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FOREIGN CONCEPTS OF INFORMATION (DIGITAL) ECONOMY

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Abstract. In modern conditions, the new challenges have emerged in the economy due to the introduction of global competitive digital technologies and, accordingly, the transformation of the economy into a digital format. In industry, digitalization is based on the concept of Industry 4.0, which provides for its end-to-end digitalization and integration into an intelligent technology platform. The analysis of the digital economy is relevant in the light of global challenges, the new economic reality, the development of the theory of digital economy and governance. In today's economic development, an increasing number of industrial-oriented countries are moving to the digital way of the development, as the use of digital results allows to produce competitive products with high added value, to develop related industries (intensifying the multiplier effect) and also it promotes economic progress, what, of course, ensures the emergence of qualitative changes in all industrial production. The purpose of the study is to substantiate the directions of foreign concepts of information (digital) economy. Methodology: the theoretical and methodological basis of the study are the fundamental and analytical foundations of digital economics research, to ensure the conceptual integrity To ensure the conceptual integrity of the research we used post-nonclassical methodology based on the Agile-methodology and Agile-philosophy as a new paradigm of informational (digital) economics, which represents the methodology of complexity, as well as systemic, axiological and informational methods and approaches, which allowed to present the foreign concepts of informational (digital) economics in their entirety. Methods of analysis and synthesis, generalization and systematization, historical and logical and comparative methods were used. The scientific importance of the work is that the world experience of forming the concepts of information (digital) economy, the use of effective mechanisms to ensure the development of a dynamic digital ecosystem capable of long-term benefits, to develop regulatory mechanisms that will be attractive to startups and talented professionals with high potential, which will promote the development of a dynamic digital ecosystem capable of bringing long-term benefits. The value of the study lies in the development of practical recommendations of improving the digital economy based on knowledge and digital technologies, which realize new opportunities for society, business and government.

Keywords: digital economy, concepts, digitalization, Big Data economy, sustainable development.
JEL Classification: A12, G14, M21.

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INTRODUCTION

In modern conditions, new challenges have emerged in the economy due to the introduction of global competitive digital technologies and, accordingly, the transformation of the economy into a digital format. In industry, digitalization is based on the concept of Industry 4.0, which provides for the end-to-end digitilization of all processes and their integration into an intelligent technology platform. This emphasizes the undeniable relevance and practical importance of digital transformation, justification and formation of digital systems and infrastructure of the digital economy. The analysis of the digital economy is relevant in the light of global challenges, the new economic reality, the development of the theory of digital economy and governance. In today's economic development, an increasing number of industrial-oriented countries are moving to the digital way of development, as the use of digital results allows to produce competitive products with high added value, develop related industries (intensifying the multiplier effect), promotes economic progress and ensures the emergence of qualitative changes in all industrial production.

LITERATURE REVIEW

Analysis of recent research and publications is a combination of a synthesis of many ideas on philosophical and economic issues, the results of authorial research and collaboration of scientists who belong to a certain area of the scientific paradigm of information (digital) economy. These are the works of Donella Meadows, Jorgen Randers Dennis Meadows «Limits to Growth. The 30-Year Update" (2018), whose contribution was fundamental and whose deep concern for the world and inexhaustible faith in humanity inspired us to talk about the prospects of the information (digital) economy. "Growth Limits" models the scenarios of the world economy and answers the question: what can be done to create a digital society that will bring prosperity. An important role for us was played by Appello Jurgen's works "Management 3.0. Agile management. Leadership and Team Management", James Wumek, Daniel Jones "Lean Manufacturing. How Toyota's production system will help prevent material loss and ensure the prosperity of your company", Drucker Peter F. "Challenges for management of the XXI century", which creates the conditions for a new paradigm of information (digital) economy. The article uses O'Reilly Tim's study "Who Knows", Porter Michael`s "Competitive Advantage. How to achieve consistently high results", Kelly Kevin`s "Inevitable. 12 technologies that shape our future ", Spence Michael`s "New Convergence". The Future of Economic Growth in a Multilayered World" and Stadwell Joe`s "Why Asia Succeeded. Successes and failures of the most dynamic region of the world ", which says that the main task is to form a sustainable digital economic development. The article is based on the works of Voronkova Valentyna H., Nikitenko Vitalina A., Teslenko Tatyana V., Bilohur Vlada E., Regina Andriukaitiene, Roman I. Oleksenko, which expand the subject field of research.

THE PURPOSE OF THE RESEARCH is to substantiate the directions of foreign concepts of information (digital) economy. Objectives of the study: 1) to analyze the concepts of digital transformation of the economy, aimed at making qualitative changes in business processes or ways of doing business (business models) due to the introduction of digital technologies; 2) to explore the concepts of "Big Data economy" as the basis for the development of digital economy based on knowledge and digital technologies, which realize new opportunities for the society, business and government; 3) to reveal the concepts of digital transformation as a factor of sustainable development, which provide companies with unprecedented opportunities to increase profitability and improve customer service, help increase efficiency and increase corporate income.

METHODOLOGIES

The methodological basis is the methods of post-classical methodology, based on Agle-methodology and Agle-philosophy as a new paradigm of information (digital) economy, which is a methodology of complexity. Modern concepts of information (digital) economy include a set of different methods, techniques and generalizations of different approaches, including the development of software based on an information set of values that can identify the principles, methods and approaches of modern management. Modern concepts of information (digital) economy can lead to changes at all stages of improving the search for flexible management tools, based on AGILE-methodologies as a system of flexibility, complexity, adaptation to the environment, problems of a balanced world, uncertainty, multi-alternative, open system, which includes the constant exchange of information with the external environment. It is important for us to have systematic, axiological and synergetic approaches to solving the problems of digitalization, which gave the opportunity to identify the impact of values on the formation of a new model of digital development, the opportunity to outline the problems of digital development. An important role was played by the method of cross-cultural analysis, which helped to compare the problem of global warming in all countries to prevent the devastating effects of climate change, to identify priorities for the formation of digitalization concepts. In our opinion, the axiological approach to solving environmental problems is the use of information and communication technologies to develop innovative solutions that require the expansion of cultural functions. Information approach has provided information on the problems of digital development due to new methods of Big data, data mining, data science. These principles are designed to overlap and complement each other, as the model of digital development of the city is a self-adapting complex system that offers to clarify the causes and consequences and ways to move to the sustainability of society.

ANALYSIS AND DISCUSSION

Concepts of digital transformation of economy

Concepts of digital transformation - a set of views, ideas, principles, methods, techniques for qualitative changes in business processes or ways of doing business (business models) due to the introduction of digital technologies that lead to significant socio-economic effects. The basis of digital transformation is the technological level and digital maturity, which requires the development of new technologies and appropriate restructuring of business processes. The transition to advanced solutions is gradual and possible only in the presence of updated material and technical base. Relatively mature digital technologies and developed infrastructure are already quite widespread in Ukraine. The process of digital transformation is viewed through the prism of the introduction and use of advanced digital technologies - the Internet of Things, artificial intelligence, blockchain, cloud solutions, etc. Particular attention is paid to the collection and analysis of available information (including large data sets), as well as structural changes in demand for digital technologies. In the context of the development of digital transformation concepts, the connection of a broadband connection to data networks remains relevant. The impact of economic transformations on society is assessed by indicators that characterize the concept of digital transformation: 1) structure (organizational, managerial and operational processes); 2) data and information management; 3) innovation (development and implementation of new digital technologies, information technology management); 4) quality of goods and services; 5) environment (enterprise resources, regulation); 6) security of infrastructure and data; 7) financing (costs, return on investment); 8) ethical aspects (attitude to new digital technologies).

This assessment is based on indicators that characterize: the involvement of citizens and organizations in the digital transformation, including behavioral and business models and other cross-sectoral value chains; ways and scales of use of advanced digital technologies, including

quantum, artificial intelligence (AI) and other advanced digital technologies, areas, including digital development of advanced technologies.

The digital transformation of the economy includes:

1) starting conditions and priorities of online platforms as a key element of digital transformation; 2) new services and digital channels of interaction of the population with business and the state; 3) the development of the data industry and new practices and demands within economic activities and others. The new round of technological development is the most important catalyst for a new stage of digital transformation, based on growing advances in the development of advanced technological areas, including artificial intelligence, robotics, blockchain, virtual and augmented reality technology and others.

It is worth noting the following promising technological areas of digital transformation, which are not yet in the focus of attention in our country, but at the same time are actively developing abroad: geoinformation and navigation technologies (spatial data); photonics technologies; technologies of cloud, fog, dew calculations; cyberbiological systems (including neurotechnology); authentication and identification technologies (including biometric technologies); supercomputer and grid technologies. In general, regular updating of priorities is needed now, in particular with regard to professional foresight research and big data analysis.

The sharp increase in demand has led to a reduction in the time of "exit of advanced technologies from laboratories." A typical example of digital transformation is the rapid progress of quantum technologies. It is expected that in future (3-5 years) their development will provide a new level of speed and reliability of calculations and data transmission. At the same time, some effective solutions are already being used, including to solve the most pressing problems. For example, research on COVID-19 in Canada has been conducted using D-Wave's cloud quantum computing. Further technological advances will be determined by the ability to form and apply unique knowledge at the intersection of basic research and applied research. Among the developments, is the development of deep technologies in the early stages of the life cycle (DeepTech). The prospect of commercialization increases the attractiveness of this area for venture capital investments that need to be developed.

The new surge of digital transformation - the accelerated creation and entry into the market of products and services is expected to be associated with the combination in one solution of development of different technological areas. Visual illustration - the dynamic development of systems based on "digital duplicates", including elements of artificial intelligence (AI), the Internet of Things, wireless technology, sensors and other technologies, which requires annual growth of this market. Emerging technologies have led to a new breakthrough based on more mature ones. Among the examples of the emergence of promising solutions at the intersection of technologies: quantum Internet of Things, quantum artificial intelligence (AI), etc. The creation of quantum neural networks will significantly reduce the time of implementation of models, which today will take several years. As a result, it will be possible to solve complex problems, such as modeling proteins taking into account their changing structure, to create drugs (including personalized) or optimizing the molecular structure of substances to develop new types of materials and fuels.

The concepts of digital transformation include the development of the following: fifth (5G) and sixth (6G) generation wireless networks due to high speed communication and low latency will dramatically change communication capabilities (up to the implementation of tactile Internet, telepresence and transmission of 3D holograms) and create "Growth points" in different sectors. New areas of application will become widespread: real-time monitoring and control of production processes through immersive audiovisual channels, remote robotic surgery and transmission of tactile sensations to monitor the patient's condition, complete "digitization" of all elements of the farm, routine operations. We estimate that they are most in demand in industry, agriculture, healthcare and the financial sector. The digitalization of energy has led to the proliferation of distributed intelligent energy systems and related patterns of resource consumption. High demand in health care is largely due to the need to address the urgent challenges of combating the COVID-19

pandemic. The active growth of digital technologies by large financial companies contributes to the advanced growth of digital maturity of companies in the financial sector.

In most sectors of the Ukrainian economy and social sphere, the digital transformation is at a relatively early stage. Still in the structure of investments of organizations of various activities, which account for two thirds of the internal costs of the digital economy, appreciates the equipment. In recent years, intangible (digital) assets of companies have become a new driver of digitalization - such as the size and loyalty of Internet audiences, brand recognition and reputation in cyberspace, digital platforms, software products and related intellectual property.

Today, the digital transformation of the economy is more associated with end-user markets, where an integral requirement of competition is the improvement of consumer experience, including through the personalization of goods and services. It is in these conditions that digital platforms and ecosystems have become widespread, as well as radically new business models based on them, which are associated with the very emergence of the concept of "digital transformation". Recently, however, the importance of the end consumer and the creation of a "value proposition" aimed at him has been growing in most industries. Companies are becoming customer-oriented, developing new services and digital channels of interaction with customers and contractors. This trend is now affecting not only organizations and industries that interact directly with consumers (B2C), but also those that have traditionally focused on the business sector (B2B). Yet for B2B industries, the main benefits of digital transformation are still in terms of economic efficiency and institutional change, such as supply chain optimization. As a rule, they are characterized by high resource intensity and long investment cycles. In this regard, the effects of digital transformation are only felt in comparison in the long run. Even among the leading sectors, no more than 38.5% of organizations use cloud services, 29.6% - ERP systems, 19.6% - electronic sales and only 12% - RFID technologies. At the same time, the level of implementation of these technologies in some areas differs between the leading and lagging sectors, which indicates an increase in the risks of "digital inequality".

2. Concepts of "Big Data" economy as a basis for the development of the digital economy

The digital economy is a global network of economic and social activities supported by the platforms such as the Internet and the development of the Big Data economy, which contributes to the formation of a new economy based on knowledge and digital technologies, in which new digital skills and opportunities for society, business and the state are being formed. The Digital Economy as a Big Data Economy is based on digital technologies used to conduct business in the market based on the Internet and network platforms. It is a complex structure consisting of several levels, interconnected by an ever-increasing number of nodes, an economy that is able to provide high-quality ICT infrastructure and mobilize ICT opportunities for the benefit of consumers, businesses and the state. The Big Data economy is a form of economic activity that results from a billion examples of networking between people, businesses, devices, data, and processes, based on intangible assets, massive data usage, multilateral business models, and is the main source of growth.

"Big Data Economy" as the basis for the development of the digital economy: 1) stimulates competition, investment and innovation that will improve service quality, expand consumer choice, create new jobs, which increases labor efficiency, competitiveness companies, reducing production costs, reducing poverty and social inequality; 2) the economy of the new technological generation, economic activity in which the key factor in production is data in digital form; 3) processing of large volumes of these data and the use of the results of their analysis in accordance with innovative forms of management, which can significantly increase the efficiency of various types of production, equipment, storage, sales, delivery of goods and services; 4) activities for the creation, dissemination and use of digital technologies and related products and services.

Data flows are difficult to measure because they are growing rapidly. COVID-19 pandemic has had a tremendous impact on the Internet traffic, as most businesses and organizations are

increasingly online. In terms of volume, the most commonly used indicator is the total used international Internet bandwidth, which allows you to measure the total amount of data transmitted in bytes. In addition, according to available information, the use of international capacity increased during the pandemic. Distinctive feature of the "Big Data" economy - large imbalances, digital gaps. Only 20% of the population of the least developed countries (LDCs) use the Internet, and access conditions for them are usually relatively low download speeds and relatively high costs. On the other hand, its use is of a different nature. Thus, while in some developed countries up to 8 out of 10 Internet users shop online, in many countries this figure is less than 1 of 10. In addition, there are significant differences within countries. Both raw data and the ability to convert them to digital intelligence are needed to create value and benefit. Creating added value of data is something that helps countries to move towards the development of the big data index. As the digital data economy has evolved, there has been another data gap that has widened the existing digital divide. In this new configuration, developing countries may find themselves in a subordinate position, and data and related benefits will be concentrated in the hands of several global digital corporations and other multinational data control companies. There is a danger that they will simply become raw data providers for global digital platforms. At the same time, they will have to pay for the digital intelligence obtained with their data.

Despite the important role that data plays in the developing digital economy, there is no generally accepted concept of "data", what is confusing and difficult to conduct analytical research. Data is a special resource that has certain features that distinguish it from goods and services. Data is elusive and uncompetitive, while access to data may be restricted by technical or legal means, leading to varying degrees of exclusion. For example, data collected by major global platforms is not always available for use by others, giving platform owners a monopoly that allows them to benefit from this data. In addition, the total cost of data can often be greater than the sum of the value of individual data, especially in combination with other, additional data. In addition, the raw data collected may have a "deferred" value, as it may become valuable if the data can be used to address new issues that did not exist before. The more detailed and detailed the data, the more goals can be served by filtering, aggregating, and combining the different methods used to produce different results.

Moreover, the data are multifaceted. From an economic point of view, they can bring not only private benefit to those who collect and control data, but also public benefit to the economy as a whole. And the latter cannot be provided by markets alone. In addition, private income from the use of data is distributed very unevenly. As a result, there is a need to develop policies aimed at supporting goals of efficiency and equity. However, non-economic aspects must also be taken into account, as the data are closely linked to privacy and other human rights, as well as national security issues, all of which need attention.

Understanding data and its flows requires looking at them from different points.

First, there has always been data and information that has developed the archetypes of sustainable biotechnology business models and has been proven in practice. Second, raw data collected on certain activities, goods, have no value on their own, but can create value after grouping, processing and monetization or use for public purposes. Third, the conversion of raw data into digital intelligence - in the form of statistics, databases, analytical data, information, etc. - leads to "information goods", which when sold to other countries can be considered in the structure of trade statistics as services. There are also different taxonomies in which data types are classified according to different criteria.

The rationale of biotechnology in this case is similar to industrial applications, to increase the overall efficiency of conversion of agricultural inputs, into products (Peppou, G., 2018). Due to this these organisations are able to compete on the basis of cost.

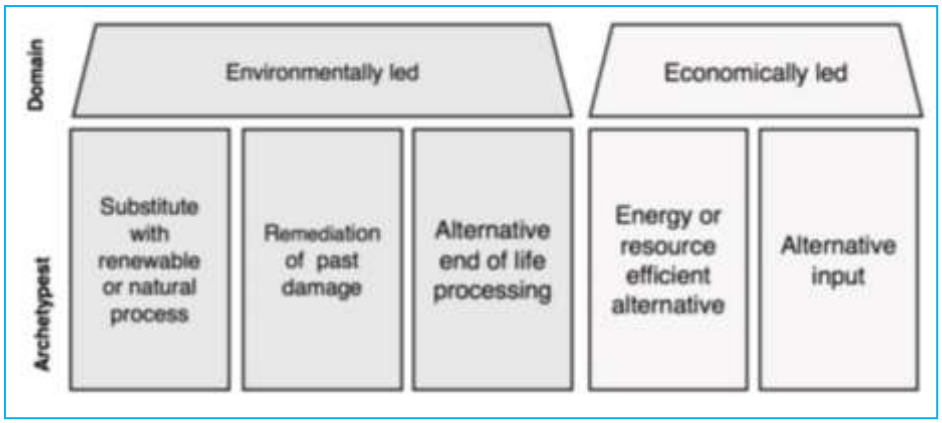

Figure 1. Sustainable biotechnology-driven business model archetypes
Source: Peppou, G., 2018

As the advantage derived is a cost-based advantage this archetype is classified as 'economic-led', the primary advantage of adopting biotechnologies is to reduce costs to be able to compete on price. sustainable biotechnology-driven businesses can reach a sustainable business model through either operating as an environmentally-led archetype or economically-led archetype. Broadly organisations operating an environmentally-led business model archetype facilitate some reconfiguration of the industry value chain they operate in, utilising biotechnology to offer a product or service distinct to those previously available (Peppou, G., 2018).

Some industrial sectors, such as transport logistics. According Kaveckė and Paužuoliene (2021), companies around the world are under pressure to apply sustainable development-based business practices in the value-creation system. The development of the logistics and transport sector leads to increasing freight flows, an increase in the mileage of freight cars and the consumption of diesel fuel, which has an impact on the environment by increasing CO2 emissions. The use of renewable energy sources in the transport sector is still low and the targets have not been met. Companies should therefore step up their efforts to reduce emissions of pollutants harmful to health from vehicles in order to improve these indicators. Organizations seeking to reduce negative environmental impacts should apply green solutions in their activities, thus helping to reduce a wide range of environmental, economic and social problems. In order to move towards more environmentally friendly transport, organizations could implement the following green solutions in their activities: use greener vehicles, alternative fuels, encourage drivers to learn and apply a fuel-efficient driving style, optimize vehicle routes, reduce waste, etc.

There are important differences in whether data is collected for commercial purposes, whether it is used by companies or the public sector, to which period it belongs - present or past, whether it is confidential or non-confidential, or personal or non-personal. Data classification is important because it is important not only for data management policy and international data flow management, but also for determining the type of access that must be granted to each data type. Due to the special properties of the data, they should be treated differently than ordinary goods and services. In the new context of the digital data economy, concepts such as property rights and sovereignty are becoming blurred. Instead of trying to determine who "owns" the data, it is more important to understand who has the right to access, control and use the data. Digital sovereignty is most often associated with the need to store data within national borders, but the relationship between the geography of data storage and development is not obvious. Assigning territorial affiliation to international data flows is also a difficult task.

Data can be better understood in terms of using, rather than trading or sharing. The information asymmetry inherent in the data economy seems insurmountable because there are no market solutions to correct it. Contradictions in data ethics also play an important role, including between value creation through data use and control of population data, as well as between data

filtering and censorship. As a result, the management of data and its flows is of great importance. Approaches to regulating data flows - and in the digital economy as a whole - differ widely among the major economic and geopolitical players in the digital economy, both regionally and internationally, and with rare exceptions there is no consensus on their interpretation. The three most popular approaches to data management are the most popular in the world: 1) the approach used in the United States, which is to control data from the private sector; 2) in the Chinese model of "data economy" the emphasis is on control over data by the state; 3) while in the European Union - by individuals on the basis of fundamental rights and values.

There is a friction between these centers today, especially between the United States and China. In addition, global digital corporations are seeking to expand their own data ecosystems. The advantage in the field of technological development is being fought for, as its winner will be able to gain economic and strategic advantages by controlling data and technology, especially in the field of artificial intelligence (AI). In these conditions, there is a danger of fragmentation of digital space and the Internet. In general, there is a danger of obstacles in the digital "data economy", which contradicts the original spirit of the Internet as a free, decentralized and open network. The fragmentation of the digital data economy hinders scientific and technological progress, as well as reduced competition, an oligopolistic market structure in some countries, and increased state influence in others. This can have significant negative consequences for all countries, as fragmentation will reduce business opportunities, as access to supply chains for users and companies will be more difficult, and data transfer to other countries will be limited. In addition, there will be more obstacles to cooperation between different countries.

3. Concepts of digital transformation as a factor of sustainable development. Digital transformation as a factor of sustainable development provides companies with unprecedented opportunities to increase profitability and improve customer service. Digitization, which is described as interfering with the DNA of an enterprise, requires a revision of traditional business practices and methods. Artificial intelligence and technology (machine learning, natural language processing, neural networks) have the potential to increase efficiency and increase business revenue.

The positive contribution of these technologies can be applied even outside the private sector, as the development of e-government will also increase the speed and efficiency of administrative processes. As digitalisation grows, similar shortcomings arise in all economies and societies. Recent research shows that automation and related advances in the use of artificial intelligence in manufacturing will result in reduced employment opportunities and higher unemployment (Frey and Osborne, 2017).

Although economic activity, complemented by digital technologies, contributes to value creation, it will not require the same number of workers, and a significant part of the population will lose their jobs. To address the potential and existing employment risks associated with digital technologies, some developed countries are considering a wide range of pilot policies, from the introduction of general wages to the taxation of robots and data centers to understand the different classifications of sustainable business models.

Jacob Agwu, U., & Bessant (2021) investigated the literature to understand different classifications of sustainable business models.

