HERALD

of Kyiv National University of Trade and Economics

Scientific journal

It is published six times a year
First was published in February 1998

№ 6(128)2019

To October 2000 had been published under the title "Herald of Kyiv State University of Trade and Economics"
Journal is recognized by HAC of Ukraine as special edition on Economic Sciences

Founder, edition, publisher and manufacturer
Kyiv National University of Trade and Economics.

Managing Editor – OLIUNINA S.
Editors: KYRYCHENKO E., RASSKAZOVA I.
Artistic and Technical Editor ANDRUSHKO S.

State registration certificate
Series KV № 13100-1984PR of 23.08.2007.

Index of the magazine
in Catalogue of publications in Ukraine in 2020 – 21910

Signed 17.12.2019.
Conventional print. pages. 10,1. Circulation 250. Order 842.

Address of the Editorial board, publisher, manufacturer:
st. Kyoto, 19, Kyiv-156, Ukraine 02156.

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Printed on equipment of KNUTE.
Certificate of subject of publishing industry
series DK № 4620 of 03.10.2013.

Published on the recommendation
of the Academic Council of KNUTE
(minutes № 3 of 21.11.2019).

The journal is represented in international and national scientometrical databases such as Index Copernicus, *abstract database* Ukraine Naukova *and in search system of* Google Scholar.

Kyiv · KNUTE · 2019

C O N T E N T

GLOBAL ECONOMIC RELATIONS

MANAGEMENT, MARKETING

FINANCE

С О Д Е Р Ж А Н И Е

ГЛОБАЛЬНЫЕ ЭКОНОМИЧЕСКИЕ ОТНОШЕНИЯ

МЕНЕДЖМЕНТ, МАРКЕТИНГ

ФИНАНСЫ

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ГЛОБАЛЬНІ ЕКОНОМІЧНІ ВІДНОСИНИ

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UDC 339.5:338.3=111 DOI: http://doi.org/10.31617/visnik.knute.2019(128)01

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INTERNATIONAL TRADE IN THE CONTEXT OF SPREADING PRODUCTION NETWORKS

It has been proved that during global production fragmentation, the economic entities gain access to new technologies, forming a new system of international economic relations where protectionism is unacceptable to all members of the network. the obtained conclusions are recommended for considering for economic policy of the key entities of international production networks functioning in the XXI century.

Keywords: regulation of international trade, preferential trade agreements, international production networks, production fragmentation, multinational corporations, WTO.

Мазараки А., Дугинец А. Международная торговля при распространении производственных сетей. *Доказано, что в процессе фрагментации глобального производства экономические субъекты получают доступ к новым технологиям, формируя новую систему международных экономических отношений, в которой протекционизм неприемлем для всех участников сети. Полученные выводы рекомендованы для учета в экономической политике ключевых субъектов функционирования международных производственных сетей в XXI в.*

Ключевые слова: регулирование международной торговли, преференциальные торговые соглашения, международные производственные сети, фрагментация производства, транснациональные корпорации, ВТО.

Background. Since the early 1990s, the structure of world production and trade has undergone some changes. Thus, the reduction in trade costs due to the spread of technological progress and total trade liberalization has led to the expanding and deepening of production fragmentation around the world. This, in turn, has reduced the barriers in the sectors that support

the international production networks (IPN) operation (transport, finance, telecommunications, etc.), leading to an increase in the internationalization of certain links (see [1] for more details). Considering the global nature of production, investment, and trade, the government of any country, including Ukraine, needs to understand which factors are facilitating or slowing participation in the IPN. *Firstly*, it is about the work quality of institutions and infrastructure, the availability of incentives for investors and firms operating in the local market, the level of corruption. The foregoing affects investment decision making for entering the IPN, which is formed by several factors. First, the complication of the international division of labor process (IDL), which went into the intra-sectoral division due to production fragmentation processes spreading beyond national economies. *Secondly*, the acceleration of scientific and technological progress and technological change, which serve today as the basis of international production and the driving force of world trade.

Consequently, in the XXI century, due to the above factors, the production processes transformation took place that resulted in changing from natural resources (in particular, land and relatively unskilled labor) to human-created assets (buildings and structures), and then to insensitive assets (knowledge and information). Thus, according to the United States Bureau of Statistics, in 1950, 80 % of the value-added in US industrial production was primary either the processed materials or raw materials themselves, and just 20 % of the value-added was the knowledge itself. Before the year 2000, the proportions had changed significantly, accounting for 25 % and 75 %, respectively [2]. Besides, in the book value of assets, the market value component of companies has been declining lately. Thus, for most companies, the ratio of intellectual/ or innovative capital to physical and financial is 5:1 to 16:1 [3]. The change in the value structure, its fragmentation through across countries fragmentation, and the complexity of defining its volume by network links has raised the issue that not only trade statistics but also trade policies require revaluation and updates to reflect the new structure of world trade for expansion of international industrial networks. It should be noted that the current trade rules were created for the terms of the XX century when most of the goods were produced mainly in one country. But in the twenty-first century, these rules do not fit modern models of international trade, as expansion of production fragmentation has led to the dichotomy between the trade realities and its regulatory framework at the WTO level.

Traditional approaches to assessing economic effects resulting from the formation of international production networks are losing their relevance, given that in the context of large-scale multilateral and bilateral reduction of tariff barriers, the real causes of production fragmentation processes development are related to the institutional changes and the elimination of non-tariff barriers for enhancing competitiveness of foreign recipient countries in terms of multiple cross-border movement of intermediate goods and services. The problem is compounded by the fact that countries use different

rules to determine the country of goods origin. In addition to the generally accepted criterion of sufficient processing, other criteria, such as changes in tariff classification, ad valorem percent, etc. are also applied. Domination in the trade flows of intermediate goods and services, intellectual property rights, a growing share of the import component in exports are transforming requirements for the content of the trade policy. The complexity of trade's structure and nature requires adequate institutional support, which guarantees the rights of investors and right holders of all types in all links of the IPN. On the other hand, modern Preferential Trade Agreements (PTA) is an important argument in making decisions by major companies to locate a particular production abroad. But the variety and complexity of rules for determining the country of the origin of the goods lead to regulatory fragmentation, creating trade barriers, increasing costs and, consequently, the final cost of goods to consumers. Therefore, further regulation system transformation of international trade towards harmonization and simplification of rules of the origin of the goods will stimulate the formation and development of production networks in the world economy.

Analysis of recent research and publications. In the modern scientific literature, a considerable number of publications are devoted to the study of the effects of the productions' formation in world economy. The implications identification of country involvement in production fragmentation processes, the assessment of value flows and some aspects of coordinating the operation of IPN are discussed in K. DeBacker and S. Miroudot [4], G. Gereffi and D. Wyman [5], R. Stöllinger [6], R. Johnson and G. Noguera [7]. It should also be noted that different institutions create competing tables, each designed for a specific analytical purpose, so their presentation format, industry classification and types of supporting information are different. In the issue of the World Expenditure Tables and their international (interregional) modifications, cross-border trade flows are decomposed into components of analogous transactions between industries and end consumers within the national economy. Typically, the task is to identify the value-added of national and foreign origin in the aggregate exports of a particular country. For example, in October 2015, based on TiVA, OECD-WTO calculations, in absolute terms, gross exports from Germany and Spain, as well as France and Poland, increased most significantly from 1995 to 2011 [8].

Such a significant delay in providing information is due to the high complexity of its processing, as well as to the frequency of calculating Cost-Production tables by individual countries since they are not calculated annually in all countries. It should be noted that in these statistical databases there are no data on the Ukrainian economy, and in general, as of October 2018, there are data for almost 70 countries up to 2011 (TiVA) and 43 countries until 2014 [8].

Another feature of international production networks research is related to TNCs' investment activity, which has a significant impact on value-added trade [9–12]. It was given that factors that determine value-added trade can

equally influence FDI, it is important to consider the nature of the latter. Thus, the FDI aimed at gaining market share or providing proximity to the consumer is more likely to lead to a decrease in value-added exports from the investor country (exporting country). Different requirements for the localization level can similarly be affected. On the other hand, the country that FDI may increase value flows to partner countries that have previously cooperated with the exporting investor [13].

The innovative economy development has led to a dynamic increase in the number of corporate integration and merging, as well as creation of alliances in the 1990s, followed by the new category formation, the "alliance economy". This is the main factor determining the level and direction of foreign direct investment (FDI) at the present stage. By integration and merging each other, companies have an impact on the development of individual markets and the economic policies of individual countries. The last decade of the XX century differed by a high number and high cost of the integrations and merges. For example, UNCTAD's integration data, merging and non-ownership cooperation agreements show that direct investment, licensing, franchising and other corporate alliance schemes were advancing [14].

In terms of the sectoral structure of cross-border integration and merging, the highest share of such transactions is in high-tech industries. For instance, enhancing the effectiveness of TNCs through integration is particularly acute in the automotive sector, where the primary integration purpose is to achieve optimum vehicle production. Over the past twenty years, automakers have either consolidated through merging or integration into strategic alliances. It was given that the automotive industry has limited growth potential, which results in the volatile dynamics of the automaker's financial performance; it is precisely the integration and merging that allow overcoming the growth potential barrier.

A considerable number of agreements were concluded in the telecommunications, aviation and pharmaceutical sectors, which allowed for the distribution of R&D costs and the necessary synergy from the agreement. It should be noted that virtually all major pharmacological companies use integration and merging to consolidate their competitors by merging competitors as they increase the cost of developing new drugs and as a growth strategy (e.g., Aventis, AstraZeneca, Glaxo Smith Kline, Aventis-Sanofi).

International organizations such as UNCTAD [15], the World Economic Forum [16] and the Group of Twenty have also been involved in discussing the topic of value-added through international trade mechanisms. In September 2013, the Heads of State and Government of the G20 were presented with a joint OECD, WTO and UNCTAD report on the results of global product chain analysis, their relationship with trade and investment, job creation and economic development [16].

In 2016, the United Nations Economic Commission for Europe prepared a report on "Global Manufacturing Measurement Guide", which continues the logic of the report "The Impact of Globalization on National Accounts",

although in the former case, more attention is paid to multinational enterprises involved in global production [17]. It should be noted that recently IPN includes companies that specialize in the production of individual components of a particular end product. That is, the world production represents groups of subsidiaries and branches of the same multinational enterprise that are linked together in a global production chain. This type of international corporate structure is mainly addressed in the Global Manufacturing Measurement Guide. Also, at the end of 2017, the WTO website published a report "Global value chain development report 2017" [18] with main purpose to identify the changing nature of international trade it in terms of expansion of international production networks (available for 1995–2014).

Notwithstanding the significant contribution of existing developments in research of economic effects of international production formation, it should be noted that there is another aspect that must be considered when analyzing the distribution of value among network members. This is a value assessment of concluding (or having) regional trade agreements on trade between elements of the network, which is located mainly within the territories of the parties to this agreement.

Thus, this article's **aim** is to identify the regulation features of world trade for the expansion of international production networks.

Materials and methods. The complex of complementary methods of scientific research of economic processes and phenomena was used to realize the research's purpose: system-structural, comparative analysis, comparative and statistical analysis; territorial, resource, information, process and institutional approaches for analyzing formation and functioning of international production networks. The research's information base includes statistical and analytical materials and information-analytical collections, newsletters and reviews of international organizations; information materials of national and international research centers; a wide range of local and international literature sources, results of own scientific researches, analytical and informative materials from open sources.

Results. Most commonly, a trade agreement is the result of increased economic ties between companies in different countries (which may be reflected in increased trade intensity between the partner countries). In other words, the economic integration is not only a legal tendency towards production fragmentation and trade processes within a certain region but also the result of the interaction of economic entities of different countries, combined by geographical, linguistic, cultural proximity, similarity of business practices and their state regulation features. It should be noted that at the time of signing the GATT, no trade agreement has been concluded in the world. But between 1948 and 1994, 123 notifications were sent to GATT, of which 49 regional trade agreements were registered: 45 for goods and 4 for services [19].

The growth dynamics analysis of regional trade agreements in the years 1948–2015 shows a marked increase in the number of integration associations since the 1990s [19]. It was at this time that most of the integration

blocs were formed, such as MERCOSUR (1992), FTA Agreement between ASEAN countries (1992), EU (1993), NAFTA (1994). Most agreements were created as a free trade area with 262 valid agreements; other forms are customs union, economic integration, and agreements in a particular area. Thus, FTA agreements between countries are the most widespread in the world, accounting for almost 60 % of the total preferential trade agreements. But this research will further use the term "preferential trade agreement" to mean all trade agreements that are the subject of granting preferences in trade between countries, both unilaterally and on a reciprocal basis. It should be emphasized that most of these agreements in the XX century aimed at trade-in end goods when the exporter aimed to penetrate the market of the partner country to the detriment of the protectionist interests of the national producer. In the context of global fragmentation, where the share of imported components in most countries' exports is more than 60 %, both sides are interested in reducing barriers to trade. The effects of tariff- and non-tariff barriers will be proportional to the number of times the product crosses national borders due to the different production stages being located in different countries.

In recent years, bilateral preferential trade agreements have been the most widespread, with countries not located close geographically but with similar economic and political interests. Thus, according to WTO statistics, the number of agreements concluded between developed and developing countries, so-called North-South agreements, has increased. In the total number of transactions, they represent 50 % agreements, with "South-South" – 40 % and "North-North" – 10 % [19]. This tendency can be explained by increasing fragmentation in these areas, as well as the wish of developing countries to make progress by transferring technology from developed countries. And in the 21st century a new type of preferential trade agreement is being formed, which stipulates, on the one hand, an obligation on a contractual basis to accelerate customs and border procedures, and on the other, an obligation on institutional and legislative changes in national economies, namely: in investment, services, competition, intellectual property rights, labor and the environment.

PTA provides countries with benefits in both trade and economic spheres: reducing tariff barriers and liberalizing non-tariff regulation assist to increase trade, develop cooperative links between countries, and create value-added chains. Therefore, the signing of the agreement can be a tool to protect both the already functioning international production network and the impetus and condition for the development in the territories of the partner countries of new IPN. However, another option is that simplifying access to a more favorable institutional environment or to higher quality services that have an increasing role in the production process will cause the relocation of production, thereby altering value-added routes and reducing value-added exports from the country (which is part of the integration group).

World experience confirms that PTA is one of the important aspects of embedding in the IPN (along with the formation of advanced scientific and technological base, availability of a developed system of institutions).

The main feature of trade facilitation networks is their complementarity, that is, agreements aimed at creating the most favorable conditions for cross-industry cooperation, importing components into countries and exporting the final benefits from them. All EU countries, as a single integration group, pursue similar goals for free trade negotiations with third countries. A large part of the PTA is concluded by the EU on the WTO + principle, i.e. agreements cover, in addition to tariff preferences for trade in goods, the issues of regulating trade in services, conducting joint investment projects, harmonizing approaches in human rights, working conditions, etc. This creates the right conditions for IPN formation in partner countries since their development is impossible without an effective system of protection of intellectual property rights and even low labor costs will not be able to attract production to the country without certain patent protection mechanisms. In this regard, the liberalization between the parties to the agreement is possible, reducing competition from the IPN of other countries [20]. Also, the EU vertical restraint [21] mechanism also ensures their competitiveness under FTAs. Thanks to such regulation, European companies have preferential opportunities to integrate into the international production network, unlike foreign counterparties, given their legal affiliation with third countries. In the end, European (especially German) distributors always have constant contact with manufacturers overseas and virtually never go out of the IPN, while being as close to the target consumer as possible, thus getting most of the value-added that is generated by the network. Confirming the benefits of concluding preferential trade agreements shortly, the EU plans to sign agreements with the US, Vietnam, Thailand, Singapore, Morocco, Malaysia, Japan, India. These bilateral agreements will complete preparations for the formation of an expanded pan-Euro-Mediterranean diagonal cumulation zone between the EU, the Middle East, and the EFTA.

Besides, the Economic Partnership Agreements between the EU and the countries of Africa, the Caribbean, and the Pacific will come into force soon. Trade cooperation based on the Economic Partnership Agreements is envisaged by the Cotonou Treaty and symbolizes shifting from unilateral preferences, which expired in 2007 [22].

The United States and China should also be taken into account as they may sign new mega-regional agreements in the configuration and scale of the issues covered. These include: the Trans-Pacific Partnership (TPP); EU–US Transatlantic Trade and Investment Partnership (TTIP), as well as the Regional Comprehensive Economic Partnership (RCEP), under which auspices China wants to establish FTAs with ASEAN and New Zealand, Australia, India, Japan, and South Korea (countries participating in regional cooperation of ASEAN + 1, ASEAN + 3, ASEAN + 6 formats). If like the TPP, the TTIP and the RCEP will be signed, the share of all mega partnerships will account for more than 75 % of the world trade. Mega-regional agreements, on the one hand, can exacerbate the "stratification" of trade regimes and, on the other, be the basis for initiatives to further integrate preferential zones and move towards a unified trading space.

An analysis of recent years' trends in the formation of mega-regional preferential partnerships, such as TPP, TTIP, RCEP allows to conclude that the main purpose of these agreements is to reach new standards in trade of goods and services, investments, environment, working conditions, intellectual property, fight against intellectual property, corruption and competition. This is first and foremost an attempt to create institutionally compatible legal and regulatory environments for world preferential trade. That is, these agreements can be defined as a tool for maintaining and enhancing the competitiveness of countries for expanding international production networks.

It should be noted that the preferential rules of origin (PRO), which are an integral part of any preferential trade agreement, are of utmost importance for the effective operation of international production networks. But the diversity of preferential PROs creates an additional burden for the customs services and those authorities responsible for administering PTA. Therefore, given the current trend towards consolidation (the Pan-Euro-Med Convention), the application of the most successful means of determining the country of origin for expansion of global manufacturing systems in the context of institutional preferential trade agreements, it can be argued that the mechanism of full accumulation will be most convenient. In other words, simplification and mutual recognition of origin criteria can become a platform for the dissemination of the main mechanisms of preferential rules of origin multilaterally. In this case, however, the question arises as to whether the imported sector merged the imported product in the statistical database; its intended use for intermediate purposes or final consumption and the like.

The lack of progress in the Doha Round of multilateral trade negotiations may be indicative of the inefficiency created in the XX century of the multilateral regulation mechanism due to inability to resolve the XXI century trade issues related to the multiple cross-border movement of intermediate goods, services, capital, intellectual property in terms of international production networks' functioning. The reasons for such inefficiency include the growing number of new WTO members, which has made it difficult to find compromise solutions; strengthening protectionist attitudes in the world after the 2008 global financial crisis; increasing disagreement between countries on the compromise and balance of mutual concessions; the disappointment of private business in the WTO as a place to address their problems related to the trade growth of intermediate goods; increasing geopolitical imbalances in the world. Taking into account the aforementioned, as well as the results of the conducted analysis of available research in this field, *tables 1, 2* outline the main directions of international trade regulation transformation due to the development of international production networks at national and international levels. Considering the fact that the countries' integration level into IPN is different, the most stimulating effect for business is usually achieved when carrying out a set of measures aimed at ensuring economic and political stability, development of human capital, creation of quality national infrastructure of roads, ports, and telecommunications.

Table 1

International trade regulation transformation due to development of international production networks (national level)

Scope	Direction of change	Content of change
Customs Tariff Policy	Approaches and Optimality Criteria	The protection degree calculation must include not only import duties on end products but also duties on the imported components used, in particular cases, when components are protected by a higher rate than the end products.
	Export development	Preventing shrinking and anti-export shifts of promising sectors, which produce high value-added products that occur in case of their continued high tariff protection
Introducing protectionism	Adjusting the model of protectionism	Encouraging imports of raw materials and components concerning the prospective export of end goods
	Protecting the national links of the IPN	Ensuring multiple smooth border crossings, promoting their regulatory systems and protecting intellectual property in the partner countries of the network
	Multilateral Trade Negotiations	Promotion of the Trade Facilitation Agreement (reduction of border crossing costs and costs within Partner Countries), Services Agreement, TISA (reduction of barriers to access to service markets), Counterfeiting Agreement, ACTA (to protect intellectual property rights), etc.

Source: Compiled and supplemented by [18; 23].

Table 2

International trade regulation transformation due to the development of international production networks (international level)

Scope	Direction of change	Content of change
International Economic Integration	Transposition of PTA decisions into the Global Level of Regulation	The issues are aimed at reducing trade costs in affiliate countries' network members (simplifying regulation, limiting local component requirements)
		Measures aimed at protecting functioning IPN (rules of origin, rules of competition)
		Monitor regional negotiations on non-WTO investment and competition issues
Coordinating international trade facilitation	Coordination of "hard and soft infrastructure packages"	Hard infrastructure includes transport, roads, communication, which is necessary for the functioning of a modern industrial country. Soft infrastructure intends to support the country's economic, medical, cultural and social standards
	Strengthening cooperation and coordination between partners	Interaction of countries in coordinated information support of international industrial cooperation
		Avoiding duplication of actions to support regional actions aimed at simplifying trade procedures and programs that include both national and regional aspects (streamlining and harmonizing border crossing procedures on land, reviewing legislation and improving the functioning of transit regimes through regional integration and project integration corridors)

Source: Compiled and supplemented by [18].

The policies implemented to support individual sectors of the economy to assist specific companies are not always of a success. As a rule, it leads to the creation of monopolies, reduced competition, rising costs, which does not allow creating the potential of global or regional competitiveness. Therefore, an approach that covers the entire production chain is required, with trade agreements being only part of that complex of institutional infrastructure that influences the decisions of companies and corporations to fragment their production systems.

Increasingly, attention is being paid to measures at the national level to increase production opportunities and attractiveness for international investors, especially with a focus on education and technical training of the workforce (see *table 1, 2*). During the fragmentation of global production, economic entities gain access to the latest technologies, forming a new system of international economic relations where protectionism is unacceptable to all the network members. It is in the first place contrary to the interests of TNCs and national economies, as international trade is weakened under the high level of customs tariff protection and non-tariff barriers to trade.

There are identified two key points of methodological discourse on determining the directions of international trade regulation transformation for formation and development of the IPN in the example of three countries: A (supplier), B (intermediate production) and C (end consumer), which in future researches can serve as a basis for justification proposals at national and international levels of the regulatory process:

The distribution of value added by the links of international production network:

- when the aggregate output in country B increases, the value-added exported from country A increases to produce goods for the country of end consumption C. On the one hand, the expansion of production/production capacity in country B necessitates a disproportionate increase in value-added exports from country A within the IPN. *Firstly*, due to the increasing demand for goods within the intermediary country (in particular within other production chains), it needs more value-added imports (passing through established channels, that is, within existing GVC and IPN) to meet the same demand (by secondly) in country C. *Secondly*, the higher the output/demand increase in intermediate country B, the greater the increase in value-added exports, which is related to the implementation of research and development, that is, value-added exports embodied in high-tech products to preserve the exporting country's competitiveness in the global market (production chain A-B-C). In other words, it is an increase in aggregate economic capacity of country B within the IPN, which contributes to increasing its ability to export value-added. The greater the involvement of the supplier country in the network of countries with economic potential (including country A itself) in the IPN, the more significant country's GDP change influence on the increase in value-added exports (in particular by realizing the scale effect, improving the effecttiveness of interaction between companies). Further, the FDI implementation in an intermediate country B may increase the country's participation in IPN,

thereby increasing the impact of that country's GDP growth on value-added exports from the country (FDI companies additionally supply the value-added they create in their mother country A);

- the greater the GDP growth in the country of final consumers, the greater the increase in value-added exports from country A (exporting to country C through country B) embodied in both final and intermediate goods (i.e., the greater the value-added is needed for satisfaction of this demand, in particular through the participation of country B). Thus, the FDI implementation in country B may lead to an increase in output and demand for exporter goods, which will increase value-added exports from countries B and C. Thus, an increase in output in the importing country C will contribute to an increase in value-added exports to that country by an increase in exports of business services and services to the population, i.e., by increasing supplies of goods and services not previously supplied to the country;
- the higher the economic and innovative development of country B, the greater the chance of an increase in value-added exports in a particular country B, and the smaller the increase in value-added exports from A to C. This effect is explained by the drag effect [24]: all other countries consume more value from country A (including end goods that are directly exported from A or other routes), as well as increasing the likelihood of a country which value-added imports are more economically profitable for the importing country (e.g., through lower transaction costs). Moreover, the greater (in the previous period) the share of value-added exported from A to C through intermediate country B (i.e., the greater the involvement of the exporting country in the IPN), the more significant the negative impact of changes in the value-added in country B. This can be explained by the fact that other countries, with which partner countries have production fragmentation, are more intensively "dragging" part of the value-added for their industries (and expansion of production capacity in countries A and B is not immediately possible).

Transformation of trade policy to create prerequisites for integration in the IPN:

- the relationship between the development of IPN and forming of preferential trade agreements is bilateral, which, on the one hand, manifests in countries already involved in international production fragmentation, seeking to enter into more widespread and comprehensive PTA with partners for the guaranteed movement of intermediate goods and services. This addresses the barriers associated with suppliers and consumers in third countries that lead to increased costs between trading partners. On the other hand, preferential trade agreements stimulate new production networks, providing simplified trade between the links of the production chain, which requires constant institutional changes to increase the investment attractiveness of the national economy;
- further multilateral liberalization in WTO format at a deeper level in PTA format is a more promising direction for the development of international trade since preferential liberalization is not completely without disadvantages compared to multilateral regulation. Thus, by increasing the number of PTA, there is a risk that, *firstly*, having achieved their goals of liberalization within

the bilateral or regional formats, the most active countries – the IPN participants will not be interested in promoting liberalization at the multilateral level. *Secondly*, there is a paradox in the world practice for the rapid growth of concluded PTA where preferential tariff incentives tend to decline. *Thirdly*, international production networks are expanding in the global economy precisely through multinational universal standards and norms that create conditions for the IPN not to remain predominantly regional. However, it should be noted that further multilateral liberalization in the WTO format will become possible if the expediency of unifying international trade regulation rules goes beyond the business and protectionist interests of individual groups.

