-term measures should be aimed at restoring business and consumption, stabilizing the fiscal state. Medium-term measures should focus on macroeconomic stability, external balances and sustainable economic growth. Structural reforms and innovation are important in long-term sustainable growth policies. The pace of recovery will depend on the effectiveness of public policy in both addressing existing risks and overcoming fundamental systemic problems.

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