The authors relied on Bocken et al. (2014), who used them to "describe groupings of mechanisms and solutions that may contribute to building up the business model for sustainability" (Bocken et al., 2014, p. 45), Bocken, Weissbrod, & Tennant (2016) and They broke down the broad nature of approaches in sustainable business modeling into a substantial framework. The content of archetypes includes a wide variety of activities. table contains explanations of the content of archetypes.

It should be emphasized that digitalisation, combined with evidence-based policies, can enable the development of digital technologies, complementing the socio-economic prosperity of the nation. According to the study, business investment in digital technologies is positively

correlated with the employment of highly skilled workers and negatively correlated with the employment of low-skilled workers. As low-skilled jobs are at risk in the long run, governments are faced with the need to provide retraining opportunities. The existing level of technological capabilities and the ability of enterprises to successfully integrate them into existing business models, the digital transformation at this stage will mainly help to replace individual tasks, rather than entire jobs. Automation is mainly about simple and repetitive tasks that allow people to pay more attention to creative tasks and devote more time to developing their talents.

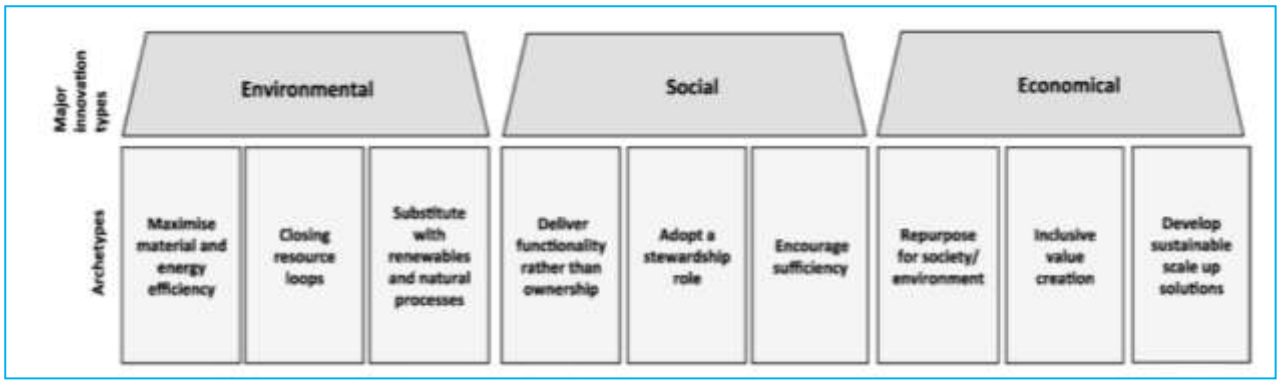

Figure 2. Sustainable business model dimensions and archetypes

Source: Ritala, P., Huotari, P., Bocken, N., Albareda, L., & Puumalainen, K. (2018). Sustainable business model adoption among S&P 500 firms: A longitudinal content analysis study. Journal of Cleaner Production, cit. Jacob Agwu, U., & Bessant, 2021.

The spread of digital technologies in different societies is uneven, leading to a digital divide based on gender, geography and age. On average, the number of women pursuing careers in the ICT sector and improving their skills in programming is much lower. Gender inequality remains a problem in the subregion and is reflected in science, technology and innovation, where men and women have unequal access to technologies and related capabilities.

Rural areas tend to have very limited access to high-quality fixed and mobile broadband infrastructure compared to urban centers. Few older people have the skills and competencies to be competitive in the digital age. Without access to retraining, there is a risk that a significant part of the population will be excluded from the digital economy. Sustainable digital infrastructure combined with digital literacy can help to bridge the gap between urban and rural areas. Inclusive sustainable development is achievable if women, the rural population and the elderly acquire the appropriate skills to work with digital technologies. In order to avoid benefiting from digitalisation opportunities only for certain groups of the population, it is important to ensure a multilateral approach that links the development of inclusive digitalisation with the 2030 Agenda for Sustainable Development.

CONCLUSION

Many national initiatives have demonstrated the viability of digitization, but at the same time have shown that a number of obstacles remain to the full realization of digital potential. These barriers need to be addressed through targeted policies that address specific challenges to ensure that digitization efforts complement the longer-term goals of economic transformation and sustainable development.

In recent decades, the pace of digital economic transformation in most countries has been limited. To address this issue, governments need to develop clear national policies and action plans for the digital economy. The initiative should include consultations with the private sector and civil society, focusing on the initiatives proposed by the Working Group on Innovation and Technology

for Sustainable Development and the recommendations of the Committee on Information and Communication Technologies.

Cooperation between scientific and industrial circles can be stimulated by direct and indirect investments, reform of the management system in the Free Economic Zone and the development of public-private partnerships in this field. In addition, support mechanisms need to be put in place by reviewing tax legislation and the public procurement system. These initiatives can be effectively used to contribute to the Sustainable Development Goals while creating the policy environment and infrastructure for a comprehensive digital economy.

In this regard, it is necessary:

- to ensure compliance of legal requirements with changes in the socio-economic landscape caused by digitalization. Currently, the regulatory framework of many countries does not reflect the requirements and needs of the digital economy; These mechanisms can also attract strategic investment in countries to finance specific sectors for potential development.

- to increase investment in the development of science, technology and innovation, which will allow this sector to make a more significant contribution to the creation of highly skilled jobs and higher incomes. As countries seek for diversifing their economies in order to reduce their dependence on the extractive industries, investment in digitalisation will contribute to sustainable economic transformation. It also indirectly solves the problem of "brain drain", as investment can stimulate the creation of opportunities.

To full fill this task, it must be prepared:

1. Human resources for the digital economy: expanding the supply of skilled labor by reforming secondary and higher education, which will transform the labor market to support the digital economy, create opportunities and incentives for learning.

2. Information infrastructure should be developed and improved in order to further develop ICT infrastructure and data centers.

3. Information security: ensuring digital security and protection of citizens, as well as public and private organizations.

4. Digital technologies: identification of measures to support basic and applied research in the field of digital technologies.

5. Regulatory regulation of the digital environment: development of laws and regulations supporting the development of digital technologies and their application in the public and private sectors.

6. Digital public administration: creating a vision and formulating measures for the digital transformation of the public sector based on new technological approaches.

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ЗАРУБІЖНІ КОНЦЕПЦІЇ ІНФОРМАЦІЙНОЇ (ЦИФРОВОЇ) ЕКОНОМІКИ

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В сучасних умовах в економіці з'явилися нові виклики, зумовлені впровадженням глобальних конкурентоспроможних цифрових технологій та, відповідно, трансформації економіки у цифровий формат. У промисловості цифровізація спирається на концепцію Індустрія 4.0, що передбачає її наскрізну цифровізацію та інтеграцію в інтелектуальну технологічну платформу. Актуальним є аналіз цифрової економіки з урахуванням глобальних викликів, нової економічної реальності, розвитку теорії цифрової економіки та управління. В умовах сучасного економічного розвитку все більша кількість промислово-орієнтованих країн переходить на цифровий шлях розвитку, оскільки використання результатів цифрової діяльності дозволяє виробляти конкурентоспроможну продукцію з високою доданою вартістю, розвивати суміжні галузі (йдеться про активізацію мультиплікативного ефекту), сприяє прогресу економіки, держави, що, безперечно, забезпечує виникнення якісних змін всього промислового виробництва. Метою дослідження є обґрунтування напрямів зарубіжних концепцій інформаційної (цифрової) економіки. Методологія: теоретичною та методологічною основою дослідження є фундаментальні та аналітичні основи досліджень цифрової економіки, для забезпечення концептуальної цілісності якого були використані методи постнекласичної методології, в основі якої Aglile-методологія і Aglile-філософія як нова парадигма інформаційної (цифрової) економіки, що представляє методологію складності, а також системний, аксіологічний та інформаціологічний методи і підходи, що дозволили у всій цілісності представити зарубіжні концепції інформаційної (цифрової) економіки. Були використані методи аналізу і синтезу, узагальнення та систематизації, історичного та логічного та порівняльного методів. Наукова важливість роботи полягає в тому, що досліджено світовий досвід формування концепцій інформаційної (цифрової) економіки, використання ефективних механізмів забезпечення розвитку динамічної цифрової екосистеми, здатної приносити довгострокові вигоди, для чого розвивати регулятивні механізми, які будуть привабливими для стартапів та талановитих фахівців з високим потенціалом, що сприятиме розвитку динамічної цифрової екосистеми, здатної приносити довгострокові вигоди. Цінність дослідження полягає в розробці практичних рекомендацій щодо удосконалення цифрової економіки, заснованої на знаннях і цифрових технологіях, у рамках яких реалізуються нові можливості для суспільства, бізнесу та держави.

Ключові слова: цифрова економка, концепції, цифровізація, економіка «Big Data», сталий розвиток

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MICROCREDIT AND MULTIDIMENSIONAL POVERTY IN ALGERIA: DOES GENDER MATTER?
CASE STUDY: NATIONAL AGENCY FOR MANAGEMENT OF CREDIT / DEPARTMENT OF BOUMERDES

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Abstract. This article attempts to assess the impact of microcredit on the economic well-being and implicitly the degree of multidimensional poverty of women in Algeria. Based on data from a survey of 228 microcredit recipients in the department of Boumerdes in Algeria. The study showed that participation in microfinance services provided by the national agency for management of microcredit (ANGEM) could be a tool for women to acquire the capacity to make strategic choices concerning their lives. By having access to microfinance services, women can set up their own businesses and consequently improve their status within the household and in their communities. Only 26 women participated in the survey. Using the Mann Whitney U test, the results show a significant difference between the impacts generated by microcredit on both genders based on the asset ownership index where female beneficiaries feel more impacted than male members do. These results call for further questions. ANGEM is not Micro-Finance Institution (MFI) like the others. It is a public agency.

Key words: empowerment, impact, microcredit, multidimensional -poverty, gender.
JEL Classification D10, O30, M54, I32.

INTRODUCTION

The economic well-being of the people living in a society is essential for the development of the country and represent an integral part of the role of government. The contribution of the microfinance sector to this economic well-being is an important research question. The microfinance has generated considerable interest among researchers around the world after his success in multiple economies since 1970. The number of research articles published each year, by academics and practitioners in ranked journals, has increased significantly in recent times.

Hadefi, A.Z., Bouchetara, V.M. and Zerouti, M. (2022), "Microcredit and multidimensional poverty in Algeria: does gender matter? Case study: National Agency For Management of Credit / Department of Boumerdes", *Management and entrepreneurship: trends of development*, 2(20), pp.20-30. Available at: https://doi.org/10.26661/2522-1566/2022-2/20-02

It is recognized that microfinance is important tool for ensuring the transition from the informal economy to the formal economy (ILO, 2015). Social enterprises constitute a segment of the social and solidarity economy. One of the main components of the informal economy according to ILO resolution 204, "the *economic units of the informal economy include: a) units which employ labor of work; (b) units owned by individuals working on their own account, either alone or with the assistance of unpaid family workers; c) cooperatives and social and solidarity economy units"* (ILO, 2015, p. 5 point 3). It is also accepted that microfinance is one of the important approach to create a decent work.

One of the recurring contributions of microfinance is the reduction of poverty and the development of the empowerment of women (Kabeer, 2005, p. 4711). The latter is defined by Kabeer as "*a process by which those who have been deprived of the ability to make strategic life choices acquire this ability.*" In developing countries, women are poor and powerless compared to men. Women do not always have access to education, the right to claim property and many other living facilities. Before resorting to the services of microfinance institutions (MFIs), poor women borrowed in many informal ways, which increases their social vulnerability.

The vulnerability, the probability of physical or psychological abuse, health problems are some of the serious problems faced by women in developing countries. (Murshid, 2016, p.1582). Therefore, women economic empowerment increases women security, self-esteem, and social and economic status; in addition, it improves the standard of living of the whole family (Gaywala, 2018). According to the World Poverty Clock, among the world's poor, "*65% are women"* (World Data Lab, 2020).

In this sense, and for more than three decades, microfinance programs have been considered an important development strategy all over the world, particularly in developing countries. Governments and non-governmental organizations (NGOs) in these countries have set up various micro-credit programs targeted the poor. Most of these programs intentionally target women because they have more constraints of access to credit and limited access to the labor market. They have the *"higher loan repayment rates than men"*. Similarly, the women are more likely to share the benefits of the loan with other family members, especially their children. An increase in social and political awareness, training and skills development of this disadvantaged group could also be the reasons for targeting women (Kato & Kratzer, 2013, p. 43).

In this study, we postulate that access to microfinance, has a significant impact on the level of poverty and the empowerment of women in Algeria. With access to microfinance, decision-making power increases, which brings economic well-being and prosperity to the family. Our aim is to examine the hypothesis that the impact of microcredit on beneficiaries is more significant for women than for men. The study is based on a survey of 228 beneficiaries of microcredit from ANGEM in the department of Boumerdes. We use first, the possession of assets, solvency index and the index of financial inclusion as dependent variables. Gender represents our stratified variable.

LITERATURE REVIEW

Empowering women through financial inclusion

Women constitute half of the population in all countries, but their unemployment rate is higher than unemployment mal-rate in almost countries according to the ILO data. The Arab countries have the lowest rates of activity. According to the female activity rate, Algeria is among the last countries in the world in 2019 (ILO, 2020). The empowerment of women was selected as one of Objectives of the Millennium for developing countries (MDG3). It was reappointed to the Agenda 2030 of the United Nations all over the world - goal of sustainable development (ODD5). The economic empowerment of women can be achieved by the financial inclusion.

The existing literature on the impact of microfinance can be classified into three categories. The first category examines the impact of microfinance on poverty. The second were addresses the impact of microfinance on women empowerment. The third series of studies highlights other effects of microfinance, such as the impact on education, health, nutrition, level of consumption and asset building.

According to a recent survey (Microfinance Barometer, 2020), MFIs serve 140 million people worldwide, over 80% of whom are women. Globally, women participation has different roles: as borrowers, board member, manager and loan officer, is increasing relative to male counterparts in the microfinance sector. Another study (MIX Market data, 2019) gives an order of magnitude of MFI clients by region of the world: South Asia (99%), East Asia and the Pacific (80%), Africa (60%) Latin America (49%), Middle East and North Africa (48%) and Eastern Europe (44%).

Numerous evaluations of MFIs have shown that microfinance services have a positive impact on women. Some economists (Hashemi, Schuler, and Riley, 1996, p. 652) found that programs micro credit had significant effects on the different dimensions of women empowerment. Other authors (Pitt & Shahidur, 1998, p. 989) does not found that microcredit has a greater effect on the behavior of poor households in Bangladesh where women participating. They also observed that the participation of women in microfinance programs had a positive impact on the acquisition of assets by client households. Another study (Rai & Ravi, 2011, p. 918) on women empowerment and microfinance, found that MFI members women are more independent than the others women. Finally another author (Rahman, 2009, p. 298) has deduced that the ability of women (income from their own jurisdiction) is also a major empowering.

From the above literature, we can confirm that women achieve some autonomy by using the services of MFIs. The difference in results may have a relation with the difference in the socio-economic environment, to the timeframe, the tools used (method of measuring economic empowerment), the nature of the studies (transversal or longitudinal) and socio-political conditions.

Improving the well-being of women in the context of microfinance services

There is a large body of research on the economic impacts of microcredit services (Banerjee, Duflo, Glennerster, & Kinnan, 2015). Previous research reported mixed evidence of the impact of microfinance on economic conditions of women (Vaessen et al., 2014). The diversity of results can partly be explained firstly by two major methodological differences in the study intervention. First, microfinance programs differ considerably in their services offered (Armendáriz & Morduch, 2010). Second, the study designs differ and include the results of national demographic survey data. So that controlled trials and randomized behavioral games, or semi-structured in-depth interviews (Banerjee, Duflo, Glennerster, & Kinnan, 2015). The two main methodological differences make the comparison of results very difficult.

To integrate the results of previous research and thus acquire a more in-depth understanding of the well-being of women in the field of microfinance services. We propose a three-dimensional model for measuring the well-being of women, which includes: (i) micro dimension, referring wealth index observed, (ii) the medium level , referring to financial independence measured by the degree of savings , and finally (iii) the dimension at the macro level, referring to the results women economic performance.

Micro finance in the mena region

According to the World Bank document on poverty and prosperity (World Bank, 2020), which provides global and regional comparisons, the poverty analysis in Middle East and North Africa (MENA) is different for two reasons. Firstly, it is the only region where the rate of extreme poverty increased between 2011 and 2015, from 2.7% to 5%. The number of people living on less than 1.90$ per day has doubled to reach 18.6 million person. On the other hand, it is the first time that global estimates have been established for this region after several years marked by a lack of data and problems related to the conversion factors of purchasing power parities in 2011 in some countries (Atamanov & Tandon, 2018).

However, the same institution emphasizes that a large part of the population lives in vulnerable situations, which increases its fragility to external shocks. For this region, several countries seem to suffer particularly from extreme poverty: nearly half of the population of Yemen (Middle East) lives below the poverty line of $ 2 per day. The rates are also high for Iraq and Syria with 21.41% and 16.9% respectively.

Regarding access to basic financial services, developing countries in the Arab region (except Gulf countries) have the lowest proportion of adult account holders compared to other regions of the world in 2011 , the proportion of adults with an account was only 1 8 %. Women are less likely than men do to have an account in the Arab region (Asli & Leora, 2012, p. 09).

Financial inclusion of women can therefore be a solution to help women increase their economic participation and create their own income-generating activities. The characteristics of the region make it a fertile ground for the development of microfinance. Microfinance in the MENA region is a relatively a new industry compared to other regions (Chehade, Navarro Barnieh, and Attia, 2017, p. 02). The Alexandria Business Association, launched in Egypt 20 years ago, managed the oldest program. In other parts of the world, particularly in Asia and Latin America, MFIs have been in existence for several decades. Thus, by developing microfinance, practitioners and policy makers in the MENA region can learn from other regions while adapting programs to their own environment.

Nevertheless, microfinance is narrowly defined, as most services offered by Arab MFIs are limited to loans. Yet many MFIs in the region are beginning to offer education loans as well as micro-insurance for death and disability, health and medical insurance, in addition to life insurance. Despite this deployment of inclusive finance, the MENA region continues to be the smallest market in terms of borrower reach and gross loan portfolio (Chehade, Navarro, Barnieh, & Attia, 2017, pp. 5.7).

In the MENA region, microfinance markets are at different stages of development, Morocco and Egypt in particularly shows higher levels of reach and scale than younger markets in Iraq and Syria. Morocco and Egypt currently represent 85 % of the total number of borrowers and 73 % of the total loan portfolio in the region (Khamar, 2019, p. 4). Egypt remains the largest market in terms of borrowers, while Morocco remains the largest market in terms of portfolio.

Since 1999, when the first survey was carried out in the region, microfinance in the Arab States has moved from a commercial sector that targets financial performance, to an emerging industry that is based on social values. However large Gaps appear: most microfinance institutions in Egypt are both socially and financially successful, while those in Yemen are socially successful and those in Jordan are financially successful (Adair & Berguiga, 2014, p. 11).

Over the past decade, the sector has seen notable changes as well as areas requiring further development. The region has seen a significant improvement in terms of awareness of female borrowers compared to around 36% of borrowers in 1997; women currently represent almost two-thirds of borrowers in the MENA region (58 %), compared to 63 % for the Asian region (Khamar, 2019, p. 4). As women also constitute the majority of the world's poor, the increased focus on women has been accompanied by a general increase in the outreach of awareness. Despite some instability in the region, the influence of the microfinance sector remains constant. Group loans were the predominant lending methodology in the past, particularly in Morocco, Jordan and, increasingly, Egypt, where they are seen as an effective tool for reaching women. In all other countries, individual loans were largely used. The MENA region enjoys a low average loan balance per borrower, indicating that MFIs in the MENA region are targeting the low-income market. While Iraq, Lebanon and Palestine have the highest loan balances and are the only ones above the regional average of $ 1,100, Palestine is the only country with the average loan balance / GNI per inhabitant is more than 50%. While benefiting from the largest markets, Egypt and Morocco also have the lowest average loan balances per borrower (Chehade, Navarro, Barnieh, & Attia, 2017). The MENA region recorded the highest capital-to-asset ratio and a relatively low

debt-to-equity ratio. This is because savings products continue to be offered on a limited scale in the region because of legal restrictions, while deposits constitute a larger share of MFI funding in other regions (Ben Abdelkader & Mansouri, 2019) .

In Algeria, microcredit is recent. The NGO Touiza introduced microfinance in l995. The microcredit regulatory system, established and implemented by the government in 1999, coincides with the idea of promoting small economic activities. Touiza's experience did not last without obtaining the approval of the authorities (Benhabib, Smahi, Maliki, & Baha, 2005). The device microcredit was initially built in the Social Development Agency (ADS) created into 1996 mitigate the social effects of structural adjustment Program (SAP).

Only eight years after an independent agency was created. The (ANGEM) which was created by Executive Decree n ° 04 - 14 of January 22, 2004. According to Article No. 2 of Order, "the *micro lending is a loan granted to classes of citizens without income and / or unstable incomes with small and irregular activity"*. According to ANGEM, micro lending is designed as "a *tool in the fight against unemployment, poverty and social exclusion "*. Regarding the creation of activities and jobs, micro lending will effects: reducing unemployment, fight against poverty and social exclusion and to phase out the informal economy (Musette, 2014). ANGEM went through two stages, with changes made in its text in 2011 by a presidential decree.

Before 2012, ANGEM developed two programs providing interest-free loans as well as non-financial services: (i) for the purchase of commodities (AMP); (ii) to create an activity, including at home, not necessarily a business.

After 2012, a change took place in its program. It joins the model of the National Agency for the Support of Youth Employment (ANSEJ) with mixed funding and tripartite funding with a ceiling of 1 million Algerian Dinar (DA). According to agency data, a steady increase in activity is recorded for the two types of "interest-free" financing, whether for the AMP or for the creation of a business (project).

It was able to reach the threshold of 923,788 projects at the end of 2020, of which nearly 834,896 were dedicated to the MPA. They have generated 1 357 764 job positions. From its inception to date, the agency has reportedly funded around 587,213 women businesses, mostly in the AMP formula.

Table 1

Financial services provided by ANGEM

Number of loans granted to women	587,213
Number of loans granted to men	336,575
Number of jobs created	1,357,764
Number of beneficiaries of non-financial services	342,323

Source: authors according to ANGEM data (ANGEM, 2021)

METHOD AND DATA

The empowerment economic of women is seen as a process as well as a result. Seen it as a process allows help us to better evaluate impact, but it is easy to collect data on women's empowerment as an outcome and it is difficult to measure empowerment as a process. Data collection (survey and participatory approach) related to the empowerment process takes longer and may add bias in interpreting responses (Pokhriyal, Rekha & Jaya, 2014). For this, we will treat the database of a survey by analyzing the impact on three dimensions: the asset ownership dimension to measure the depth of the impact, the savings dimension to measure the degree of financial inclusion and the dimension credit and debt to measure the creditworthiness of beneficiaries.