It should be emphasized that in many fundamental documents one of the priorities of social, economic and industrial policy is expansion recognition of the country's integration into the world economy based on its integration into the IPN and support of the export of high value-added products. It should be noted that, according to OECD research, the reduction of barriers in the process of production fragmentation can cause a global GDP growth of 4.7 %. This is 6 times more than can be obtained from the complete cancellation of all current import tariffs [25].

So, it could be concluded that in the XXI century the expansion of preferential trade agreements is a certain institutional response to the problems and needs of trade-related to the removal of production internationally. This complicates the task for WTO to carry out its traditional activities aimed at ensuring mutual entering markets. Perhaps the future direction of WTO development will be to find an approach that can facilitate "deep" integration while preserving the principles of non-discrimination and reciprocity**.**

Conclusion. Transformation trends in the global reproduction process regulation in the development of international production networks are characterized, on the one hand, by the extension of preferential trade agreements as a tool to protect and stimulate development in the territories of the partner countries of international production networks links, which increases the tendency to consolidate these agreements and the future of mega-regional trading blocs such as the Transatlantic Trade and Investment Partnership, Regional Comprehensive Economic Partnership. On the other hand, there is uncertainty about the movement of value and value structure across the network links, which leads to discrepancies between foreign trade practices, its normative regulation (obsolescence of WTO principles) and evaluation (lack of information about which sector of the economy consumes imported product, as well as intended for intermediate use or final consumption).

In the XXI century, protectionism is at odds with the interests of both national economies and TNCs, as the former is not profitable to trade with its partners in the IPN and the latter between its structural units for high levels of customs tariff protection and the non-tariff trade barriers. Recognizing this, all parties involved in production networks are seeking to reduce customs tariffs, simplify trade procedures and develop investment cooperation through bilateral or regional trade and investment agreements. Considering that TNCs play a major role in coordinating the international production networks

functioning of TNCs, in the coming years the issue of developing new harmonized rules and norms in trade will no longer be solved by multilateral negotiations of the World Trade Organization, but above all in the negotiations on the trade agreements conclusion that often lobby for TNCs. This is confirmed by the fact that most countries have already joined more than one PTA, and one can assume that all the trends characteristic of the last decade, such as: involvement in global reproductive processes of countries at all levels of economic development in all regions of the world; withdrawal from non-reciprocal preferences in agreements with developing countries; changing the configuration of PTA participants, increasing the number of agreements between existing integration units (e.g. the Pan-Euro-Med Convention), expanding and deepening PTA coverage to determine the nature of trade cooperation in the global economy. It is possible that even after the new opportunities for bilateral cooperation are exhausted, the tendency to consolidate PTA will increase with the emergence of new mega-regional trade blocs.

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The article submitted to editor's office on 30.09.2019.

Мазаракі А., Дугінець Г. Міжнародна торгівля при поширенні виробничих мереж.

Постановка проблеми. *Зміна структури доданої вартості, її рознесення завдяки фрагментації по різних країнах і складність визначення її обсягів за ланками мереж актуалізували питання, що не тільки торгова статистика, але й торгова політика вимагає переоцінки та оновлення з метою відображення нової структури світової торгівлі при поширенні міжнародних виробничих мереж.*

Аналіз останніх досліджень і публікацій *показав, що попри наявність окремих наукових доробок залишається невирішеним питання оцінювання впливу на укладання (або наявність) регіональних торговельних угод за торгівлі між елементами міжнародної виробничої мережі, що розташовується переважно на території країн-учасниць цієї угоди.*

Мета *статті – виявлення особливостей регулювання світової торгівлі в умовах поширення міжнародних виробничих мереж.*

Матеріали та методи. *Комплекс взаємодоповнювальних методів наукового дослідження економічних процесів та явищ з використанням статистичних й аналітичних матеріалів Організації економічного співробітництва та розвитку, Групи Світового банку, Світової організації торгівлі, Європейського бюро статистики, а також результати власних наукових досліджень.*

Результати дослідження. *У процесі фрагментації глобального виробництва економічні суб'єкти отримують доступ до новітніх технологій, формуючи нову систему міжнародних економічних відносин, в якій протекціонізм є неприйнятним для всіх учасників мережі. Усвідомлюючи це, учасники міжнародних виробничих мереж (МВМ) прагнуть до зниження митних тарифів, спрощення процедур торгівлі та розвитку інвестиційного співробітництва шляхом двосторонніх чи регіональних преференційних угод як стимулу розвитку на територіях країн-партнерів ланок міжнародних виробничих мереж. Обґрунтовано, що головною особливістю мереж, які формуються в умовах спрощення торгівлі, є їх компліментарність, тобто угоди, спрямовані на створення найвигідніших умов міжгалузевого співробітництва, імпорту компонентів у країни та експорту кінцевих благ з них. Результати аналізу тенденцій формування у перспективі мегарегіональних преференційних партнерств (Транстихоокеанське партнерство (ТТП) між США, Брунеєм, Канадою, Новою Зеландією, Сінгапуром, Австралією, Мексикою, В'єтнамом, Малайзією, Чилі, Перу та Японією; Трансатлантичне торговельне та інвестиційне партнерство (ТТІП) між ЄС і США, а також Регіональне всебічне економічне партнерство (РВЕП) свідчать, що метою цих угод є формування інституційно сумісних правового та регулятивного середовищ для світової преференційної торгівлі. Проте як інструмент збереження та підвищення конкурентоспроможності держав в умовах поширення міжнародних виробничих мереж різноманітність преференційних торговельних угод з різними правилами походження товарів призводить до нормативної фрагментації, створення торгових бар'єрів, збільшення витрат і відповідно вартості товарів для споживачів. Враховуючи, що основну роль у координації зазначених процесів відіграють ТНК, розробка та обґрунтування нових гармонізованих правил і норм у торгівлі відбуватимуться під час переговорів щодо преференційних торговельних угод, а не в рамках багатосторонніх переговорів СОТ.*

Висновки. *У процесі фрагментації глобального виробництва відбувається формування нової системи міжнародних економічних відносин, в якій учасники МВМ прагнуть до зниження митних тарифів, спрощення процедур торгівлі та розвитку інвестиційного співробітництва шляхом преференційних торговельних угод як інструменту захисту та стимулювання розвитку на територіях країн-партнерів ланок мереж. З огляду на те, що основну роль у координації цих процесів відіграють ТНК, розробка та обґрунтування нових гармонізованих правил і норм відбуватимуться при укладанні преференційних торговельних угод, а не багатосторонніх переговорів СОТ, що актуалізує подальші дослідження в цьому напрямі з метою вирішення питань, пов'язаних з багаторазовим транскордонним переміщенням проміжних товарів, послуг, капіталу, об'єктів інтелектуальної власності тощо.*

Ключові слова: регулювання міжнародної торгівлі, преференційні торговельні угоди, міжнародні виробничі мережі, фрагментація виробництва, транснаціональні корпорації, СОТ.

UDC 339.5.012.42(477:4-6ЄС)=111 DOI: http://doi.org/10.31617/visnik.knute.2019(128)02

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UKRAINE'S TRADE UNDER THE DCFTA: A GRAVITY MODEL

The article analyses the trade performance of Ukraine under the Deep and Comprehensive Free Trade Area (DCFTA). The practical results of the application of the DCFTA provisions on Ukraine's exports to the EU are presented and compares the results of a gravity model with actual trade to determine whether Ukraine's exports to the EU under the DCFTA have performed as expected. The findings follow with both traditional economic theory and ex ante models that expected a significant increase in exports overall and above normal trade growth and yet the reality has shown the contrary suggesting such ex ante modelling is not relevant or accurate for policy makers negotiating such agreements.

Keywords: trade liberalization, the Deep and Comprehensive Free Trade Area, economic growth, tariffs, exports, preferential trade agreements, gravity model.

Хеллаер М. Торговля Украины в рамках УВЗСТ: гравитационная модель. *В статье анализируются торговые показатели Украины в условиях углубленной и всеобъемлющей зоны свободной торговли (УВЗСТ). Представлены практические результаты применения положений УВЗСТ к экспорту Украины в ЕС. Проведено сравнение результатов гравитационной модели с фактической торговлей, чтобы определить был ли экспорт Украины в ЕС в рамках УВЗСТ осуществлен так, как ожидалось. Полученные результаты основаны как на традиционной экономической теории, так и на моделях ex ante, согласно которым ожидалось значительное увеличение экспорта в целом и выше нормального торгового роста. Однако реальность показала обратное, а, следовательно, можно предположить, что моделирование ex ante не актуально или не достаточно точно для политиков, ведущих переговоры по подобным соглашениям.*

Ключевые слова: либерализация торговли, глубокая и всеобъемлющая зона свободной торговли, экономический рост, тарифы, экспорт, преференциальные торговые соглашения, гравитационная модель.

Background. Negotiation of an Association Agreement (AA) between EU and Ukraine were concluded and signed in Brussels on 21 March 2014 with provisions for the creation of a Deep and Comprehensive Free Trade Area (DCFTA) applied from 1st January 2015. Broadly speaking, the AA opens up the EU market by offering reduced tariff access and in parallel Ukraine will adopt a vast range of EU legislation that will align with the rules in the EU over the next 10 years and make it easier for business to export.

Analysis of recent research and publications. The expectations of the EU, Government and citizens of Ukraine was that this would bring Ukraine closer to the EU and lead to increased exports from Ukraine to the EU market. Most studies predicted a positive impact on Ukraine's trade[1–7] and others developed computable general equilibrium (CGE) models [8–11] that predicted ex ante increases in exports of Ukraine of between 6.3 and 15 % in the short term (measured as 1 year impact in most cases) over and above any expected export growth (*table 1*).

Table 1

Predicted Impact of DCFTA on Ukraine's Exports to EU

Author(s)	Date	Method of estimation	Aggregate Impact (Ukraine's exports to EU), %	Timeframe for impact
K. Berden, F. Smakman, P. Wymenga [8]	2007	Computable General equilibrium (CGE) model	+6.4	1 year
V. Sidenko [9]	2007	Computable General equilibrium (CGE) model	+15	Short Term
V. Movchan, R. Giucci [10]	2011	Computable General equilibrium (CGE) model	+6.3	Immediate
Institute for Economic Research and Policy Consulting [11]	2014	Computable General equilibrium (CGE) model	+9.9	Immediate
A. Kravchuk, Z. Popovych [12]	2016	GTAP Computable General equilibrium (CGE) model	+1	1 year

Source: composed by the author on the results of various sources analysis.

However, exports to the EU from Ukraine have not performed as expected at an aggregate level. Ukraine's exports to the EU initially declined after application of DCFTA trade provision (autonomous trade preferences applied in early 2014) with –6.7 % growth and in 2015 and increased by 3.4 % in 2016 (calculated by the author from Eurostat data). Whilst growth in exports to the EU was an impressive 24.7 % in 2017, Ukraine's export growth to EU in 2018 was a more modest 8.0 %.

To compare actual short term performance with the predicted short term (one year impact), a smoothed data approach is used of a 3 year moving average of trade so that the immediate trade impact of the DCFTA is average growth between 2015–2017 for the first year after the application of DCFTA trade provisions and 2016–2018 for the second year. Average growth in Ukraine's exports to the EU post DCFTA was only 7.6 % (2015–2017) compared with 7.6 % (2011–2013) prior to the application of the DCFTA showing immediately no apparent effect. Even for the second year (2016–2018), average export growth to the EU was 12.4 %, so compared with pre DCFTA growth, the increase in exports post DCFTA is only 4.8 %. These are below any of the predictions of ex ante CGE models.

Indeed, immediate short term average exports post DCFTA implementation (2015–2017) were €13.8 billion compared with €14.1 billion pre

DCFTA (2011–2013). This means that the short term (3-year average) impact of the DCFTA has been a decline of 2.3 % in exports compared with the 6.3–15.0 % expected by models.

Therefore, the **aim** of this paper is to examine whether the predictions and the expectations are reasonable and thus indicated that other factors have played a role that policy makers could investigate to "unlock" the potential of the AA/DCFTA. If the ex-ante predictions are accurate, then it is important for policy makers in Ukraine to analyse which other factors are constraining the potential of the AA/DCFTA and if addressed, could unlock trade to the EU. Whereas, if these CGE models are not good predictors of the effects of Ukraine's trade under the DCFTA, and actual export performance is what could reasonably be expected, then other policies to promote and develop exports should be pursued.

Materials and methods. The literature on Ukraine's export performance to the EU under the DCFTA has preferred the use of CGE modelling. However, gravity models are popular empirical trade devices that have been used widely for analysing the impact of different trade policy issues on bilateral trade flows between different geographical entities whereas CGE models are generally used to quantify the impact of a change in trade policy on the countries' welfare and the distribution of income across countries [13].

Therefore, the absence of any gravity modelling on Ukraine's exports with the EU under the DCFTA could mean that the CGE model approach created higher expectations than could reasonably of mean expected given they aim principally at welfare rather than trade gains. Gravity models have been shown to be amongst the most empirically robust relationships in economics [14; 15] with Disdier and Head [16] meta-analysis of 1.467 estimations showing stable and accurate results. Leamer and Levinsohn [17] also conclude that "Some of the clearest and most robust findings in empirical economics."

Therefore, in order to confirm the expected impact of the AA/DCFTA, a gravity model (based on pooled panel data) of countries associated with or recently acceded to the EU was developed to compare the expected results of these ex-ante models.

The model is based on the idea that trade between two countries, like the gravitational force between two objects, is a function of the countries' "mass" (in this case, population size and GDP as well as the distance between them). Tinbergen [18] first presented the gravity model in 1962 specifying that the trade between two countries is relative to their size in GDP and distance between them, as follows:

Equation 1: Traditional Gravity Model Specification

$$T_{A,B} = \frac{(GDP_A)^{\alpha}.(GDP_B)^{\beta}}{DIST_{AB}{}^{\gamma}}$$

with coefficients $\alpha, \beta, \zeta \approx 1$.

Despite the high level of success in gravity models explaining trade between two countries, these models were used in a "theoretical" vacuum until Krugman's [19] seminal work on theory of gravity models. He theorised with costs to firms and market demand to prove from an economic perspective to derive the gravity formula. In this theory, the GDP is used as a proxy to the traditional Ricardian comparative advantage in relation to relative production and market demands. Distance is then the proxy for trade cost between the two countries (assuming transport being the main cost) and therefore affects the level of trade; that is in some way this addresses the "frictionless trade" assumption of comparative advantage.

Linnemann [20] included population as an additional measure of country size, in what was one of the first "augmented gravity models" and it is also common to instead specify the augmented model using per capita income, which captures the same effects. Other economists have then specified other "trade costs" as the denominator to assess the impact of specific policies including average tariff rates, SPS restrictions etc. [21]. A review of the range of gravity models including dependent variables and statistical method employed is provided by Kepaptsoglou et al (2010) [22] for 53 studies using gravity models and the most relevant references relating to trade agreement analysis is presented in *table 2*.

Fixed effect gravity models use dummies to assess trade impact of specific trade policies on trade, most commonly the impact of FTAs [23]. These fixed effect models also have the benefit of overcoming heteroskedasticity inherent in gravity models whereby the structural form is affected by policies such as signing an agreement or change in exchange rate regime.

In specifying and estimating the model, recommendations from Baldwin and Taglione [24], where used to ensure better results:

1. Unobserved variables are correlated with error term (autocorrelation) so pooled panel data should be used to avoid this.

2. Gravity is an expenditure equation explaining the value of spending by one nation on the goods produced by another nation (EU) so average trade flows include spending in the other nation so in this model, only imports from Ukraine are used (Ukrainian exports).

3. Gravity is an expenditure function allocating nominal GDP into nominal imports so variables are not deflated for either trade flows or GDP.

Therefore, based on the plethora of research and evidence available, a fixed effect gravity model of EU imports from partners was developed to assess the impact of the AA/DCFTA on Ukraine's trade using the following specification:

Equation 2: Gravity Equation with Accession Dummy

$$X_{Ukr,EU} = \frac{(GDP_{Ukr})^{\alpha}.(GDP_{EU})^{\beta}.D^{\delta}}{DIST_{UkrEU}{}^{\gamma}}$$

$X_{Ukr,EU}$ – exports from Ukraine to the EU (measured by EU imports from Ukraine);
GDP_{Ukr} – nominal GDP of Ukraine;
GDP_{EU} – nominal GDP of EU;
$Dist_{UkrEU}$ – distance between Kiev and Berlin;
D – Dummy for Signature of Association Agreement.

Table 2

Summary of Gravity Model Literature Reviewed by Kepapstoglou et al.

Year	Author (s)	Objective	Dataset	Dependent Variables	Explanatory Variables	Estimation Technique
2001	Buch and Piazolo	Investigation of the impact of EU enlargement	Panel data	Imports and Exports	GDPs per capita, distance, EU membership	OLS
2003	Fukao *et al.*	Analysis of trade effects under NAFTA	Panel data	Imports	GDP per capita, tariffs, total commodity exports, country specific factors	OLS
2004	Robers	Analysis of the proposed China- ASEAN FTA	Cross s ectional	Exports	GDP, GDP per capita, distance, FTA	OLS
2005	Paas and Tafenau	Investigation of trade flows in the EU eastwards enlargement	Panel Data, EU-25, 1993- 2002	Exports	Population, GDP, distance, EU- 15 membership, post-socialist accession countries, land border existence, Baltic sea country, Central European country, Mediterranean country	OLS
2005	Peridy	Analysis of the AGADIR FTA effects	Panel data, 5 MENA and 42 main import partners	Exports	GDPs, distance, FTA, common border, common language, trade complementarity	OLS
2007	Nowak-Lehmann *et al.*	Analysis of customs union between EU and Turkey	Panel data, Turkey and 10 EU countries	Exports	GDP, GDP per capita, exchange rate, transport costs	OLS with fixed effects
2008	Grant and Lambert	Investigation of the trade flow effects of Regional Trade Agreements (RTAs)	Panel Data	Bilateral trade flows	GDP, Distance, Adjacency, Language, Landlocked, RTA	OLS fixed effects
2009	Kepaptsoglou *et al.*	Analysis of the EMFTA trade agreement	Panel data, EU and Mediterranean countries	Bilateral trade flows	Exports and imports, transportation costs, free trade agreements, tariffs	OLS

Source: composed by the author according to [22].

In order to estimate the model parameters, a suitable group of reference countries must be used to gather the required data to then estimate Ukraine's expected trade under the AA/DCFTA. This assumes that Ukraine should export to the EU at levels similar to the exports of the reference group used to estimate the gravity equation. Therefore, this group should be similar in nature and particularly, the dummy must reflect the AA/DCFTA flag.

However, the AA/DCFTA is a new instrument of the EU and is a new kind of agreement. Therefore, although Ukraine is not on an accession path the legal approximation agenda and commitments of the AA/DCFTA are closer to "Accession terms" than any other trade agreement. For this model, the reference group used is newly acceding members of the EU from Eastern Europe. Western Balkans was considered as these too have an Association Agreement, but this seemed not appropriate as these countries are to some extent, less integrated currently in terms of legal approximation than Ukraine.

Results. As recommended by Baldwin et al. [23] the parameters were estimated using pooled panel data of Accession Countries' exports to the EU by log linear OLS regression.

Equation 3: OLS Specification of Gravity Equation

$$\ln X_{Ukr,EU} = Intercept + \alpha \ln GDPUkr + \beta \ln GDP_{EU} + \gamma \ln DIST_{UrkEU} + \delta D.$$

Initially, the resulting regression ordered the data by country and year and produced a model with adjusted R^2 of 91% (goodness of fit of the equation to actual trade), but a Durbin Watson statistic of 0.34 which suggested autocorrelation of stochastic error (that is, the model is following its own trend rather than modelling the dependent variables). The OLS results are given in *Appendix 1*.

To overcome this autocorelation, the data was reordered randomly and re-estimated as shown in *Appendix 2*.

The resulting model had a high goodness of fit (R2) of 88%, and no autocorrelation with a Durbin Watson (DW) of 2.22; with 4 dependent variables and 102 observations, the lower and upper limits range (inconclusive) for DW is 1.461–1.625 and 2.375–2.539.

The elasticity of the "dummy" policy variable for accession showed the expected impact of applying the policy to increase Ukraine's trade (through simulation) by 53 % (difference with 2014 expected trade with and without the dummy). This is far higher than any of the literature predicted.

Considering the similarities of the policy of accession and AA/DCFTA, the assumption and use of acceding countries as a reference group is still valid, but further understanding of the complexities of the agreement and the implementation stages mean that the use of a single policy dummy to capture the effects was perhaps too ambitious.

The AA/DCFTA has two important parts: market access through the liberalisation in the EU of tariffs on Ukraine's imports and; alignment with EU business regulations (mostly technical regulations and sanitary and phytosanitary measures). This is also the mechanism during accession. Whilst in the case of the AA/DCFTA, the process of gaining market access and alig-

ning legislation starts with the implementation of the agreement, the date of accession of acceding countries mark the end of the process and therefore, the accession dummy does not truly represent the AA/DCFTA. Therefore, two dummies in the model should be examined, the date of gaining virtually duty free market access and the beginning of the process of alignment of business legislation to the EU (that is, the date of formal accession launch when acceding countries start the legislative alignment process). Given that legislative alignment and market access to the EU did not always align, a separate dummy was used for each in the re-specified equation, D_1 and D_2 respectively. The combined dummy of D_1 and D_2 in the simulation of Ukraine's trade would show the expected impact of AA/DCFTA. The accession dummy (D_3) was still included to show the expected impact once alignment under the DCFTA was completed (expected mostly on legislation in Title IV, Trade after 7 years of entry into force).

AA/DCFTA on Ukraine's trade using the following specification:

Equation 4: Augmented Gravity Model for AA/DCFTA

$$X_{Ukr,EU} = \frac{(GDP_{Ukr})^{\alpha}.(GDP_{EU})^{\beta}.D_1^{\delta}.D_2^{\zeta}.D_3^{\eta}}{DIST_{UkrEU}{}^{\gamma}}$$

$X_{Ukr,EU}$ – Exports from Ukraine to the EU (measured by EU imports from Ukraine);
GDP_{Ukr} – nominal GDP of Ukraine;
GDP_{EU} – nominal GDP of EU;
$Dist_{UkrEU}$ – distance between Kiev and Berlin;
D_1 – Dummy of virtually free market access granted by EU;
D_2 – Dummy for the process of legislative alignment with EU business acquis based on commitments in international agreement;
D_3 – Dummy for Signature of Association Agreement.

For the regression estimates, the following data was used for recently acceded countries from Eastern Europe as shown in *table 3*.

Table 3

Scope of Data Used for Model Estimation

Countrie	Data Set	Date and basis of EU Granting free market Entry	Date and basis of launch of Accession Negotiations	Date of Accession
Czech Republic, Estonia, Hungary, Poland, Slovenia	1995–2008	1999 as declared by EU at EU Essen Summit [25] setting out the pre Accession strategy		2004
Slovakia, Lithuania, Latvia	1997–2008	1999	2000 official launch at the Inter-governmental Accession Conference (Brussels) [26]	2004
Bulgaria and Romania	1997–2011	1999		2007
Croatia	1995–2013	2000 under the Autonomous Trade Preferences to Western Balkans [27]	2005 [28]	2013

Source: composed by the author according to [25–28].

The initial regression produced no significance for D_1, policy dummy for FTA market entry. This is because in all but a few country cases (Croatia, Bulgaria and Romania), the timing of application of market access to EU (D_1) and start of accession negotiations and legislative alignment (D_2) were the same. Therefore, the regression was re-run without D_1 and D_2 would be used as the AA/DCFTA proxy.

The regression results are presented in *Appendix 3*. The goodness of fit of the results is 89 % (Adjusted R^2) and the DW of 1.61 (which is within normal limits and all t statistics are significant within 5% confidence (>2.01 with 5 df).

GDP of partner countries, and the two policy dummies are positive and significant as expected so that as GDP in the partner country (proxy for supply capacity) rises, so does trade and the application of agreement for market access and approximation and completion of the process also increases trade as market access and legislative alignment increases opportunity for trade. The distance coefficient (proxy for trade costs) is significant and negative as expected so that as trade costs increase, trade decreases.

Although EU GDP (proxy for demand) is significant, the sign is negative which is counter intuitive and not in line with all other models. That is, it is expected that as partner demand (EU grows), then exports from the country to the EU would also grow. However, it is possible for the partner country's GDP to have a negative effect on the value of trade [29]. For example, in an Heckscher-Ohlin model, if all the factors of production were to expand proportionately in the partner country, the partner's per capita GDP would remain unaffected while GDP rises. If the elasticity of foreign demand (here EU) for the country's exports is sufficiently low, then even though the quantity of exports may rise, their value may decline.