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Our main contribution is to measure the gender effect on the impact of microfinance through a sample regrouping 228 micro lending beneficiaries in the department of Boumerdes conducted by the Research center for applied economic for development (CREAD) in 2012.

The population of the department of Boumerdes is estimated at 800,000 inhabitants according to the 2008 RGPH. It grew by 2.2% between 1998 and 2008, slightly above the national average. This population is divided between 142,000 households, with an average of 5.6 persons / household.

The survey includes 90 questions classified under 9 headings. Relate to: (i) the observations of the interviewer, (ii) the living conditions, (iii) the household equipment, (iv) the individual characteristics of the promoter before the launch of his activity, (v) Characteristics of the promoter and the launch of the activity, (vi) The launch of the activity - situation at the start, (vii) the financial situation, (viii) the impact of the activity on the individual, on his family, on their environment, (ix) a general appraisal sheet of the system.

The sample of promoters was established by the technical services of ANGEM. The criteria used are the year of granting of loans, from 2005 to 2011, according to the two formulas "purchase of raw materials" (AMP) and for the creation of an activity (project). A second control sample was withdrawn for promoters who benefited from a loan after 2011, taking into account the reforms adopted by the government for the system. In total, a volume of 350 promoters, with a loss margin for each year. 30 executives from Algiers, Tipaza and Blida conducted the survey. The 10 executives of the Wilaya of Boumerdes were mobilized to support the investigators in locating the people to be investigated. The investigators were able to fill in 228 validated questionnaires (Musette, Belhouari, Meziani, & Achour, 2013).

In order to test the hypotheses, a non-parametric test is essential; the Mann-Whitney U test was used to determine whether there were significant differences between women and men receiving microcredit. This test represent an alternative to the t test for independent samples, it examines the differences in classified positions ordinal dependent variables in two independent groups (Nachar, 2008, p. 14). The Mann-Whitney U test is robust to violations of normality and homogeneity of variance. This test is used to determine if there is a significant difference between women and men receiving micro lending. Any significant difference statistically suggests that dependent variable that represent in our case the index of asset ownership, the index of financial inclusion and solvency index differ significantly between women and men beneficiaries of the ANGEM program.

RESULTS AND INTERPRETATIONS

Descriptive analysis

This study seeks to measure the impact of gender-split micro lending on the economic empowerment of beneficiaries and implicitly the degree of multidimensional poverty. For this, descriptive analysis is essential to identify our research variables.

The household size is an essential tool to estimate equivalence scales to compare the two subgroups. It can be seen from the visualization of the data that 80% of households have a maximum of eight members. We also note that only 11% of our sample is female against 89% male.

We note from the data that the average age of beneficiaries is 56 years and 80% of respondents are under 66 years old, for the marital status of respondents we see that more than 86% of respondents are married. For the level of education, we see that 95% of respondents does not access to university, with a rate of 33% completely excluded from the education system. For the individual situation before access to micro lending program, we note that only 48% of beneficiaries were excluded from the labor market.

Impact analysis

Different tests are available to determine whether the relationship between two crosstab variables is significant according to a categorical variable, which is represented in our case by the gender of the respondents. The most commonly used test is the Mann-Whitney test. One of the advantages is that it is suitable for the type of ordinal data. This test is used to determine if there is a significant difference between women and men receiving micro lending. The impact measurement will be done in two stages: first on the possession of assets and then on three indices.

Impact on asset ownership

The impact on the ownership of assets includes four tests on four selected items based on the approach of the deprivation; this dimension includes the degree of participation in the purchase of goods following refrigerators, a television, a cooktop and a computer. The choice of these goods is subjective. The significance value contains the information sought. Over the significance value is negligible, more likely the two variables are different.

The following table summarizes the results obtained for the equipment selected from the households surveyed.

Table 2

Mann-Whitney test of possession of selected equipment

Mann-Whitney U	2082	2310.5	1280	84
W from Wilcoxon	22182	22210.5	13526	90
Z	-3.284	-1.722	-2.621	-0.759
Asymptotic significance (bilateral)	0.001	0.085	0.009	0.448
To. Grouping criteria: Gender				

Source : Own compilation

According to the data, 226 ANGEM micro lending beneficiaries interviewed believe that the microcredit has positively influenced the possession of a refrigerator. In our case, we record a significance value of 0.001 less than 5%, which confirms the existence of a significant difference between the possession of a refrigerator between women and men.

According to the data, 225 beneficiaries find that the microcredit positively influenced the possession of a television. We records a significance value of 0.0 85 higher than 5%, which does not confirms the existence of a significant difference between owning a TV between women and men, but it is significant at 10% of error risk

According to the data 176 beneficiaries approves that the microcredit positively influenced the possession of a stove. The significance level of 0.009 less than 5%, which confirms the existence of a significant difference between owning a stove between men and women.

According to the data, 70 beneficiaries admit that the microcredit positively influenced the possession of a computer. The significance value of 0.660 [bis] greater than 5%, which confirms the non-existence of a significant difference in the possession of a computer between women and men.

Impact on the survival of businesses , the financial inclusion and the a solvency financial

We applied the same test under the same questions about the degree of significance for beneficiaries and the difference between the two genders. The results are synthetic in the following table.

First of all, the index sustainability measured by the financial situation of the company represent an indispensable tool to know to what degree beneficiaries applies good governance of their companies. According to the descriptive statistics, we realize that 217 beneficiaries consider that the financial situation of their business is difficult. In our case, it records a value of 0 meaning of, 114 over 5% which says the lack of a significant difference in the index of corporate sustainability among both genders.

Table 3

Mann-Whitney test on business sustainability, inclusion and financial solvency

Mann-Whitney U	1895.5	2397	2298.5
W from Wilcoxon	20616.5	21703	2623.5
Z	-1.579	-0.194	-0.625
Asymptotic significance (bilateral)	0.114	0.846	0.532
To. Grouping criteria: Gender			

Source: authors from survey data

Second, access to finance and financial capacity are both intermediate outcomes and components of financial inclusion. Being strictly interrelated, efforts to simply improve financial access without at the same time improving financial capacity and contextual conditions for development will be insufficient. They will also be unsustainable given that choosing and using the most adequate financial product (access) can be complex, if not impossible, as understanding all the implications in terms of risks, costs and benefits without the skills and knowledge necessary to make informed financial choices (capacity).

In this sense, financial inclusion represents the main objective of microcredit programs and it is measured by the degree of savings. In our case, we see that there is no difference in terms of impact on the index of financial inclusion between the two sexes, according to the Mann-Whitney test the degree of significance is 0.846 higher than the significance level, which is 5%.

Finally, the development of financial capacity is therefore only one of the intermediate outcomes of financial inclusion (Deb & Kubzansky, 2012) , where achievement requires a portfolio of various personalized products and services. Therefore, in order to successfully include the gender dimension in the financial inclusion program, innovative modes of access to financial services must be adapted to women and the capacity to use these products must be developed within the framework of the same action (Arora-Jonsson, 2014). To enable such changes, a radical changeover would have to occur in the financial market, which is achieved through rigorous financial solvency.

The financial solvency index measured by the respect of loan maturities is an effective financial tool to identify the sustainability of the microfinance institution. In our case we find that 222 beneficiaries have not bump into the deadlines payment of microcredit, in terms of gender no difference is observed, according to the Mann-Whitney test the degree of significance is 0.552 greater than the significance limit that is 5%.

CONCLUSION

This article examines the impact of women participation in microfinance institutions (MFIs) on various indicators of well-being and implicitly the degree of multidimensional poverty using quantitative data collected at the department of Boumerdes in the center of Algeria , directed by the center of research in applied economics for development in 2013 . The study showed that participation in microfinance services provided by the National Agency for Management of Microcredit (ANGEM) could be a tool for women to acquire the capacity to make strategic choices concerning their lives. By having access to microfinance services, women can set up their own businesses and consequently improve their status within the household and in their communities.

This article has examined how participation in services microfinance leads primarily to an increase in women control over savings and income generated by the company , secondly the impact on the ownership of assets , third point the self-efficacy measured by the solvency

index and lastly the good governance of companies managed by women . The results are consistent with previous research indicating that, there is a significant relationship between participation in MFIs and the possession of certain assets. The results show that women beneficiaries have more control over their savings and income than men do.

These results call for further questions. ANGEM is not an MFI like the others. It is a public agency, with a public service mission that operates according to the public budget, renewed each year by the state. The number of women beneficiaries of this agency is greater, in particular for AMP loans, which is a developed activity , most often at home, known in particular for lack of social security. This type of loan can thus lead, paradoxically, to the dynamics of the informal economy.

As against the loans related to the projects of creation of micro-enterprises, as ANSEJ model seems attract men more than women. These micro-enterprises are subject to regulation. The few women recipients of funding for a project, our sample results from the fact observed for companies. However, our study provides irrefutable proof that women engaged in the creation of projects acquire relative autonomy and are more successful than men in the world of micro-business are.

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МІКРОКРЕДИТУВАННЯ І БАГАТОМІРНА БІДНІСТЬ В АЛЖИРІ: ЧИ Є ГЕНДЕРНЕ ЗНАЧЕННЯ?
ТЕМАТИЧНЕ ДОСЛІДЖЕННЯ: НАЦІОНАЛЬНЕ АГЕНТСТВО З УПРАВЛІННЯ КРЕДИТАМИ / ДЕПАРТАМЕНТ БУМЕРДЕС

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У цій статті зроблено спробу оцінити вплив мікрокредитування на економічний добробут і, побічно, рівень багатовимірної бідності жінок в Алжирі. На основі даних опитування 228 одержувачів мікрокредитів у департаменті Бумердес в Алжирі. Дослідження показало, що участь у мікрофінансових послугах, що надаються національним агентством управління мікрокредитами (ANGEM), може стати для жінок інструментом набуття здатності робити стратегічний вибір щодо свого життя. Маючи доступ до послуг мікрофінансування, жінки можуть створити свій власний бізнес і, отже, покращити своє становище у сім'ї та суспільстві. В опитуванні взяли участь лише 26 жінок. Використовуючи U-тест Манна-Уітні, результати показали значну різницю між впливом мікрокредитування на представників обох статей на основі індексу володіння активами, де жінки-бенефіціари відчувають більший вплив, ніж чоловіки. Ці результати потребують подальших питань. АНГЕМ не є мікрофінансовою організацією (МФО), як інші. Це державна установа.

Ключові слова: розширення можливостей, вплив, мікрокредитування, багатовимірна бідність, гендер.

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BANKS' DISTRIBUTIONAL CHANNEL STRATEGIES, CUSTOMER SATISFACTION AND MEDIATING ROLE OF TRUST

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Abstract. The purpose of this paper is to investigate the impact of perception of banks' distributional channel strategies (Human Teller, ATM-Banking, POS-banking, Mobile banking, internet banking) on customer satisfaction; and the mediating effects of trust in these relationships. Cross-sectional (survey) data was obtained from a sample of 352 retail bank customers in north-east region of Nigeria, using pre-validated measures. The ADANCO 2.0.1 analytical package was employed in conducting the tests of hypotheses. Results indicate that only the human teller and internet banking channels influence customer satisfaction directly and indirectly through customer trust; while the influence of mobile banking channel on customer satisfaction is fully mediated by trust. The research findings have further confirmed the irreplaceability of the human element in the delivery of banking services. Bank managers should emphasize continuous training and orientation of employees towards effective service delivery and relationship building. The findings also point to the need for bank managers to devise innovative means of improving the quality of services through self-service channels (ATM, POS and Mobile), and communicate such to customers; while putting measures in place to win the trust of customers for the channels and the entire services of the banks. This paper contributes to the body of knowledge on customer perceptions and response in a multi-channel banking environment, and the mediating role of trust, particularly from developing country perspective.

Key words: customer satisfaction, distributional channel strategies, trust, banks, Nigeria.
JEL Classification: L1, M31, M32.

INTRODUCTION

Developments in the banking and financial services sectors have seen the deployment of multiple channels for service delivery as a means of creating value and satisfaction for customers. These channels, comprising both the traditional human teller and the automated delivery channels, have been predicted as capable to "dramatically change the distributional structure of retail banks" (Mols, 1998:331), through their influence on the nature and extent of competition for customer patronage. In the Nigerian banking industry, deployment and availability of multiple channels for service delivery have long become a major selling point for banks in their communication efforts to

customers. Evidences to the differentiation powers of multiple distribution channels in the Nigerian banking industry began manifesting around 1990s when the deployment of automated service channels (such as the automated teller machines (ATM), Telephone banking, and internet banking) became a basis for classifying banks into old generation vs new generation banks dichotomies (Bello et al., 2014). Researchers are unanimous in declaring that the emergence of the new generation banks, with their multiple distribution channel strategy marking a new turning point for the industry, as it not only forced the older banks to deploy the same technologies, but also made the banks compete against one another in being the first to deploy subsequent channels as they evolve.

Available statistics reveals a large-scale adoption of multichannel banking by bank customers in Nigeria. A report by KPMG (2018) reveals that 65% of bank customers make use of multichannel distribution, as against only 2% who use electronic banking exclusively. To sustain this patronage, bank managers have been paying considerable attention to customer satisfaction with the quality and performance of the channels. In the same vein, several researchers (e.g., Adewoye, 2013; Adeyemi, Ola & Oyewole, 2014; Tijani Ilugbemi, 2015; Oluwagbemi, Abah & Achimuga, 2011) have conducted researches in distributional channels of banks in Nigeria. However, a major observation on these studies is that they have adopted a disaggregated approach by focusing mostly on one (or a combination) of the automated channels, without considering the traditional channel of human tellers. Thus, creating the need for a study that captures both the traditional and automated channels, to provide a holistic view of customers' perceptions of banks' distributional channel strategies in Nigeria.

From the international perspective, Al-Hawari, Ward and Newby (2009) have also observed the dearth of studies examining customer service quality responses to traditional and automated channels in one model. Hence, their study proposed a "comprehensive" model encompassing the ATM, Telephone banking, internet banking, and traditional channel service attributes (p. 456). However, the time-lag between 2009 and the present has seen the deployment of additional channels such as mobile banking and the POS-agent banking, which have their own unique features; thus, creating a lacuna in the knowledge-base on consumer response to banks' channel strategies. Similarly, Patricio et al (2003) had earlier assessed the contribution of individual channels to customer satisfaction in a multi-channel setting. However, mobile banking was not included and the authors used interview as a means of data collection with small sample size. Furthermore, the authors called for quantitative studies in relation to multi- distributional channel.

Beyond the number of distribution channels studied, this study also contributes to the literature by including trust as a mediating variable. Consumer trust is defined as a psychological state relating to the customer's belief that a product or service provider can be relied on and to exhibit good behavioral intentions in serving the long-term interests of the customer (Crosby et al., 1990; Morgan & Hunt, 1994), particularly in situations where the customer is exposed to some degree of risks (Delgado-Ballester, 2004). Pemartin and Rodriguez-Escudero (2020) state that such positive psychological state "can either trigger or result from" specific actions of transacting partners; thus, placing trust as an effective mediator of customers' attitudinal/behavioral intentions. Trust connection is particularly important to the context of this study, given the reported incidences of frauds across the traditional and automated banking channels in Nigeria (Bello & Alkali, 2020). Hence, given the reported growth in customers' use of the multiple service distributional channels, it is logical to examine the level of customers' trust in these channels, and its intervening role in relation to customer satisfaction with the banking distribution channels.

Based on the foregoing, this study proposes an integrative model to explore customers' perceptions of banks' distributional channel strategies, customer satisfaction and the mediating effect of trust in the Nigerian banking industry. The subsequent section presents a review of literature focusing banks' distribution channel strategies, customer satisfaction and trust, along with the hypotheses development and conceptual framework in section 3. This is followed by discussion

of the study methodology in Section 4, research results and discussion in sections 5 and 6 respectively; and lastly, implications, conclusions and future studies in Section 7.

LITERATURE REVIEW

Distributional channel strategy for banks could be conceptualized as any means used to increase the availability and/or convenience of services, which help to maintain existing bank users or increase their use among current and potential clients (Osuagwu, 2008). Besides the provision of quality services, banks are also concerned about customer convenience – in terms of location and timing – of obtaining services. Traditionally, banks' distributional decisions were centered on factors like location of headquarters and its proximity to the network of branches, the proximity of branches to customers, and operating hours (Murowaniecki, 2015). Over the years, innovations in information and communication technologies have created opportunities for additional channels for distributing services to customers, via such platforms as the Automated Teller Machine (ATM), the Point of Sale (POS) Terminals, the mobile banking and internet banking. This development has given rise to the need for banks to evolve strategies for choosing and combining these channels along with the traditional human tellers for service distribution, in a manner that ensures customer positive attributions and satisfaction.

Customer satisfaction

Customer satisfaction is an important issue for marketing organizations (Delacroix and Guillard, 2016). Marketing literature defines customer satisfaction as reflecting the degree of positive/negative feelings consumer experiences after using a product or service encounter (Kotler, 2003). Thus, customer satisfaction is said to have taken place when customers' expectations are met, or exceeded (Anderson & Fornell, 1994); and the opposite (i.e., dissatisfaction) occurs when the product or service encounter has fallen short of customer's expectations. Generally, customer satisfaction has always been regarded as one of the most important goals/performance measures of business (Anderson, Fornell & Lehmann, 1994). It is a variable that has significant impact on customers' positive post patronage behavior (Islam et al., 2021), culminating into loyalty and customer retention; and also on business growth and profitability (Dauda & Lee, 2016).

Conceptualizations of customer satisfaction have revealed two major aspects: transaction-specific and cumulative (Kaura & Sharma, 2015). Transaction-specific satisfaction is allied to the evaluation of particular service encounter, and tends to vary from one experience to another (Veloutsou et al., 2005). Cumulative satisfaction on the hand is associated with the overall evaluation of service provider to date (Kaura & Sharma, 2015). It is often based on all past encounters with the product or service provider, and usually links the customer's satisfaction with service encounters to other facets of the service provider (Veloutsou et al., 2005). For this reason, most researchers consider customer satisfaction as a 'snowballing' construct arising from a universal assessment of all the features that make up the customer association with the service supplier rather than being a transaction-specific phenomenon' (Anderson, Fornell, & Lehmann, 1994; Manon, Sandrine, Isabelle, & Lova, 2017, Thakur, 2014).

Arising from the arguments above, this study aligns with the cumulative perspective of the satisfaction construct, and views consumer satisfaction as encompassing the totality of consumer's emotions/feelings regarding all encounters with the distributional channels to date. Furthermore, the study also adopts the expectancy-disconfirmation theory of satisfaction (Oliver, 1980), regarded as the most widely applied theory in satisfaction studies. The theory postulates that customers would typically "compare a new service experience with some standard that they have developed" (Barsky, 1992: 53). This process takes place through the interplay of customers' expectations regarding the service, its perceived performance, disconfirmation (or confirmation) - resulting from comparison between prior expectation and performance, leading to satisfaction or dissatisfaction (Oliver, 1980). Hence, the extent to which the service experience measured up to the preconceived standard determines whether the customer is satisfied or not with the encounter (Barsky, 1992;

Holjevac, Markovic & Raspor, 2013). To this end, this study proposes that consumers' satisfaction with the respective distribution channels will be based on the comparison between the preconceived expectations they have formed regarding the channels and the performance they have experienced while using the channels. The associated hypotheses are presented in the subsequent subsections.

The Human Teller

Human tellers (HT) otherwise known as branch-based-banking or mortar and brick banking is the first physical point of banking contact. Human tellers are the human element in the banking hall (Moutinho & Smith 2000). Human tellers help customers withdraw, deposit, transfer money, pay bills, attend to customers' problems and facilitate loans among others. Despite proliferations of different technology oriented bank distributional channels, human tellers have remained an important channel of distribution. Osuagwu (2008) noted that, high branch-banking network proved the relevance of human tellers and the channel appeals to large number of customers in Nigeria. Report from KPMG (2017) shows that 75% bank customers in Nigeria mostly visit bank branches to lay complaints or engage in financial transactions. A major unique attribute of the Human teller is its social orientation through face-to-face interaction. It is this social orientation attribute that perhaps makes most bank customers perceive human teller channel as less risky, since problems arising from service encounters can be resolved at the point of transaction (Patricio et al., 2003) indicated that human teller has less risk, because problems are resolved at the point of transaction. On this basis, the study hypothesizes as follows:

H1: Human teller channel positively influences customer satisfaction.

Point Of Sale (POS) Terminals

The POS Terminal is an electronic device that could be used for verifying and processing credit card transactions. A Retail Point of Sales system typically includes a computer, monitor, cash drawer, receipt printer, customer display, a barcode scanner, and a debit/credit card reader. In some instances, the POS system may also include a weighing scale, integrated credit card processing system, a signature capture device and a customer pin pad device (Okechi & Kepeghom, 2013). This combination of accessories elevates the POS as a form of electronic banking platform that allows customers handle financial transactions without visiting the bank or even the ATM. Various uses of this form of e-banking include cheque verification, credit authorization, cash deposit and withdrawal and cash payment, among others. Recently, the POS has gained prominence as means for actualizing funds transfer and payment at the point of sales such as supermarkets, petrol stations, hospitals, restaurants, among others. The main advantage of POS is that it enables customers pay for goods and services without cash, as the purchase price would be debited on the buyer's card and credited on the seller's account (Olanipekun, Brimah & Ajagbe, 2013). In addition, POS-banking is also made available through agents who set up kiosks in strategic locations in major towns and cities across the country; and providing easy access to cash for individuals in areas too far from bank branches and ATMs. Hence, it is expected that customers would derive immeasurable values from the use of the POS system, thus, increasing the chances for satisfaction. To this end, the paper proposes the following hypothesis.

H2: The POS banking channel positively influences customer satisfaction.

The Automated Teller Machine (ATM)

ATM is one of the electronic distributional channels deployed by banks that have reduced banking hall congestion and made it easier for customers to withdraw cash and make other bank transaction. Narteh (2013) defined ATM as an electronic device, which permits customers deposit, withdraw, transfer money, pay bills and engage in other financial transaction without being present in the banking hall. The ATM is widely acknowledged as having achieved large-scale acceptance and favorable attitude from customers. Leonard and Spencer (1991) associated ATM with improving the image of banks, just as Moutinho and Brownlie (1989) reported that customers place high values on the locational advantages of ATM, leading to higher levels of satisfaction. Similarly, Adeyemi, Ola and Oyewole (2014) in comparing of ATM and human teller, indicated that ATMs

are mostly located in areas easy to reach for customers, compared to the human teller that needs banking hall for transactions to take place.

The popularity of the ATM has made it a focus of numerous studies. Hence, despite its positive links with customer satisfaction in prior studies, some scholars have indicated problems with ATMs, which could reduce or prevent customer satisfaction. Murdock and Franz have highlighted some difficulties and security risks associated with ATM, while Mark and Luiz (1995) reported that customers' needs more functionality on ATMs to enable them enjoy banking services. Within the Nigerian context, Alaba (2011) pointed out issues of fraud and lack of knowledge in using ATMs as affecting its adoption in the country. Other problems with ATMs are high bank charges, failure of machines and the long process of recovering the stock cash. Nevertheless, evidences abound that the ATM has remained the most prominent customer-interfacing channel within the Nigerian banking system (Bello, Danjuam & Udo-Imeh, 2014). Thus, the following hypothesis is proposed.

H3: ATM banking channel positively influences customer satisfaction.

Mobile banking

Mobile banking (m-banking) refers to all forms of services offered by financial institutions that make use of technology-enabled portable devices such as mobile phones, smart phones, or tablets (Makanyeza, 2017; Tam & Oliveira 2017). Mobile banking is regarded as one of the important recent strategic innovations in retail banking (Tam & Oliveira 2017); and its use cuts across developed and developing countries (Makanyeza, 2017). Mobile banking has significantly improved banking delivery through varieties of banking features, such as alerts, notifications and geographical benefits (Ha, Canedoli, Baur & Bick, 2012), which allows customers to enjoy bank services anywhere and anytime (Tam & Oliveira 2017). These multiple benefits derivable from using mobile banking through cell phones increases the likelihood for customer satisfaction with the banking channel.

M-banking became a prominent feature of the Nigerian financial system due to the proliferation of Global system for mobile communication (GSM), (Adeyemi, Ola & Oyewole, 2014). Recent data from the Nigerian telecommunication commission indicates that there are about 199,863827 active mobile lines in the country as at January 2021 (www.ncc.gov.ng), representing over 90% of the country's population. In the same vain, reports from the Nigerian interbank settlement scheme (NIBSS) have indicated that mobile channel have attained the status of most preferred channel having recorded consistent growth over the years; culminating into an increase of 84.6% from 506.16 million transactions in 2019 to 933.66 million transactions in 2020 (The Punch.com, 2021). This seeming largescale acceptance of mobile banking is consistent with Adewoye's (2013) assertion that the channel helps bank to improve their services, thus leading to customer satisfaction. Therefore, this study hypothesizes as follows.

H4: Mobile banking channel positively influences customer satisfaction.

The Internet Banking

Internet banking refers to banking process that enables a customer to engage in banking activities with electronically connected internet through bank website provided by the financial firms, and normally accessed via a the computer and smart phone devices (Shaikh & Karjaluoto, 2015). It is generally regarded as a channel with wide acceptability among customers (Moghavveni, Lee and Lee, 2018); because it has changed the way customers transact with banks and made it easier for them to access account, transfer money, pay bills, engage in investment and establish inquiries as long as there is internet connectivity, from their comfort zones (Lee and Chung, 2009; Mols, 1998).

The ubiquitous nature of internet banking has attracted research interests on its adoption/acceptance and customer attitudes. Countless researchers have reported large scale acceptance as well as a positive relationship between internet banking and customer satisfaction. A sizeable number of these studies have focused on quality of internet banking as major drivers of customer satisfaction (e.g., Amin, 2016; Ankit, 2011; Harington and Weaven, 2009; Jun and Can,

2001; Pikkarainen, Pikkarainen, Karjaluoto, and Pahnila, 2004; Rod, Ashill, Shao and Carruthers, 2009); while some studies have established a link between certain attributes of the internet banking and customer satisfaction. A typical example of the latter group of studies is Ramseook-Muhuerrum and Naida (2011), who found that ability of customers to access and perform banking anywhere as some reasons that attract and satisfy customers.

Despite the wide acceptance and satisfaction with Internet as channel of banking service distribution, it is not without its share of reported challenges that could reduce or prevent customers from getting the desired satisfaction. For example, securities issues have been reported as greatly affecting the utilization and satisfaction of customers (Jun & Cai, 2001; Liao & Cheug 2002; Ramseook-Munhurum & Naido 2011). Similarly, Chen, Husia, and Hwang (2012) in their study of evaluating the satisfaction of customers using the internet in Taiwan, recommended that banks should design a friendly user internet and ensure strong internet security. Notwithstanding these challenges, the current study aligns with the prevalent position that internet banking is directly linked to customer satisfaction, to the extent that it is considered to influence customer satisfaction better than human teller (Polatoglu & Ekin 2001). Hence, the following is hypothesized.

H5: Internet banking channel positively influences customer satisfaction.

Mediating Role of Trust on the Relationship between Distribution Channels and Customer Satisfaction

Trust is generally conceived as an idividual's belief in the ability of another, to deliver on expectations, as well as his/her honesty to act in a manner that would not jeopardize one's interest. In business relationship, trust is viewed as customer confidence in vendor's openness and honesty in transactions (Morgan & Hunt, 1994; De Wulf, Odekerken-Schroder & Iacobucci, 2001). Trust reduces risk and uncertainty associated with commercial transaction (Huurne, Ronteltap, Corten, & Buskens, 2017). Delgado-Ballester (2003:574) specifically conceptualize trust as the "the confident expectations of the brand's reliability and intentions in situations entailing risk to the consumer". This definition identifies two important ingredients associated with trust in business relationships in general, and banking relationships in particular. These are the 'confidence' that the buying party has in the selling party, and the recognition of 'potential risks' that typically pervades every level of such relationships. Thus, it emphasizes the necessity of the trust element at every stage of business relationships (Urban, Sultan, & Qualls, 2000). Kim, Ferrin and Rao (2003) underscored this point when they posited that even for the first time buyer, with no prior direct experience with the seller, an "initial trust … formed by indirect experiences such as reputation, recommendation, information quality of the seller's websites and so on" are necessary for the buyer to initiate the relationship (p.312). For this reason, trust is considered as the foundation of any business relationship (Berry, 1995; Kim, Ferrin and Rao, 2003; Urban, Sultan, & Qualls, 2000), and a major influencer of the consumer's cognitive, emotional and behavioral responses towards the firm and its offerings.

The importance ascribed to the trust variable has inspired researchers' interests in studying its effects in business. Most previous studies have conceived trust as a relationship variable (Kim, Ferrin and Rao, 2003), and have situated it within the social exchange theory (SET), which emphasizes that exchanges are mostly based on the expectations of trust and reciprocation between parties (Blau, 1964). Firms are naturally interested in building long-term profitable relationships; and the trust element is confirmed as major connection that leads to lasting relationships between customer and clients (Dwyer, Schurr, and Oh, 1987; Urban, Sultan, and Qualls, 2000), especially when customer expectations are fulfilled (Urban, Sultan, and Qualls, 2000). The nature of banking relationships further underscores the importance of trust in service relationships. Banks serve as custodians of peoples' funds, and a good measure of trust is required for customers to feel comfortable 'safe-keeping' their hard earned funds with the banks. Zsofia (2009) further likned the importance of trust in banking relationships to the experiences of financial and economic crises that have affected customers' confidence in banks globally. Hence, S/he noted that trust has become a crusial element and differentiating factor, necessary to create a balanced and persistent relationship.

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The current study proposes trust as mediator between distribution channel usage and customer satisfaction. This proposition is in line with the popular conception in the literature, where trust has been widely acknowledged as mediating variable across several disciplines, and most particularly in the service evaluation (Vlachos, et al., 2009;). Further more, within the context of banking services, research findings have confirmed trust as a major influencer of customer satisfaction with banking services (Lee and Chung, 2009; Kim et al., 2003). More specifically, previous studies on customer evaluations and response regarding banks' distributional channels have confirmed trust as effective mediator between automated service quality and customers' commitment (Al-Hawari, 2011); and between service quality and loyalty in e-banking context (Chu, Lee and Chao, 2012). To this end, this study hypothesize as follows.

***H5a**: Trust mediates the relationship between human teller (HT) distributional channel strategy and customer satisfaction*

***H5b**: Trust mediates the relationship between point of sales (POS) distributional channel strategy and customer satisfaction*

***H5c**: Trust mediates the relationship between automated teller machine (ATM) distributional channel strategy and customer satisfaction*

***H5d**: Trust mediates the relationship between mobile banking (MB) distributional channel strategy and customer satisfaction*

***H5e**: Trust mediates the relationship between internet (INTNB) distributional channel strategy and customer satisfaction*

1. Conceptual Model

In regard to prior theoretical review propose the conceptual model was form. As presented on Figure 1, the proposed model indicated that the latent exogenous variables affect directly the latent endogenous variable. Therefore, distribution strategy as target constructs is independent variable, which is represented by five dimensions (HM, POS, ATM, MB and INTNB). Trust is the mediating variable and customer satisfaction is the dependent variable

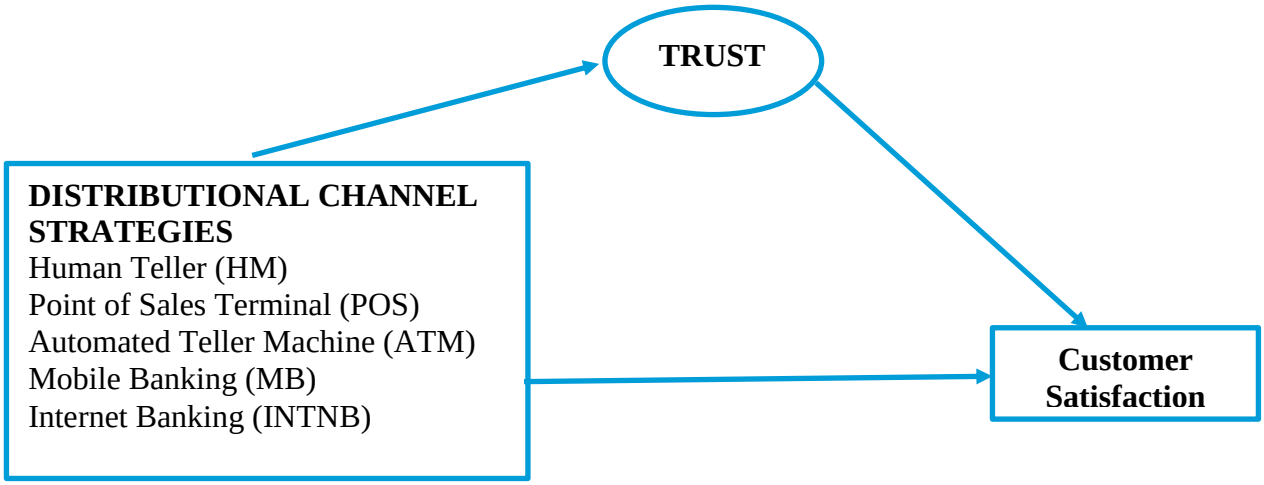

Figure 1 Conceptual Framework

Source: Authors conceptualization

METHODOLOGY OF THE STUDY

This study adopted the survey research design, with personally administered questionnaire as research instrument. A total 450 retail bank customers comprising academic and non-academic staff from six tertiary institutions in North East Nigeria participated in the study. The survey

questionnaire consisted of 34 items, measured on a five-point Likert scale, ranging from "strongly disagree (1), to "strongly agree (5)". Respondents were required to tick appropriate answers corresponding to their opinions/evaluations. At the end of the survey, an initial set of 400 questionnaires were retrieved, and subjected to data screening procedures involving missing data analysis and treatment of outliers. Missing data were identified and treated using the recommended expectation maximization (EM) technique (Karanja et al., 2013). Similarly, extreme case scores (univariate outliers) that may have substantial negative impacts on the analysis were removed, and the Mahalanobis Distance (D) was used to determine and handle multivariate outlying cases (Hair et al., 2010). Subsequent preliminary analyses to ensure that all data treatment and multivariate assumptions were satisfied (i.e., normality, homoscedasticity, linearity, test for independence of the error terms, and multicollinearity) were conducted, leading to the exclusion of 48 responses. Therefore, a final set of 352 observations were used to detect R^2 values around 0.005, assuming a significance level of 5%, and a statistical power of 95%. Moreover, 92 observations are required to detect a medium effect size of 0.15 with five predictors (as in the case of the current study), assuming the same significance level of 5% and statistical power of 0.80 (Nitzl, 2016).

Measures

Variables in the study were measured using multi-item, previously validated scales. Consumer perceptions of distributional channel strategies (independent variable) and trust (mediating variable) were measured by a set of questions inspired by the intensive study of the literature (Mohammad, 2020; Strydom & Fourie, 2018). To this end, Human teller and internet banking channels were measured using five items each, ATM-banking and consumer trust were measured through four items each; while POS and Mobile banking channels were measured through six and three items in the questionnaire respectively. Sample item for the distributional channels reads: "The internet banking services are available 24/7". The dependent variable (customer satisfaction) was measured through seven items adapted from Mohammad (2015). Sample item reads "The distributional channels of my bank meet my expectations". The questionnaire was pre-tested through a pilot test using 30 respondents to ensure that the items were reliable, after which adjustment was made to strengthen the instrument.

Common method Variance (CMV) or Bias

After primary data is collected, it is required to test the common methods variance or bias to insure whether orderly bias is influencing the data that have been collected (Podsakoff, MacKenzie, Lee, & Podsakoff 2003). CMV is a common bias in self-administered survey method. According to Bagozzi, Yi, and Phillips, (1991), CMV appears to be possible when correlation between constructs is more than 0.9. Table 1 shows the correlation between satisfaction and trust to be the highest with value of 0.6294. Therefore, it signifies no common method variance or bias from the data used.

Table 1:

Inter-Construct Correlations

Construct	HM	POS	ATM	MB	INTNB	TRUST	ST
HM	1.0000						
POS	0.1047	1.0000					
ATM	-0.0145	0.2592	1.0000				
MB	0.3046	-0.0631	-0.0746	1.0000			
INTNB	0.3646	-0.0892	-0.0567	0.5004	1.0000		
TRUST	0.4842	-0.0111	-0.1087	0.3724	0.5161	1.0000	
ST	0.5184	-0.0852	-0.0752	0.3555	0.5103	0.6294	1.0000

Source: Output from ADANCO software

2. *Partial least squares (PLS) Path Modeling Techniques*

ADANCO 2.0.1 (Henseler, 2017) was employed to conduct the PLS-PM based analysis. The software is a variance-based analytical tool reputed for its 'superiority' over covariance-based SEM counterparts in handling non-parametric and non-normally distributed data (Hair et al., 2014). The analysis follows the three-stage recommendations of Hair et al. (2017), comprising assessment of the model fit for the global (estimated) model, followed by evaluation of the measurement (outer) model – to determine the extent to which the indicator variables align with the theoretical concepts they are meant to represent. The third stage entails the assessment of the structural (inner) model to ascertain if the proposed relationships between constructs are in line with the proposed hypotheses. Details of these analyses are presented below.

Overall Model Fit and Measurement Model results

The major indicator of overall or global model fit in PLS is that the standardized root mean square residual (SRMR) should not be greater than 0.08 (Henseler, 2016). As indicated in Table 2, the SRMR for the current model is 0.067. Since this value is within the required cut-off point, the proposed model has satisfied the fitness criteria.

Upon confirming the model fitness, the study proceeded to assess the measurement model to ascertain the validity of the research items and constructs they represent. Results presented in table 2 reveals that all measurement items have factor loadings greater than 0.6 (Hulland, 1999), hence, confirming their reliability. Similarly, estimates from the relevant parameters for construct validity (i.e., Dijkstra-Henseler's rho (ρA), Jöreskog's rho (ρc), Cronbach's alpha (α)) are all greater than 0.6, which is the minimum acceptable threshold for SEM analysis in social researches (Bagozzi and Yi, 1998). Likewise, the average variance extracted, AVE for all the main constructs are greater than 0.5, thus confirming the convergent validity of the constructs (Fornell and Larcker, 1981). Subsequently, discriminant validity was assessed to examine whether the study constructs are divergent from one another (Mohammad, 2019). Henseler (2015) recommends the HTMT test as the best for establishing discriminant validity, and Teo et al. (2008) recommends a threshold of not more than 0.9 to be used for measuring HTMT. Results in Table 2, indicates that all the HTMT values for the study constructs are within the acceptable threshold.

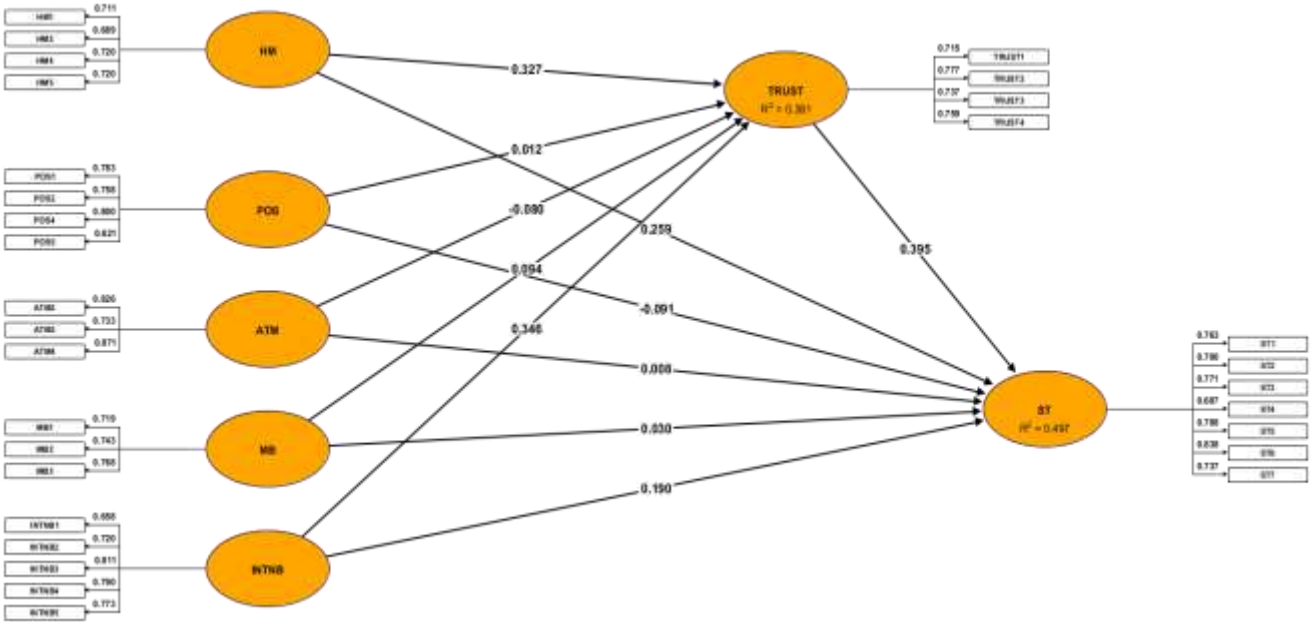

Figure 2: Reflective Measurement Model

Source: Output from ADANCO software

Table 2

Model fit and Measurement Model Results

	Value	**HI95**	**HI99**
SRMR	0.0676	0.0682	0.0857

Measuremet Model

Construct	Indicator	Loadings	Dijkstra-Henseler's rho (ρ_A)	Jöreskog's rho (ρ_c)	Cronbach's alpha(α)	AVE
Human Teller	HM1	0.7112	0.6744	0.8029	0.6733	0.5046
	HM2	0.6892				
	HM4	0.7205				
	HM5	0.7200				
Point of Sale	POS1	0.7826	0.7782	0.8307	0.7397	0.5530
	POS2	0.7581				
	POS4	0.7995				
	POS5	0.6212				
Automated Teller machines	ATM2	0.8263	0.7934	0.8526	0.7470	0.6596
	ATM3	0.7331				
	ATM4	0.8710				
Mobile Banking	MB1	0.7188	0.6093	0.7876	0.6146	0.5529
	MB2	0.7429				
	MB3	0.7682				
Internet Banking	INTNB1	0.6578	0.8135	0.8666	0.8075	0.5665
	INTNB2	0.7203				
	INTNB3	0.8115				
	INTNB4	0.7905				
	INTNB5	0.7730				
Trust	TRUST1	0.7149	0.7374	0.8348	0.7361	0.5584
	TRUST2	0.7768				
	TRUST3	0.7371				
	TRUST4	0.7589				
Satisfaction	ST1	0.7629	0.8778	0.9031	0.8743	0.5720
	ST2	0.7002				
	ST3	0.7706				
	ST4	0.6867				
	ST5	0.7881				
	ST6	0.8382				
	ST7	0.7367				

Discriminant Validity: Heterotrait-Monotrait Ratio of Correlations (HTMT)

	HM	POS	ATM	MB	INTNB	TRUST	ST
HM							
POS	0.1435						
ATM	0.0153	0.3876					
MB	0.4281	0.0649	0.0794				
INTNB	0.4904	0.0897	0.0682	0.7008			
TRUST	0.6865	0.0101	0.1366	0.5124	0.6607		
ST	0.6715	0.0996	0.0955	0.4604	0.5951	0.7787	

Source: Output from ADANCO software

Structural Model

To assess the structural model (i.e., relationships among the endogenous latent variables), Hair et al. (2014) recommends checking for collinearity issues among constructs. Results of the collinearity analysis revealed that tolerance (VIF) values are generally below the threshold of 5 (tolerance higher than 0.20). Therefore, collinearity among the predictor constructs is not an issue in this structural model. Having certified the data as collinearity free, the analysis proceeded with checks on the model's predictive capability. For this, Chin et al. (2003) recommends assessing the R^2 value, which indicates the sum of variance in the endogenous constructs explained by all of the exogenous constructs connected to it (Hair et al., 2017). Generally, Falk and Miller (1992) recommend that the variance explained, or R2s for endogenous variables should be greater than 0.1., while Hair et al. (2017) classify R2 values of 0.75, 0.50 or 0.25 for the endogenous constructs as corresponding to 'considerable', 'moderate', and 'weak' predictive capabilities. The R^2 values for the endogenous variable in this study are 0.381 and 0.497 for Trust and ST respectively, see figure 3 and table 3. These values are well above 0.1 recommended by Falk and Miller (1992), and also greater than 0.25 classified as weak by Hair et al. (2017). Thus, certifying the model as having valid predictive capability, and suitable for confirming hypotheses.

Figure 3: Structural model

Source: Output from ADANCO software

Tests of hypotheses were conducted based on the recommended non-parametric bootstrap analysis with 5000 samples (Hair et al., 2017) to assess the path coefficients and t-statistics. Results presented in Table 3 reveals that only two of the five hypothesized direct effects are significant and positive. Human teller (β=0.2586; t=5.1908; ρ=0.0000) and INTNB (β=0.1896; t=3.6842; ρ=0.0002) are proven to be positively associated with customer satisfaction; thus providing support for hypotheses H1 and H5. The test statistics for hypotheses H2, H3, and H4 fell short of the acceptance criteria; hence, they were not supported.