The resulting gravity model was thus specified:

Equation 5: Augmented Gravity Model

$$\ln X_{Ukr,EU} = 37.0 + 0.82\ln GDP_{Ukr} - 1.07\ln GDP_{EU} - 0.32 InDIST_{UkrEU} + 0.57 D_2 + 0.61 D_3 .$$

Based on recently eastern accessions to the EU, and using the above formulation, Ukraine's exports to the EU under the AA/DCFTA can be simulated using the D_2 dummy (accession process begins as proxy for AA/DCFTA implementation) and without D_2 to predict trade without implementing the AA/DCFTA. D_2 is then used to signal the signing of the AA/DCFTA (the point at which improved market access is offered and Ukraine starts the process of legislation alignment which is akin to the launch of accession negotiations for the reference countries used to specify the model).

D_3 in the EU accession gravity model is the completion of the accession process which will only happen (equivalent) once Ukraine has adopted the EU acquis (akin to membership) which is expected (and Ukraine committed) to be completed only 10 years after entry into force of the AA/DCFTA and so in the following simulation, D_3 is not used.

Table 4 shows simulated and actual trade with the EU using the gravity model for acceding eastern European countries over the period immediately before application of the DCFTA and immediately after (four years):

Table 4

Ukraine's Trade with EU Simulated

Year	Modelled Exports to EU,€	Actual Exports to the EU, €	Differential, %
2010	11.366.479.560	11.100.825.360	–2.4
2011	12.149.520.251	14.651.406.648	17.1
2012	13.760.811.114	14.201.384.330	3.1
2013	13.621.804.897	13.347.435.180	–2.1
2014	17.917.526.218	13.218.532.266	–35.5
2015	14.991.753.256	12.336.451.349	–21.5
2016	15.204.472.884	12.756.762.825	–19.2
2017	16.810.272.395	16.197.138.541	–3.8
2018	20.087.797.879	18.022.713.323	–11.5

Source: composed by the author according to [30].

In the above simulation, the period prior to the AA/DCFTA (2010–2012) shows actual and forecast trade without AA/DCFTA and is a fairly good fit in most cases except for 2011. Therefore, it would be expected that the post AA/DCFTA model (2015–2018) should provide a good indicator of the expected benefit of the AA/DCFTA under frictionless trade (absence of other trade barriers).

Conclusion. In the period before the application of the DCFTA (2010–2013), the model shows that on average, actual exports are 3.9 % higher than expected (simulated) exports to the EU from Ukraine, suggesting that the model is a relatively good match to explain Ukraine's trade with EU. However, following the implementation of the AA/DCFTA, the actual exports from Ukraine to EU is substantially lower (2015–2018) than simulated trade with D_2 activated (that is with market access the launch of programme of alignment) at 14.8 %. Extending this to 2018, actual performance in terms of Ukraine's exports to the EU under the AA/DCFTA is on average 14 % lower than would have been expected. This confirms and correlates with the ex ante CGE models that Ukraine's exports to the EU under the DCFTA is much lower than expected.

Further research is therefore warranted to unpack Ukraine's export performance to the EU at a disaggregated level to identify specific elements that may explain this poor performance so that policy makers may address these and through better understanding, mitigate and enable business to take advantage of the export opportunity. Moreover, other countries entering free trade agreements can take a more realistic view of the expected impact of these agreements on exports.

Appendix 1: Gravity Model Results (Panel data in Date order)

Regression of variable XEU:

Goodness of fit statistics (XEU):

Observations	102
Sum of weights	102
DF	97
R^2	0.88
Adjusted R^2	0.88
MSE	0.12
RMSE	0.34
MAPE	1.21
DW	0.47
Cp	5.00
AIC	–213
SBC	–200
PC	0

Analysis of variance (XEU):

Source	DF	Sum of squares	Mean squares	F
Model	4	85	21	178
Error	97	11	0	
Corrected Total	101	96		

Computed against model Y=Mean(Y)

Model parameters (XEU):

Source	Value	Standard error	t	Pr > |t|
Intercept	41.33	6.03	6.85	< 0.0001
GDP	0.85	0.04	19.21	< 0.0001
GDPEU	–1.21	0.22	–5.45	< 0.0001
Dist	–0.41	0.10	–4.16	< 0.0001
Accession	0.43	0.10	4.07	< 0.0001

Source: composed by the author based on Eurostat data [30].

Appendix 2: Gravity Model Results (Panel data Randomised order)

Goodness of fit statistics (XEU):

Observations	102
Sum of weights	102
DF	97
R^2	0.88
Adjusted R^2	0.88
MSE	0.12
RMSE	0.34
MAPE	1.21
DW	2.22
Cp	5.00
AIC	–213
SBC	–200
PC	0

Analysis of variance (XEU):

Source	DF	Sum of squares	Mean squares	F
Model	4	85	21	178
Error	97	11	0	
Corrected Total	101	96		

Computed against model Y=Mean(Y)

Model parameters (XEU):

Source	Value	Standard error	t	Pr > |t|
Intercept	41.33	6.03	6.85	**< 0.0001**
GDP	0.85	0.04	19.21	**< 0.0001**
GDPEU	–1.21	0.22	–5.45	**< 0.0001**
Dist	–0.41	0.10	–4.16	**< 0.0001**
Accession	0.43	0.10	4.07	**< 0.0001**

Source: composed by the author based on Eurostat data [30].

Appendix 3: Augmented Gravity Model of Acceding Eastern European Members to EU

Regression of variable XEU:

Goodness of fit statistics (XEU):

Observations	155
Sum of weights	155
DF	149
R^2	0.90
Adjusted R^2	0.89
MSE	0.12
RMSE	0.35
MAPE	1.26
DW	1.61
Cp	6.00
AIC	–320
SBC	–302
PC	0

Analysis of variance (XEU):

Source	DF	Sum of squares	Mean squares	F
Model	5	156	31	255
Error	149	18	0	
Corrected Total	154	174		

Computed against model Y=Mean(Y)

Model parameters (XEU):

Source	Value	Standard error	t	Pr > |t|
Intercept	37.00	5.29	6.92	**< 0.0001**
GDP	0.82	0.04	22.56	**< 0.0001**
GDPEU	–1.07	0.19	–5.66	**< 0.0001**
Dist	–0.32	0.08	–4.03	**< 0.0001**
D2	0.57	0.07	7.77	**< 0.0001**
D3	0.61	0.10	6.36	**< 0.0001**

Source: composed by the author based on Eurostat data [30].

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The article submitted to editor's office on 11.11.2019.

Хеллаєр М. Торгівля України в рамках ПВЗВТ: гравітаційна модель.

Постановка проблеми. *Підписання Угоди про асоціацію між Україною та ЄС 21 березня 2014 р. передбачає створення поглибленої та всеохоплюючої зони вільної торгівлі (ПВЗВТ). У широкому сенсі ця угода має відкрити доступ Україні до ринку країн ЄС. Водночас, це передбачає, що Україна має схвалити низку законів, які будуть узгоджуватися з правилами ведення бізнесу в ЄС і сприятимуть експорту.*

Аналіз останніх досліджень і публікацій *показав, що попри наявність окремих наукових доробок, залишається не вивченою детально проблема того, наскільки обґрунтованими були прогнози щодо зміни потенціалу розвитку торгівлі України з ЄС за умови ПВЗВТ, зроблені на основі традиційної економічної теорії та моделей.*

Метою *статті є перевірка обґрунтованості та достовірності прогнозів щодо розвитку торгівлі України з ЄС за умови ПВЗВТ на основі гравітаційних моделей, а також надання рекомендацій щодо їх врахування у межах підписання подібних угод.*

Матеріали та методи. *У дослідженні використано гравітаційні моделі, у т.ч. модель, що заснована на даних зведених панелей країн, асоційованих або нещодавно приєднаних до ЄС. За основу взято припущення, що хоча Україна поки не стоїть на шляху остаточного приєднання до ЄС, для вивчення її ситуації найбільше підходить модель, де застосовується референтна група новоприєднаних членів ЄС зі Східної Європи.*

Результати дослідження. *На основі аналізу показників зовнішньої торгівлі України у межах поглибленої та всеохоплюючої зони вільної торгівлі презентовано практичні результати застосування положень ПВЗВТ в експорті України до ЄС. Проведено порівняння результатів торгівлі, що визначені із застосуванням гравітаційних моделей, та фактичні показники торгівлі. Результати цього порівняння свідчать, що прогнозні дані, які базувалися на традиційній економічній теорії та моделях і передбачали суттєве зростання експорту загалом, у реальній ситуації не справдилися у повному обсязі. Останнє також стало свідченням того, що у цих моделях не брались до уваги додаткові чинники, які могли завадити зростанню торгівлі. Запропоновано рекомендації для політиків, які беруть участь у перемовах щодо укладання подібних угод. Наголошено, що гравітаційне моделювання не завжди дає достатньо точні результати.*

Висновки. *У 2010–2013 рр. (до запровадження ПВЗВТ) гравітаційна модель показала, що в середньому фактичний експорт на 3.9 % перевищував очікуваний (імітований) експорт до ЄС з України. Це дало змогу припустити, що модель порівняно добре підходить для опису торгівлі України з ЄС. Однак після впровадження ПВЗВТ (2015–2018 рр.) фактичний експорт з України до ЄС став нижчим, ніж було змодельовано: зокрема, у 2018 р. це відхилення становило 14 % порівняно з очікуваним.*

Подальші дослідження можуть бути присвячені деталізації аналізу експорту України до ЄС з метою визначення конкретних елементів, які б дали змогу пояснити низьку ефективність ПВЗВТ у випадку України. Це у свою чергу сформує передумови для покращання ситуації та дасть повноцінну можливість українському бізнесу скористатися експортними можливостями, що відкриває створення ПВЗВТ.

Ключові слова: лібералізація торгівлі, поглиблена та всеохоплююча зона вільної торгівлі, економічне зростання, тарифи, експорт, пільгові торговельні угоди, гравітаційна модель.

MANAGEMENT, MARKETING

UDC 005.93=111 DOI: http://doi.org/10.31617/visnik.knute.2019(128)03

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VALUABLE MANAGEMENT OF THE ENTERPRISE: CHANGES IN THE PARADIGM

Article is devoted to the study of the workers' values of the trade enterprise. The relevance of the use of valuable management in modern commercial enterprise is determines in this article.

The current trends in management that actively influence the development of modern approaches to personel administration are considered. For research of personal values of the employees of the enterprise, K. Harsky's method was used in our modification.

Keywords: values, employees management, values management.

Бай. С., Волобуев М., Кандагура Е. Ценностное управление предприятием: изменения парадигмы. *Исследованы трудовые ценности торгового предприятия. Определена актуальность использования ценностного менеджмента на современном коммерческом предприятии. Рассмотрены современные тенденции в управлении, которые активно влияют на развитие современных подходов к управлению персоналом. Для исследования личных ценностей работников предприятия в авторской модификации использован метод К. Харского.*

Ключевые слова: ценности, управление сотрудниками, управление ценностями.

Background. Actual question at the current phase is optimisation of the management system of the production team with a constant increase of the efficiency of personnel enterprise activity. At the same time, theory and

practice of management that practically exhausted possibilities of employyers' opportunities create unique incentive programs that impact on the motivation of its employees. The social programs offered by the employer for their staff are quite monotonous. Insurance, loyalty bonus, support for innovation activity, free meals and transport to the workplace etc.

This situation is ever more complicated because of the need to take into account the current trends in the labor market – outflow of Ukraine's able-bodied population abroad, a steady decrease in the share of workforce of Ukraine, who agree to work without official payment, more stricter requirements to the employer, working condition, rest, modernization of payments. Meanwhile, the modern employer is pressured not only by constant search of new ways and approaches to attract candidates to the vacancy of the company. No less important problem is the need to create programs for the maintenance of their staff.

Management theorists and practices continue to offer employers new, effective pay system. Various indicators were taken as basis: performance of the standard of daily productivity (Bart's system), level of qualification, competence, knowledge and skills (Helsey system), value of products and their lowering (Scanlon system) and other. Sufficient developments in native enterprises have received remuneration system based on modern approaches such as Key Performance Indicators (KPIs) and Balanced Scorecords (BSs) [1–3].

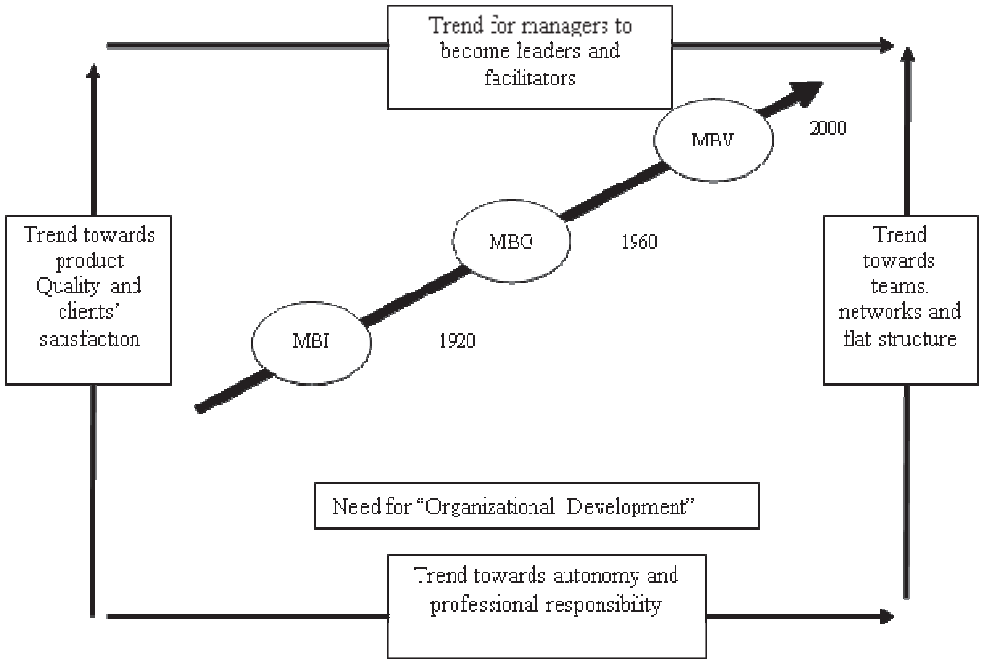
But all these systems, as a rule, are based on the fact that the employer tries to influence the motivation of the employee to receive more money. But practices shows that the modern worker does not always put in the first place exactly the level of remuneration. The employee is interested in such elements of his activities as the image of the enterprise and products, professional challenges of complex production tasks, the possibility of professional and personal growth in the enterprise, the ability to form independently the level of workload and the mode of activity, the comfort of the moral and psychological atmosphere in the company, the scale of projects, the level professionalism of colleagues etc. [4].

Enterprise management is not possible without effective management of its personnel. Such efficiency is based, in the first place, on the interest of the personnel to carry out their professional duties in a qualitative manner. Employee's interest is a certain type of motivation to fulfill (or not) the production task of the given parameters. Motivation is based on the fact, that the employee is important at the time of the performance of the production task – that is personal production and life values. It is sufficiently new to introduce into the practice of enterprise the principles and methods of effective management [5–7].

Analysis of recent research and publications. Many scientists and practitioners of management paid attention to the study of the values of the individual and the possibilities of using the results obtained in the production activity of the enterprise. At the end of the last century in works of

B. Agle та C. Caldwell [8], C. Anderson [9], K. Blanchard, M. O'Connor [10], R. Edgeman, F. Scherer [11], M. Garvanova та I. Garvano [12], P. Griseri [13], R. Roe, P. Ester [14] were indicated the possibility of building the management of the personnel of the company based on the values of the individual and group values of the team. The relevance of effective management in the current moment was emphasized in works of G. Abbott, F. White and M. Charles [15], Y. Bao, R. Vedina, S. Moodie, S. Dolan, [16], S. Bay [17] S. Dolan [18], G. Fitzgerald [19], K. Jaakson [20], S. Schwartz and K. Boehnke [21]. Such authors of C. Mowles [22], P. Smith, M. Peterson and S. Schwartz [23], R. Tangri [24] emphasized that the relevance of effective management does not depend on the size or direction of its activity of the enterprise.

S. Dolan and G. Salvador [25] defined modern tendencies in the development of general management of values as a very powerful and irresistible (*figure*):



Modern trends of management

MBI = Management by Instructions;
MBO = Management by Objectives;
MBV = Management by Values.

Source: [25].

These four trends, in turn, are a considerable increase in the complexity and uncertainty in companies 4. All four are also inter-connected:

1. The need for quality and customer orientation.
2. The need for greater professionalism, autonomy and responsibility.
3. The need for "bosses" to evolve into leaders/facilitators.
4. The need for "flatter" and more agile organization structures.

In line with market trends, what was assigned by managers as the basis for management – the instructions, tasks or values-changed.

It should be noted that during the time when the values and their place in the structure of the personality and motivation of employees were studied, there were certain changes in their importance and relevance. Thus, K. Blanchard, and M. O'Connor [10] argued that the key to employees are the value of career advancement, the acquisition of new skills and knowledge to improve their skills. According to original research, G. Abbott, F. White and M. Charles note that the enterprise has a tendency to shift life values from general business to personal values [15].

The **aim** of the article was to investigate the values of employees of a modern trading enterprise and the possibility of using this information to optimize the process of managing the personnel of the enterprise.

In order to achieve this goal, we have completed the following tasks:

- investigate the values of the employees of the trading company and identify the group that is most important to them;
- identify the specific values that respondents consider to be important;
- to carry out comparative analysis of selected values with the results of researches of other scientists of previous years;
- to determine the possibility of practical use of the results obtained by the managers of the trading enterprise.

Materials and methods. The study of the values of the individual was carried out by the authors for original methods. According to the methodology of Rockich, terminal and instrumental values are studied, basic human values are studied with help of Sh. Schwartz's method. The E. Fantaal' methodology demonstrates the values that form the core of personality, and according to the method of S. Bybnova's study of ideal values. S. Dolan noted that the values in the enterprise divided into three groups-economic-pragmatic, ethical-social and emotional-spiritual [26; 27].

In research, we used the method of K. Kharsky [28] in own modification. According to the author's version, the respondent must compare in pairs all values among themselves. The results of this comparison is value that has received most numbers of answers. The same situation is with group of values. In our opinion, this technique is rather cumbersome and it makes sense to carry it out only in an automated version. For the possibility of conducting researches in field conditions and conditions when it is not possible to use a computer. Therefore, we developed a paper version of the research of personality values. Each of the respondents received a list of 32 human values. This list consisted of four groups of values: ideological, material, emotional and values of life – eight in each. For the impartiality of the choice of respondents, groups of values in the text were not named and separated. Each of the respondents chose among the 32 proposed values only eight. Between eight selected values necessary to select the most important and evaluate it in eight points. In this algorithm, other values received a score from seven to one. We tried to determine not only the choice of actual values, but also their place among the important ones.

The research was conducted on workers of the enterprise of the female and male of the age from 22 to 32years (n=90) – with the middle age – 27.9 years. Respondents to our study were cashier sellers, cashier controllers, food and non-food consultants, administrators of the trading hall of 12 outlets of *ATB* and *Silpo* trading networks. The study involved employees with secondary and tertiary education. The respondents were selected according to the principle of proportional type selection.

Results. The number of answers, the total amount received and the average amount of points were determined for each value. Furthermore, the same set of indicators for each of the four groups of values was determined. The results are shown in *table 1*.

Table 1

Actual group values of employees of the enterprise

Value group	Grade point average GPA	Place	Number of answers
Ideological	4.26	3	51 (4)
Material	3.64	4	77 (3)
Emotional	4.91	1	127 (1)
Of life	4.74	2	105 (2)

Source: authors' research.

The data in *table 1* indicate that for the group of respondents in the first place there are values from the group of emotional. GPA in this group was 4.91. The second place was a group of values of life – 4.74 points. The third place was taken by a group of ideological values – 4.26 and the last – material – 3.64 points.

It is necessary to consider the fact that by the number of responses the third place is material values, and the fourth is ideological. But the calculation of points led to the fact that the values changed places.

Based on how the author of the method K. Harsky commented selection of a group of values, we can note the following.

In the team, our respondents put their emotional values in the first place. This indicates that the relationship between colleagues is in the first place for the team. The relationship between employees is based on interpersonal relationships. Relationships and their harmony for employees and leadership are more important than income and earning. The main task of management is to take care of the loyalty of the staff and to maintain a high level of desire to work at this particular enterprise. The maximum attention of all personnel is aimed at creating in the team the optimal moral and psychological atmosphere and keeping it at that level. At the enterprise, non-material incentives are important and work must bring moral satisfaction in the first place, and then – material. The management directs its staff to prevent misunderstandings between employees and avoid conflict situations. If conflicts still arise, they are solved with the active participation of managers as mediators and intermediaries. The team appreciates the ability to control their emotions and not respond to external negative influences that can lead to misunderstanding.

The second group life values should be interpreted as a need and desire of management to worry about their employees – for their physical and psychological health, the team is considered as a family. Employees need attention from the management and as a result, they demonstrate excellent disability and productivity. At the same time, the high quality of performance of duties is appreciated to preserve the positive image of the enterprise. Managers believe that strict rules limit the freedom and creativity of staff. The company appreciates the loyalty of the employee, which is expressed in the work, and dedication is encouraged and is an example for others.

The fourth place of material values is explained by the fact that for employees material is not the most important. Profit and economic performance are important only if the relationships between the employees are regulated and they enjoy staying in such calm, family atmosphere. Analysis of the selection of specific values showed that respondents had certain priority and outsider values. Information about first eight values is shown in *table 2*.

The data presented in *table 2* showed that the value of "freedom" elected only 22 from 90 respondents this value took the fourth place only due to the fact, that respondents gave it enough high scores. In addition, such value as "friendship" has received 70 answers from 90 respondents. At the same time, this value took the sixth place.

Table 2

Actual values determined by employees (average)

Place	Value	Group	Number of answers	Number of points	GPA
1	Relationships with parents	Values of life	52	312	6.0
2	“Having a family”	Values of life	48	286	5.96
3	Love	Emotional	80	472	5.9
4	Freedom	Ideological	22	114	5.2
5	Righteousness	Ideological	50	240	4.8
6	Friendship	Emotional	70	330	4.71
7	Understanding	Emotional	24	113	4.7
8	Self-sufficiency	Emotional	26	117	4.5

Source: authors’ research.

We need to solve the problem of determining the importance of one or another value, depending not only on the points that the respondents gave this value, but also on how often it was chosen by the respondents. Therefore, we have worked out a formula that takes into account together: the number of respondents choosing a particular value and the value of points in which respondents assessed value. This formula calculated the weight of value (w):

$$W=S/n \cdot k,$$

where W – weight of value;
S – sum of all points for a particular value;
n – total number of respondents;
k – the number of answers of a particular value.

Using this formula allowed us to obtain the results of the first eight values of the respondents' answers, which are represented in *table 3*.

Table 3

Actual values determined by employees (average)

Place	Value	Group	Number of answers	Number of points	Weight of value (*w*)
1	Love	Emotional	80	472	209.8
2	Friendship		70	330	128.3
3	Relationships with parents	Values of life	52	312	90.1
4	"Having a family"		48	286	76.3
5	Righteousness	Ideological	50	240	66.7
6	Career	Material	54	194	58.2
7	Quality of life	Values of life	46	180	46.0
8	Confidence	Emotional	42	184	26.6

Source: authors' research.

Comparing the results presented in *table 2* and *table 3* gives an opportunity to state that due to the new method of calculating the weight of values the distribution of values in the first eight has changed somewhat.

The value of "love", which took the third place in the previous method of calculation, with the new method, took first place with high result *W*=209.8 points. The value of "friendship" from the sixth place moved to the second with a result significantly less than the value of "love" – only *W*=128.3 points. At the same time, the value of "relationship" with parents and "having family" moved from the first and second places, respectively, in third and fourth.

The value of "righteousness" kept its fifth position in the list of actual eight values. At the same time, from the list of these values due to the new system of calculating results, values such as "freedom", "understanding" and "self-sufficiency" fell out. Instead, their places occupied the values of "career", "quality of life" and "confidence".

Statistical processing and analysis of the results made it possible to determine that the respondents disregarded some of values. Such values as "patriotism" and "duty" from a group of ideological values, the value of "qualification" from the group of material values, the value of "sensitivity" and "tranquility" from the group of emotional values and the value of "ecology" from the group of values of love have not been received any numbers of points.

In accordance with the results of the research of the values of the production team, who we have developed proposals for managing the company to optimize the process of personnel management.

It is advisable to pay more attention to the implementation and broadcasting of values belonging to the emotional group in the management of the personnel of the enterprise. Thus, the team will maintain a friendly atmosphere; employees will appreciate one in one human qualities and desire for mutual understanding. Among the staff, the spirit of collectivism and the pursuit of

collective goals and values will prevail. The management should make maximum efforts to preserve the team's optimal moral and psychological climate, because this brings for employees pleasure from work. Corporate holidays should be hold, as this will contribute not only to improve relationships, but also to prevent misunderstandings and interpersonal conflicts. Demonstration by the leadership of their calm and confidence gives a positive example to the subordinates and teaches them to control their emotions and configure themselves on the positive.

The pursuit of values of life should be reflected in the creation of a family atmosphere in the team. Employees should always feel the care management.

The team appreciates the spirit that prevails in the enterprise, so everyone should be very careful about the dissemination of information, especially personal and undesirable. Workers should solve disputes and misunderstandings in small groups and try to save the enterprise personnel. The leadership should make efforts to educate its subordinates not only professionally, but also in personal terms.

According to the results of the research, the workers are not strongly motivated by professional development, qualification, social status – values from the group of material. If we use the values from this group, then more attention should be paid to the development of career. None of the respondents gave the value of "money" eight points, and only one gave the value of "weight" – seven points and two-six points.

In the group of ideological values, respondents most of all chose "righteousness" – four of them gave this value eight points and two more – seven.

However, we offer management to use the results of research not only for developing a staff encourage program, but it can also be used to find and select candidates for a job. We already have a description of the values that are cultivated in the enterprise. When conducting the same research among candidates, special attention should be paid to those whose personal values will be similar or very similar to the values of the team. This approach will be positive not only for the company's staff, but also for the new employee. Firstly, the candidate will not interfere employees to work, as maintain the same values that they support. The team will therefore perceive a new colleague as a close person and help him in the process of adapting to the new workplace. The combination of values of the new employee and the team will increase the potential results of their work.

Conclusion. Modern management trends are the need to improve the quality of products and customer satisfaction, the need and desires of managers to become leaders and facilitators, increase professional autonomy, professional responsibility and build a team and organizational structure with high flexibility and rapid response to changes. Under these conditions, the leading position is the management with help values. Effective management has been studied by scientists and management practices for a long time, but in the last twenty years is increasing importance.

An original study conducted showed that at the investigated trading company for personnel are most relevant values from the group of emotional. Among these values, the most important workers consider the values of "friendship" and "love".

In the first three of the most important values the workers included the value of "relationship with parents" from the group of values of life.

Among the values presented for selection, the collective of the trading company ignored certain values. Such as "patriotism" and "duty" from a group of ideological values, the value of "qualification" from the group of material values, the value of "sensitivity" and "tranquility" from the group of emotional values and the value of "ecology" from the group of values of life.

The obtained results of the research became the basis for development of the program of stimulation of the personnel of the trade enterprise. This simplified the creation of this program and determined exactly the values most supported by the staff of this enterprise.

The results, in our opinion, can be used by the company's management not only to create a stimulus program. Results will be useful in the process of finding and selecting candidates for a vacancy by comparing the values of candidates with the values of the enterprise team. We propose to give preference to candidates whose values will be similar or close to the values of the staff of the enterprise.

We believe that the results obtained during the study are not final and we consider it necessary to continue the research to determine possible changes in the values of the team during a certain period of its operation. We consider it necessary to continue research in the direction of implementation of value management in the practice of management not only of trading enterprises. Research on the values of employees of enterprises in other industries will determine whether the values selected by employees of a trading enterprise are universal, or vice versa – they are specific only to a trading enterprise. The speed and direction of changes in the value preferences of employees of a trading company should also be investigated. An important area of further research is to identify the differences between the results of our research and those of other scientists. Such discrepancies may testify either to changes in employees' preferences over time, or to differrences in values among employees representing different cultural and geographical populations.

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The article submitted to editor's office on 07.11.2019.

Бай С., Волобуєв М., Кандагура К. Ціннісне управління підприємством: зміни парадигми.

Постановка проблеми. *Можливості стимулювати персонал торговельного підприємства лише через матеріальну складову не безмежні. Тому відбувається пошук шляхів покращення ефективності роботи персоналу без збільшення їхньої заробітної плати. Одним з перспективних напрямів у цьому є управління персоналом через ціннісні переваги працівників.*

Аналіз останніх досліджень і публікацій *показав, що ціннісні переваги працівників з часом зазнають суттєвих змін, що вимагає від керівництва торговельного підприємства постійного моніторингу цього питання та внесення коригування в програми стимулювання власного персоналу.*

Мета *статті – дослідити ціннісні переваги працівників сучасного торговельного підприємства та можливості використання цієї інформації для оптимізації управління персоналом підприємства.*

Матеріали та методи. *У процесі дослідження використано методи: порівняння, графічний, табличний, економіко-статистичний.*

Результати дослідження. *Проведене дослідження підтвердило гіпотезу про високу ймовірність зміни в часі ціннісних уподобань працівників торговельних підприємств. Визначено сучасні тенденції ціннісних орієнтацій працівників. Доведено,*

що для сучасного працівника торговельного підприємства першочерговими особистісними життєвими цінностями є не матеріальні (заробітна плата, освіта, кваліфікація) та не ідеологічні (свобода, рівність), а цінності емоційні (любов, дружба, розуміння) та вітальні (стосунки з батьками, наявність родини). Отримані результати надають можливість розроблення та впровадження на торговельних підприємствах оптимальних програм стимулювання персоналу з урахуванням ціннісних орієнтацій працівників. Крім того, отримані результати можуть бути використані під час пошуку та відбору кандидатів на вакансії торговельних підприємств.

Висновки. *На відміну від попередніх досліджень, визначено сучасну тенденцію щодо зміни пріоритетів цінностей у працівників торговельних підприємств. Наразі вони віддають свої уподобання не матеріальним та ідеологічним цінностям, а цінностям емоційним та вітальним.*

Наведені результати можуть становити основу подальших наукових досліджень, метою яких буде визначення універсальності або навпаки – специфічності обраних цінностей для працівників саме торговельних підприємств. Обов'язковим є проведення аналогічних досліджень у колективах торговельних підприємств для визначення тенденцій до змін цінностей працівників у часі.

Ключові слова: цінності, управління персоналом, ціннісне управління, підбір персоналу.

UDC 338.488.2:640.412 =111 DOI: http://doi.org/10.31617/visnik.knute.2019(128)04

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OVERBOOKING AS THE INSTRUMENT OF REVENUE MANAGEMENT

The peculiarities of the use of overbooking in the hotel business have been investigated. Using the principles of overbooking which are applied in hospitality, the study found that there are statistically significant returns on the revenue in Ukrainian hotels. Prerequisites and benefits of implementing overbooking in hotel business are analyzed.

Keywords: overbooking, revenue management, hospitality, hotels, market segments.

Бойко М., Босовская М., Кулик М. Овербукинг как инструмент ревеню-менеджмента. *Исследованы особенности использования овербукинга в гостиничном бизнесе. Доказана зависимость доходов украинских отелей от увеличения количества услуг перебронирования. Проанализированы предпосылки и преимущества внедрения овербукинга в гостиничном бизнесе.*

Ключевые слова: овербукинг, управление доходами, сфера гостеприимства, гостиницы, маркетинговые сегменты.

Background. The development of revenue management at Ukrainian hotels requires the use of new methods that optimize overbooking levels and allocation. Modern methods for hotels are a revenue management strategy that helps to maximize the total capacity and increase the Room revenue. It is precisely the use of overbooking that can solve urgent issues of the revenue generating capabilities. Overbooking is a situation when the total number of rooms reserved for a certain period of time exceeds the total number of rooms available for sale for the same period.

Analysis of recent research and publications. The prerequisites for forming conclusions about the peculiarities of forming overbooking as a hotel revenue management optimization method in an environment where market segment prices are optimized via demand curves ahead of a planning horizon [1]. Theoretical and methodological understanding of booking cancellation patterns and enable the adjustment of a hotel's cancellation policies and overbooking tactics according to the characteristics of its bookings were analyzed in [2].

Thus, S. Ivanov, identified all possible combinations between the overbooking levels of each room type and the actual number of cancellations, no shows and early departures the hotel can face, and formulates the costs of the overbookings in each of these combinations [3]. J. Salvat, L. Zanzi, A. Garcia-Saavedra, V. Sciancalepore, X. Costa-Perez – the need to acquire slice overbooking which can provide up to 3x revenue gains in realistic scenarios with minimal footprint on service-level agreements [4].

G. Gallego, H. Topaloglu noted that there is no strategic investment that has a higher return than investing in good pricing instruments, one of which is overbooking [5].

V. Pimentel, A. Aizezikali, T. Baker, formulated the basic requirements and identified a simulation model of a large hotel's reservation system, validated by Marriott hotels [6].

D. Sierag, G. Koole, R. Van Der Mei, J. Van Der Rest, B. Zwart proposed a revenue management model based on Talluri and van Ryzin that takes cancellations into account in addition to customer choice behaviour [7; 8].

In spite of the considerable amount of scientific works devoted to overbooking in the system of revenue management, it is necessary to note fragmentation and discussion of theoretical and methodical approaches concerning the use of their results in the practice of managing the subjects of the hotel business. A certain approach is an urgent task for business entities. There is no theoretical structure in the scientific literature that would justify a holistic concept of overbooking in the revenue management system. This complicates the development of organizational and economic mechanisms for its implementation and limits the possibilities of application to achieve the socio-economic goals of the functioning of business entities.

The **aim** of this study is to analyze the state of overbooking implementation in Ukrainian hotels, realization of hotel services segmentation by criteria of overbooking use on the basis of methods and analytical tools of data processing of web sites of Ukrainian hotels and testing of hypotheses.

Materials and methods. The research is based on the scientific works of scientists whose works reveal the managerial process of overbooking. The multidisciplinary and multidimensional nature of the scientific problem led to the application in the process of research of a set of methods: general

science – abstraction, analysis and synthesis, inductive and deductive, historical, logical, comparison, which provided the systematic character of overbooking as a hotel revenue management optimization method.

Results. Principles of revenue management are applied in any business environment. Overbooking hotel rooms can play a big role in a hotel's revenue management strategy. The statistical and historical data should be stored and processed by the reservation manager or revenue manager to calculate optimum overbooking levels necessary for implementing overbooking methods are:

- The total number of rooms available.
- Confirmed reservations and no-shows based on historical data.
- Credit Card / Guaranteed reservations vs no-shows based on historical data.
- Expected cancellations.
- Predicted stay overs and predicted under stays.
- Predicted Walk-in guests.
- Room type wise overbooking levels.

For hotels that are just beginning to implement overbooking, it is very important in the early stages to correctly identify and shape demand segmentation, which is determined by a combination of factors such as location, list of services provided, competitive environment and price elasticity. For analysis of competitors it is possible and necessary to use widely used tools. It may be such tools as STR, to provide daily reports on the main indicators of the hotel (downloads, average price and profitability of a room) compared with the chosen pool of competitors, as well as to explore open competitor prices in electronic sales channels and various resources for information exchange between hotels.

During the high season (more than 50 % occupancy in a city) all rooms in a hotel must be assigned with greater precision as well as stop sale must be announced in time to prevent overbooking which is always a bone in contention in our dealings with individual guests, corporates, business group and tour operators.

The biggest challenge in this situation – is proper working software and whole PMS (Property Management System – for example Opera). We analyzed the state of overbooking implementation in Ukrainian hotels in their high, middle and low seasons in order to fill up the property with the best (highest) rates and earn as much money as they can. But Revenue management also can consciously create overbooking. That is because in high season hotel always have no-shows (guests that have reservations and didn't show up in a hotel for a first night). For example, the hotel has a frequency of 30 % of No-shows with a full occupancy, so it means there can be some overbooking for such periods in order to fill up all rooms.

In *tables 1–3* the results of research about usage the overbooking hotel rooms of different market segments at five, four and three stars hotels in Ukraine are presented.

Table 1

Overbooking of different market segments in 5* hotels

Hotel	High season	Middle season	Low season	The level of use of hotels overbooking tools, %
Hilton Kyiv	Business Individual Tactical & Qualified Offers Business Groups	Business Individual	Business Individual	55.6
Premier Palace	-	–	–	0
City Holiday resort & SPA	Leisure Groups Business Groups	Leisure Groups	–	50
Fairmont Grand Hotel	Business Individual Business Groups	–	–	33.3
Opera hotel	Business Individual Business Groups	–	–	33.3
Intercontinental	Business Individual Tactical & Qualified Offers Business Groups	Business Individual	–	44.4
Hyatt Regency	Business Individual Tactical & Qualified Offers Business Groups	–	–	33.3
Lypky Signature Apartments	Leisure Groups Business Groups	Business Groups	–	50
Wish family Space	–	–	–	0
Leopolis Hotel (Lviv)	Business Individual Tactical & Qualified Offers Business Groups	–	–	33.3
Il Decameron Clubhouse (Odesa)	–	–	–	0
Kaddor Hotel Resort & SPA (Odesa)	Leisure Groups Business Groups	Business Individual	–	50
Hotel de Paris Odessa MGallery by Sofitel (Odesa)	–	–	–	0
Nobilis Hotel (Lviv)	–	–	–	0
M1 Club Hotel (Odesa)	–	–	–	0
Seasonal fluctuations in the use of overbooking tools, %	66.7	33.3	0	–

Source: Own development by authors.

During research 15 Ukrainian 5 stars hotels was analyzed. Nine of them are based in Kyiv, 4 in Odesa and 2 in Lviv. We discovered that only 9 of them are using overbooking. Some of them (Hilton, Intercontinental) use overbooking affectively and fully, but the majority use overbooking tools partially or occasionally. As we can see the majority of overbooking users are based in Kyiv and only 2 hotels are based out of Kyiv – Kaddor Hotel Resort & SPA in Odesa and Leopolis Hotel in Lviv. The main user of overbooking system is a Hilton Kyiv which uses overbooking for the market segment "Business Individual" in high, middle and low seasons.

Table 2

Overbooking of different market segments in 4* hotels

Hotel	High season	Middle season	Low season	The level of use of hotels overbooking tools,%
Mercure Kyiv Congress	Business Individual Business Groups Leisure Groups	Business Individual	Business Individual	55.6
Greguar Hotel	Business Groups	Business Groups	Business Groups	100
"NATSIONALNY" Hotel	Business Individual	–	–	33.3
Visak	Business Individual	Business Individual	–	66.7
Favor Park Hotel	–	–	–	0
BonApart Hotel	Business Individual	Business Individual	–	33.3
Park Inn by Radisson	Retail Business Individual Tactical & Qualified Offers Business Groups Leisure Groups Crew	Business Groups Leisure Groups Crew	Crew	53.3
Aloft Kyiv	Business Groups Leisure Groups Crew	Business Groups Crew	–	55.5
Boutique Hotel Vozdvyzhenskiy	Business Individual	Business Individual	Business Individual	100
Axelhof boutique hotel (Dnepr)	–	–	–	0
Viva Hotel (Kharkiv)	Business Groups	–	–	33.3
City club Hotel (Kharkiv)	Business Individual	–	–	33.3
LH Hotel&Spa (Lviv)	Business Individual	–	–	33.3
Intourist hotel (Zaporizhya)	–	–	–	0
Marlin Hotel (Odesa)	–	–	–	0
Seasonal fluctuations in the use of overbooking tools, %	73.3	46.6	26.6	–

Source: Own development by authors.

Almost all 4* hotels in Kyiv use overbooking unlike using this instrument in hotels in other Ukrainian cities isn't so frequent. The most standard situation is overbooking in high and middle seasons. Also we often can encounter overbooking for the market segment "Business Individual" and "Crew". The main user of overbooking system among 4* hotels in Ukraine is "Park Inn by Radisson" which uses overbooking for the market segment "Crew" in high, middle and low seasons.

For analysis hotels price changing we have chosen thirteen 3* hotels: 10 in Kiev and 3 in Cherkassy. As a result we can see that at least 8 hotels use overbooking system but only in Kyiv.

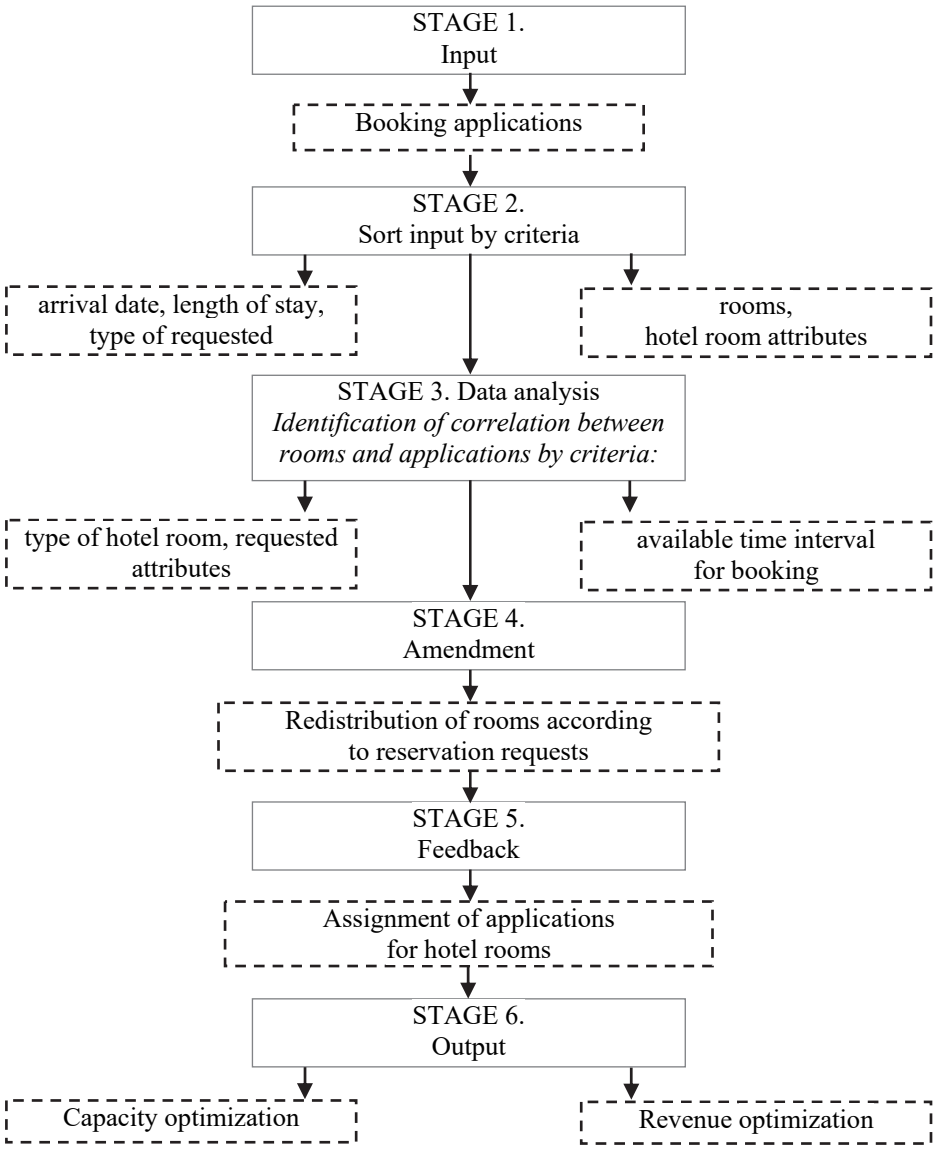
Table 3

Overbooking of different market segments in 3* hotels

Hotel	High season	Middle season	Low season	The level of use of hotels overbooking tools, %
Golden Gate Inn	Business Individual Tactical & Qualified Offers Business Groups	Business Individual	–	44.4
Verhovyna Hotel	–	–	–	0
Ukraine Hotel Kiev	Business Individual	Business Individual	–	33.3
Hotel Complex Tourist	Business Groups	–	–	
Salut	–	–	–	0
Premier Hotel Rus	Tactical & Qualified Offers Business Groups	–	–	33.3
Hotel Druzhba	Business Individual Tactical & Qualified Offers Business Groups	Business Individual	–	44.9
Mir Hotel	Business Groups	–	–	33.3
Premier Hotel Lybid	Tactical & Qualified Offers Business Groups	–	–	33.3
Ibis Kiev City Center	–	–	–	0
Knyazha Hora Hotel	–	–	–	0
Optima Cherkassy Hotel	–	–	–	0
Ukraina Hotel Cherkassy	–	–	–	0
Seasonal fluctuations in the use of overbooking tools, %	57.1	21.4	0	–

Analysis of the overbooking process for different segments of the market showed that the main problem faced by hotels when using overbooking is that, despite the set of booking applications exceeding the total number of rooms, there is downtime in the number of rooms in the intervals between bookings (*figure*) [9].

An analysis of the overbooking process for different market segments showed that the main problem that hotels encounter when using overbooking is that, despite a set of requests for the number of rooms exceeding the total number of rooms, downtimes are formed in the intervals between reservations.



The interdependence of overbooking and revenue management system optimization of hotel revenues

Source: developed by authors based [9].

The methods of Revenue Management are increasingly interested in the owners and managers of hotels, including the small numbered stock, but still not all managed to implement a profit management system. The market in this direction is only developing. The profitability management – both from the sale of rooms and for the provision of additional services, banquet and conference rooms, and events – will be the main trend of the hospitality industry for many years. The revenue manager can, on the one hand, optimize profitability and profitability not only from sales of rooms but also

other profit centers of the hotel; on the other hand, knowing (analyzing) the habits of regular guests, you can increase their loyalty by offering a personalized approach to providing special conditions for services the hotel. The hotel will have 100 % occupancy only if all rooms will be actually occupied by guests by the end of the day. That is why hotels with such high occupancy demand all reservations to be paid in advance or they will be cancelled on the day of arrival.

If the hotel is overbooked and all guests come on time to check-in and there are no rooms left to offer, this hotel needs to find hotel with same level and that has available room with same room category and organize the transfer for guest(s). What is the most important that the rate per room has to be the same that guest(s) has in his reservation.

For example, Radisson Blu Kyiv Hotel has an agreement with 3 hotels in Kyiv: Radisson Blu Podil, Park Inn and Holiday Inn for allowing accommodation for their guests in case of overbooking. These hotels are located in city center and close to each other.

Usually overbooking happens in a 3* and low 4* hotels – Ramada, Mercure, Park Inn. The highest occupancy level in Kyiv was during UEFA Championship League Final when all 4* and 5* hotels were full booked at the time of announcing such event in Kyiv. Hotels set high rates from the very beginning. The problem was that not all guests come to the hotel on the day of arrival (no-show) and that gave the hotel chance to sell those rooms even for higher rate than it was. That is why period of 24–26 May was the most profitable period for hotels (around 20 % of annual revenue was earned in those few days – accommodation + meetings & events + food & beverage parts). For night from 25.05 to 26.05 rate per single standard room was 1200 euro in Park Inn (only 1 room was available), 500 euro in Holiday Inn (2 rooms available) and 900 euro in Alfavito (1 room available).

Hotels that meet all of the above conditions will be able to show better results with revenue management methods. The size and style of the hotel, as well as the market where the hotel operates, will affect the observance of each of these conditions. For example, your market may be limited geographically, or you have to set prices in accordance with the instructions of the government. However, your product will most likely meet at least two of the three requirements outlined above.

To date, in Ukraine there is an obvious tendency to develop this technology not only in network and large hotels, but also in small hotels, where only one employee can handle income control.

Conclusion. The system of overbooking allows us to evaluate all aspects of the business activity of the subject of the hotel business, concerning the target segments and other weighty components. Summarizing the results of the study overbooking as an effective instrument of revenue management in hospitality, it can be stated that in order to achieving economic activity goals. It is important for the business entities to apply management technologies

that promote the introduction of information innovation and consolidation of intellectual resources. These instruments are the basis for regulating the successful management of hotel business entities, creating the necessary conditions for efficient use of resource potential and service quality. The implementation of overbooking in the hotel business management system will enable the hotel companies not only to increase competitiveness in the market, but also to increase capitalization, increase investment attractiveness. Hotel management must be able to use an effective market monitoring system that combines management (operational and strategic levels), information, marketing, accounting components.

This will allow to determine the volumes of application of overbooking at different time periods in order to ensure the optimal structure of hotel services, to identify potential reserves of demand satisfaction, to differentiate target segments of hotel services customers.

Accordingly, in further studies, it is advisable to focus scientific discussions on the use of overbooking in the plane of constructing theoretical and applied models that reveal the essence of its implementation through the prism of certain hotel services customers segments differentiation.

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The article submitted to editor's office on 15.11.2019.

Бойко М., Босовська М., Кулик М. Овербукінг як інструмент ревеню-менеджменту.

Постановка проблеми. *Впровадження системи ревеню-менеджменту в українських готелях вимагає застосування нових методів, що оптимізують рівень завантаженості та розподілу номерного фонду. Сучасний метод управління доходами в готельному бізнесі – це стратегія овербукінгу як ефективного інструменту ревеню-менеджменту. Саме використання овербукінгу може вирішити актуальні питання пошуку резервів отримання доходу. Овербукінг – ситуація, коли загальна кількість номерів, зарезервованих за певний проміжок часу, перевищує загальну кількість наявних у продажу номерів за той же період.*

Метою *статті є аналіз стану застосування овербукінгу в готелях України, здійснення сегментації готельних послуг за критерієм використання овербукінгу на основі методів та аналітичних інструментів обробки даних вебсайтів готелів України, перевірка гіпотез.*

Матеріали та методи. *У роботі використано такі загальнонаукові методи, як синтез, аналіз, порівняння, абстракція та індукція.*

Результати дослідження. *Проаналізовано стан використання овербукінгу в українських готелях на основі методології ревеню-менеджменту у високий, середній та низький сезони. Визначено рівень використання овербукінгу за основними ринковими сегментами в готелях 3*, 4* та 5*. На основі даних STR-звітів виявлено основні тренди сегментації готельних послуг за критерієм використання овербукінгу.*

Висновки. *Система овербукінгу дає змогу оцінити всі аспекти ділової активності суб'єкта готельного бізнесу щодо цільових сегментів та інших вагомих складових. Для суб'єктів господарювання важливо застосовувати технології управління, які сприяють впровадженню інформаційних інновацій та консолідації інтелектуальних ресурсів. Ці інструменти є основою для регулювання успішного управління суб'єктами готельного господарства, створення необхідних умов для ефективного використання ресурсного потенціалу та якості обслуговування. Впровадження овербукінгу в системі управління готельним бізнесом дасть змогу готельним операторам не тільки підвищити конкурентоспроможність на ринку, але й збільшити капіталізацію та інвестиційну привабливість. Менеджмент готелів повинен бути в змозі використовувати ефективну систему моніторингу ринку, що поєднує управління (операційний та стратегічний рівні), інформацію, маркетинг, бухгалтерські компоненти.*

Ключові слова: овербукінг, управління доходами, сфера гостинності, готелі, маркетингові сегменти.