Similarly, the non-parametric bootstrap procedure was applied in testing the significance of the indirect effects for the mediated paths in the model. This process is highly favored above the Baron and Kenny's (1986) causal step approach, due to its convenience and versatility in detecting mediation effects, particularly in SEM analysis (Nitzl et al., 2016; Zhao et al, 2010). Results from the bootstrap procedure reveal that four out of the five mediated paths are significant. Consumer trust significantly mediates the relationship between HT and satisfaction (β= 0.1291; t= 4.8790; ρ= 0.000); as well as the relationship between INTNB and satisfaction (β= 0.1368; t= 4.6614; ρ= 0.000). In both cases, the 95% bias corrected confidence intervals were above zero. Therefore, hypotheses H5a and H5e are supported. Furthermore, given that the direct effects remained significant even with the presence of the mediating effects, indicates partial mediation.

For the indirect path between MB on satisfaction via trust, estimates reveal significant positive and full mediation (β= 0.0373; t= 1.9339; ρ= 0.0266). This is indicated by the absence of significant effect on the direct path, and the 95% bias corrected confidence intervals, which were above zero. Thus, confirming hypothesis H5d. However, the results from the tests of significance on the indirect paths for POS→ST and ATM→ST through TRUST revealed insignificant effects as their associated *t-values* and *p-values* were below the threshold for acceptance. Also, the 95% bias corrected confidence intervals for the two paths all included a zero value. As such, the study found no support for hypotheses H5b and H5c.

Table 3

Structural Model Assessment and Hypotheses Testing

Endogenous Constructs			**R^2**		**Adjusted R^2**	
TRUST			0.3806		0.3717	
SATISFACTION			0.4972		0.4884	
Direct effects						
	B		**t-value**		**p-value**	
HM -> ST	0.2586		5.1908		0.0000**	Supported
POS -> ST	-0.0912		-1.8440		0.0652	Not Supported
ATM -> ST	0.0081		0.1592		0.8735	Not Supported
MB -> ST	0.0296		0.6097		0.5421	Not Supported
INTNB -> ST	0.1896		3.6842		0.0002**	Supported
Mediating effects						
	B	**t-value**	**p-value**	**95% CI**		
HM →TRUST→ ST	0.1291	4.8790	0.0000**	[0.0638, 0.2028]	Supported	
POS →TRUST→ ST	0.0049	0.2302	0.8179	[-0.0483, 0.0585]	Not Supported	
ATM →TRUST→ ST	-0.0318	-1.6595	0.0971	[-0.0827, 0.0279]	Not Supported	
MB →TRUST→ ST	0.0373	1.9339	0.0266*	[0.0024, 0.0786]	Supported	
INTNB → TRUST→ST	0.1368	4.6614	0.0000**	[0.0692, 0.2177]	Supported	

Source: Output from ADANCO software

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DISCUSSION

The results of this study extend the understanding on distributional channel strategy and customer satisfaction, mediating role of Trust in a banking context. The study established that Human teller and internet banking significantly affect customer satisfaction, while POS, mobile banking and ATM do not exert significant direct effects on customer satisfaction. Positive influence of human teller on customer satisfaction is in line with the position of Seck and Phillipe (2003), and particularly Osuagwu, (2008) who stated that most Nigerian's rely on face to face banking hall transaction and have a strong confidence in it. Similarly, significant positive effects of internet banking on customer satisfaction is consistent with those of previous studies, i.e., Raza and Hanif (2013), Jun and cai (2001), Pikkarainen et al (2004), Herington and Weaven (2009), Road et al (2009) and Ankit (2011) who found that quality internet banking services leads to customer satisfaction across several contexts.

Findings from this study have not confirmed the direct effects of POS, ATM and Mobile banking on customer satisfaction. Although, these findings are largely inconsistent with those of previous findings (i.e., Sampio et al., 2017; Seck and Phillipe, 2003), they provide indications that customers may not be so happy with the performance and quality of services received through these distributional channels. The reasons for this lack of satisfaction may not be unrelated to what previous researchers have pointed as problems associated with ATMs and other automated service channels. For instance, Murdock and Franz highlighted issues of the difficulty of usage and risk, while Sanda and Arhin (2011) raised issues of customer complaints of high bank charges, unreliable service, and faulty machines. Specific to this study's context, Alaba (2011) characterize ATMs in Nigeria with fraud and other unwholesome practices. This phenomenon is basically same with other automated service delivery channels, and has become a constant news item on the traditional and social media.

Findings from the mediation analyses also provide support for the importance of trust in influencing customer behavior. Results indicated that trust is partial mediator between two distributional channels (human teller and internet banking) and customer satisfaction, while it fully mediates that between mobile banking and customer satisfaction. These findings are consistent with Rizan, Warokka & Listyawati (2014), who found customers' trust as important mediator of the effect of relationship banking tactics on loyalty towards the banking services. More specifically, the full mediation effect of trust between mobile banking and customer satisfaction conforms to Al-Hawari (2011), who observes that most factors of automated banking channels only have indirect effect on customer commitment through customer trust and delight.

IMPLICATIONS, CONCLUSIONS AND STUDY LIMITATIONS

Findings from this study have significant implications for banks managers. First and foremost, the study findings have provided additional confirmation to the importance of the human teller in bank services, particularly in the study context. As indicated in the results, the channel maintained significant positive effects on customer satisfaction, both directly and indirectly, with trust only exerting a partial mediating effect. This finding underscores the irreplaceability of the human element in banking service relationships (Al-Hawari et al., 2009). Bank managers will need to implement continuous training and orientation of employees towards effective service delivery and relationship building.

Similarly, the results further emphasize the need for Nigerian banks to pay more attention to distributional channel strategies, particularly those aimed at self-service (ATM, POS, Mobile banking). The fact that these channels do not directly influence customer satisfaction point to the need for bank managers to device innovative means of improving the quality of services from these channels. Additional efforts would also be required to communicate these measures to customers in

order to overcome the learning difficulties that likely impact on customers' perception and attitudes towards these channels (Al-Hawari, 2011).

Furthermore, the study findings also highlight the imperative for bank managers to win the trust of customers towards the banking channels and their services in general. As observed by Kim et al. (2003), trust is a crucial factor in banking relationships, and it plays important role at every stage of banking relationship. Consumers need to develop some measure of trust before even deciding to use any of the distributional channels, and this trust is further strengthened when the quality and performance levels of the channels meet or exceed customer expectations. Bank managers should consider instituting security and safety measures, as well as customer feedback mechanisms to help alleviate all negative issues impacting on customers' trust for the channels.

The study acknowledges the following limitations. First, the study sampled customers from the north-east region of Nigeria. Although, the respondents are considered cosmopolitan, extended studies covering more regions and other territories may provide additional insights and improve generalizability of findings. Secondly, the study focused on retails customers only. Future studies may examine the relationships from corporate customers' viewpoints to account for differences in usage patterns. Finally, even though this study has assessed most of the distributional channel strategy in retail banking. It will be appropriate for future studies to approach it from Omnichannel strategy perspective (Mainardes, Rosa and Nossa, 2020).

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СТРАТЕГІЇ БАНКІВ ЩОДО КАНАЛІВ РОЗПОДІЛУ, ЗАДОВОЛЕНОСТІ КЛІЄНТІВ І ПОСЕРЕДНИЦЬКА РОЛЬ ДОВІРИ

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Мета даної роботи – дослідити вплив сприйняття стратегій банківських каналів розподілу (людський касир, банкомат-банкінг, POS-банкінг, мобільний банкінг, інтернет-банкінг) на задоволеність клієнтів; а також опосередковуючий вплив довіри в цих відносинах. Дані крос-секційного (опитувального) дослідження було отримано на вибірці з 352 роздрібних банківських клієнтів у північно-східному регіоні Нігерії з використанням попередньо перевірених заходів. Для перевірки гіпотез використовувався аналітичний пакет ADANCO 2.0.1. Результати показують, що тільки канали банківського обслуговування за участю операційістів та інтернет-банкінгу впливають на задоволеність клієнтів прямо та опосередковано через довіру клієнтів; тоді як вплив каналу мобільного банкінгу на задоволення клієнтів повністю опосередковано довірою. Результати дослідження ще раз підтвердили незамінність людського фактора у наданні банківських послуг. Керівники банків повинні приділяти особливу увагу постійному навчанню та орієнтації працівників на ефективне надання послуг та побудову відносин. Результати дослідження також вказують на необхідність для менеджерів банків розробляти інноваційні способи підвищення якості послуг через канали самообслуговування (банкомати, POS та мобільні пристрої) та повідомляти про це клієнтів; водночас необхідно вживати заходів для завоювання довіри клієнтів до каналів та всіх послуг банків. Ця стаття робить внесок у скарбничку знань про сприйняття та реакції клієнтів у багатоканальному банківському середовищі, а також про посередницьку роль довіри, особливо з погляду країн, що розвиваються.

Ключові слова: задоволеність клієнтів, стратегії розподільчих каналів, довіра, банки, Нігерія.

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FORMATION OF EFFECTIVE PRODUCT DISTRIBUTION CHANNELS AS A LOGISTIC SYSTEMS ECONOMICS COMPONENT OF AGRICULTURAL COMPLEX OF UKRAINE

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Abstract. The article highlights the essence of distribution channels and considers management aspects of sales channels formation and development for the Ukraine agro-industrial complex. Problems and main factors of influence on the logistics system formation of the agroindustrial enterprise with effective trade channels of national agricultural products are analyzed.

Today, in the process of realizing the geopolitical advantages of the national economy, it is worth paying attention to the potential of the national agro-industrial complex, which is the main budget-forming sector of the national economy of Ukraine. One of the key vectors of development for Ukraine's integration into the world economy is the formation of effective channels for distributing products of national agricultural producers to export markets. The participation in world trade may open opportunities for our country to enter a new stage of development.

Keywords: logistics system, distribution channels, trade, distribution logistics, agricultural enterprise, distribution channel schemes, agricultural products.

JEL Classification: A22, I20, I21.

INTRODUCTION

Today, the organization of distribution channels is the weakest link in the system of functioning of national agricultural producers. Insignificant investments in sales logistics and low efficiency of distribution channels lead to the loss of part of the profit, incomplete satisfaction of demand, as well as increasing the level of risk associated with the sale of agricultural products in foreign markets. The process of movement of goods from the agricultural producer to the final

consumer takes place through a system of distribution channels, the efficiency of which is achieved by ensuring uninterrupted flow of products in the agri-food market from producer to consumer. It primarily depends on the coordinated work of all parts of the sales channel. As you know, the system of channels of trade is a set of organizations that provide consumers with the opportunity to use and consume goods and services. The availability of distribution channels is a guarantee of competitive advantage for all entities that are part of the channel. Such distribution channels facilitate planning, ensuring the relationship between the functional units of the organization, market agents, production and commercial structures and the finally users. The organization of effective distribution channels of national agricultural products is one of the most promising areas of Ukraine's integration into the world economy and the implementation the concept of total quality management.

LITERATURE REVIEW

Argumentation of theoretical positions and practical developments on the organization of effective channels of distribution of agricultural products are covered in the works of prominent foreign and domestic scientists, among whom were: A.N. Rodnikov, Yu.M. Nerush, VV Dybska, G. Astratova, P.R. Kols, M. Tracy, O. Berezin, Y. Glushko, I. Balanyuk, V. Goncharov, S. Potemkin, P. Sabluk, O. Shpykulyak and others. Some aspects of theoretical and practical nature of the logistics activities of agricultural enterprises in their work considered EV Крикавський, A.M. Gadzhinsky, VI Sergeeva, AG potter, L.B. Mirotina, N.Y. Konishchev and other foreign scientists.

PAPER OBJECTIVE

The purpose of this is to reveal the essence and basic principles of organization of distribution logistics in the general logistics system of agricultural enterprises, as well as analysis of the management aspect of formation and development of effective distribution channels in the logistics system of national agricultural producers.

RESULTS AND DISCUSSION

Each system is a set of elements that are in mutual connection and relationship with each other, forming a certain integrity, unity. The system is understood as a set of elements that are in interaction; a set of elements organized in such a way that the change, exclusion or introduction of a new element will naturally be reflected in the other elements of the system; everything that consists of interconnected parts. Elements of a system can only exist within it - outside the system they are only objects. They are heterogeneous but compatible. Any system has input and output. Also, it is integral and at the same time articulate. There are significant orderly connections between the components of the system that have the structure and determine its unifying qualities. The system as a whole has its unique integration qualities that are not inherent in its elements.

The logistics system of the enterprise has all the properties of the system, because it consists of interconnected and interdependent system-forming elements, which are arranged in a certain way and form a structure with predefined parameters. Analysis of modern domestic and foreign literature has shown that there is no single definition of the term "logistics system". So A.G. Kalchenko in his works, calls the logistics system an organizational and economic mechanism for managing material and information flows, the purpose of which is to deliver the required quantity and range of products prepared for production and personal consumption at minimum time and financial costs. However, the goal of the logistics system is not only to deliver products, but also to optimize all flows of the enterprise.

According to Y.M. Nerusha logistics system organizes the free distribution and exchange of products in order to ensure the optimal ratio of supply and demand, optimizing the activities of the constituent subsystems. In his work "Logistics" the scientist concluded that some logistics departments determine the required amount of products for the smooth operation of the enterprise, others - promote products from supplier to end user, others - analyze the market, suppliers and consumers, and others are involved in forming distribution channels (Nerush, Yu. M., 2011).

Foreign scientists, in particular VV Dybska, Ye.I. Zaitseva, VN Sergeyev and others are convinced that the logistics system is a complex organizationally complete economic system, which consists of interconnected in the management process, the set, tasks and boundaries of which are united by the internal purpose of the enterprise and its external goals (Krykavs′kyy YE.V.,2008).

A.M. Aucklander calls the logistics system of the enterprise an organizational and managerial mechanism for coordinating the actions of specialists from different departments that manage material flows in his works. Thus, the logistics system is considered as a subject of management that affects the object - the material flow [4]. However, it is advisable to consider the logistics system not only as a management mechanism, but also as a whole set of subsystems that operate to achieve a common goal.

It can be concluded that the concept of "logistics system" is multifaceted and has many definitions, but the most common of them is the definition of a leading scientist in the field of logistics, EV Krykavsky, who argues that the logistics system is an adaptive system with feedback. language, which performs certain logistic functions and operations, has developed links with the external environment and consists of several subsystems (Krykavs′kyy YE.V., 2006).

,Thus, analyzing the views of domestic and foreign scientists to determine the essence of the logistics system of the enterprise, we can conclude that the division of such a system at the macro level includes a number of constituent elements - subsystems:

- supply subsystem;
- storage subsystem;
- production subsystem;
- planning subsystem;
- distribution (sales) subsystem.

The logistics system of the enterprise and its functional subsystems is determined primarily by the specifics of its activities. Thus, the logistics system of an agro-industrial enterprise has a structure specific to such activities, different from enterprises in other industries.

Consider the aggregate scheme of the structure of the logistics system of an agricultural enterprise (Fig. 1).

From fig. 1. it is seen that sales or distribution logistics is an integral part of the overall logistics system of the agricultural enterprise. Distribution logistics is a set of interrelated functions that are implemented in the process of distributing the flow of goods between consumers. The logistics distribution subsystem is integrated with marketing. Its main purpose - the timely sale of finished products to consumers in the right place at the specified time. The main participants in the process of distribution of agricultural raw materials, products and food are the manufacturer, processor, storage system, wholesale and retail links and the final consumer.

The very concept of "distribution" in the economy is a phase of economic activity, which results in the transfer of ownership of the result of labor. It should be noted that within the distribution subsystem of logistics there are no resources or finished products - they are available outside it. In the process of implementing its functions, there is a close interaction between the agricultural producer and consumers, which form two micro-logistics systems, which are interconnected by a distribution channel. Such channels are a partially ordered set of various intermediary organizations and individuals who help bring goods from the agricultural producer to the final consumer (Pol A. Samuel′son i Vil′yam D. Nordhaus, 2004).

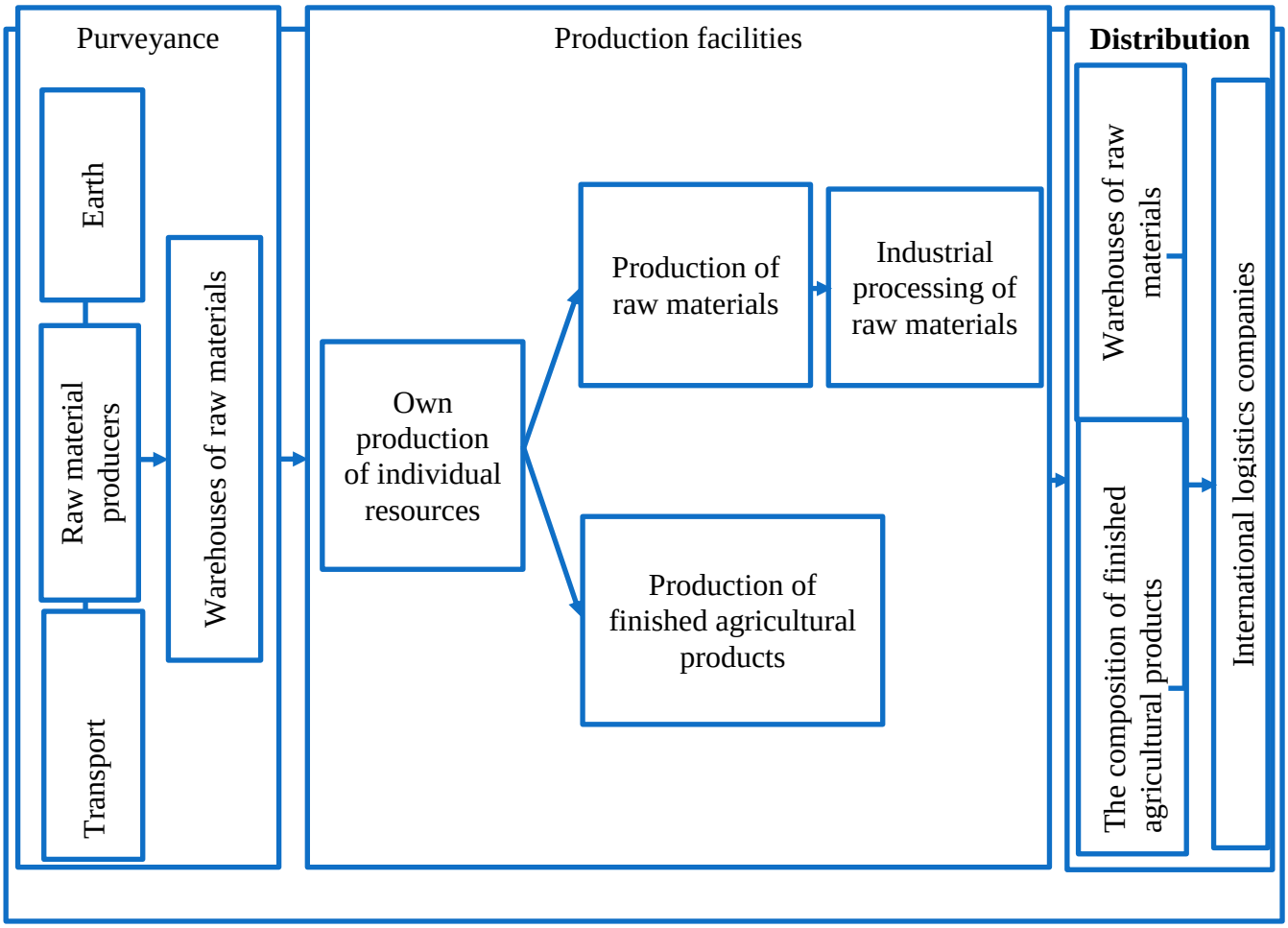

Figure 1. Aggregate scheme of the logistics system of the agro-industrial enterprise
Source: Own compilation.

After the separation of individual participants in the process of promoting the material flow, the logistics channel is transformed into a logistics chain.

Traffic channels perform a number of important functions:

1) conducting market research;
2) data collection and analysis for exchange planning and optimization;
3) determining the conditions of purchase and sale of finished products;
4) sales promotion;
5) establishing and maintaining communication with existing and potential consumers;
6) coordination of prices;
7) production, packaging and sorting;
8) organization of goods movement (loading and unloading operations, transportation and warehousing).

In the economic literature there are the following types of distribution channels of agricultural products, depending on the established within the channel of economic institutions:

- government Procurement;
- vertical marketing systems;
- flexible marketing distribution channels;

- Channels with direct links.

Each distribution channel has its own boundaries, among which are the following:

1. Geographical (market area).
2. Economic (control over sales of certain products).
3. Social (ability to interact effectively within the channel).

The overall cost of distribution activities of the agricultural producer depends on the smooth operation of distribution channels. Thus, due to the inefficient functioning of logistics, technical losses of grain are 15% of the annual harvest, and total losses of agricultural products due to underdeveloped logistics are about 35% of the annual volume. And the profit and expenses of the distribution channel are up to 50% of the price of finished products. Therefore, in order to optimize costs, ensure the overall efficiency and competitiveness of the agricultural producer, the issue of organizing efficient distribution channels becomes problematic (Kennet Ye., 1996).

The formation of effective distribution channels of national agricultural producers is determined by the specifics of the agricultural market, seasonality of supply and uniformity of consumption of manufactured products. If the manufacturer sells products directly to the consumer, then such a distribution channel is called zero or direct sales. If the mediator is one - one-level channel, if two - two-level, and so on (Fig. 2).

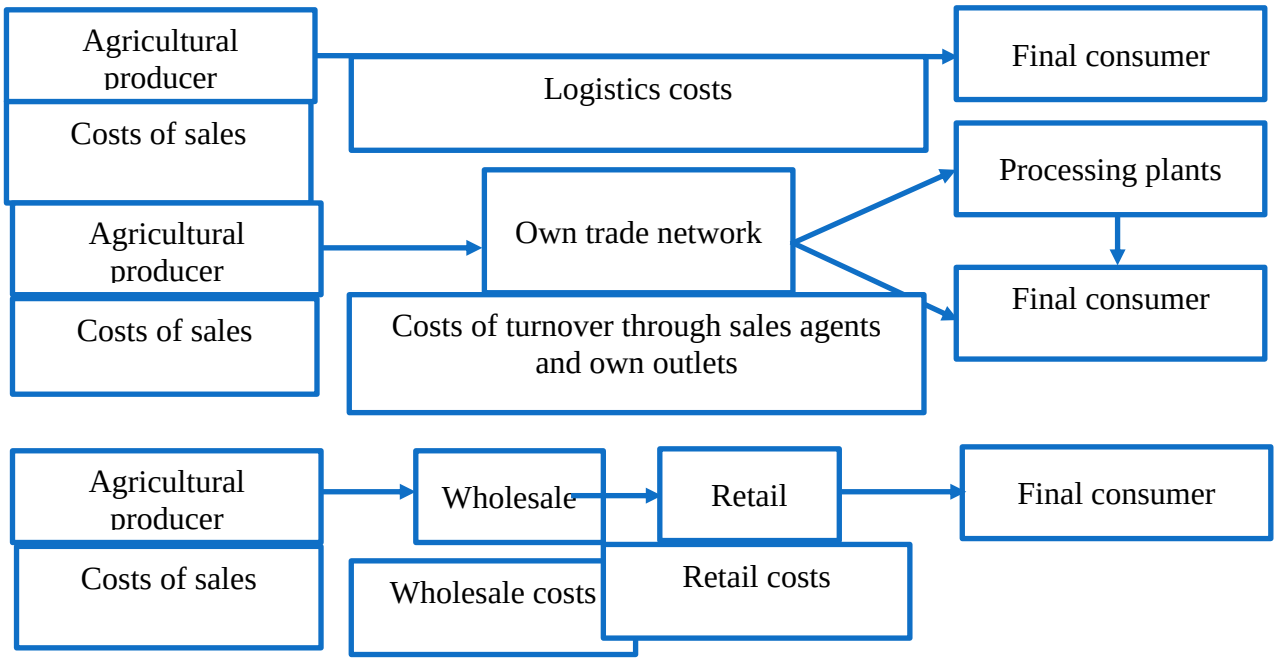

Figure 2. Network schemes of distribution channels of agricultural products
Source: Own compilation.

It should be noted that such a scheme of distribution channels of agricultural products allows to optimize costs at all stages of the logistics chain, as well as minimize the so-called "transaction costs", which according to D. North and K. Arrow are not just costs of economic entities, but total costs of managing the economy of the logistics system of an agricultural enterprise. Today, the issue of adaptation of the national agricultural producer to the conditions of the world market economy on the basis of a clear organization of economic relations between trade enterprises and suppliers is becoming problematic. Therefore, direct contractual relations are especially important. As for indirect, which are associated with the movement of agricultural products from producer to independent participant in the movement of goods - wholesale company and buyer, they are used mainly to increase their markets, maximize sales and optimize costs, but the agricultural producer loses contact with consumers and control over distribution channels.

Indirect channels are long, it consists of a larger number of participants and, accordingly, stages of trade, and direct - on the contrary, short. In order to reduce the length of the channel, the agricultural producer can use vertical integration by teaming up with other participants in the distribution channel, such as a wholesaler. In this way, the merged firm will gain a number of competitive advantages, including the optimization of costs for intermediaries, the ability to independently control distribution channels and ensure supply, gain greater independence.

In addition, in order to strengthen the position at its stage of the channel, the agricultural producer can expand (vertical or horizontal integration) - to acquire an enterprise of similar specialization. Thus, the national agricultural producer gets more market share, increases the size of the company, optimizes the cost of promoting its products.

Factors affecting the movement of goods in the distribution channels of agricultural enterprises can be divided into socio-economic, industrial, transport, geographical and trade (Table 1).

Table 1

Factors influencing the movement of agricultural products

Group of factors	Influencing factors
Socio-economic	- income level of the population; - population size and density; - submit and customs and tariff regulation of the state economy; - availability of effective market infrastructure.
commercial	- number of retail and wholesale operators in the market; - scale and location of commercial enterprises; - the complexity of the range; - volumes of batches of agricultural products.
Transport	- condition of roads and transport routes; - availability of modern vehicles; - availability of warehouses and equipment for sorting and loading and unloading operations; - norms of shipment of products.
Geographical	- location of production and consumption zones; - climatic specialization of agricultural production.
Industrial	- size and number of production enterprises; - the level of innovation and the use of modern technologies in the manufacture of agricultural products.

Source: Pot'omkin, S. K.,2015.

The efficiency of a multilevel distribution channel depends primarily on the number of consumers and the specialization of the agricultural producer. Trade channels of agricultural products are also classified according to the level of integration and participation of producers:

- conventional channels (formed by networks of independent traders, agents and ancillary enterprises, the purpose of which is to increase only their own profits);
- vertical channels (networks of agricultural producers and intermediaries striving for maximum efficiency of the channel as a whole).

Vertical channels of trade include cooperatives, large agricultural holdings, chains of retail stores and channels in which wholesalers are in the lead. The basis of specialization in distribution channels is to obtain competitive advantages.

The distribution of agricultural products can be divided into several types, each of which has its own characteristics of the organization of effective channels of trade.

Table 2.

Ways to increase the efficiency of different types of distribution channels

Type of distribution	**Ways to increase efficiency**
Iintensive	Intensive distribution of agricultural raw materials and finished products is characterized by a large number of outlets where goods are sold at low prices. Therefore, the more intensive the distribution, the higher the efficiency of intermediaries in the logistics chain.
Exclusive	A small number of intermediaries who have the exclusive right to sell products in a certain area. Improving the efficiency of distribution of agricultural products is achieved by maximizing sales of agricultural producers, the ability to control pricing and maintain the call sign image of the organization. With the exclusive type of distribution, it will be expedient to use one or two retail outlets for agricultural products in each separate shopping area, while reducing the wholesale and retail trade organizations in the geographical area.
Electoral distribution	Electoral distribution is a synthesis of intensive and exclusive types of distribution. The supplier seeks to increase market share and at the same time to limit it by cooperating only with highly qualified dealers. Using the average number of wholesale and retail organizations, the agricultural producer receives more sales and profits, while maintaining control over the channel of trade.

Source: Shholokova, O. M., 2011.

Farmers should choose those distribution channels in which they have the leverage to influence the intermediary's strategy to promote and present finished products to consumers. The degree of such control is determined by the supplier's authority over the channel of movement and the possibility of imposing sanctions on the intermediary.

CONCLUSIONS

The development of a modern agricultural enterprise involves the implementation of a systematic approach, based on the synthesis of capabilities of production, storage and distribution logistics subsystem. So today, logistics is a key tool for improving the efficiency of agro-industrial enterprises, because it is the organization of efficient distribution channels allows to optimize the movement of goods from the source to the final consumer. The choice of an effective scheme of distribution of agricultural products will minimize costs at all stages of the logistics chain, as well as optimize the "transaction costs" for managing the economy of the logistics system of agricultural enterprises.

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ФОРМУВАННЯ ЕФЕКТИВНИХ КАНАЛІВ РОЗПОДІЛУ ПРОДУКЦІЇ ЯК СКЛАДОВА ЕКОНОМІКИ ЛОГІСТИЧНИХ СИСТЕМ АГРОПРОМИСЛОВОГО КОМПЛЕКСУ УКРАЇНИ

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У статті висвітлено сутність каналів розподілу та розглянуто управлінські аспекти формування та розвитку каналів збуту для агропромислового комплексу України. Проаналізовано проблеми та основні фактори впливу на формування логістичної системи агропромислового підприємства з ефективними каналами збуту національної сільськогосподарської продукції. Сьогодні у процесі реалізації геополітичних переваг національної економіки варто звернути увагу на потенціал національного агропромислового комплексу, який є основним бюджетоутворюючим сектором національної економіки України. Одним із ключових векторів розвитку для інтеграції України у світову економіку є формування ефективних каналів розподілу продукції вітчизняних сільгоспвиробників на експортні ринки. Участь у світовій торгівлі може відкрити нашій країні можливості виходу новий етап розвитку. Ключові слова: логістична система, канали розподілу, торгівля, логістика розподілу, сільськогосподарське підприємство, схеми каналів розподілу, сільськогосподарська продукція. У статті висвітлено сутність каналів розподілу та розглянуто управлінські аспекти формування та розвитку каналів збуту для

агропромислового комплексу України. Проаналізовано проблеми та основні фактори впливу на формування логістичної системи агропромислового підприємства з ефективними каналами збуту національної сільськогосподарської продукції. Сьогодні у процесі реалізації геополітичних переваг національної економіки варто звернути увагу на потенціал національного агропромислового комплексу, який є основним бюджетоутворюючим сектором національної економіки України. Одним із ключових векторів розвитку для інтеграції України у світову економіку є формування ефективних каналів розподілу продукції вітчизняних сільгоспвиробників на експортні ринки. Участь у світовій торгівлі може відкрити нашій країні можливості виходу новий етап розвитку.

Ключові слова: логістична система, канали розподілу, торгівля, логістика розподілу, сільськогосподарське підприємство, схеми каналів розподілу, сільськогосподарська продукція.

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SUSTAINABLE WASTE MANAGEMENT: INTERNATIONAL EXPERIENCE FOR UKRAINE REGIONS

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Abstract. The article considers the key statistical indicators of waste management in the context of sustainable development of the EU and the regions of Ukraine, which allows to understand development trends, identify problems and suggest ways to solve them. Positive trends in waste generation, processing and utilization have been identified, which contributes to the increase in the circular use of materials (CMU) in the EU. It is demonstrated that the unsatisfactory state of waste management in the regions of Ukraine is associated with significant territorial disparities in their formation and accumulation and with the low level of their utilization. The necessity of introduction of responsible consumption and production as preconditions of rational waste management at the regional level in the context of sustainable development is substantiated. **The aim** of the study is to substantiate the areas of implementation of the experience of EU countries in waste management for the regions of Ukraine to ensure sustainable development and security of the state. **Methodology:** the theoretical and methodological basis of the research are the fundamental basics on sustainable development studies, ecology, consumption and the circular economy. To ensure the conceptual integrity of the study, the following methods were used: statistical analysis and systematization, grouping, desk research. **The scientific significance** of the work is that the European and domestic experience of waste management with a focus on sustainable development is studied, the tendencies of improving the environmental situation in the EU countries are analyzed (introduction of circular economy principles, reduction of accumulation and recycling); recommendations for improving the results of sustainable waste management for Ukraine have been developed. **The value** of the study lies in the analysis and substantiation of problematic areas of sustainable waste management in the regions of Ukraine based on the experience of EU member states.

Keywords: sustainable development, waste processing and utilization, circular use of materials, reduction of post-harvest losses, regions.
JEL Classification: R11, Q01, Q53.

INTRODUCTION

Despite the difficult and tragic situation in Ukraine at the moment, we are convinced that its restoration and development should take place as soon as possible on the basis of sustainability principles and their implementation in all spheres of socio-economic life. For our country, one of

the many tasks to achieve the goals of sustainable development is the establishment of waste generation and disposal processes, the indicators of successful solution of which are included in the 12th Sustainable Development Goals "Responsible production and consumption". Thus, in the industrial regions of Ukraine the ecological and, accordingly, demographic situation remains threatening, which is caused, among other things, by the excessive amount of accumulated industrial waste, the slowness of reforms regarding their storage and utilization. This, in turn, leads to increased social tensions due to increased risks to human health. Under such conditions, it is important to study the experience of developed countries in solving the problems of sustainable waste management, namely of the EU countries, which have significant achievements in this area.

LITERATURE REVIEW

According to the Sustainable Development Index (SDI) by the ISC WDS World Data Center for Geoinformatics and Sustainable Development [1], Ukraine ranked 76th out of 137 countries in 2020, with an index value in 2005–2013 fluctuated in approximately the same range (0.72–0.74), and since 2015 it has significantly decreased to 0.413 (in 2017). In 2018–2020, SDI rose to 0.694–0.697, but is low. This is primarily due to the low position in the index of economic measurement (0.374) and environmental measurement (0.538).

In the regional dimension, according to the Sustainable Development Index, the following regions are distinguished: with a high index – 1.04–1.29 (Zakarpattia, Ivano-Frankivsk, Lviv, Ternopil, Vinnytsia, Kharkiv regions); average – 0.9–1.03 (Volyn, Rivne, Zhytomyr, Kyiv, Poltava regions); low and very low – less than 0.9 (all other areas). Such a spatial structure is associated with the concentration of industrial enterprises in the regions of south-eastern Ukraine and the negative impact of environmental factors on the indicator of quality of life (Sustainable Development Modeling, 2021).

Effective waste management in production and consumption plays an important role in reducing environmental impact. According to the European Commission's report, waste will have a huge negative impact on the environment, causing pollution and greenhouse gas emissions that cause climate change (European Comission, 2010). That is why the effective model of waste management is their utilization and recycling, which return material resources to the economy.

An example to be followed in this direction is the experience of EU member states, which seek to create a circular economy in which the number of iterations of resource and material use is as high as possible and waste is minimized. An important aspect of this model is to reduce both material consumption and waste by reducing economic and environmental cycles of resource flows, which also can be made by popularization of sustainable consumption (Antoniuk K., 2021).

PAPER OBJECTIVE

The aim of the study is є substantiation of the directions of implementation of the experience of the EU countries in waste management for the regions of Ukraine in order to ensure its sustainable development and security.

METHODOLOGY

The theoretical and methodological basis of the study are the fundamentals of research on sustainable development, ecology, consumption and the circular economy. To ensure the conceptual integrity of the study, the following methods were used: statistical analysis and systematization, grouping, desk research.

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RESULT AND DISCUSSION

During 2004–2018, the volume of waste generated in the EU countries increased from 775.9 tons to 812.0 tons (+4.2%) due to an increase in waste / water waste (+175.9%), construction (+20.1%) and households (+6.7%), with a significant reduction in waste generated by agriculture (-66.8%), manufacturing (-24.9%), mining and quarrying (-22.6%) (Table 1).

Table 1

Waste generation in EU countries (excluding basic mineral waste), 2004–2018, million tons

	2004	2006	2008	2010	2012	2014	2016	2018	2018/ 2004, %
Agriculture, forestry, fishing	62,3	56,7	45,5	20,2	20,4	17,7	19,7	19,5	-66,8
Mining and quarrying	10,4	7,1	10,0	7,9	7,5	7,7	6,9	8,1	-22,6
Manufacturing	239,9	225,8	216,8	190,5	176,4	175,9	178,9	180,1	-24,9
Energy	85,4	93,3	84,1	78,6	88,8	87,4	74,7	75,7	-11,4
Waste/water	75,2	83,3	98,9	129,9	155,0	180,7	196,9	207,6	175,9
Construction	34,4	33,4	34,8	42,5	39,8	38,6	37,8	41,3	20,1
Other sectors	97,7	111,12	88,8	102,3	88,9	85,1	88,5	94,0	-3,7
Households	174,1	179,2	181,6	186,0	180,7	175,8	181,4	185,7	6,7
Total	775,9	789,9	760,6	758,7	758,0	769,0	784,7	812,0	4,2

Source: Eurostat. Waste statistics (2018).

During 2004–2020, the rate of circular use of materials (CMU, the ratio of secondary raw materials to total material used for domestic use), which reflects the share of resources used from collected waste, increased from 8.3% to 12.8% (Fig. 1). In the short term (2014–2020), growth was lower than the annual average by 1.3%, and only in 2020 the CMU grew by 0.8%.

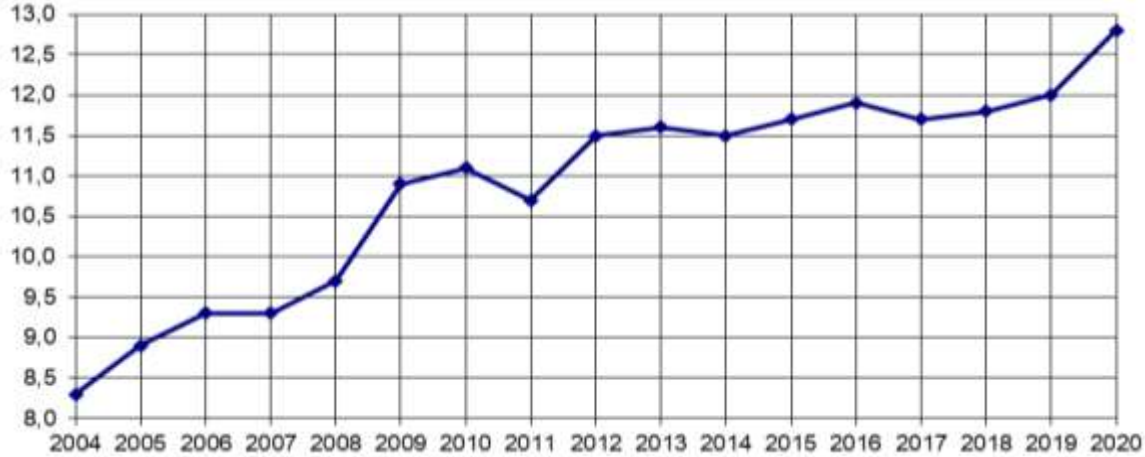

Figure 1. Dynamics of changes in the circular use of materials (CMU) in the EU (2004–2020), %

Source: Eurostat, (2021).

The highest CMU rates were observed in the Netherlands, Belgium, France, Italy, Estonia, and the lowest in Romania, Ireland, Portugal, Bulgaria, and Cyprus (Fig. 2).

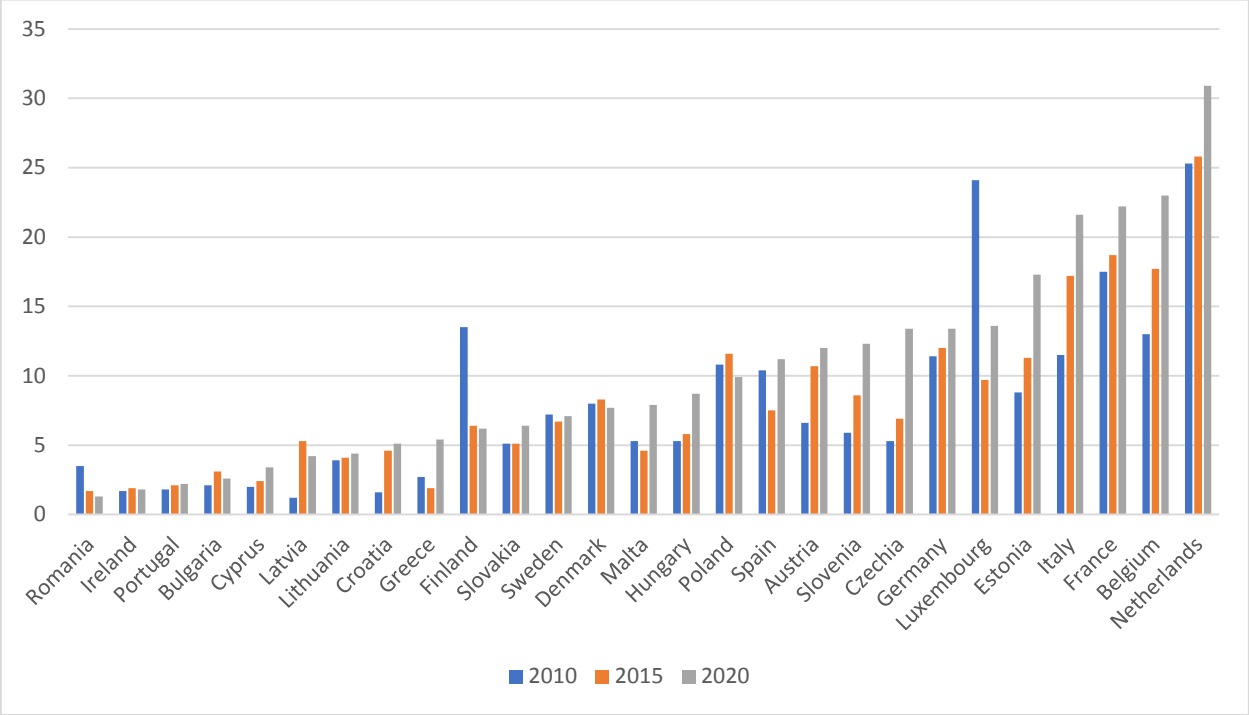

Figure 2. Dynamics of changes in the geographical structure of the circular use of materials (CMU) in EU member states (2010-2020),%

Source: *Eurostat, (2021).*

Unfortunately, statistics on waste disposal, which excludes the main mineral waste, have been available only since 2010 and show a slight increase. However, despite the much higher rate of recycling, the relatively low degree of circularity in the EU can be explained by two structural barriers. First, a significant part of the materials is used for the construction and maintenance of buildings, infrastructure and other goods (works, services) with a long service life and limited availability for recycling. Secondly, a significant amount of material resources is used for energy production, so the circularity rate is quite low (European Commission, 2015).

In 2018, out of 812.0 million tons of generated waste, the largest part came from waste / water (207.6 million tons), households (185.7 million tons) and Manufacturing (180.1 million tons) (see Table 1). One third of wastes, excluding basic mineral wastes, were mixed conventional wastes, including household wastes, mixed undifferentiated materials and waste sorting residues. Waste combined into "recyclable waste" (metal, glass, paper and plastic) accounted for about a quarter, combustion waste - 15%, animal and vegetable waste - 10%, chemical and medical waste - 6%, mineral waste from processing of stabilized waste - 5%. In 2016, the volume of slag and equipment was about 2%. In 2016, 48% of waste was recycled in the EU (Fig. 3).

Up to 25% of waste was accumulated in landfills, while the share of waste accumulated in garbage dumps decreased, recycling due to energy-saving incineration increased. The recycling rate is higher for general waste, except for basic mineral waste, than for household waste. Despite significant growth, the level of municipal waste disposal remained at 45.3% in 2018, which is due to the dominance of landfill technology for their disposal. However, there is a change in landfill disposal for combustion with energy recovery. Thus, if in 2011 34.4% of municipal waste was accumulated in landfills and 24.0% burned, and in 2018 the share of landfills was 24.4% against 27.6%.