UDC 004:658.5 =111 DOI: http://doi.org/10.31617/visnik.knute.2019(128)05

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INFORMATION CYCLE OF STRATEGIC MARKETING

The article analyzes the peculiarities of information support system for strategic marketing decision making. According to the survey of trade enterprises management personnel, there is a discrepancy between the information need and its use. The importance of developing strategic marketing information support system is substantiated. The information cycle of strategic marketing of trade enterprises is considered. Within the information cycle of strategic marketing of trade enterprises the levels of development of information support are defined, namely: operational, consolidation, integration, optimization, innovative.

Keywords: information cycle, information supply of strategic marketing, information needs, marketing strategy, marketing information.

Дубовик Т., Бучацкая И., Савчук А. Информационный цикл стратегического маркетинга. *Проанализированы особенности информационного обеспечения принятия стратегических маркетинговых решений. По результатам опроса управленческого персонала предприятий торговли определено несоответствие между потребностями в информации и ее использованием. Обоснована значимость развития информационного обеспечения стратегического маркетинга. Рассмотрен информационный цикл стратегического маркетинга предприятий торговли. В рамках информационного цикла определены уровни развития информационного обеспечения, а именно: оперативный, консолидации, интеграции, оптимизации, инновационный.*

Ключевые слова: информационный цикл, информационное обеспечение стратегического маркетинга, информационные потребности, маркетинговая стратегия, маркетинговая информация.

Background. The strategic marketing information supply operation is permanent; the collection, analysis and use of information are continuous, due to the dynamic changes occurring in the enterprise environment and possible changes in the strategic objectives of the enterprise. The strategic marketing information cycle involves defining information needs and requests

based on strategic marketing objectives and assessing the level of satisfaction of the information needs of its recipients. Information interests can be expressed through the specific objectives of the enterprise: economic, marketing, socio-ethical, technological, organizational. Economic and marketing goals are dominant for retail enterprises. Information interests provide the definition of information purpose, taking into account the economic interests and marketing objectives of trade enterprises. Economic interests of trade enterprises emerge from the necessity of continuous improvement of financial and economic conditions and are determined by quantitative and qualitative indicators: volume of goods turnover, profitability, income level, etc. Quantitative indicators characterize the enterprise results, which can be measured by calculation of data – these are reliable facts, the main characteristics of which are truthfulness and objectivity. Qualitative indicators characterize the level and characteristics of the processes development, characteristics of phenomena that are difficult to quantify and compare, since they reflect the long-term effect and are based on experience. In our opinion, within the information cycle of strategic marketing, it is expedient to consider the information request as the information requirements addressed to the enterprise information system for the implementation of strategic marketing tasks.

An important condition for correct information requests production is the knowledge about the essence and purpose of information. Information interests are determined by speed and quality indicators of managerial decisions, which is associated with the usage of different types of information and methods of analyzing it. It is important to consider information need, interest and requests as the basis for further collection, analysis and interpretation of the necessary marketing information**.** Thus, strategy formation is not the result of a strategy workshop or the application of a strategy method and extended analyses, or a formalized concept of an entrepreneurial vision, it is associated with permanent searching and interpreting information by managerial personnel or entrepreneur [1, p. 362]. Marketing information system can support managers in their marketing decision making by providing them with internal linking and operational integration between departments or business units. It can also increase the ability to respond to the Organizational dynamic system environment, allows the most efficient handling, and organize and store data [2, p. 331].

Using informal information, from personnel networks of the business entity, may assure a faster response to new events. The ability to learn from the experiences of employees at all level is important for strategies to emerge and effective strategic decisions making from a communicative interaction among relevant organizational members [3; 4]. Employees may have a very active role in the strategy formation process encouraged by communication with the small business manager [5]. The external environment moderates the strategy formation performance relationship and expects that dynamic industries offers opportunities that can exploited more easily by emergent

strategists while in stable industries a planned strategy is required considering in advance the actions of various factors determining competition [1]. While some stages of strategic marketing process repeated, appears holistic judgment which is based on the previous experience of the decision maker, and is analogous to "making holistic associations" [6, p. 42]. Faced with higher storage costs and burgeoning data growth, the concept of information life cycle management has emerged to help management understand their information needs and to structure their storage spending in a way that meets those needs [7]. Automated decision technologies affect organizational performance by facilitating routine tasks [8, p. 30]. The automation of routine and often tedious tasks allows a decision maker to explore a problem more thoroughly [9, p. 723].

It is important to determine information needed for managerial decision making. Information needs are considered as a need for information or activities, eliminating the imbalance between the present and desired state of the subject information environment [10]. Any information needed in the management process is a formal description of the task and ways of its successful solution, as well as recommendations for the result application in different situations [11, p. 41] The reliability of information refers to the fact that this information must be accurate and precise. Some researchers consider the information need as a form of manager's attitude to the information needed to solve a specific task. The information needs formation is significantly influenced by the type of management activity and the peculiarities of the functions performed [12]. It should be noted, that information needs are divided into conscious and unconscious. Information interest is a conscious information need, which is an incentive for searching and using of information resources. Information interests of trade enterprises are strongly connected with their economic and marketing objectives. Investigation of information needs and requests is an important task for managerial personnel of trade enterprises.

Analysis of recent research and publications. Different scientists have studied the role of information processing and economic environment investigation for marketing strategy formation. Some authors investigated the necessity of regular monitoring of the functioning process of the marketing information management system in order to find out whether it corresponds to general aims and tasks of the enterprise [13, p. 53]. Marketing information is regarded as one of the main factors for holding leading positions in the market segment of the enterprises.

The information systems development and implantation should start from clarifying its strategic, tactical and operational objectives (long, medium and short term) [14].

The relationship between systematic collection and analysis of publicly available information about consumers, competitors, and developments in the marketplace and gaining competitive advantage was investigated by scientists. The results of the analysis showed that there is a relationship

between the major components of marketing information system like internal records, marketing research, and marketing intelligence towards achieving a competitive advantage. Therefore, marketing intelligence explores the usefulness of the use of information technology in achieving competitive advantage [15].

Some authors have also suggested that there is a significant relationship between all the sub-constructs of marketing intelligence, such as internal records, competitors' sales data, marketplace opportunity, competitive threat and competitive risk to business competitive advantage. Therefore, above average returns can be maintained if a company gains business competitive advantage in the market over time, and all these are attributed to the amount of market information and intelligence a company can gather, store and utilize to the best of its advantage. Such information and marketing intelligence enable enterprises successfully acquire more profit, expand its branch network, perform better than its rivals in the market and increase its competitive advantage [16, p. 53].

A large number of existing studies in the broader literature have examined seeking, collection and use of information, as well as information needs, interests and queries, but they were not considered within the company's information cycle.

The **aim** of the article is to investigate the information needs of managerial personnel of enterprises and to develop strategic marketing information cycle.

Materials and methods. For the purpose of the research, we applied the methods of analysis and synthesis in order to study the peculiarities of strategic marketing information support system, questionnaires to investigate the selection of information sources used by consumers and identify the level of information needs satisfaction of management personnel.

Results. Thus, the study of information needs and requests of management personnel in accordance with the target audience of enterprises is a matter of urgency (*table 1*). First of all, we investigated with questionnaire by "Google Forms" regarding the influence of information on customers buying decisions. Due to results of this investigation, the Internet posts (experts' reviews, blogs, and forums), online-stores, web-sites, comparison sites and social networks information proved to be the most significant of all the information sources, which influence the decisions of customers – to buy or not to buy goods in stores.

According to *table 1*, the main source of information about the company for most consumers is the feedback from experts, bloggers and the information in social networks and on the site of the company. Thus, tracking consumer information from online resources can be used by retail enterprise when strategic decision making about communication and price policy and should be taken into account while marketing strategy development. To develop recommendations about information cycle, we investigated the level of information in the course of developing and implementing a marketing strategy on retail enterprises.

Table 1

The sources of information which influence the respondents buying decision in stores, %

Information sources	Age of respondents				
	16 –19	20–29	30– 39	40–55	56 and more
Experts and bloggers messages	54.6	69.6	42.6	53.1	37.5
Relatives, friends, colleagues referrals (word of mouth)	21.9	21.6	17.6	18.8	43.8
Corporate web-site (company, brand or product)	31.9	36.8	30.6	46.9	75.0
Price comparison web-sites	45.4	52.8	40.7	65.6	37.5
Advertising background in stores	7.6	6.4	10.2	21.9	18.8
Online news sources	10.9	14.4	13.0	40.6	56.3
Salesman recommendations	1.7	2.4	4.6	12.5	12.5
Printed advertising	10.1	7.2	15.7	15.6	37.5
Enterprise information in social networks	46.2	36.8	32.4	53.1	43.8
TV and radio advertising	4.2	8.8	16.7	25.0	56.3
Customers information on forums	32.8	34.4	25.9	34.4	31.3
Online advertising in search engines	37.8	28.8	20.4	28.1	25.0
Online advertising in social networks	23.5	27.2	25.0	25.0	50.0
Online-stores web sites	42.9	38.4	29.6	59.4	37.5
Printed chapbooks/catalogues	3.4	5.6	10.2	15.6	12.5
E-mail advertising dispatch	16.0	15.2	13.0	25.0	31.3
Manufacturers' online-stores	10.9	14.4	14.8	59.4	50.0

Source: authors investigations, samples – 400, statistical error – 0.945 doesn't exceed 0.055 (5.5 %).

The authors conducted a survey of directors, deputy managers, marketers and commercial directors of trade enterprises in Ukraine. Sizes of investigated enterprises are large and medium, according to quantity of employees and annual income. As the research showed, despite the availability of information needs, the level of information use when performing strategic marketing tasks varies. The lowest level of information usage is observed in the study of the influence of the macro environment, the state and trends in the market, consumption trends, forecasting the future development of the enterprise and monitoring the efficiency of marketing strategy. The obtained results prove the need to develop recommendations for the external information collection, analysis and evaluation of the marketing strategy efficiency (*table 2*).

The complexity of gathering information about the environment may be due to the limited access to information resources that characterize the activities of competitors and the lack of market research opportunities. Insufficient information in the study of the marketing strategy effectiveness depends on the accuracy of the selected indicators for its evaluation, as well as the possibility of identifying the causes that affect the obtaining of such results. Forecasting the development of an enterprise is complicated by the volatility and dynamic changes of the environment at micro and macro levels.

Table 2

Level of information needs for the implementation of strategic marketing tasks by retail enterprises, %

Type of information	Need		Use	
	Large enterprises	Medium enterprises	Large enterprises	Medium enterprises
Condition and prospects of economic development	100.0	95.1	61.0	76.0
Macroeconomic factors influence on the implementation of the enterprise marketing strategy	100.0	92.2	81.0	48.0
Purchasing power of the population	100.0	98.1	94.0	90.0
Market conditions and trends	90.3	84.5	71.0	52.4
Competitors research	100.0	95.1	84.0	54.4
Current and future needs of consumers	100.0	75.7	87.0	84.5
Trends in consumption	80.6	85.4	55.0	35.9
Projections of the enterprise development taking into account internal possibilities and influence of external factors	90.3	75.7	64.5	34.0
The effectiveness of the marketing strategy of the enterprise	100.0	86.4	83.9	47.6

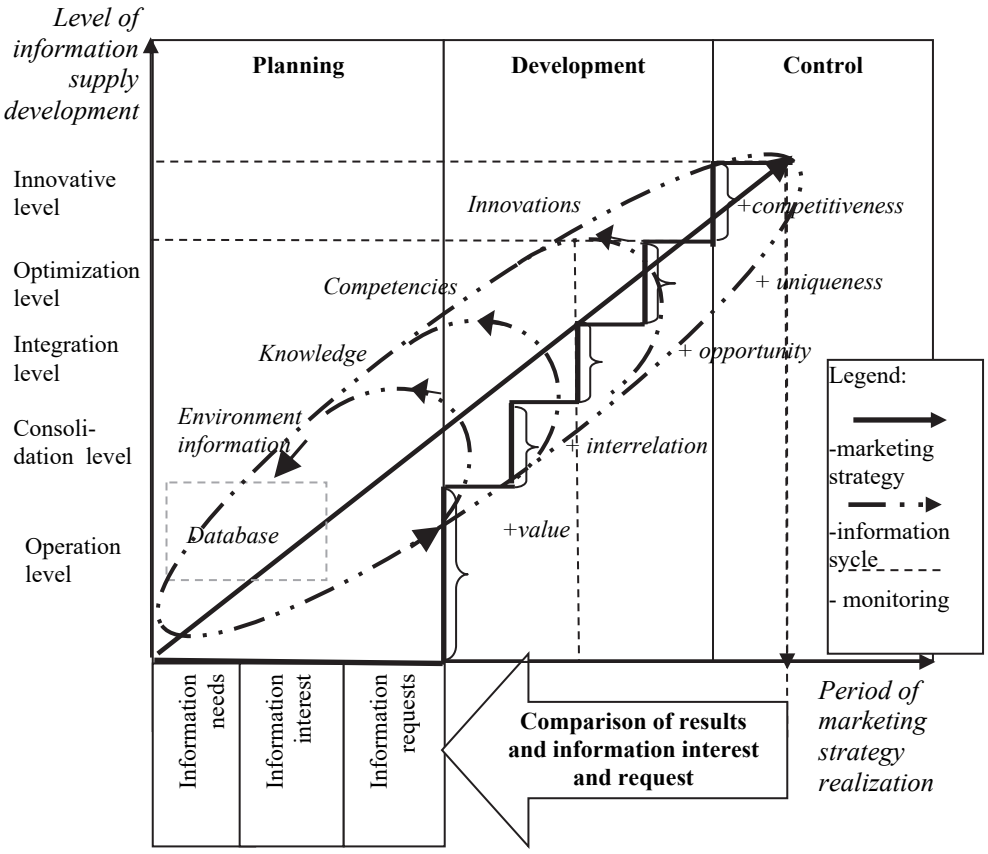
Source: authors investigations.

Among the areas for improving the information provision of strategic marketing in order to increase the level of information security, it is appropriate to note the application of various methods of analysis and forecasting, as well as the use of information and communication technologies. It is important to take into account the previous level of information security with its further collection, as the development of information provision for strategic marketing has an iterative nature. Iterative models were considered earlier by scientists for software engineering [17]. This model constructs a partial implementation of a total system. Then, it slowly adds increased functionality. Therefore, each subsequent release will add a function to the previous one until all designed functionalities are implemented [18, p. 99]. The information cycle of strategic marketing of retail companies is considered as a period of information resources usage at each stage of strategic marketing management: from the emergence and awareness of information needs, the formation of information interests and requests by the management of the company to exercise control over its implementation, on iterative basis of this process. The type of information, the frequency of its collection, and the source may be different, but some of the steps involved in filling the strategic marketing data base are repeated within the strategic marketing information cycle (*figure*).

We distinguish the following levels of development of information support system within the strategic marketing information cycle of trade enterprises: operational, consolidation, integration, optimization, innovation.

Based on the Iterative Development approach, the project, in our case marketing strategy, is divided into small parts. This allows demonstrating results earlier on in the process and obtaining valuable feedback from

system users. Often, each iteration is actually a process with the feedback from one phase providing vital information for the design of the next phase. The level of information supply development is connected with the necessity of using different information at each of its stages, depending on the level of information support from the existing information needs and their changes. The emergence of information needs with developing new marketing strategies involves the beginning of a new information cycle, taking into account the current base of strategic marketing data.



Strategic marketing information cycle

The operational level involves the creation of database about the enterprises internal environment, the accumulation of the enterprise performance indicators values used to assess the level and nature of enterprise development.

At the consolidation level, information is collected and marketing research that allows obtaining initial data about the external environment of the enterprise can be conducted. At this level the relationship and trends of changes in the external and internal environment of the enterprise are determined.

The integration level involves analytical processing of information with expert methods and intelligent analysis of data usage. The main task of this level is to convert the collected information into knowledge.

The optimization level involves the effective usage of knowledge gained during the previous levels, when making strategic marketing decisions.

The innovative level involves usage of modern information and communication technologies for large volumes of data analytical processing and the software and automated decision technologies, which provide the ability to forecast the enterprise development in the long-term period. It should be noted that the achievement of the innovative level is desirable, but not all enterprises achieve it.

Information technology on retail enterprises provides opportunities for collecting information from different channels of sales, monitoring and evaluation of consumer preferences of different segments, analysis of large volumes of data, but their introduction requires the attraction of significant financial resources, technical readiness of the enterprise, and relevant skills of its staff. The achievement of a certain level of development of the information support of the trading company in fulfilling the objectives of strategic marketing depends on the intensity of various resources use. Using the model of strategic marketing information cycle allows us to choose further directions of information security improvement on the basis of determining the existing level of information.

Conclusion. Information needs of managers during the implementtation of strategic marketing tasks form information interests that can be represented by the objectives of the enterprise. Improving the process of meeting the information needs of individuals who make strategic marketing decisions involves consideration of the information cycle of strategic marketing, which is the basis of the formation and development of information provision. Identifying information needs at different stages of strategic marketing and developing recommendations for providing the necessary data for their satisfaction will allow the adoption of reasonable management decisions. Increasing the efficiency of marketing strategy implementation is possible through monitoring changes in enterprise performance before, during and after the implementation of each strategy.

This research provides data about the information usage at different stages of strategic marketing process. Investigation of the information needs level for the implementation of strategic marketing tasks by retail enterprises, showed that there is discrepancy between the need and usage of information.

These findings should be viewed in light of some limitations. The sample set of enterprises in this study can be wider. Small enterprises and enterprises of other industries might be investigated too.

Further research about the impact of using information obtained on the speed, accuracy and efficiency of adopting relevant strategic decisions can increase their effectiveness in the future. However, theoretical conclusions require empirical studies. It is advisable to identify several ways of research. Firstly, the strategic marketing information cycle was considered, albeit in a simplified form, and in the future it would be necessary to analyze the synergy effect for various strategic marketing programs, taking into account the rotation of some processes. It is advisable to consider separately the

extent of the impact of Internet sources on the information cycle and peculiarities of information needs on other types of enterprises. Research on these practical issues will allow empirically confirm the theoretical conclusions regarding the use of the information cycle of retail enterprises.

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The article submitted to editor's office on 25.11.2019.

Дубовик Т., Бучацька І., Савчук А. Інформаційний цикл стратегічного маркетингу.

Постановка проблеми*. Удосконалення процесу задоволення інформаційних потреб осіб, які приймають стратегічні маркетингові рішення, передбачає розгляд інформаційного циклу стратегічного маркетингу, що є основою формування та розвитку інформаційного забезпечення. Саме виявлення інформаційних потреб на різних етапах стратегічного маркетингу та формулювання рекомендацій щодо надання необхідних даних для їх задоволення дадуть змогу приймати обґрунтовані управлінські рішення.*

Аналіз останніх досліджень і публікацій *показав, що інформаційне забезпечення суттєво впливає на досягнення конкурентних переваг та розвиток підприємств у стратегічній перспективі.*

Мета *статті – вивчення рівня інформаційних потреб управлінського персоналу підприємств та розгляд інформаційного циклу стратегічного маркетингу.*

Матеріали та методи. *Використано методи аналізу та синтезу для дослідження особливостей інформаційного забезпечення стратегічного маркетингу, анкетування – для дослідження джерел інформації, що використовуються споживачами, та визначення рівня задоволеності інформаційних потреб керівного персоналу.*

Результати дослідження. *За даними опитування управлінського персоналу підприємств торгівлі визначено, що існує невідповідність між потребами в інформації та її використанням. Обґрунтовано необхідність врахування циклічності розвитку інформаційного забезпечення, що пов'язано з потребою використання різної інформації на різних етапах стратегічного маркетингу, її накопичення та зміни інформаційного стану підприємства. З огляду на це, розглянуто інформаційний цикл стратегічного маркетингу як період використання інформаційних ресурсів на кожному з етапів управління стратегічним маркетингом: від виникнення й усвідомлення інформаційної потреби, формування інформаційного інтересу та інформаційного запиту керівництвом підприємства при визначенні мети розробки та вибору маркетингової стратегії підприємств торгівлі до контролю її реалізації. У межах інформаційного циклу стратегічного маркетингу підприємств торгівлі розглянуто рівні розвитку інформаційного забезпечення, а саме: оперативний, консолідації, інтеграції, оптимізації, інноваційний.*

Висновки. *Використання моделі інформаційного циклу стратегічного маркетингу дає змогу обирати подальші напрямки вдосконалення інформаційного забезпечення. Підвищення ефективності реалізації маркетингової стратегії можливе завдяки моніторингу змін у діяльності підприємства до, під час та після реалізації стратегій.*

Подальші дослідження впливу використання інформації, отриманої на швидкість, точність та ефективність прийняття відповідних стратегічних рішень, можуть підвищити їх ефективність у майбутньому. Однак теоретичні висновки потребують емпіричних досліджень. Доцільно визначити кілька способів дослідження. Передусім, інформаційний цикл стратегічного маркетингу розглядався у спрощеній формі, і надалі необхідно проаналізувати ефект синергії для різних стратегічних маркетингових програм з урахуванням ротації деяких процесів. Доцільно розглянути окремо ступінь впливу інтернет-джерел на інформаційний цикл та особливості інформаційних потреб на інших видах підприємств. Дослідження цих практичних питань нададуть можливість емпірично підтвердити теоретичні висновки щодо використання інформаційного циклу підприємств роздрібної торгівлі.

Ключові слова: інформаційний цикл, інформаційне забезпечення стратегічного маркетингу, інформаційні потреби, маркетингова стратегія, маркетингова інформація.

UDC 338.486.1.025.2:640.41 =111 DOI: http://doi.org/10.31617/visnik.knute.2019(128)06

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COMPLAINCE CONTROL IN THE HOTEL BUSINESS

It is carried out an analysis of the preconditions and outlines the prospects for implementation of compliance into the hotel business entities in the service market. The theoretical basis is defined and the methodology of compliance control is developed. The main problems are identified. The directions of the application of compliance control in the management of the hotel business entities are given.

Keywords: hotel business entity, compliance, compliance control, compliance risks.

Бовш Л., Гопкало Л. Комплаенс-контроль в гостиничном бизнесе. *Проведен анализ предпосылок и очерчены перспективы внедрения комплаенса в деятельность субъектов гостиничного бизнеса на рынке услуг. Определен теоретический базис и разработана методология комплаенс-контроля. Установлены основные проблемы и приведены направления использования комплаенс-контроля в менеджменте субъектов гостиничного бизнеса.*

Ключевые слова: субъект гостиничного рынка, комплаенс, комплаенс-контроль, комплаенс-риски.

Background. The concept of compliance is actively applied in the management of companies worldwide. Gradually, according to the tendencies in integration processes, compliance is implemented into domestic companies' activities as a preventive mechanism of protection against economic risks. The relevance of the hotel business entities, which are components of the tourism system, including quality assurance of service and formation of corporate reputation.

That is why it is advisable to analyze the perspectives of implementing compliance control into activities of hotels as a factor of business success in the view of transparency and compliance, initiated by investors, owners and franchisors.

Analysis of recent research and publications. Compliance as a theoretical and practical concept of management has recently become an object of interest for domestic scientists and market practitioners.

However, the attention of both Ukrainian and foreign researchers is mainly related to the objects of industry, pharmaceutical manufacturing and banking, public administration [1–8; 19–20]. Thus, M. Pieth considered compliance as anti-corruption mechanisms [9], J. Wieland, R. Steinmeyer [10] and S. Behringer [1] – as an effective tool for companies management. Arguments for compliance control were made by L. Klyusko [5], T. Kobeleva [6], M. Dumitru [11] et. al. The need for control as an integral part of the management policy of the national tourism system is mentioned in the works by A. Mazaraki, M. Bosovska and others [12], as an element of crowdfunding technology – N. Vedmid, M. Boiko, A. Okhrimenko [13].

There is reason to expand research on this issue because the hotel industry is not sufficiently covered by the methodology of compliance.

The **aim** of the article is the development of theoretical and methodological provisions of the compliance control of the entities' activities in the hotel services market.

Tasks that outline the achievement of this goal are following:

- to define the definition and meaning of the concepts "compliance" and "compliance control";
- to determine the perspectives of implementation of the compliance control of the activity of domestic hotel business entity in the services market;
- to develop a methodology of compliance control for domestic hotel business entities in the services market;
- to determine the directions of its application in hotel management.

Materials and methods. Methods of analysis and synthesis, scientific generalization and induction were used, including generalization of scientific literature on the content and functions of compliance and compliance control.

Results. Compliance (English: *compliance* – conformity; accordance) means an action according to a request. In other words, compliance with specific activities of the company for internal or external requirements (laws, standards, norms, regulations, instructions) [7, c. 13]. Compliance is also a part of the management and control system for quality standards, corporate standards, compliance with legislation, regulations and etc. Therefore, compliance control should be considered as a corporate image standard that the company's representatives are guided.

Today the hotel services market needs an upgrade of the requirements for the material and technical base, internal and external control system, standardization of quality, given the fact that in the period from 01.01.2016 to 01.10.2019 the Certificate of Assignment of the Category was terminated in 96 hotels and Certificates of 14 entities will have been terminated by the end of 2019. In addition, to evaluate the extent of external independent compliance, it should be noted that according to the Tourism Department of the Ministry for Development of Economy, Trade and Agriculture of Ukraine at the beginning of October 2019 hotel services of different levels of comfort offered 4719 accommodations [14]. However, only 341 of them have been certified. Their categories are established: 5* – 41 (13.2 %), 4* – 122 (35.8 %) 3* – 123 (36.1 %),

2* – 33 (9.7 %), 1* – 22 (6.5 %) [15] *(figure 1)*. This situation requires compliance in the course of service activities in the legal field, because pursuant to Chapter 5 of Article 19 of the Law of Ukraine "About Tourism" "…it is forbidden to provide accommodation services without a certificate of establishment of the relevant category" [16].

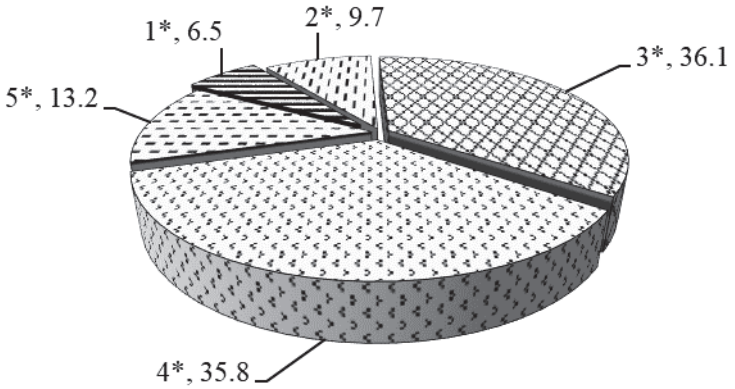

Figure 1. Structure of Certified Hotel Business Entities, %

Source: authors based on [14; 15].

Implementation of external compliance control of hotel business entities and creation of a system of compliance management will contribute to the growth of the investment attractiveness and value of reputation capital, will form the preconditions for improving the quality of services and maintenance in accordance with corporate standards *(figure 2)*.

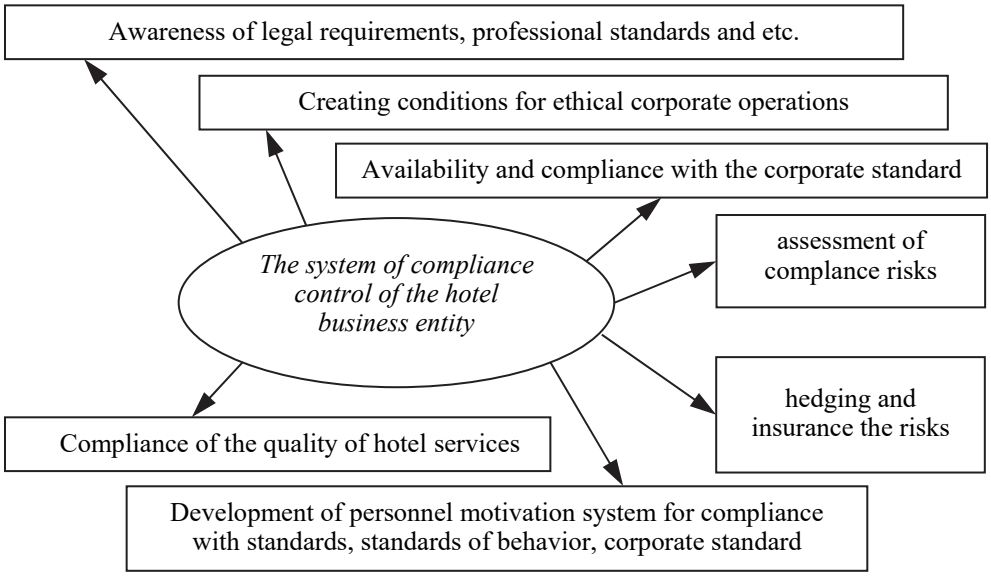

Figure 2. The compliance control functions of the hotel business entity

Source: authors based on [3; 19].

At the same time, compliance goals can be summarized as follows [3]:

- monitor and enforce the fulfillment of legislative requirements;
- abide by provisions, professional standards and internal rules;
- to provide the expectations of consumers and stakeholders holding the ethical conditions for the image and reputation of the hotel;
- hedging the risks and preventing the negative consequences and problems that arise in the process of realization of economic functions, etc.

Compliance control is based on compliance with legal requirements and internal standards in accordance with ethical principles and norms. As a management element, the compliance program is constructed in this order [3, p. 12]:

- implementing a culture and compliance policy at the hotel. At this stage, goals and compliance risks are identified and experience of business practices based on ethical principles are implemented;
- organizational and resource support of the compliance system;
- identification and assessment of economic risks;
- forming a profile of compliance management: documentation (provisions, standards, instructions, etc.), directions of coordination and subordination, methods and means of control;
- creating a system for reporting possible violations;
- conducting an internal review and disciplinary actions in the case of a violation of company policies by hotel representatives.

To test the above hypotheses of formation the system of compliance control in the activity of domestic hotels, we will construct a complex of identities according to two criteria: ascriptive and activity related attributes *(figure 3)*. The first is the compliance prospects that a hotel receives regardless of its own actions, that is, under the influence of certification or standardization requirements; the second is characteristics that are driven by conscious and purposeful activity.

		Activity related attributes	
		+	–
Ascriptive Characteristic	+	*intensive*	*ascriptive*
	–	*consecutive (consequential)*	*unspecified*

Figure 3. Types of compliance identity of hotel business entities

Source: authors based on [17; 18].

The types of identity of compliance control systems in domestic hotel business entities are formed according to the criteria of ascriptive and activity related attributes (*figure 3*). To test this typology, the research were conducted to determine the importance of certain attributes in compliance of hotel entities with the exploratory factor analysis by the method of categorical analysis of main components, which allows to quantify ordinal data in metric.

The survey was conducted among a selection of certified hotel brands (*figure 1*), including international chains, national chains and autonomous hotels.

The results *table* 1 confirm the validity of the distribution of identity determination criteria of the types of compliance control, which demonstrates the tendencies of the communicative environment in the hotel market, which have been transformed into activity related attributes.

Table 1

Pattern matrix

Criteria	Factors	
	ascriptive	active
Certification of activity	0.43	0.44
Certification of quality of hotel services	0.4	0.25
Compliance of professional standards	0.91	–0.09
Compliance of corporate standards	0.1	0.72
Control of management methods and technologies	–0.1	0.89

Source: authors based on [17; 18].

From the *table 2* it follows that a consecutive type of identity is the most common in the market of hotel services (72 %). It exists under the influence of trends and is also a consequence of market requirements, legislative requirements.

Table 2

Distribution of hotels in Kyiv by type of compliance control identity

Type of identity	%	n
Intensive	6	1
Consecutive	72	18
Ascriptive	8	2
Unspecified	14	3
Total	100	24

Source: authors based on [17; 18].

The identity complex influences not only on the identification of the hotel brand in the hotel services market, but also on the relationship system.

The identification of the compliance system should be considered through the architectonics of the management system, which provides for documentary and methodological support, within each business process forms the procedures where compliance is applied (*figure 4)*.

The main analytical method during the implementation of procedures described on *figure 4* is comparing consumer expectations with the real level of service quality and maintenance, business partners – with corporate reputation; owners and top managers – with goals.

That is why any control and evaluation entity is investigated not only by itself but also by comparison with the best practices, desired results, expected risks.

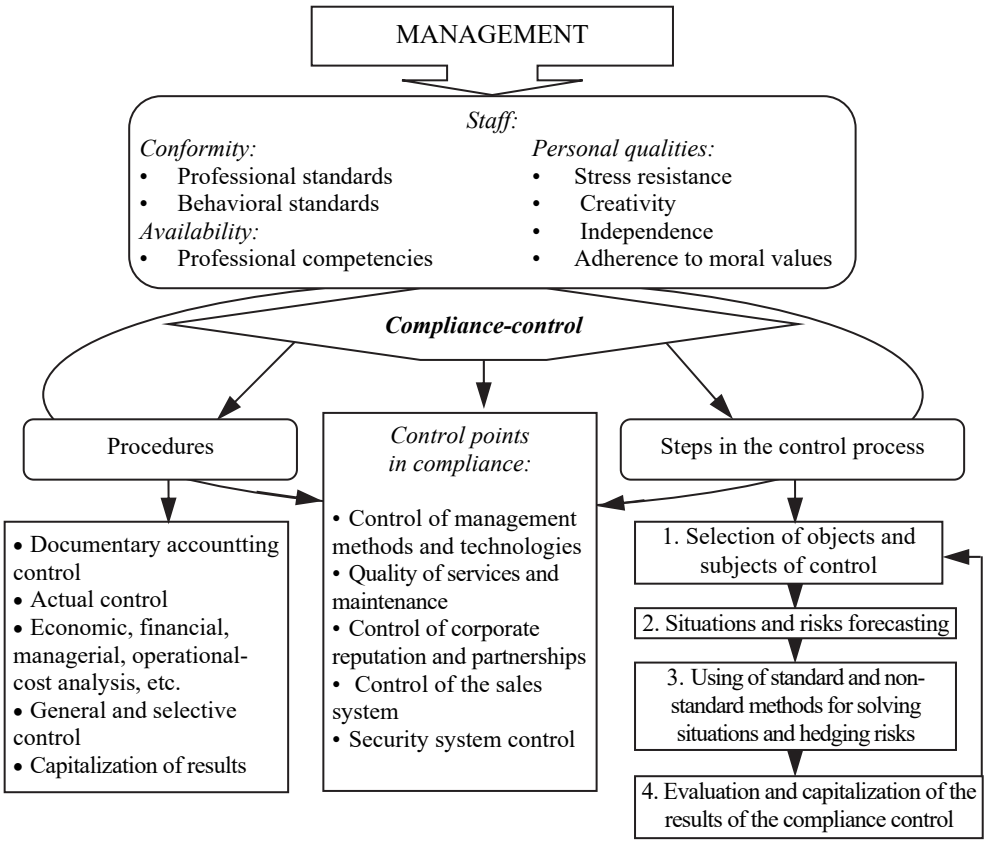

Figure 4. Methods of implementation of compliance control by hotel business entity

Source: authors based on [1–11; 19–20].

Each of these procedures has its own meaning and degree of impact on the financial result. Therefore, an aggregation of control results should be formulated to prevent the occurrence of risks. These results must be substantiated in the conclusions, proposals and actual actions.

Thus, the implementation of compliance control into the hotel business entity must be phased in. This ensures awareness of the relevance of compliance policies, as well as meeting goals and functions of compliance control i.e. to formulate a risk-oriented approach.

At the same time, the established internal standards and procedures reflect the validity of key compliance risks that have a negative impact on reputation, penalties and sanctions, costs of legal services, invalidity of contracts, financial and intellectual losses, damages.

In view of the above, determining the type and probability of risk is an important tool to minimize it and ensuring of financial and reputational security in the hotel entity's compliance control system *(figure 5)*.

At the same time, the points of compliance risks in the hotel services market could be the following:

- market conditions, political and economic situation in the location, in the whole country;

- change of legislation, tax burden;
- condition of the infrastructure of the hotel services market;
- condition of financial and investment markets, an investment attractiveness of location;
- volume of domestic and inbound tourist traffic, the tourist attractiveness of the location;
- corporate reputation;
- forms and systems of payment, financial discipline of consumers, stakeholders;
- non-revenue generating departments of the hotel;
- loss-making departments that define and complement the aggregate quality of the hotel service, the hotel category;
- the reputation and image of the hotel;
- information and security systems;
- staff, etc.

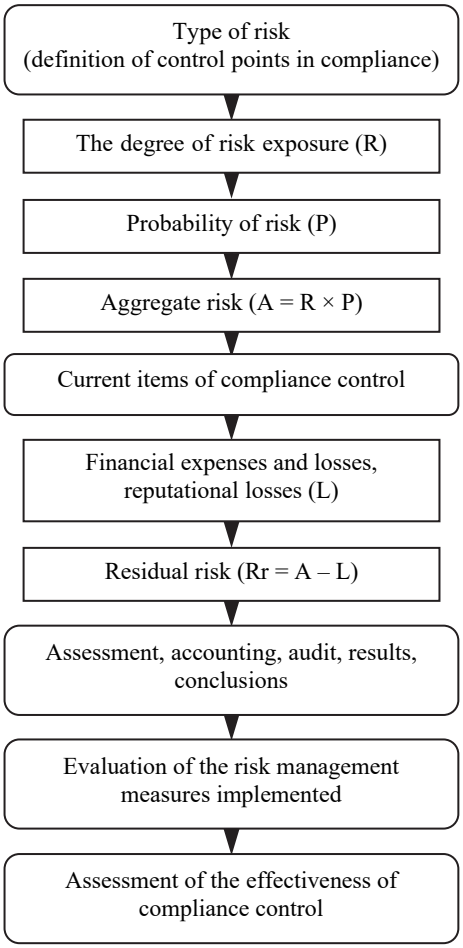

Figure 5. Compliance risk management and accounting

Source: authors based on [1–11; 19].

These include macro risks that are worth adapting to, and those that can be minimized and insured. With regard to internal risks, the management of the hotel market entity should develop a system of control and response with a proven methodology for decisions. In other words, the management of the entity determines the measures that should be taken to eliminate and prevent deviations by applying disciplinary actions and establishing liability and/or subordination to legal rules and legislation that require the training and motivation of all departments.

Therefore, perfect knowledge and compliance with behavioral and corporate standards by employees and owners of the company, understanddable to contractors, consumers and society as a whole is the goal of compliance control implemented in hotel management.

This will help to establish long-term partnerships, increase the sales of hotel products, because compliance with high standards in the activity is a guarantee of quality of services and maintenance, positive reputation of the hotel business entity.

The foregoing focuses on the compliance control of the hotel business entity with respect to compliance with the requirements, standards and the anti-corruption counteraction of the following directions (control points):

- availability of all permits for land management, construction, landscaping and ownership (joint ownership/management, business partnership);
- obtaining licenses, certificates of conformity, patents for copyright ideas;
- timely certification and assessing quality services and maintenance criteria of the hotel's activity for further assignment;
- effective hotel branding and naming;
- efficient logistics and transport: prompt transportation and convenience;
- partnerships with stakeholders and consumers.

Public accent on the compliance of the hotel business entity will improve marketing relationships and effectiveness of the activity in general, and will generate positive reputational capital.

Thus, compliance is not only the right work from a legal and moral point of view, but also a means of ensuring economic efficiency. For a hotel, taking measures to limit the probability and impact of risks on infringement of its corporate reputation, that may arise in the course of its activity is a central part of an effective risk management system.

It is also a prerequisite for establishing a long-term trust relationship with consumers, partners and counterparties. This is why compliance control is a key business imperative in the domestic hotel services market.

Conclusion. The identified theoretical foundations of compliance control form an analytical set of approaches to assessing of the economic and social effectiveness of hotel entity management.

It has been proved that hotel business entities require a professional approach to the formation and management of business processes in accordance with the requirements of corporate cooperation and quality standards of services and relationships, which ensure and make it possible to implement a system of compliance control.

It was found that certification and standardization of activities and services was intensified among the accommodation establishments, which is related to consumer safety and competitiveness issues within both national and world tourism systems.

The identification of the level of compliance control allows to determine the level of responsibility of the management system and controllability of the quality system.

Analytical methods of formation and assessment of the level of compliance control of the activities of hotel business entities (that were proposed for the implementation of polled hotels) form a clear system of compliance with standards, rules, requirements, etc., the evaluation of which will be the subject of further research.

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The article submitted to editor's office on 15.10.2019.

Бовш Л., Гопкало Л. Комплаєнс-контроль у готельному бізнесі.

Постановка проблеми. *Питання комплаєнсу є одним з найбільш актуальних питань для операторів готельного ринку у всіх сферах: нормативна підтримка; якість послуг; корпоративна репутація. Комплаєнс – це система вимог та умов, розроблена для встановлення відповідності прийнятим стандартам та регламентам.*

Мета *статті – дослідити зміст і напрями здійснення комплаєнсу та комплаєнс-контролю у діяльності суб'єктів готельного ринку.*

Матеріали та методи. *Використано методи аналізу й синтезу, наукового узагальнення та індукції, зокрема узагальнення наукової літератури щодо змісту та функцій комплаєнсу та комплаєнс-контролю.*

Результати дослідження. *Комплаєнс-контроль є важливою складовою системи управління підприємством, яка забезпечує та гарантує якість послуг і відносин між суб'єктом господарювання та всіма учасниками готельного ринку. Комплаєнс-система повинна бути невід'ємною частиною місії готельного суб'єкта, закладеною у свідомості кожного працівника.*

Суб'єкти готельного ринку потребують професійного підходу до формування та управління бізнес-процесами відповідно до вимог і тенденцій корпоративного співробітництва та стандартів якості послуг і відносин, що гарантує комплаєнс-контроль.

Посилено сертифікацію і стандартизацію діяльності та послуг серед закладів розміщення, пов'язаних з питаннями безпеки споживачів та конкурентоспроможності як у національній, так і світовій туристичній системі.

Висновки. *Виявлення рівня комплаєнс-контролю уможливлює визначення рівня відповідальності системи управління та керованості системою якості.*

Описані аналітичні методи формування та оцінки рівня комплаєнс-контролю діяльності готельних підприємств формують чітку систему відповідності стандартам, правилам, вимогам тощо, визначення ефективності яких стане предметом подальших досліджень.

Ключові слова: готель, комплаєнс, комплаєнс-контроль, комплаєнс-ризики.

UDC 005.334=111 DOI: http://doi.org/10.31617/visnik.knute.2019(128)07

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RISK MANAGEMENT MODELS

The basic business processes of the enterprise that are the basis for building a risk management system are identified. The main components of the enterprise risk management model have been established in accordance with the planning, operation and control of the enterprise activity. Based on the proposed model, risk identification techniques and key indicators that influence the performance of risk analysis and management at the enterprise are identified.

Keywords: risk, risk management, model, business processes, risk analysis, impact on risk.

Суб'єкти готельного ринку потребують професійного підходу до формування та управління бізнес-процесами відповідно до вимог і тенденцій корпоративного співробітництва та стандартів якості послуг і відносин, що гарантує комплаєнс-контроль.

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Keywords: risk, risk management, model, business processes, risk analysis, impact on risk.

Матусова Е., Андреева В., Ягодзинский В. Модели риск-менеджмента. *Определены основные бизнес-процессы предприятия, которые являются базисом для построения системы управления рисками. Установлены главные компоненты модели управления рисками на предприятии в соответствии с планированием, функционированием и контролем деятельности предприятия. На основе предложенной модели определены методики идентификации риска, ключевые индикаторы, влияющие на результативность анализа и обработку рисков на предприятии.*

Ключевые слова: риск, управление рисками, модель, бизнес-процессы, анализ риска, влияние на риск.

Background. The synergistic properties inherent in an enterprise management system that meets the requirements of different standards and models and satisfies the requirements of all stakeholders is the main subject of research into the constant development of an entity.

Each enterprise seeks to maintain its own position, despite the current economic crisis and adverse market conditions. Therefore, in addition to meeting the formal requirements of the standards, it is vital for stakeholders to ensure business continuity, that is, to maintain the ability to provide services or produce products to consumers before, during and after a crisis. To this end, management should analyze possible business impacts for prioritizing business functions based on an assessment of the potential financial and non-financial risks that threaten business continuity. To ensure safe, effective and timely action, the priority areas are: protection of human life; protection of business assets; support or early recovery of key business processes.

On the way to achieving the set goals, the company faces internal and external influences that create uncertainty about their timely reach. Therefore, for businesses seeking sustainable development in a complex, ever-changing environment, it is important not so much to establish the compliance of the management system with the requirements of different standards as to obtain comprehensive risk information in all areas of activity of the entity. Therefore, the introduction and continuous improvement of the risk management system in the enterprise is a prerequisite for its competitiveness and timely response to the challenges of the changing environment.

Risk management is seen as a process that operates on certain principles: it is continuous and covers the whole enterprise; carried out at all levels and in all departments of the enterprise used in strategy development and formulation; aimed not at specific risk but at their complex, considering the possibility of mutual influence of risks on each other and occurrence of synergism effect, detection of events in such a way that the organization could take risk without threat of liquidation; provides management with a sound guarantee of achieving goals even in times of crisis [1].

Analysis of recent research and publications. Issues related to the consideration of such concepts as: "risk", "uncertainty", "risk management" were investigated by N. Khrushch, M. Nastenko, M. Cruy, M. Velikanova, O. Gerasimenko [1–5] etc.

Although the problems of providing an effective enterprise management system are actively discussed by politicians, scientists, practitioners of various spheres of public activity, not all aspects in this sphere have sufficient theoretical and methodological elaboration. These include the identification, assessment, counteraction to risks and threats to the economic activity of the enterprise, as well as the formation of a modern model of enterprise risk management.

The **aim** of the article is to develop a model of risk management as an integral part of the enterprise management system, which will ensure its effective operation in modern conditions of changing internal and external environment and meeting the needs of all interested stakeholders.

Materials and methods. Dialectical cognition method, methods of analysis, synthesis, system and process approach, as well as modeling of business processes were used to build a risk management model at the enterprise.

Results. The global experience of risk management shows that the main principle of modernization of risk management was the principle of quality management system [6], which involves the application of a process approach to management on the basis of continuity, involvement of the whole organization, taking into account its goals, effective communication between management entities, and also giving preference to preventive measures (*figure 1*).

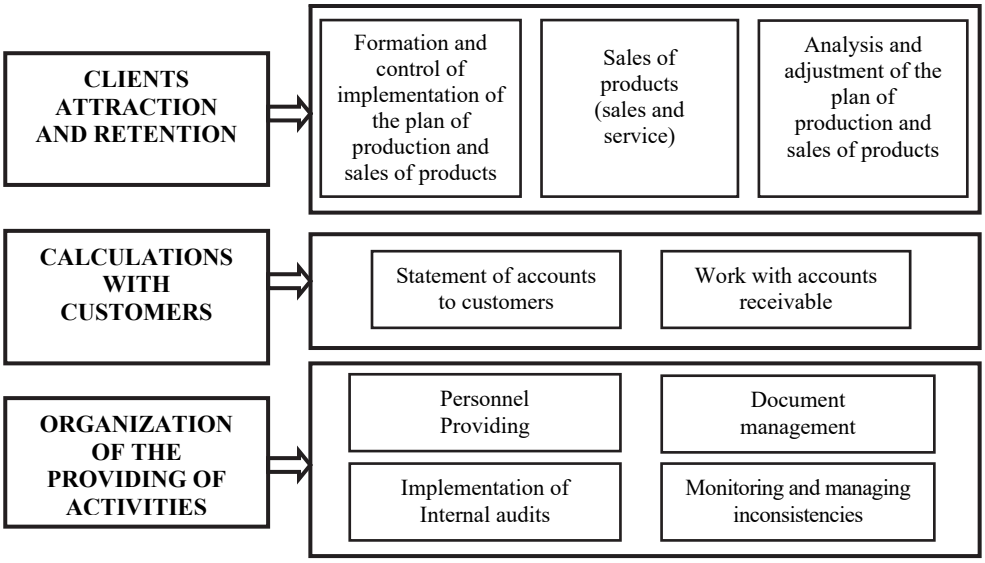

Figure 1. The main processes of the enterprise

Source: developed by the authors.

An enterprise trying to respond to changes in the market can be guided in its activity by dividing into the key processes outlined in *figure 1*. It is these processes and changes in them that provide the basis for functioning and stimulate its development, and are crucial for establishing the mission and main goals of the enterprise. Thus, risk management as a response to changes in the processes of the enterprise is a necessary prerequisite for achieving the planned level of performance.

ISO 31000: 2018 establishes principles, a common framework for risk management, that can reduce the risk of failure to meet targets in a timely manner:

- implementing risk-oriented thinking in the organization;
- risk identification and management;
- improvement of enterprise management in general [7; 8].

By improving risk management approaches, the company expands opportunities for improvement and innovation, as well as shortening the timeframe for achieving its goals. Risk assessment information provides objective, comprehensive input for critical analysis of management by Board and decision making and actions related to: improving system performance; product/ service improvement; reducing the risk of dissatisfaction with all stakeholders.

In order to obtain comprehensive information about the management system, which contains information not only about the non-compliance of this system with certain points of international standards, but also about possible cause and effect relationships of systemic problems, it is of fundamental importance for the maturity of the organization at the moment of searching for new approaches to improving the management system, as well as management system goals set by senior management.

In accordance with the process approach and the approved world standards, in order to ensure the effectiveness of the risk management system at the enterprise, a risk management model is being built, which contains three main components, which correspond to the basic elements of the enterprise's activity (*figure 2*).