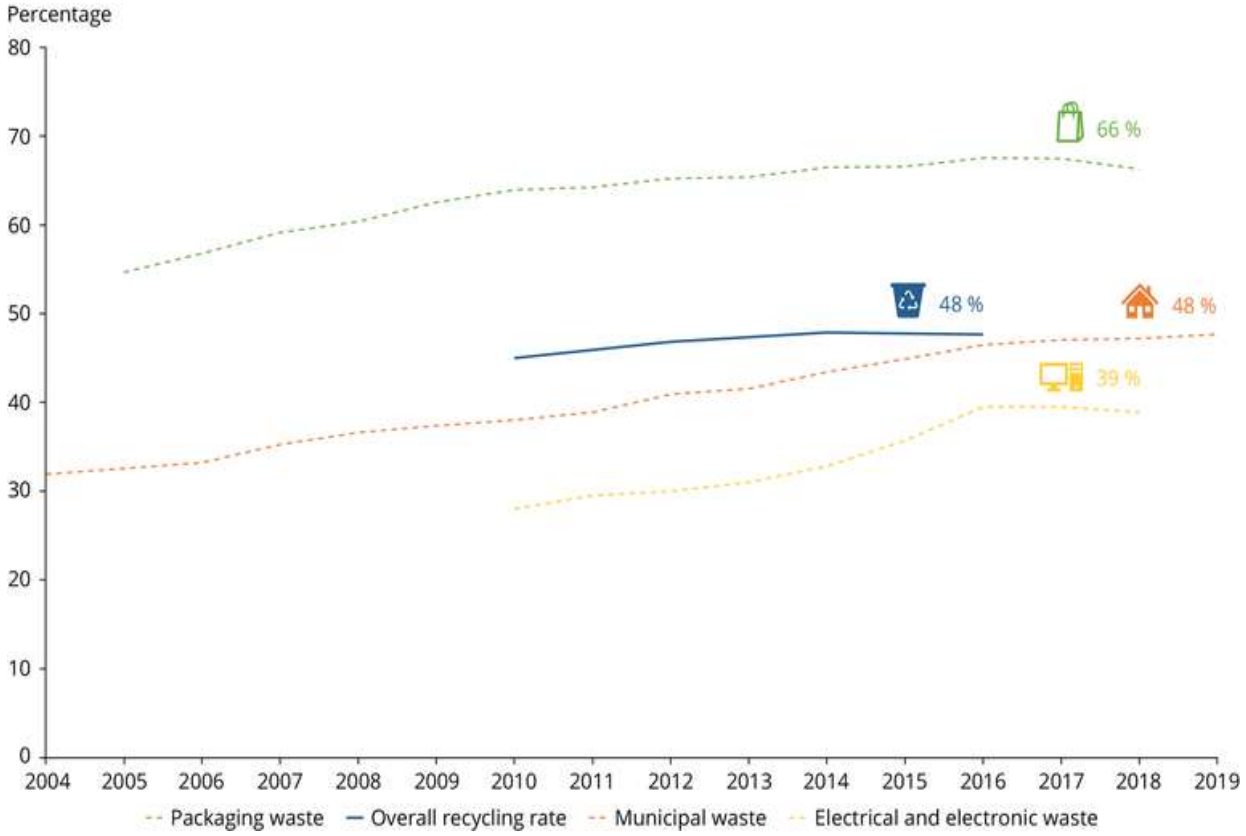

Fig. 3. Recycling rates in Europe by waste stream (2004–2019), %

Source: *Europian Environment Agency, (2019).*

In 2018, 7.5% of waste, excluding basic mineral waste, or 132 kg per capita, was assessed as hazardous to health or the environment.

In Ukraine, the emphasis of the implemented measures for achieving the 12th SDG ("Ensuring of responsible consumption and production") is made on reducing post-harvest losses in agricultural production and efficient waste management, while it should be much more wider (Antoniuk K., Antoniuk D., Mokiy A., 2020).

The importance of the first task can be explained by the priority of agricultural sector development as potentially competitive for the national economy in the medium term. But the constant increase in the load on agricultural land due to increased arable land, agricultural consumption, food prices causes negative consequences, which in the long run pose a significant threat to economic security of regions with reduced resource potential for stable agro-industrial production (Analytical report, 2018). To solve this problem, it is necessary to reduce food losses in the supply chain, the dynamics of which should be assessed using the following indicators: the share of post-harvest losses in total grain production (%); share of post-harvest losses in total production of vegetables and melons (%).

Recently, there has been a decrease in post-harvest losses in total grain production (Fig. 4), the share of which in the regions of Ukraine ranges from 0.1 to 3.4 %. It seems debatable to apply a methodological approach to account for this indicator (Analytical report, 2018), as its real value is much higher, and compared to 2011 has decreased significantly. The following average annual indicators are defined as target values for the national economy: 2020 – 1.8 %; 2025 – 1.0 %; 2030 – 0.5 %.

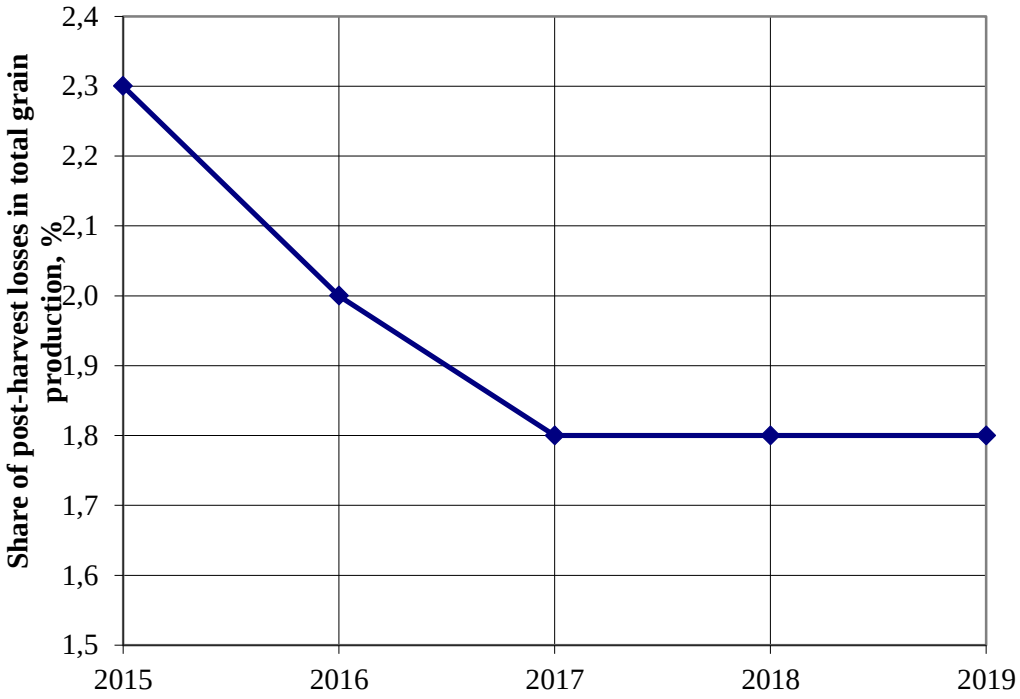

Figure 4. Dynamics of change in the share of post-harvest losses in total grain production,%

Source: Analytical report, 2018.

In Ukraine, the problem of waste management will become increasingly important, including the consumption safety context. The tasks of reducing the volume of waste generation and increasing the volume of their processing and reuse to minimize the negative impact on the environment, increase the efficiency of production and, consequently, the safety of consumption of goods (services) remain decisive.

During 2015–2019, there is a tendency to reduce the volume of waste of hazard classes I–III, but the share of waste of class IV is growing. To some extent, the economic crisis of 2008–2009 and the military-political conflict with the Russian Federation since 2013 have significantly affected the volume of hazardous waste of I–III classes. In 2015, there was a significant decrease of 44% (to the level of 2011), caused by the occupation of certain districts and cities of Donetsk and Luhansk regions, which housed a large part of the country's industrial enterprises. These trends also appeared due to the industry structural reorientation to less production waste.

At the same time, the total amount of waste in the economy is increasing (Fig. 5). In the regional dimension, the leaders are: Dnipropetrovsk region (206 million tons); Kirovohrad (35 million tons); Donetsk (20 million tons); Poltava and Zaporizhia regions (5 million tons each). This is due to the concentration of mining and processing enterprises – the main polluters, whose shares in 2011 were 75.0% and 18.0%, in 2016 – 74.0% and 18.2%, respectively.

The volume of waste disposal in the regions of Ukraine ranges from 3.8 to 67.3% of the total. In Zaporizhzhia, Poltava, Ivano-Frankivsk and Cherkasy region, the share of waste incinerated and utilized at landfills in the total amount of waste generated significantly exceeded the Ukrainian average (29%).

Antoniuk, K. and Antoniuk, Dm. (2022), "Sustainable waste management: international experience for Ukraine regions", *Management and entrepreneurship: trends of development*, 2(20), pp. 59-67. Available at: https://doi.org/10.26661/2522-1566/2022-2/20-05

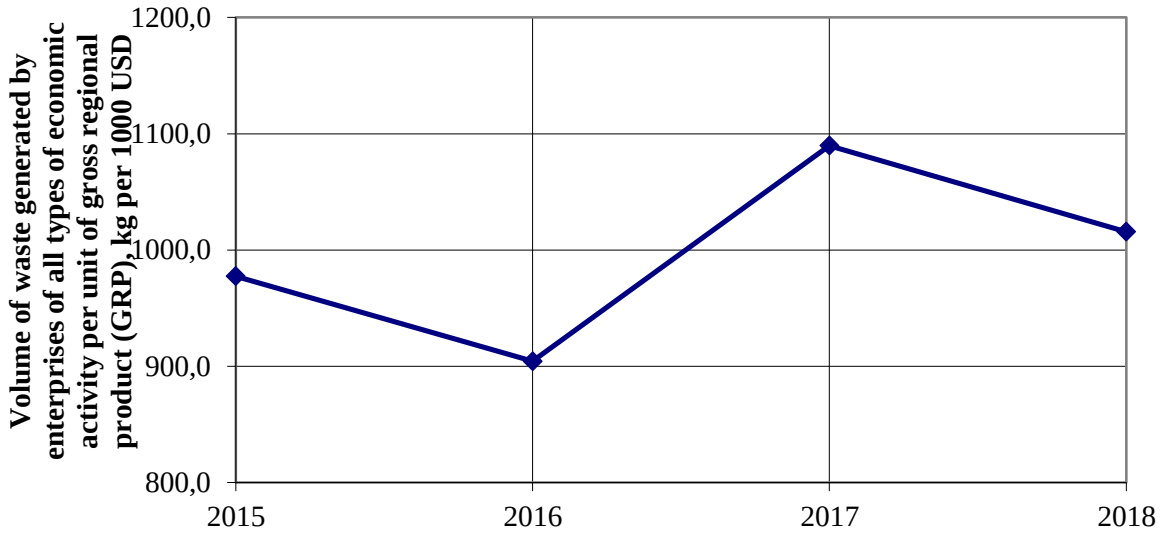

Figure 5. Dynamics of changes in the volume of waste generated by enterprises of all types of economic activity per unit of gross regional product (GRP) (2015-2018), kg per 1000 USD
Source: Analytical report, 2018.

Significant volumes of generated waste and low values of their utilization indicators lead to an increase in the volume of accumulated waste (Table 2). A threatening situation is observed in Dnipropetrovsk region, where 10 million tons of waste are stored, in Zaporizhzhia region (7.7 million tons of waste of I-III classes), in the Sumy region (2.2 million tons of waste of I-III classes) and in Luhansk region (860.4 thousand tons of waste of I-III classes). As for the total amount of waste accumulated during operation, Dnipropetrovsk and Donetsk regions are several times higher than other regions of Ukraine in terms of waste disposal per square kilometer (EEA report, 2016).

Table 2
The total amount of waste accumulated during operation, in places of utilization, per square km, in the most polluted regions of Ukraine, t

№	Region	Years				
		2010	2015	2016	2017	2018
1	Dnipropetrovsk	287151,1	318310,6	320717,2	323535,7	335571,1
2	Donetsk	95742,7	40200,1	32611,6	32587,0	33996,4
3	Kirovohrad	9557,8	13976,5	15274,9	16609,7	21011,1
4	Kyiv city	4442,3	14100,1	13903,3	14258,9	14818,7
5	Lviv	8006,6	10553,0	10617,9	10657,7	10513,4
6	Zaporizhzhia	5439,9	5883,6	5970,2	6082,8	6064,1

Source: EEA report, 2016.

The state of household waste management in Ukraine, according to scientists of the National Institute for Strategic Studies (Yakushenko L.M., Bugaychuk N.V., 2019), is characterized by:

- inconsistencies and imperfections of legislative regulation (52 legal acts, five of which are considered contradictory and eight more - irrelevant);
- low level of infrastructure development in the field of household waste management (as of 2018 in Ukraine 6107 garbage dumps and landfills with a total area of 9172.436 hectares, of which 984 units did not meet environmental safety standards and 256 units - overloaded; the need for new landfills - over 421 units);

- lack of economic incentives to expand the range of services in the field of household waste management;

- imperfect or no informational and educational work (Antoniuk K., Mokiy A. , Pikh M., Bukharina L., Antoniuk D., 2021) in the field of household waste management among the population (as of 2019, only 1462 settlements have introduced separate collection of household waste; in 28 settlements there are 34 waste sorting lines).

CONCLUSION

The critical situation with waste in Ukraine cannot be resolved in the short term, as it requires significant financial and intellectual resources. Implementation of EU environmental policy principles in the areas of "Waste Management", "Industrial pollution and man-made threats", "Climate change and protection of the ozone layer", implementation of investment projects to implement innovative waste management technologies involving European financial institutions will help to solve this problem, which directly affects the safety of consumption.

At present, there is a recognition of the importance of introducing responsible consumption and production, which can be further strengthened by consolidating the actions of the state, business and consumers in the following areas:

- gradual removal of hazardous chemicals from production processes through the introduction of a system of environmental labeling and European standards of production management;

- creation of legal and institutional preconditions for the formation of a green economy in Ukraine, implementation of the concept of a circular economy, the principles of resource-efficient and clean production;

- strengthening the role of united territorial communities, increasing their powers to impose sanctions on companies that pollute the environment;

- application of modern technologies and European practices of waste management of production and consumption of goods (works, services);

- implementation of programs of information, education and educational activities on sustainable production and consumption of goods (works, services).

This will be facilitated by improving the institutional framework for security and sustainable development of Ukraine.

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СТАЛЕ ПОВОДЖЕННЯ З ВІДХОДАМИ: МІЖНАРОДНИЙ ДОСВІД ДЛЯ РЕГІОНІВ УКРАЇНИ

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У статті розглянуто ключові статистичні показники поводження з відходами в контексті сталого розвитку країн ЄС та регіонів України, що дозволяє зрозуміти тенденції розвитку, виокремити проблеми та запропонувати шляхи їх вирішення. Виявлені позитивні тренди у генеруванні, переробці та утилізації відходів, що сприяє збільшенню показника циркулярного використання матеріалів (CMU) в країнах ЄС. Незадовільний стан поводження з відходами у регіонах України, пов'язаний із суттєвими територіальними диспропорціями в їх утворенні та накопиченні, низьким рівнем їх утилізації. Обґрунтовано необхідність впровадження відповідального споживання та виробництва як передумови раціонального поводження з відходами на регіональному рівні в контексті сталого розвитку. **Метою** дослідження є обґрунтування напрямів імплементації досвіду країн ЄС із поводження з відходами для регіонів України задля забезпечення сталого розвитку та безпеки держави. **Методологія:** теоретико-методологічною основою роботи є фундаментальні основи досліджень сталого розвитку, екології, споживання та циркулярної економіки. Для забезпечення концептуальної цілісності дослідження були використані такі методи: статистичний аналіз та систематизація, групування, кабінетні дослідження. **Наукове значення** роботи полягає в тому, що досліджено європейський та вітчизняний досвід поводження з відходами з орієнтацією на забезпечення сталого розвитку, проаналізовано тенденції покращення екологічної ситуації в країнах ЄС (впровадження принципів циркулярної економіки, зменшення обсягів нагромадження та переробки); розроблено рекомендації щодо покращення результатів поводження з відходами на засадах сталого розвитку для України. **Цінність** дослідження полягає в аналізі та обґрунтуванні проблемних напрямів забезпечення сталого поводження з відходами в регіонах України на основі досвіду країн-членів ЄС.

Ключові слова: сталий розвиток, переробка і утилізація відходів, циркулярне використання матеріалів, скорочення післязбиральних втрат, регіони.

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MANAGEMENT OF FINANCIAL INSTITUTIONS AND RISKS UNDER UNCERTAINTY

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Abstract. The **purpose** of this study is to examine the purpose of this study is to examine the features of managing financial institutions and risks under conditions of uncertainty. The current period of development of the financial sphere is characterized by availability of a significant number of approaches and methods of management through forecasting and assessing risks, their identifying and minimizing. Analysis of recent research and publications has shown that the use of innovative mathematical management methods can minimize risks and provide significant competitive advantages in the future. **Methodology:** general and special methods of system-structural analysis and synthesis, grouping and comparison were used in the research process. The risk management scheme proposed by the NBU for use by financial institutions has been analyzed and supplemented by taking into account reputational risks. The research **findings** show that the existing methods are based on the use of expert judgment and require a significant amount of information that is not always available. It has been proven that the construction, use, calibration and interpretation of results obtained during risk assessment should be handled by a risk committee, whose main task is to monitor, identify and manage risks that arise during the operation of the financial institution. It has been revealed that there is no single complete Bureau of Credit Histories in Ukraine, which is a significant barrier to the effective management of financial institutions. The prospect for further research is the formation of approaches that would allow managing several types of risks, in compliance with all regulations under current legislation. This will make it possible to fully satisfy customers, while the setup of a single bureau of credit histories will minimize risk manifestations.

Keywords: management, financial institutions, uncertainty, credit risks, risk assessment methods

JEL Classification: G18, G20, D81.

INTRODUCTION

Financial institutions management under conditions of uncertainty necessitates consideration

of risks, since untimely detection, identification and poor forecasting of consequences can cause significant harm not only to an individual financial institution exposed to the risks, but also to the entire financial system of Ukraine. This fact was confirmed by the events of 2015-2016, when about 40% of banks concurrently went bankrupt due to incorrect risk assessment and management (Neplatospromozhni banky).

Under conditions of uncertainty, management should be based on a prevention strategy, the basis of which is control over a wide range of indicators. Effective risk management is a guarantee of economic security and a high level of competitiveness in the future.

LITERATURE REVIEW

A significant number of publications by both domestic and foreign scholars have been devoted to the issue of financial institutions management under conditions of uncertainty. For example, Chernobai A. and Ozdagli A.K. and Wang J. (2021) identified the problem of inconvenience for big financial institutions to simultaneously monitor and control all risks, as this requires additional administrative resources. Moreover, using regulated means of risk control, financial institutions are not always able to compensate for managerial failures. To address this issue, Malik M., Zaman M. and Buckby S. recommend to set up a risk committee at the level of the company's top management or board of directors, which will make it possible to improve the focus on problematic issues. As a result, the financial institution becomes focused on risk protection and risk management. Establishing a risk management committee is not a panacea and will not solve all the problems at once, but this step helps to concentrate on the development of risk strategy and involve the most experienced employees and managers in that. In continuation of this study, Malik M., Shafie R. and Ku Ismail (2021) recommend entrusting the risk management committee with the function of ensuring the sustainability of the financial institution and increasing its future value. The scholars focus on the experience level of management, whose task is to monitor, predict and manage risks to increase the company's value.

Levchenko N.M., Ivanova M.I. (2020) emphasize that currently a fragmented risk management system is most commonly used, which does not ensure prompt tracking and timely prevention or minimizing risk. As a way out, the authors recommend that companies implement compliance management systems (CMS) and propose the Roadmap to the formation and implementation of compliance management systems. Mordan Ye.Yu., Bukhtiarova A.G., Kravchenko Ya.I. (2021) focused on the analysis of the risk, posed by the involvement of financial institutions in illegal schemes, through the use of the Basel Anti-Money Laundering Index and proposed an integral index that assesses the level of this risk. Larionova K.L., Donchenko T.V. (2020) focused on the credit risk for financial institutions due to its extremely high level and proposed to more actively address the issue of problem loans by using mechanisms for debt restructuring and writing-off and other ways of credit risk optimization. Similar conclusions were drawn by Khoma I.B., Myrhorodets' Yu.V. (2021). Pleskun I.V. (2019), among the many risks faced by financial institutions, singled out corruption risks and proposed to create a model of customer risk control in the context of implementing a risk-oriented approach. This model involves three successive stages: 1) analysis of the external and internal environment (primary financial monitoring); 2) formation and testing of a customer risk map; 3) implementation of control measures in relation to high risk customers.

It is obvious that despite the significant number of publications, the issue of effective management of financial institutions and risks arising under uncertainty remains relevant.

PAPER OBJECTIVE

The purpose of this study is to examine the features of management of financial institutions and risks arising under conditions of uncertainty. The main objectives of the study are to improve

the risk management scheme, compare risk assessment methods and determine the risk appetite.

METHODOLOGY

In the course of the study, general scientific and special methods were used: system-structural analysis and synthesis when building a scheme for financial institutions risk management and determining their risk appetites; grouping for identification of internal and external factors of risk manifestation and classification of credit risks of financial institutions; comparison to define the conditions of application, advantages and disadvantages of risk assessment methods.

RESULTS AND DISCUSSION

As a classic definition of risk, we will consider the definition provided in the Regulations on the Organization of the Risk Management System in Banks and Banking Groups of Ukraine. Risk is the likelihood of loss or additional loss or shortfall in planned income due to the debtor's / counterparty's failure to fulfill their obligations under the terms of a contract. (Polozhennia pro orhanizatsiiu systemy upravlinnia ryzykamy v bankakh Ukrainy ta bankivs'kykh hrupakh).

We will use the generally accepted identification and division of factors, which contribute to the manifestation of risk, into internal and external factors (Table 1).

Table 1

Internal and external risk factors for financial institutions

External factors	Internal factors
Instability, inconsistency of legislation	Unforeseeable changes in business processes
Unforeseeable actions of state bodies	Natural environmental impact
Instability of economic policy	Financial problems of the financial institution
Unforeseeable changes in domestic and foreign market conditions	Development and implementation of new technologies or methods of labor organization
Unforeseeable actions of competitors, corruption, takeovers	Insufficient, imperfect or untimely business information
Uncertainty of operating conditions	Inefficient performance of marketing department

Source: Own compilation

In turn, the manifestation of internal and external factors affects the formation of such types of risks as credit, market, liquidity, operational, legal and reputational risks. For financial institutions, taking into account credit risk is a priority. The most common classification of credit risk types is shown in Table 2.

The best way to manage risk is to take certain precautions to detect any of its types. We believe that risk management is a measure used to identify, analyze and further respond to the manifestation of a particular risk. It is a continuous process that is a useful tool in the decision-making process. The financial institution's risk management should be carried out at two levels, according to the cause of its occurrence: at the level of each individual credit and at the level of the credit portfolio as a whole. The credit portfolio risk is its assessment in order to prevent it from reaching a concentration that will violate regulatory requirements. It is necessary to conduct regular reviews and measurements of the credit portfolio in compliance with the established limits, adhering to the following principles:

- forecasting situations that may cause loss;
- taking measures to reduce loss;
- formulation of risk management policy and adherence to risk management mechanisms.

Figure 1 shows a common risk management framework for financial institutions. We insist on taking into account reputational risks in addition to those proposed by the NBU.

Table 2

Classification of credit risk of financial institutions

Classification feature	Description
By field of occurrence	Borrower risk Insurance risk Credit product risk Environmental risk for the financial institution
By position	Risk on market positions Portfolio risk
By extent of risk	Macroeconomic risk Risk of the financial institution as a whole Risk of the decision maker
By area of credit use	Risk on consumer credits Risk on industrial credits Risk on investment projects
By level of predictability of the situation	Foreseeable (predictable) risk Unforeseeable (unpredicted) risk
By causes of occurrence	Subjective risk Objective risk Legal risk / Regulatory risk
By the size of possible loss	Admissible risk Critical risk Catastrophic risk
By the term of the credit agreement	Risk under short-term agreements Risk under long-term agreements
By financial compliance	The risk that results in financial losses The risk that results in lost profits The risk that results in financial income
By type of credit operations	Risk in lending Risk in transactions with promissory notes Risk in leasing transactions Letter of credit risk
Risk by exposure	Risk to be managed by the financial institution on their own Risk that insures losses against the insurance company (to a guarantor) Risk pertaining to each financial institution in the system

Source: Own compilation

We will consider risk an economic category, which lies in the plane of implementation of systematic management in financial institutions, and is related to their formation, performance or return to a sustainable state. Reputational risk has stable cause-and-effect relationships with the activities of financial institutions, their motives and behavioral guidelines in the outside world, in particular, in the economic sphere. The source of reputational risk according to Trostyanska K.M. (2014) is not so much specific facts and events related to the organization, as the nature of the information received by individual entities in terms of influencing the formation of subjective perceptions of the organization. Therefore, financial institutions need to pay attention to the information, relating to the institution, as presented in the media and other information resources, since the deterioration of business reputation caused by negative perceptions of customers or counterparties, leads to deteriorating working conditions and emergence of other risks (operational, market or liquidity risks).