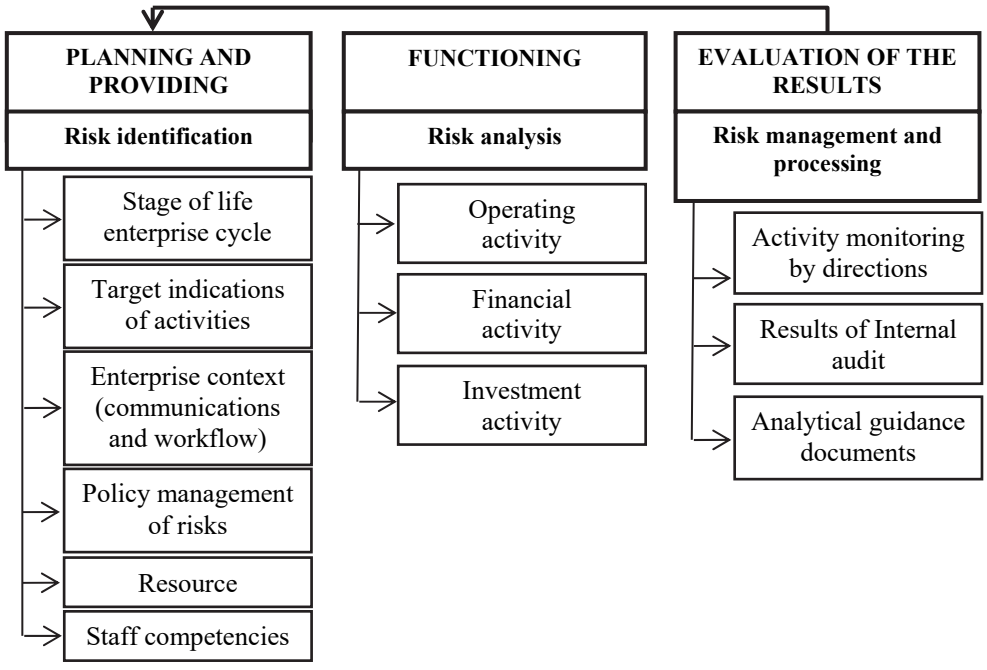

Figure 2. Model of risk management in the enterprise

Source: developed by the authors.

The component of the "Risk Identification" model provides the basis for further risk analysis and identifies the main factors of the internal and external environment that may be the reasons of risk situations.

To identify risks, an entity can use two main methods or its combination: proactive and responsive.

The proactive method is implemented by means of detailed functional analysis of business processes before the fact of deviations of the final results. To perform this analysis, it is necessary to decompose the process into elementary components. An elementary component is a simple action or function that can be described by a single verb in a commanding manner. The inputs, resources, controls, and outputs that lead to the end result of the process should be identified, unless otherwise specified in the relevant enterprise regulations.

The next step is to identify the events and conditions that may occur:

- a common factor of danger;
- components of the danger factor;
- probable conditions, events that may occur;
- the consequences that each component of a dangerous factor can lead to when each condition and event occurs.

For the proactive method, it is recommended to use *SWIFT – Structured "What-if" Technique*. By this method, risks are identified through the formulation of the questions "What if?", "What happens if?", which allows us to investigate the impact of uncertain conditions and events on the process.

Reacting technique is based on deviations that have already occurred. The analysis is performed, the causes and conditions that led to a particular event are determined. At this stage, the use of the "5 WHYS?" Technique is envisaged. The 5 WHYS technique ("What?", "Who?", "Where?", "When?", "How?") is set to investigate the reasons of the appearance by finding the answer to the question "Why (appearance)?":

- this rejection;
- reasons for rejection;
- events that are the reasons;
- conditions are heralds of events.

The analysis of deviations of process outcomes from established indicators and risk identification should be carried out with the participation of employees who have sufficient knowledge, practical experience and thorough understanding of all details of the process. A flowchart of the risk analysis and risk assessment sub-process is presented in the *figure 3*.

The source for risk analysis is any information about unforeseen events that occurred at the enterprise. Sectoral information on similar events is also possible.

The following questions can be used to determine the probability of a risk:

- Have events in the past been similar to the one under consideration, or is this an isolated incident?
- What other processes or components of the same type might have similar deviations?

• What is the number of employees who perform these procedures?
• What percentage of the time during the process or procedure is in doubt?
• How serious are the organizational or managerial implications that could indicate more significant factors for the occurrence of deviations?

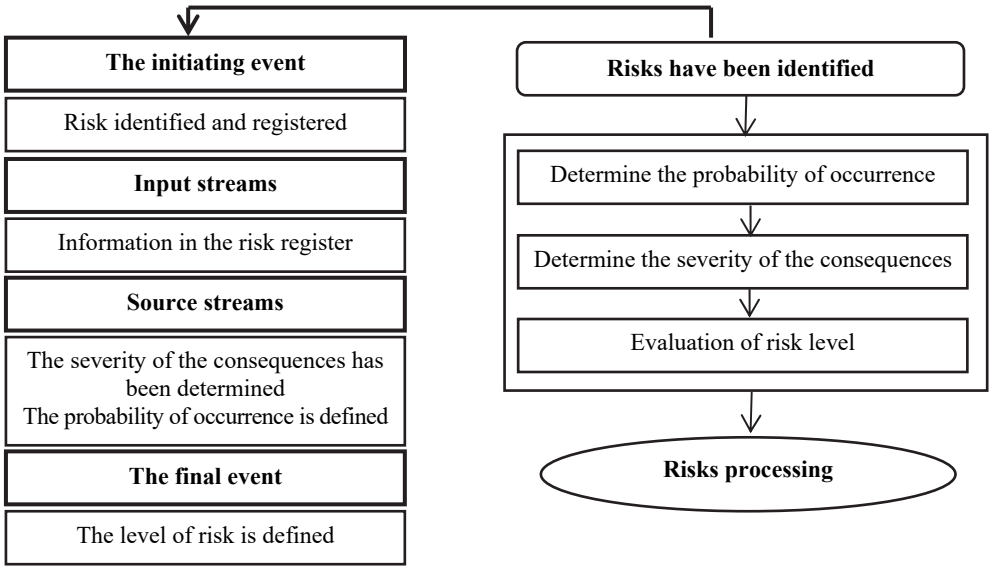

Figure 3. Analysis and evaluation of results at the enterprise

Source: developed by the authors.

Assessing the possibility that an undetermined event or condition may occur, it is crucial for informed decisions to look back over the years. In the absence of such information, risk estimation is allowed based on industry trends or expert opinion.

The risk probability matrix is presented in the *table 1*.

Table 1

Matrix of probability of occurrence of risks in the enterprise

Frequency of occurrence	Meaning	Degree
Often	It can happen many times (happened often)	5
Sometimes	**Occasionally**	4
Very rare	Unlikely but possible that it will happen	3
unlikely	It is very unlikely to happen (no details of what happened)	2
It is highly unlikely	The possibility of an event is almost off	1

Source: developed by the authors.

The next step in the process of organizational control of the risk factors associated with the consequences of deviations is to assess the severity of the consequences if the damage materializes in the processes of production and marketing of products (provision of services).

The severity of risk factors is defined as the possible consequences of an uncertain event or condition, with the worst case scenario being considered as the benchmark. These issues can, for example, help to assess the severity of the consequences if their potential materializes in the course of the enterprise's activities:

- What is the number of negative situations related to customer satisfaction?
- What is the level of damage to the enterprise (damage or destruction of the property of the enterprise, property of customers or external suppliers, damage to a third party, financial and economic consequences for the enterprise)?
- What is the probability of environmental impact (Dangerous Product Incidents or Other Environmental Disorders)?
- What is the probability of violations of current law?
- What is the level of harm to the health of customers, employees, etc?

Based on the content of the answers to such questions, one can estimate the severity of the possible consequences of an undetermined event or condition by using the risk factor matrix of severity while assuming the worst case scenario as a benchmark (*table 2*).

The Impact Severity Matrix contains five categories that characterize the severity of an undetermined event or condition. The value of each category assigned corresponds to the degree of severity of the undetermined state or event. Just like the probability matrix, this table is an example given to provide an algorithm to an expert team.

Table 2

Matrix of severity of consequences of risk exposure

Seriousness of consequences	Meaning	Degree
Critical	Full stop of the operating process. Destruction of property, infrastructure. Receiving losses over a long period. Health damage, human casualties	A
Dangerous	Significant reduction of the "safety margin" of equipment and damage to property. Receiving losses for several consecutive periods. High share of overdue accounts payable. Stress or workload that can cause staff to fail in their tasks	B
Intense	Breach of contract obligations. High share of overdue receivables. The staff is not fully able to cope with adverse operating conditions due to increased workload or due to conditions that reduce the efficiency of work	C
Insignificant	Production restrictions, short-term downtime production equipment. The presence of illiquid inventory. Insignificant interpersonal conflicts	D
Miserable	Unplanned short-term downtime of fixed assets not related to operating activities. Minor violations of the staff work schedule	E

Source: developed by the authors.

To obtain a general risk index, it is necessary to combine the probability matrix and the consequence severity matrix into the risk assessment matrix (*table 3)*.

Table 3

Risk assessment matrix at the enterprise

SERIOUSNESS OF CONSEQUENCES							
	A	Critical	1A*	2A**	3A***	4A***	5A***
	B	Dangerous	1B*	2B**	3B**	4B***	5B***
	C	Intense	1C*	2C**	3C**	4C**	5C***
	D	Insignificant	1D*	2D*	3D**	4D**	5D**
	E	Miserable	1E*	2E*	3E*	4E**	5E**
			It is highly unlikely	unlikely	Very rare	Sometimes	Often
		PROBABILITY of occurrence					

* Indicates green (acceptable risks).
** Indicates yellow (risks that should be addressed in the medium term).
*** Indicated in red (risks need immediate response).

Source: developed by the authors.

A preliminary risk assessment is an alphanumeric combination and is not a visible or tangible component, so this combination is called *a risk index*.

Acceptance zones are indicated by color marking in the risk assessment matrix (*table 4*). The risk index derived from the risk assessment matrix should now be transferred to the risk tolerance matrix, which characterizes the eligibility criteria.

Table 4

Summary matrix of risk levels at the enterprise

Criterion	Risk Index	Level of risk
CRITICALLY (Red colour)	3A 4A 5A 4B 5B5C	1 Unacceptable
CONDITIONALLY acceptably (yellow)	2A 2B2C 3B3C 3D 4C 4D 4E 5D 5E	2 Conditionally acceptable
acceptably (green)	1E 1D 1C 1B 1A 2D 2E 3E	3 Acceptable

Source: developed by the authors.

All risks exceeding the permitted limits must be processed. At the initial stage of settlement it is necessary to analyze the possibility of eliminating a dangerous factor – a source of risk. The further action is to analyze the possibility of avoiding the risk by ending the activity that causes it.

If the two previous steps for some reason are not acceptable to eliminate the risk, then it is necessary to proceed to the treatment of risk by influencing its determining parameters: reducing the probability of appearance and/or severity of consequences.

The processing of these parameters is possible through the development and implementation of measures aimed at increasing the probability of achieving the goals and reducing the probability of negative results of the process. The development of these measures should begin after an analysis of the potential impact on each parameter:

probability of appearence: if the results of the analysis show the possibility of reducing the probability of occurrence, then appropriate measures should be taken;

severity of consequences: if the results of the analysis show the possibility of reducing the severity of the consequences, then it is necessary to develop measures that will result in their reduction, which will affect the variation of the final results of the processes.

Each action developed must be completed within the prescribed time. These actions should be a clearly defined plan of action, indicating the timing of each event and the responsible officials at each stage. The action plan must be approved by the head of the structural unit where the risk has been identified. In the event that several structural units are involved in the remedial action, a general action plan must be drawn up and agreed with the leaders involved.

After the implementation of the measures, a performance check should be carried out. If the actions taken did not reduce the parameters (probability and consequences), and the risk level to an acceptable level, then repeat the procedure.

Conclusion. In order to ensure timely response of the enterprise to the challenges of the changing environment, increase its competitiveness and economic security, it is necessary to apply a risk management model that must meet the world standards of risk management and key business processes of the enterprise. Such a model allows identification of risks, analysis of their consequences in two parameters and setting the procedure for their treatment.

Depending on the life cycle of the enterprise and the availability and completeness of the information base on the risk management process, each enterprise will not only have its own different model, but also apply different methods and approaches to risk identification, assessment and treatment. Identifications will also depend on the period of the risk event. If an entity is attempting to use preventive risk management measures, then a proactive risk identification technique will be effective, and if it is intended to evaluate the impact of the event on the entity's activities, then it is advisable to use a responsive methodology.

Risk analysis as an element of an enterprise risk management system will depend on a reliable and complete assessment of the two main risk parameters: the probability of occurrence and the consequences. The result of the analysis should be used to further influence the risk, the effectiveness of which, in turn, will also be determined by the level of involvement of all stakeholders.

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The article submitted to editor's office on 18.11.2019.

Матусова О., Андрєєва В., Ягодзінський В. Моделі ризик-менеджменту.

Постановка проблеми. *Підприємство, досягаючи своїх цілей, стикається з внутрішніми та зовнішніми впливами невизначеності. Тому важливо не лише встановити відповідність системи управління вимогам різних стандартів, а й отримати вичерпну інформацію про ризики у всіх сферах діяльності суб'єкта господарювання. Впровадження та постійне вдосконалення системи управління ризиками на підприємстві є необхідною умовою його конкурентоспроможності та своєчасного реагування на виклики середовища.*

Метою *статті є розробка моделі управління ризиками як складової системи менеджменту на підприємстві, що забезпечить його ефективну діяльність у сучасних умовах мінливого внутрішнього і зовнішнього середовищ та задоволення потреб усіх зацікавлених сторін.*

Матеріали та методи. *Для побудови моделі управління ризиками на підприємстві використано діалектичний метод пізнання, методи аналізу, синтезу, системний та процесний підхід, а також моделювання бізнес-процесів.*

Результати дослідження. *Світовий досвід ризик-менеджменту засвідчує, що головним принципом модернізації управління ризиками став принцип застосування процесного підходу. Відповідно до процесного підходу та затверджених світових стандартів для забезпечення ефективності функціонування системи ризик-менеджменту на підприємстві будується модель ризик-менеджменту, що містить три основні складові: ідентифікація ризику, аналіз та оцінка ризиків, влив на ризики. Компоненти моделі управління ризиками відповідають основним елементам функціонування підприємства: планування та організація обслуговування, функціонування та контроль (оцінка ефективності управління ризиками на підприємстві).*

Підприємство може використовувати два основні методи ідентифікації ризиків: проактивний та реагуючий. З метою виявлення наслідків ризику аналіз ризику ґрунтується на оцінці двох показників (ймовірності та впливу). Усі існуючі ризики мають бути оброблені. Необхідно проаналізувати можливість усунення джерела ризику, після чого визначити можливості уникнення ризику шляхом припинення діяльності, яка його зумовлює.

Висновки. *З метою забезпечення своєчасного реагування підприємства на виклики мінливого середовища, підвищення його конкурентоспроможності та економічної безпеки необхідно застосовувати модель управління ризиками, яка повинна відповідати світовим стандартам управління ризиками та ключовим бізнес-процесам підприємства. Така модель дає змогу ідентифікувати ризики, проаналізувати їх наслідки за двома параметрами (ймовірність та вплив) та встановити процедуру впливу на них.*

Ключові слова: ризик, управління ризиками, модель, бізнес-процеси, аналіз ризику, вплив на ризик.

UDC 658:338.246=111 DOI: http://doi.org/10.31617/visnik.knute.2019(128)08

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THE DIAGNOSIS OF ECONOMIC SECURITY OF THE ENTERPRISE

The essence of economic security of the enterprise and methods of estimation of its level are considered. Methodical approaches to assessing the level of economic security of the enterprise are investigated, and their analysis is carried out. The system of functional components of economic security of the enterprise is proposed and the author's method of estimation of its level is substantiated.

Keywords: economic security, entrepreneurship, enterprise, indicators, hierarchy, thresholds, competitiveness.

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Зубко Т. Диагностика экономической безопасности предприятия. *Рассмотрены суть экономической безопасности предприятия и методы оценки ее уровня. Проанализированы подходы к оценке уровня экономической безопасности предприятия. Предложена система функциональных составляющих экономической безопасности предприятия и обоснована авторская методика оценки ее уровня.*

Ключевые слова: экономическая безопасность, предпринимательство, предприятие, индикаторы, иерархия, пороговые значения, конкурентоспособность.

Background. Currently most of enterprises act in incertitude and unpredictability conditions. Precarious political and social economic situation in the country strengthen the level of a risk of decision making and enterprises operation all in all. In the context of a market conditions it is impossible to achieve permanent success in business field if constantly we do not plan its developing effectively, do not accumulate information about own prospects and opportunities about condition of markets, also competitors market position on them so on.

Now under these circumstances formation of the system of diagnostics of economic security of an enterprise for the purpose of an effective managerial decisions approval and future prospects of enterprise developing is becoming important.

Analysis of the last research and publications. Problems of theory, methodology and practical issues of diagnostics of economic security of an enterprise were devoted to a considerable number of scientific works by domestic and foreign economists, among them N. E. Avanesova, G. Andruseac, M. D. Baldzhy, I. M. Kotova, K. I. Tarasova, G.V. Blakyta, A. O. Blyzniuk, Z. S. Varnalii, L. O. Voloshchuk, O. O. Voronkov, K. S. Diachenko, M. I. Kopytko, O. Ya. Kravchuk, P. Ya. Kravchuk, S. M. Laptev, Yu. G. Lysenko, D. K. Nanto, P. A. Poliakov, R. M. Skrynkovskii, O. S. Shumilo [1–16] and other.

Making an analysis of mentioned above scientists' research, we can make a conclusion that economic security of an enterprise is a state of enterprise defensibleness from economic dangers and threats. It is a state when stability of its activity and all kind of resources such as financial, material and immaterial, human resources are not threatened by any negative consequences. At the same time, positively evaluating the results of mentioned above scientists researches, it should be noted that there is currently no generally accepted approach to the method of assessing the level of economic security of the manufacturing and trading enterprise.

Most of the aforementioned studies are devoted to the problem of forming the economic security system of an industrial enterprise, considering the separation of its functional subsystems. However, there is no methodology for assessing the level of economic security in terms of cash flow formation. Among the problems of ensuring the economic security of the company can be mentioned the lack of a common methodology for its comprehensive assessment.

The **aim** of the article is the investigation of the creation of a system of diagnostics of economic security of the enterprise through the formation of a list of its main indicators.

Materials and methods. The study of this issue was carried out using theoretical generalization and analysis. The information base of the research is the works of leading scientists, statistical sources, Internet resources.

Results. An analysis of the activity of enterprises shows that they are faced with issues related to the financial, production, technological, investment and information fields of activity. In the conditions of the market it is unrealistic to achieve stable success in business unless to plan its development effectively, not to constantly accumulate information about own prospects and opportunities, about the state of markets, competitors market position. In these conditions, it is now important to form a system of diagnostics of the economic security of an enterprise in order to make effective managerial decisions, to establish further prospects for the development of the enterprise.

The task of economic security is to promote the stable and efficient operation of the enterprise and to realize its full potential for further development.

The economic security system of an enterprise traditionally includes the following components: intellectual and human resources, information, technical and technological, financial, political and environmental, and power [1; 2; 6; 8; 17–19].

Taking into account the peculiarities of the manufacturing and trading enterprise, its economic security contains the following functional components:

- security of operational activities (market and technical and technological);
- security of financial activity;
- security of investment activity;
- security of innovative activity;
- intellectual and personnel security.

Assessing the security levels of each functional component, we should consider the security of the logistics operations.

According to the achievements of well-known scientists [9; 10; 15; 16; 20], the diagnostics of economic security of an enterprise, as a rule, is performed in the following sequence:

- identification of internal and external factors that determine the economic security of an enterprise (for each of the functional components), analysis and assessment of the degree of their impact;
- calculation of generalized indicators of economic security for each of the functional components;
- calculation of the integral index of economic security of an enterprise;
- development of a set of measures aimed at improving economic security will give us a comprehensive methodology for assessing the level of economic security of an enterprise. In doing so, consideration should be given to their effectiveness.

There are several methods of assessing the level of economic security of an enterprise:

- the assessment of the level of economic security of an enterprise is determined on the basis of the calculation of the aggregate criterion (or integral indicator) by finding and summing up the individual functional

criteria, which are calculated by comparing the possible magnitude of damage (losses) to the enterprise and the amount of costs for the implementation of measures related to prevention this damage (losses) [3; 13; 16];

- calculation of functional dependence [5–7];
- use of indicator method [18; 20];
- for the express-analysis of the level of security of an enterprise, is being used an approach of using points assesses (rating approach) [10];
- method of determining hierarchical levels of economic security (current, tactical, strategic and general levels) [21];
- graphical [22].

In our opinion, only a balanced combination of these methods, taking into account the industry affiliation of the evaluated enterprise and taking into account the division of indicators into two groups (stimulants and destimulators), allows to create a system of assessing the level of economic security of the enterprise. When constructing functional dependence, apply the method of fuzzy logic theory, which is used to build a model of enterprise activity. The following concepts are used: universal plural; fuzzy plural; function of belonging; linguistic variable; therm-plural; therm-element. That is, the system of economic security indicators can be estimated by methods of fuzzy plurals.

Having analyzed the scientific works [3; 5; 7; 12–14; 17–19; 22], the indicators of evaluation by functional components were selected and six groups of indicators were compiled.

In accordance with the proposed system of indicators we propose a set of criteria that can be grouped as follows: X_1 – assessment of the market component of the security of the enterprise, X_2 – assessment of the technical and technological component, X_3 – evaluation of the financial component, X_4 – evaluation of the investment component, X_5 – evaluation of the innovation component, X_6 – assessment of the intellectual and personnel component of economic security of the enterprise.

In turn, the complex value of each of these groups can be determined by certain indicators. Thus, the assessment of the market component of the security of an enterprise X_1 can be estimated by the indicators: the factor of supply of material resources – X_{11}, the fulfillment of suppliers by orders – X_{12}, the degree of compliance with the size of orders – X_{13}. The dependency will be as follows:

$$X_1 = f_1 (X_{11}, X_{12}, X_{13}). \quad (1)$$

To evaluate the technical and technological component of economic security X_2 it is possible to use the indicators production capacity factor (K_{pc}) – X_{21}, wear factor (K_w) – X_{22}, returns on assets (RA) – X_{23}:

$$X_2 = f_2 (X_{21}, X_{22}, X_{23}). \quad (2)$$

The next in the list of functional security components is the financial component. In relation to the meaning of its level scientists' thoughts differ. For example, M. V. Bandura [22] proposes to evaluate financial security on

the basis of E. Altman's multifactor model. We share the opinion of V. I. Khalina [23] and the indicators of financial security we select the following indicators: the coefficient of autonomy (k_{aut}) – X_{31}, the coefficient of financing (k_{fin}) – X_{32}, the ratio of coverage (k_{cov}) – X_{33}, receivables turnover ratio (k_{rt}) – X_{34}, payables turnover ratio (k_{pt}) – X_{35}, profitability (k_P) – X_{36}. Dependency will look like:

$$X_3 = f_3 (X_{31}, X_{32}, X_{33}, X_{34}, X_{35}, X_{36}). \quad (3)$$

The functional component is investment security that can be estimated on the basis of the turnover ratio of current assets – X_{41}, profitability of incomes – X_{42}, the level of financial leverage effect – X_{43}:

$$X_4 = f_4 (X_{41}, X_{42}, X_{43}). \quad (4)$$

The following functional component which is innovative, we will evaluate by the following indicators: the share of employees involved in innovation activity – X_{51}, ratio of coverage of capital investments – X_{52}, the coefficient of inventive activity – X_{53}, the share of realized innovative products in the total volume of products – X_{54}, share of research expenditures – X_{55}.

Accordingly, the dependence is the following:

$$X_5 = f_5 (X_{51}, X_{52}, X_{53}, X_{54}, X_{55}). \quad (5)$$

The functioning of the intellectual-personnel subsystem X_6 can be estimated by the following indicators: staff turnover rate – X_{61}, labor productivity level – X_{62}, stock-raising of labor – X_{63}, the ratio of rationalization activity – X_{64}, ratio of highly skilled and skilled workers to the total number of employees – X_{65}:

$$X_6 = f_6 (X_{61}, X_{62}, X_{63}, X_{64}, X_{65}). \quad (6)$$

On the basis of calculated values of groups of indicators the level of economic security of the enterprise is determined:

$$Y = F (X_1, X_2, X_3, X_4, X_5, X_6). \quad (7)$$

Note that the set of indicators presented is one of the possible options and can be formed by an expert individually for each individual enterprise, taking into account its specificity. Data of a numerical nature come from the appropriate reporting forms of the enterprise, standards, specifications, etc. Data that cannot be quantified is based on expert judgment.

In order to be able to evaluate and process the linguistic indicators X_{ij}, $i = \overline{1,N}$, $j = \overline{1,M_i}$, that characterize an enterprise in terms of its economic security, we form a single scale of five qualitative terms: *VL* – very low level of *Xij*, *L* – low level of *Xij*, *A* – average the level of the index *Xij*, *H* – high level of the index *Xij*, *VH* – a very high level of the index *Xij*.

Using the tools of fuzzy logic, we construct the functions of fuzzy terms for the controlled parameters *Xij*, $i = \overline{1,N}$, $j = \overline{1,M_i}$ and the output

variable *Y*. Then we formulate a set of rules for estimating the level of economic security of the enterprise on the basis of independent variables. An expert system based on fuzzy knowledge should include a mechanism of fuzzy logical inference to be able to determine the level of economic security of the enterprise on the basis of all necessary source information received from the user.

The next step in this method is to evaluate the level of indicators. At this stage, the current levels of *Xij*, $i=\overline{1,N}$, $j=\overline{1,M_i}$ and *Y* are evaluated based on financial statements and expert judgment for different time periods. The values of the controlled parameters *Xij*, $i=\overline{1,N}$, $j=\overline{1,M_i}$, which exactly fall into the intervals $\left[\underline{X}_{ij},\overline{X}_{ij}\right]$ set for them, will uniquely correspond to their terms. If the value of the criterion is in the interval between the two terms, then it will belong to the term whose belonging function is greater for a given level of the indicator.

As a result, we obtain a linguistic description of the level of economic security of the enterprise and then can evaluate the quality of the results obtained.

Conclusion. The results of the investigation shows that there are different approaches to choosing a methodology for assessing the level of economic security, to defining a system of astimated indicators. A promising area of research in this sphere may be substantiation the use of specific indicators of economic security of an enterprise by its individual components. Diagnosing of the components of economic security is the basis for developing of a set of measures to counter threats and improve the level of security of an enterprise.

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The article submitted to editor's office on 03.12.2019.

Зубко Т. Діагностика економічної безпеки підприємства.

Постановка проблеми. *Більшість підприємств наразі працюють в умовах невизначеності та непередбачуваності. Нестабільна політична і соціально-економічна ситуація в країні посилюють ступінь ризику прийняття рішень і функціонування підприємств загалом. За цих умов важливого значення набуває формування системи діагностики економічної безпеки підприємства з метою ухвалення ефективних управлінських рішень, встановлення подальших перспектив розвитку підприємства.*

Аналіз останніх досліджень і публікацій *показав, що попри наявність окремих наукових доробок, залишається невирішеною важлива науково-практична проблема щодо загальноприйнятого підходу до методики оцінки рівня економічної безпеки, а саме виробничо-торговельного підприємства.*

Метою *статті є дослідження питання створення системи діагностики економічної безпеки підприємства через формування переліку його основних показників.*

Матеріали та методи. *Вивчення зазначеної наукової проблеми проведено із застосуванням теоретичного узагальнення й аналізу. Інформаційною базою дослідження є праці провідних науковців, статистичні джерела, інтернет-ресурси.*

Результати дослідження. *Результати аналізу діяльності підприємств свідчать, що перед ними постають питання, пов'язані з фінансовою, виробничою, технологічною, інвестиційною та інформаційною сферами діяльності. В умовах ринку нереально домогтися стабільного успіху в бізнесі, якщо не планувати ефективно його розвиток, не акумулювати постійно інформацію про власні перспективи й можливості, стан ринків, становище на них конкурентів тощо. Наразі важливого значення набуває формування системи діагностики економічної безпеки підприємства з метою ухвалення ефективних управлінських рішень, встановлення подальших перспектив розвитку підприємства.*

Розглянуто сутність економічної безпеки підприємства і методи оцінки її рівня. Досліджено підходи до оцінки рівня економічної безпеки підприємства, проведено їх аналіз. Запропоновано систему функціональних складових економічної безпеки підприємства та обґрунтовано авторську методику оцінки її рівня.

Висновки. *Нині існують різні підходи до вибору методики оцінки рівня економічної безпеки, визначення системи оціночних показників. Перспективним напрямком досліджень у цій сфері може бути обґрунтування використання конкретних показників економічної безпеки підприємства за окремими її складовими. Діагностування складових економічної безпеки є основою для розробки комплексу заходів протидії загрозам та підвищення рівня захищеності підприємства.*

Ключові слова: економічна безпека, підприємництво, підприємство, індикатори, ієрархія, порогові значення, конкурентоспроможність.

UDC 336.1:004 =111 DOI: http://doi.org/10.31617/visnik.knute.2019(128)09

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BLOCKCHAIN TECHNOLOGY IN THE FINANCIAL ECOSYSTEM

The relationship between the development of financial technologies and the formation of the financial ecosystem has been investigated. It is proposed to divide the properties of the financial ecosystem into general and specific ones. The definition of the financial ecosystem has been clarified on the basis of identification of the institutional, functional and sectoral approaches to its understanding. The signs of classification of blockchains in the financial sphere are systematized.

Keywords: financial ecosystem, financial technologies, blockchain technology, smart contract.

Волосович С., Баранюк Ю. Технология блокчейн в финансовой экосистеме. *Исследована взаимосвязь между развитием финансовых технологий и формированием финансовой экосистемы. Предложено разделить свойства финансовой экосистемы на общие и специфические. Уточнена дефиниция финансовой экосистемы на основе выделения институционального, функционального и отраслевого подходов к ее пониманию. Систематизированы признаки классификации блокчейнов в финансовой сфере.*

Ключевые слова: финансовая экосистема, финансовые технологии, технология блокчейн, смарт-контракт.

Background. The development of technological innovations and the economy of consumption have led to powerful transformations of both national and global financial systems. It initiated the formation of financial ecosystems, closely linked to the various financial technology tools that unite all its participants. Financial ecosystems are transformed by the impact of financial technology development. The emergence of accessible, fast and convenient financial services, the simplification of tax administration, public

procurement, the receipt of social security based on financial technologies enhance the processes of decentralization of financial systems and create the basis for transparency of financial transactions of economic entities, households and the state. One of the financial technology tools that provide it is blockchain technology.

Analysis of recent research and publications. Financial systems are subject to transformations, which are the characteristic feature of the economic systems of many developed countries in the world [1]. Substantial transformations of the structure of the financial system are due to the liberalization of financial legislation, the invention of new financial instruments and the gradual universalization of banking activities [2].

In foreign scientific literature, the issues of the functioning of financial ecosystems are explored by I. Lee and Y. Shin [3], K. Swenson, J. Yudesen and J. Webb [4], C. Bose [5], Z. Posser [6] and others. The most of works of domestic scientists concern the analysis of only certain types of financial ecosystems, in particular, cashless payments in the agricultural sector [7], banking ecosystem [8]. All publications, without exception, emphasize that financial technologies are the basis for the existence of financial ecosystems, and blockchain is its important tool. The works of J. Chen, K. Belavitis [9], J. Mulhol [10], O. Baranov [11] and others are devoted to some problems of the use of blockchain technology in the financial sphere. However, despite the high level of existing theoretical developments, the questions on the essence of financial ecosystems and the role of blockchain technology in their transformations require further research.

The **aim** of the article is to determine the priorities for the use of blockchain technology in ensuring the functioning of financial ecosystems.

Materials and methods. The theoretical and methodological basis for writing the article were the works of domestic and foreign scientists on the functioning of financial ecosystems, the role of financial technology tools in its provision, including blockchain technology. The study was conducted using the methods of theoretical generalization, comparative analysis and synthesis, which allowed clarifying the definition of financial ecosystem, identifying its specific properties and systematizing the features of blockchain classification in the financial sphere.

Results. The term "ecosystem" was originated to describe phenomena and processes occurring in the natural environment, but nowadays it has become widely used in other spheres, in particular, in the functioning of financial systems. There are institutional, functional and sectoral approaches to understanding financial ecosystems. The institutional approach involves an emphasis on the composition of ecosystem participants. So, I. Lee and Y. Shin include technology developers, government agencies and regulators; private and corporate financial clients; traditional financial institutions to the financial ecosystem [3]. K. Swenson, J. Yudesen and J. Webb add another compo-

nent to these participants – FinTech startups [4]. This approach is also supported by the National Bank of Ukraine. In the Strategy of the National Bank of Ukraine, the financial ecosystem refers to the set of participants in the financial market and other parties that at the same time interact on terms of cooperation and competition in order to create and provide financial products and services [12].

Within the functional approach, the team of authors considers the financial ecosystem as a technology platform aimed at digitalization of the financial market, which includes four areas: financial capital, consumer preferences when receiving financial services, Internet of things, financial technologies [13, p. 126–129]. The Internet of things is a financial technology tool, and it is inappropriate to include it as a separate area of the financial ecosystem. As a result, the financial ecosystem is identified with financial technologies [13, p. 29].

The sectoral approach assumes that its supporters understand only some of its subsystems under the financial ecosystem, in particular, the cashless payments subsystem in the agricultural sector [7], the banking ecosystem [8].

The financial ecosystem is characterized by general and specific properties of the systems.

Common properties include:

emergence implies that due to the interaction of individual components, new properties, that characterize the system, emerge*;*

totality is the sum of properties of each subsystem, that is, it is about the presence of the aggregate properties;

heterogeneity is that the system cannot consist of completely identical elements.

The specific properties of the financial ecosystem include:

adaptability, that is, functioning based on the use of financial technology tools, in particular artificial intelligence, big data, the Internet, blockchain, cryptography, biometrics;

decentralization, which implies a diminishing role of financial intermediaries in the markets;

client orientation, which is conditioned by the increasing role of the consumption economy in modern society*;*

inclusivity based on increased consumer access to financial services and citizen participation in budgeting*;*

stability, which implies the security of financial transactions, on the one hand, and crisis prevention or minimization of its consequences, on the other.

The financial ecosystem is a collection of traditional financial intermediaries, FinTech companies, FinTech startups, incubators, accelerators, regulators, business entities, individuals, public financial institutions, educational institutions which interact through the use of financial technology instruments that maximize consumer inclusivity in the financial services market and transparency of public finances.

In the ecosystem, each institution seeks to diversify data by managing partnerships with competitors that can be a source of strategic and operational risks [14, p. 25]. For the financial ecosystem to function effectively, it is important to ensure the transparency of relationships between all participants. This is to some extent facilitated by blockchain technology. In 2015, the World Economic Forum in Davos stated that blockchain is a new technology that eliminates the need for third parties to ensure confidence in financial, contractual and electoral actions [15]. As Baranov notes, blockchain can establish trust by examining the identity and potential of any counterparty through a combination of past transaction history (by blockchain), reputation indices based on generalized reviews and other socio-economic indicators [11].

The volume of global investments in blockchain technology during 2015–2018 tends to grow amid an increase in its share in global investments in FinTech (*figure 1*).

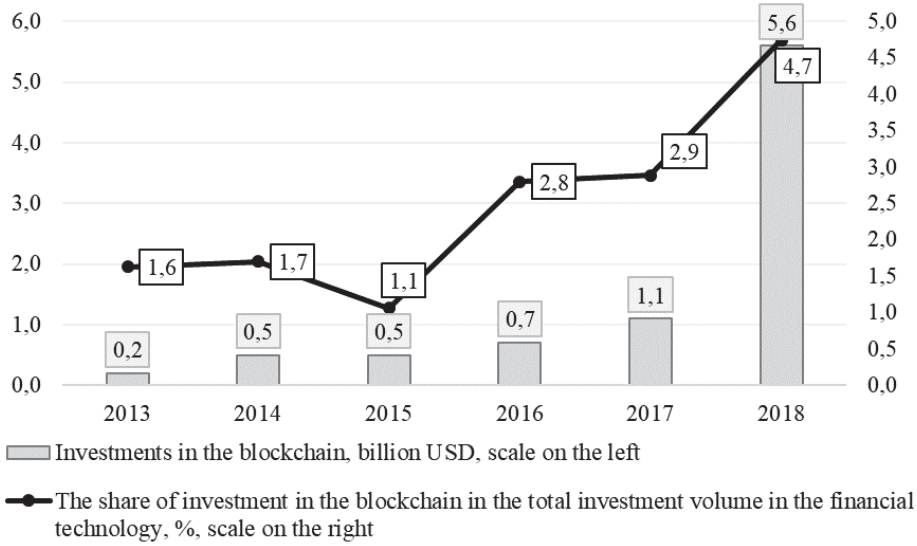

Figure 1. Global investments in blockchain for 2013-2018

Source: constructed by the authors according to the materials [16–18].

According to research company International Data Corporation, China will invest up to USD 2 billion in the development of blockchain companies by 2023 [19]. Since 2015, the US Department of Homeland Security has provided USD 800,000 to Silicon Valley tech startups to develop blockchain solutions aimed at improving the security of the country [20]. At the same time, in the world during 2013–2018, the average annual growth in the number of vacancies in the blockchain industry was 139 %, and as of the end of May 2019, 2 300 vacancies were opened [21].

There are different approaches to blockchain classification now. It is proposed to classify blockchains in the financial ecosystem by participants, level of centralization, generations and fields of application.

By participants blockchain are divided into:

public, providing wide open access for users who have equal rights and can perform basic functions: transaction validation, cryptocurrency transfer, access to database records. Examples of such blockchains are *Bitcoin, Bitcoin Cash, Litecoin*. At the same time, there are public blockchains with different levels of permissions, where there are restrictions on the transparency of transactions and the ability to perform certain functions by users, in particular transaction validation. For example, some *BitShares* users have the right to be validators or to vote, while others can only see the results of their activities. In the first case, public blockchain is decentralized and used by its participants to exchange cryptocurrency and enter into agreements based on smart contracts. In the second case, blockchain has signs of centralization and is used by corporate networks*;*

private, which has limited access for users to registry entries, within which they may have the same rights as in a public blockchain. Its example is the *Mijin* platform. The operation of private blockchains can speed up the transaction process and hide it from third parties. Private blockchain makes it easy to find the right information due to a small number of transaction records. This kind of blockchain can be both centralized and decentralized*;*

hybrid, which is a new concept that allows you to connect existing blockchain networks with additional blockchains. For example, the *Ardor* platform has a test network that is identical to the core network. It enables users to refine their skills to avoid possible mistakes and failures while working on the core network.

By the level of centralization, blockchains are divided into *decentralized*, where all users can perform the transaction validation function, and *centralized*, where this function is performed by a specific person.

There are three generations of blockchain in the genesis of blockchain technology. Blockchain 1.0 was created in 2009 on the basis of the new principle of registration of transactions with the advent of bitcoin. The second stage of blockchain development is related to the development of smart contracts by *Ethereum* company in 2013, which allow them to be executed automatically under the conditions specified therein, which prevents third parties from interfering and reduces costs. The next phase – Blockchain 3.0, started in 2017 with the development of more productive technologies, including *Cosmos*, DFINITY and EOS.

By area of application in the financial system, blockchains are divided into those used in the financial services market, in the sphere of public finance, business environment and households (*figure 2*).

It follows from *figure 2* that blockchain is most commonly used in the financial services market and in public finance. The *table* shows the possibilities of using the blockchain by individual entities of the financial ecosystem.

According to the Tax Service of the Chinese city of Shenzhen, from August 2018 to November 2019, the number of electronic invoices in this technology center in the field of finance, insurance, retail, restaurant and hotel business, written using blockchain, exceeded 10 million in the amount of 1 billion USD against the background that more than 7.6 thousand companies have accessed this system [26]. During 2018, the volume of active loans provided with the help of decentralized lending protocols increased by 1.083 % [27].

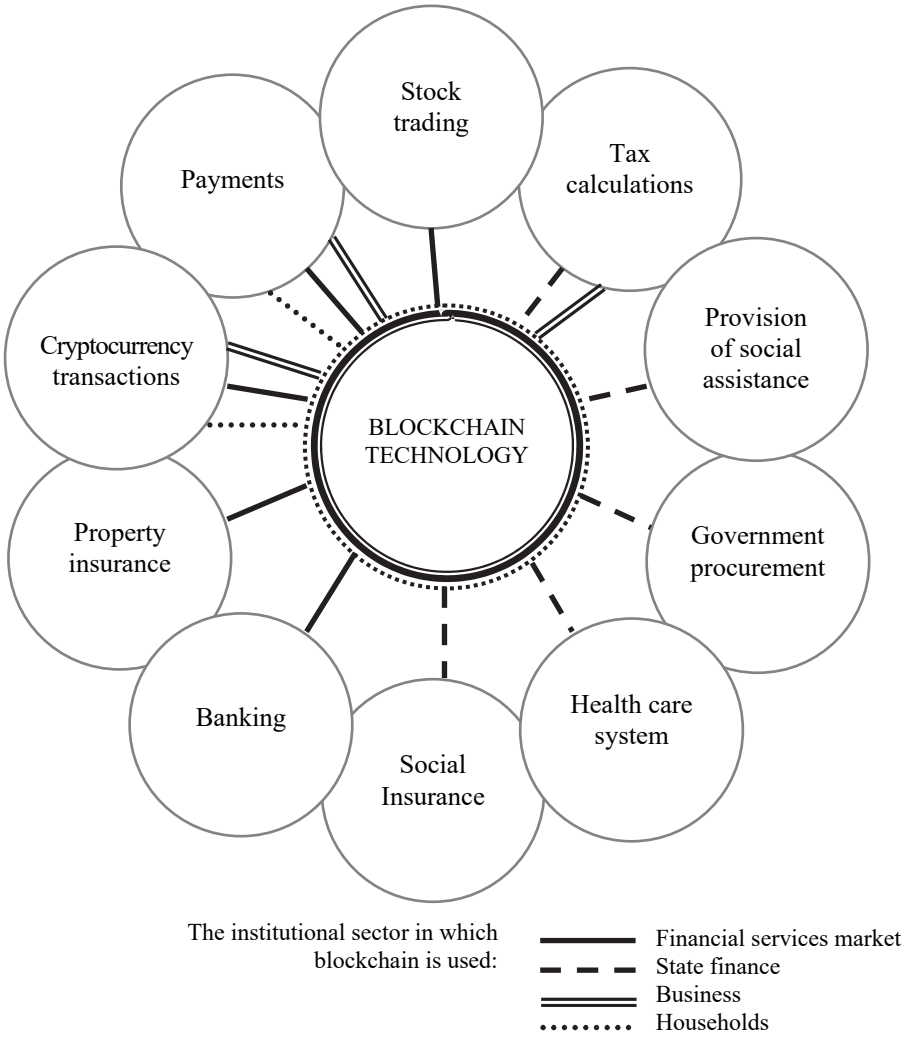

Figure 2. Application of blockchain technology in the financial sphere

Source: created by the authors.

The second largest stock exchange in the world, the New York Stock Exchange *Nasdaq*, has added the *Decentralised Finance Index (DEFX*) that monitors the effectiveness of blockchain projects after the inclusion of *Bitcoin* and *Ethereum* indices in early 2019 to exchange list [28]. This index has already been applied previously by the London brokerage company *Exante*. The *Nasdaq Global Index DataSMS (GIDS*) provides real-time

information on *Bitcoin, Ethereum and Ripple* exchange rate through *Bitcoin Liquid Index (BLX*), *Ethereum Liquid Index (ELX*) and *XRP Liquid Index (XRPLX*). With the help of blockchain technology, the Depository Trust and Clearing Corporation (*DCTT*) maintains a daily record of 90 million financial transactions with global securities amounting to 48 trillion USD [29].

Table

Opportunities for individual entities of the financial ecosystem to apply blockchain

Scope	Subjects of the financial ecosystem							
	Insurers	Banks	Payment platforms	Crowdfunding platforms	Exchanges	Business	Individuals	Regulators
Process automation	+	+	+	+	+	+		+
Creation and monitoring of insurance (payment, credit) history, ownership transfer history, delivery of goods	+	+	+	+	+	+		+
Shortening of payment terms, identifying the connection between transactions	+	+	+	+	+	+	+	+
Ensuring receipt of information from state authorities	+	+		+		+	+	
Instant fixation of insurance events	+					+	+	
Conclusion of contracts online	+	+	+	+	+	+	+	
Smart contracts conclusion	+				+	+	+	
Confirmation of identity	+	+	+	+	+	+	+	
Preliminary risk assessment	+	+	+	+	+	+	+	+
Interaction with other entities of the financial ecosystem	+	+	+	+	+	+	+	+
Transparency of settlement of clients' claims against insurers	+					+	+	
The prevention of money laundering and financing of terrorism	+	+	+	+				+

Source: constructed by authors according to the materials [10; 11; 22–25].

According to the forecasts of the World Economic Forum, 10% of the world gross product will be stored on blockchain or related technologies by 2025–2027 [15]. In 2018, the World Trade Organization stressed that international trade volumes would increase by 1 trillion USD by 2030 through the facilitation of trade financing and international shipping, logistics automation and customs clearance [30].

Consortia are now being set up in different regions of the world to explore the possibilities of using blockchain in different areas. In 2014, it was established the *R3 CEV LLC* blockchain consortium with a location in New York to develop blockchain applications in financial systems. In 2016, in Luxembourg, *BIL, BNP Paribas, CACEIS, EFA, HSBC, ING Luxembourg, Pictet, RBC Investor & Treasury Services, Société Générale Bank & Trust and PwC* companies created a *Fundchain* consortium to study the impact of blockchain on asset management. In the same year, 42 banks created a consortium in Japan to use the *Ripple* blockchain to make real-time payments.

In 2017 the Spanish bank *Cecabank* and *Grant Thornton* Company, together with other banks, established a blockchain consortium to develop money laundering counter-measures and improvement of customer identification procedures, covering 33% of the Spanish banking sector [31].

The Dutch company *Aegon*, Swiss companies *Swiss Re* and *Zurich*, as well as the German *Munich Re* and *Allianz* have joined forces to create their own blockchain consortium – the *Blockchain Insurance Industry Initiative*. The purpose of this merger is to explore new technological capabilities that will enable insurance companies to improve the quality of services they provide and access of customers to them.

In 2014, the *Blockchain Association of Ukraine* was created, according to which, in 2017, 32% of blockchain companies were founded in Ukraine. The founders of Ukrainian blockchain companies have previously worked in the fields of: finance, investment and trading (38%); programming and development (38%); cryptography and cryptocurrency (32%); marketing and advertising (12%). Most domestic blockchain companies (78%) focus on both domestic and global markets, 16% focus solely on the external market and only one company focuses exclusively on the Ukrainian market [32]. The *Bitfury* group of companies is engaged in blockchain technology and is one of the largest infrastructure providers in the cryptocurrency ecosystem. Founded in 2011, *Bitfury* delivers solutions for businesses, governments, organizations and individuals to securely move assets across the blockchain. In 2017, a Memorandum of Cooperation was signed between *Bitfury* and the State Agency for Electronic Governance of Ukraine. *Attic Lab* and *Bloqly* should also be distinguished among Ukrainian blockchain companies [33].

Conclusion. It is determined that the financial ecosystem is a collection of traditional financial intermediaries, *FinTech* companies, *FinTech* startups, incubators, accelerators, regulators, business entities, individuals, public financial institutions, educational institutions which interact through the use of financial technology tools, that ensures maximum consumer inclusivity in the financial services market and transparency of public finances. The financial ecosystem is characterized by general and specific properties of the systems. The general properties include emergence, totality and heterogeneity; specific ones include adaptability, decentralization, customer orientation, inclusivity based on increasing consumer access to financial services and citizen participation in budgeting, as well as stability.

It is established that blockchains in the financial ecosystem can be classified by participants, level of centralization, generations and fields of application. The priorities of blockchain technology in ensuring the functioning of financial ecosystems are its use to counteract money laundering and terrorist financing, improve customer identification procedures, conclude smart contracts and improve the interaction of financial ecosystem entities. Intensifying the use of blockchain technologies in the financial sector will help transform centralized financial systems into decentralized financial

ecosystems, which significantly increase the confidence of business entities and individuals in financial service providers and governments by increasing their openness, transparency and interoperability between its various participants. Further studies of blockchain technology are promising for its application in the activities of financial regulators.

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The article submitted to editor's office on 18.11.2019.

Волосович С., Баранюк Ю. Технологія блокчейн у фінансовій екосистемі.

Постановка проблеми. *Розвиток технологічних інновацій та економіки споживання започаткував формування фінансових екосистем, які тісно пов'язані з різноманітними інструментами фінансових технологій. Одним з інструментів фінансових технологій є технологія блокчейн.*

Аналіз останніх досліджень і публікацій *свідчить, що існування фінансових екосистем базується на технологіях, важливим інструментом яких є блокчейн.*

Метою *статті є визначення пріоритетів застосування технології блокчейн у забезпеченні функціонування фінансових екосистем.*

Матеріали та методи*. Теоретичним та методологічним підґрунтям для написання статті стали праці вітчизняних та зарубіжних науковців. Дослідження проведено із застосуванням методів теоретичного узагальнення, порівняльного аналізу та синтезу.*

Результати дослідження. *У розумінні фінансових екосистем існують інституційний, функціональний та галузевий підходи. Фінансовій екосистемі притаманні загальні та специфічні властивості систем. Загальними властивостями фінансової екосистеми є емерджентність, гетерогенність та сукупність. До специфічних властивостей належать: технологічність, децентралізація, клієнтоорієнтованість, інклюзивність і стабільність. Фінансова екосистема є сукупністю традиційних фінансових посередників, FinTech-компаній, FinTech-стартапів, інкубаторів, акселераторів, регуляторів, суб'єктів господарювання, фізичних осіб, державних фінансових інститутів, освітніх закладів, які взаємодіють на основі застосування інструментів фінансових технологій, що забезпечує максимальну інклюзивність споживачів на ринку фінансових послуг та прозорість державних фінансів. Блокчейни у фінансовій екосистемі можна класифікувати за учасниками, рівнем централізації, поколіннями, сферами застосування.*

Висновки. *Активізація застосування блокчейн-технологій у фінансовій сфері сприятиме трансформації централізованих фінансових систем у децентралізовані фінансові екосистеми, в яких значно підвищується рівень довіри суб'єктів господарювання та фізичних осіб до оферентів фінансових послуг та урядів завдяки зростанню їх відкритості, прозорості та сумісності між її різними учасниками.*

Ключові слова: фінансова екосистема, фінансові технології, технологія блокчейн, смарт-контракт.