We believe that the main component of risk management is the use of today's innovative methods for risk assessment (Table 2).

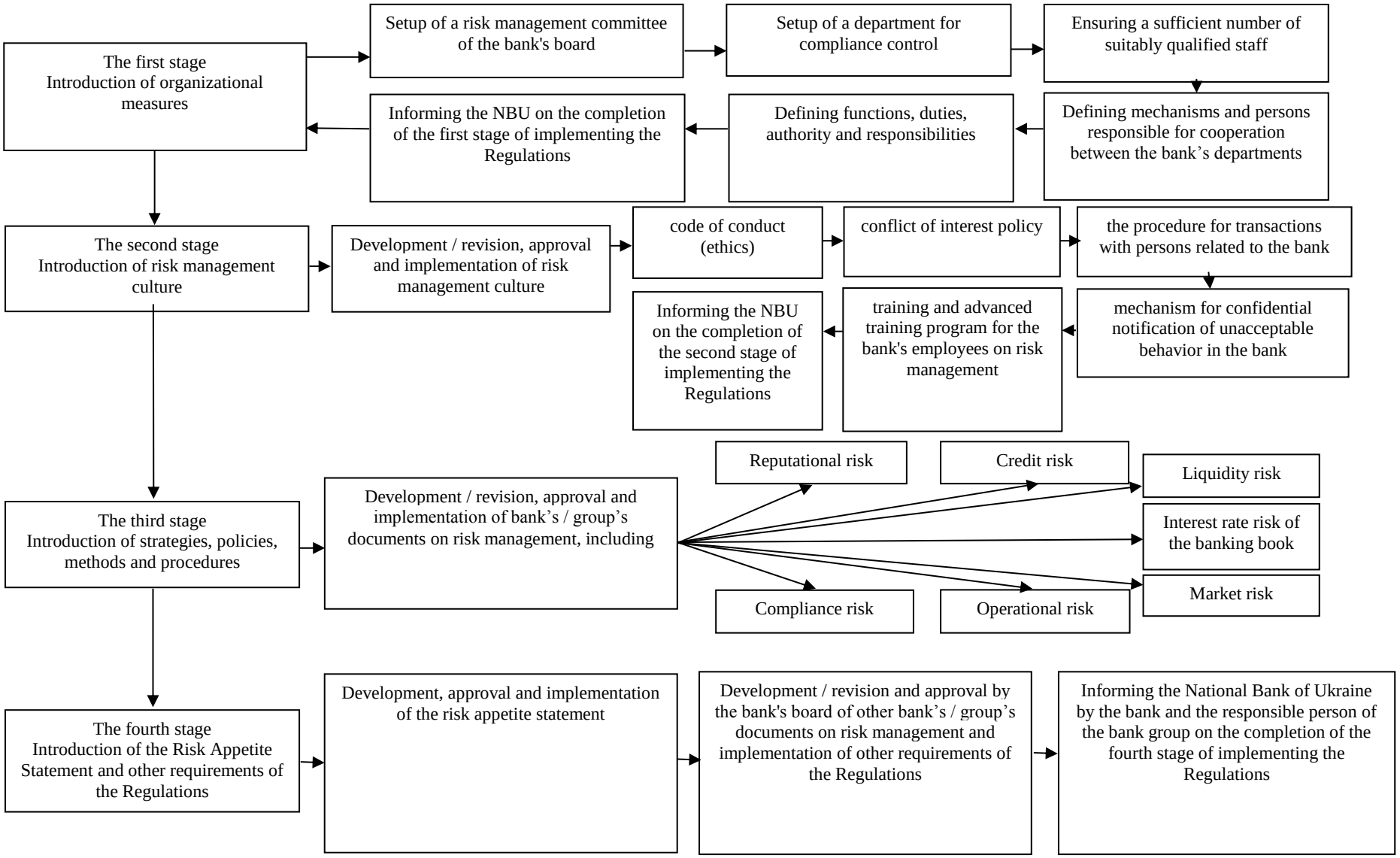

Figure 1. Risk management scheme for financial institutions
Source: PLS results of data processing (Polozhennia pro orhanizatsiiu systemy upravlinnia ryzykamy v bankakh Ukrainy ta bankivs'kykh hrupakh)

Table 2

Comparison of methods for assessing the risks of financial institutions

Method	***Description***	***Features of use***	***Advantages***	***Disadvantages***
Scoring models	Scoring is a mathematical or statistical model by which a financial institution tries to assess the probability of repayment of a credit by a particular borrower based on credit history	Integral indicators are used for each customer: age, profession, income, length of being a client of the bank, etc.	Using mathematical methods at the preparatory stages, which enables obtaining the best results and taking into account major changes and indicators	The interpretation of the results obtained is done by an expert, so there may be a discrepancy depending on the expert's point of view
Monte Carlo Simulation	Simulation of random processes according to given characteristics	Analyzing various options for a project implementation. Probable characteristics: probable credit interest rate	It allows for taking into account random elements in the model	The need for expert information, the difficulty of building an adequate, consistent model
Decision Trees	Graphical prompting of solutions that may be accepted	Determining risk indicators for the bank's credit portfolio	Possibility of using both categorical and interval variables; metrics that evaluate the model for sustainability	The method is not optimal for problems with a large number of variables, since there is information that cannot be presented in this form.
Rating method	All financial institutions use a certain method to calculate the rating and form an opinion on the borrower's creditworthiness	The use of metrics of the borrower's financial condition	Ease of use, simple mathematical apparatus, clarity of the obtained results without the need for interpretation	The end result is accepted at the discretion of the manager and/or analyst; lack of assessment of its adequacy
Taxonomic analysis	For grouping objects characterized by a significant number of features so that to order the elements of a given set	Assessing risk and profitability of the existing credit portfolio	A significant amount of information is required	It is not a separate independent method, it is necessary to use additional methods to obtain an adequate stable result
Ratio analysis	Expert analysis of the dynamics of economic ratios characterizing the creditworthiness of the borrower by comparing the borrower's indicators with industry averages	Determining the indicators of the borrower's creditworthiness and financial condition	An opportunity to choose a desired approach for analysis; it does not require a significant amount of information	Since it is an expert method, different interpretations of the results are possible; a limited choice of criteria for analysis
Stress testing	Allows the change in quantitative indicators of risk to be analyzed in dynamics	Determining the credit portfolio risk indicators	Ease of use and construction, as all the necessary information is provided by the customer or is publicly available	Indicators are chosen by government agencies and are not always logical and indicative

Source: Compiled by the authors

According to Maliy O.G. (2018), when assessing risks, the financial institution needs to take into account all available information about the debtor, including information on abuse and fraud; the reputation of the debtor; quality of management; the debtor's relationship with other banks, as well as the debtor's credit history. The main source of information on borrowers for financial institutions is the bank's

internal credit history and information obtained from the Bureau of Credit Histories for the time of application. To build a scoring model, it is recommended to use variables such as the number of existing customer's accounts for that moment of time, the presence and number of credit cards, rating from the Bureau of Credit Histories, the total amount of all credits, the date of obtaining the last credit, the use of any other credit products or offers from that particular financial institution, the balance sheet and current account information.

Pavlyuk S.M. (2012) argues that the risk management in a financial institution should be carried out through special measures, which include, first, the use of a risk rating system; second, setting the amount of the reserve depending on the risk; third, monitoring of credit portfolio; and, fourth, control of concentrations by borrowers, geographical locations, economic sectors and types of crediting.

Constructing, using, calibrating and interpreting the results obtained during the risk assessment need to be entrusted to a risk committee, the main task of which is to monitor, identify and manage the risks that arise during the operation of the financial institution. The risk committee is also responsible for assessing propensity for risk or risk appetite. Risk appetite is the predetermined levels and types of risks that financial institutions are willing to accept in order to achieve their goals, based on the institution's scope and objectives within the frames of their strategy and business plan. Risk appetite ought to reflect an acceptable level of risk that affects the achievement of specific strategic goals. Therefore, risk appetite should be formed based on the activities that the financial institution considers to be strategically important. Risk appetite needs to be approved by the board of directors and defined in stages, as shown in Figure 2.

We believe that a significant barrier to the effective management of financial institutions and possibility of a qualitative and adequate risk assessment is the absence of a single complete Bureau of Credit Histories in Ukraine, which could assist in obtaining the collected up-to-date information on the customers and their credits. On the contrary, many European countries have the Bureaus established at the state level, so that each financial institution has the opportunity to update and use the relevant information to make a decision on crediting a potential customer. This fact increases uncertainty and the likelihood of unforeseeable loss, therefore financial institutions need to provide mechanisms to compensate and avoid risk. Given the need to ensure the security of the bank, it is recommended to follow strict measures in the crediting strategy together with ensuring high quality of service. To measure the level of quality, the following criteria are proposed to use: credit accessibility; time required by the financial institution to process an individual request for credit; cost of credit.

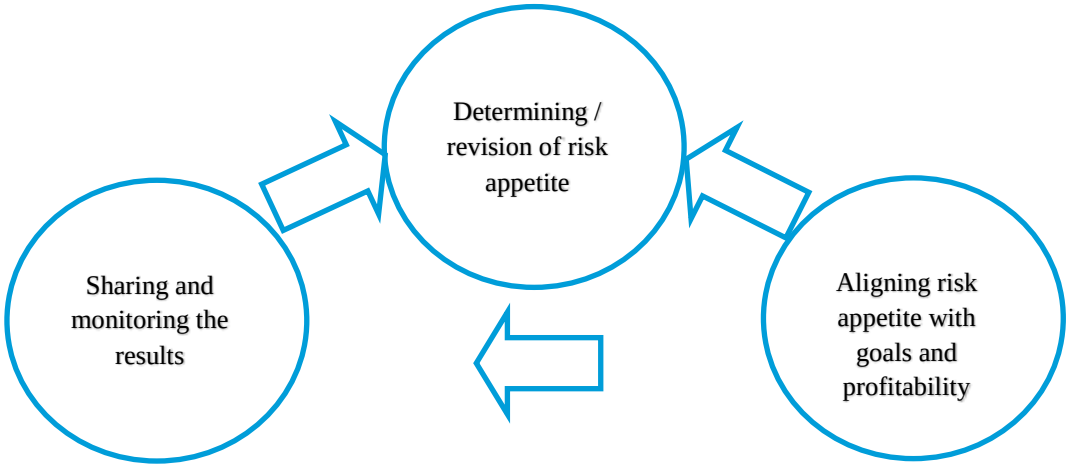

Figure 2 Stages of determining risk appetite

Source: Compiled by the authors

Thus, risk management under conditions of uncertainty becomes a key part of strategic planning for the development of financial institutions in close cooperation with top management, taking into account best practices in analytics and impartial decision-making. The prospect for further research is the formation of approaches that will allow managing several types of risks in compliance with all regulations

under current legislation. This will make it possible to fully satisfy customers, while the setup of a single bureau of credit histories will minimize risk manifestations. The risk management function needs to become more differentiated to ensure the competitive advantage of financial institutions in the future. Effective risk management should lead to large-scale ambitious transformations of financial institutions, which is becoming a major task today.

CONCLUSIONS

The article discusses the features of managing financial institutions under conditions of uncertainty. Risk management is a measure used to identify, analyze and respond to a specific risk. It is a continuous process that is a useful tool for decision-makers. Risk management in financial institutions should be carried out at two levels, according to the causes of its occurrence: at the level of each individual credit and at the level of the credit portfolio as a whole. The generally accepted risk management framework for financial institutions proposed by the NBU should also take into account reputational risks that have strong causal links with the activities of the financial institution, its motives and behavior guidelines in life, including the economic sphere. We believe that the main component of risk management is the use of up-to-date innovative methods of risk assessment. Constructing, using, calibrating and interpreting the results obtained during the risk assessment need to be entrusted to a risk committee, the main task of which is to monitor, identify and manage the risks that arise during the operation of the financial institution. We consider the absence of a single complete Bureau of Credit Histories in Ukraine to be a significant barrier to the effective management of financial institutions. The prospect for further research is the formation of approaches that will ensure managing several types of risks in compliance with all regulations under current legislation. This will make it possible to fully satisfy customers, while the setup of a single bureau of credit histories will minimize risk manifestations.

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УПРАВЛІННЯ ФІНАНСОВИМИ УСТАНОВАМИ ТА РИЗИКАМИ В УМОВАХ НЕВИЗНАЧЕНОСТІ

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Метою даного дослідження є з'ясування особливостей управління фінансовими установами та ризиками в умовах невизначеності. Сучасний період розвитку фінансової сфери характеризується наявністю значної кількості підходів та методів управління шляхом прогнозування та оцінювання ризиків, їх виявлення та мінімізації. Аналіз останніх досліджень і публікацій показав, що застосування інноваційно-математичних методів управління дозволяє мінімізувати ризики та забезпечити значні конкурентні переваги у майбутньому. **Методологія**: в процесі дослідження були використані загальнонаукові та спеціальні методи системно-структурного аналізу і синтезу, групування та порівняння. Проаналізовано та доповнено схему управління ризиками, що запропонована НБУ до використання фінансовими установами, шляхом врахування репутаційних ризиків. **Результати** дослідження показують, що наявні методи ґрунтуються на використанні експертних оцінок та потребують значної кількості інформації, яка не завжди є доступною. Доведено, що побудовою, використанням, калібруванням і інтерпретацією результатів, що отримані під час оцінювання ризиків, має займатися ризик-комітет, головною

Bardas, A., Dudnyk, A., Avramenko, A. and Kazymyrenko, O. (2022), "Management of financial institutions and risks under uncertainty", *Management and entrepreneurship: trends of development*, 2(20), pp. 68-77. Available at: https://doi.org/10.26661/2522-1566/2022-2/20-06

задачею, якого є моніторинг, виявлення та управління ризиками, які виникають під час функціонування фінансової установи. Виявлено, що в Україні відсутнє єдине повне Бюро кредитних історій, що є значною перепоною для ефективного управління фінансовими установами. Перспективою подальших досліджень є формування підходів, які дозволять керувати декількома типами ризиків, враховуючи усі нормативні акти при дотриманні чинного законодавства. Це дозволить всебічно задовільнити клієнтів, а утворення єдиного кредитного бюро кредитних історій – мінімізувати прояви ризику.

Ключові слова: управління, фінансові установи, невизначеність, кредитні ризики, методи оцінювання ризиків.

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THE IMPORTANCE OF IMPLEMENTING AN APPROPRIATE ORGANIZATIONAL STRUCTURE FOR THE DEVELOPMENT OF IT COMPANIES IN UKRAINE

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Abstract. The purpose of this study is to investigate the problems of Ukrainian IT companies faced by them on the way of their growth due to the lack of an effective business structure. The research is focused on the weaknesses and strengths of current organizational structure that any small Ukrainian IT business most commonly would have on the average. The initial reason to develop this research was to identify the different perceptions between the hierarchical levels inside the average small IT company in Ukraine. Using an exploratory study, the objective was to identify the obstacles the IT business face on its path of growing, as well as to outline the need to create organizational structure that will consider all the requirements and the peculiarities of the IT business. In this article, the Ukrainian IT market is analyzed as the unit that performs its activity under change conditions in the 21st century. In this context, needs and expectations of a wide range of IT businesses are analyzed. The article is using the theoretical approach. It contains the analysis of the literature review on organizational structures, the IT sector overview and issues concerning the growth and effectiveness of IT companies in Ukraine. The research findings show that the specifics of IT business environment and the concepts of the IT organizational management greatly influence the effectiveness of the management of the business growth and effectiveness.

Keywords: management, project management, organizational structure, IT business.
JEL Classification: G32, M15, D20.

INTRODUCTION

By the 2020 Ukraine is known as one of the worldwide IT outsourcing destination. There are a couple of reasons for such opinion like the high level of experienced and well-educated representatives of software development, the correspondence of the cost vs price of the final product delivery, etc. It is worth to mention that the number of specialists employed in the IT industry reached 200 000 people. Ukraine has over 4 000 companies operating in the IT sphere. Most of Ukrainian IT businesses are outsourced companies which are working mainly with the United States and Western European countries. Today Ukraine faces a myriad of challenges hampering its progress. These include a systemic corruption,

weak rule of law and an economy dominated by oligarchs. While there are no easy solutions to these complex issues, one of the most immediately obvious low-hanging results is support for Ukraine's IT sector. Potential backing for the IT sector could involve bringing together entrepreneurs, successful startups, small and medium enterprises (SMEs) and trade groups from Ukraine, the US, and partner countries with the goal of creating new opportunities for investment, jobs, partnership and collaboration. The US already has a significant interest in the Ukrainian IT industry. American customers are the largest consumers of Ukraine's IT services, accounting for 50 percent of clients nationally.

In total, Ukrainian IT firms do business with over one hundred Fortune 500 companies. Unlike other sectors of Ukraine's economy, oligarchic interests have not permeated the IT industry, with 80 percent of the sector consisting of SMEs (Atlantic Council, 2020). Additionally, COVID-19 has not significantly affected the industry due to its virtual ecosystem. With that being said, Ukraine has all preferences to become one of the world centers for the IT industry.

However, throughout the research it was identified that mainly Ukrainian companies are the representatives of a small businesses founded by the "amatory" communities; we believe that due to this reason almost all small IT businesses struggle due to the absence of the regular management that must involve the appropriate organizational structure. Furthering in the study the organizational structure of the average IT company will be described and analyzed. The study has been performed in Zaporizhzhia region IT community and thereby further information will be based on the profile of the average regional IT company.

LITERATURE REVIEW

Issues of organizational structure of the enterprise and its optimal construction in order to improve the efficiency of the organization have always been of great interest for both theoretical research and practical implementation. After all, it is an effective organizational structure and its skillful application is one of the factors of successful development of the enterprise, including in the IT sphere.

Thus, the theoretical justification for the introduction of an effective organizational structure at the enterprise is found in the scientific works of domestic and foreign researchers, such as: Ahmady, Gh., Mehrpour, M. & Nikooravesh, A. (2016), Kanten, P., Kanten, S., & Gurlek, M. (2015), Eze, S. C., Bello, A. O., & Adekola, T. A. (2017) and others.

PAPER OBJECTIVE

The purpose of this study is to investigate the problems of Ukrainian IT companies faced by them on the way of their growth due to the lack of an effective business structure that would recognize the specifics of the IT business and the environment it is surrounded with as well as to identify the most important factors that should be taken into account for creation an effective organizational structure of company's management.

METHODOLOGY

In the course of the research practical examination of the investigated subjects – small IT businesses in Ukraine was conducted. The article is using the theoretical approach. It contains the analysis of the literature review on organizational structures, the IT sector overview and issues concerning the growth and effectiveness of IT companies in Ukraine. The authors' conclusions are based on the results of verbal in-depth survey of small IT businesses in Ukraine that are on the state of development of the business and organizational structure. The focus group was set up to explore the educational assessment and commit its result for the further investigation purpose.

The investigation of 60 IT companies in Zaporizhzhia region indicates the weak matrix organizational structure in most of them. A company usually has 5 departments: Business Development

(or sales), Delivery, Project Management, Finance and Human Resource. The role that each department plays in the company's life must be concretize in the context of further organizational structure analyze.

The Business Development Department (BizDev). This organizational unit is mainly responsible for defining and developing new business directions – new markets, niches, partnership relations, sales channels, the development of the company's client base, attraction of new projects etc. The professionals of BizDev department are split into two groups: Sales and Account managers. The account management representatives work with strategic partners, take part in making of deals with key clients, building processes. Whereas the Sales ones are responsible for the attraction of new projects to the company throughout the IT market like Upwork for instance.

The Delivery Department. This department is responsible for the delivery of the final product to the client. IT delivery is the manner in which a corporation provides IT services, which include Frontend development, Backend development, Data mining, Design and Quality Assurance. The professionals of this department play role in various stages of service or product delivery.

The Project management Department. The project management department is committed to lead the project from the very first stages. It closely works with the BizDev sub department – Sales – in order to make sure that the project has everything that is needed to proceed with. In most companies, the project management department is the weakest spot of the business since it does not have any standards, metrics or practices that are usually applied for managing the project.

The Financial Department. This department along with the project management one hardly could be called as an undependably functioning unit. In most cases the finance management is performed throughout two price formation patterns: Fixed Price and Time & Materials but with the lack of corresponding practices such as financial planning, reporting and controls, short- and long-term business strategy, hedging, cash management, internal risk management, corporate finance, auditing and accounting.

The Human Resource Department. The main function of the HR department at the company is recruitment. Worth to note that the HR managers are also responsible to the Office management activities. The recruitment part covers the following activities:

- determination of the organization's need in personnel;
- personnel selection together with the heads of other departments of the company;
- analysis of personnel turnover, search for methods to combat the high level of turnover;
- preparing the staff schedule of the company;
- registration of personal data of employees, issuance of certificates and copies of documents at the request of employees;
- carrying out operations with employment records (receipt, issuance, filling and storage of documents);
- onboarding of the new employees;
- maintenance of vacation records, drawing up schedules and registration of vacations in accordance with current labor legislation;
- organization of employee appraisals; preparation of plans for advanced training of employees;
- organization of any corporate activity (holidays, birthdays, conferences, etc.).

Any small IT businesses is that it's main goal is to settle on the market a gain the reputation of trusted vendor of IT services. IT business works of the project base which implies that the main product is a variable from a client to client and the management is functioning in constantly changing circumstances. As it is stated in the definition of the project itself, the project is a temporary endeavor undertaken to create a unique product, service, or result (Project Management Institute, 2013). The two most important factors within that definition are depicted in Table 1:

Table 1

The key factors of a project

Project	
Temporary	Unique
A project has a fixed beginning and end. Because of this, there are two factors that come into play in virtually every project: time (deadlines) and money (budgets). These two factors are also fixed and the blurred these boundaries are the more potential there is for a conflict among stakeholders.	No two projects are the same. Some projects are derived from previous projects (therefore similar) but they are never exactly the same. Even if you had, for example, a project to produce 100 widgets for a customer, and then you are given another project to produce the same 100 widgets for the same customer, these are still two separate projects because they have separate schedules (deadlines).

Source: Own compilation

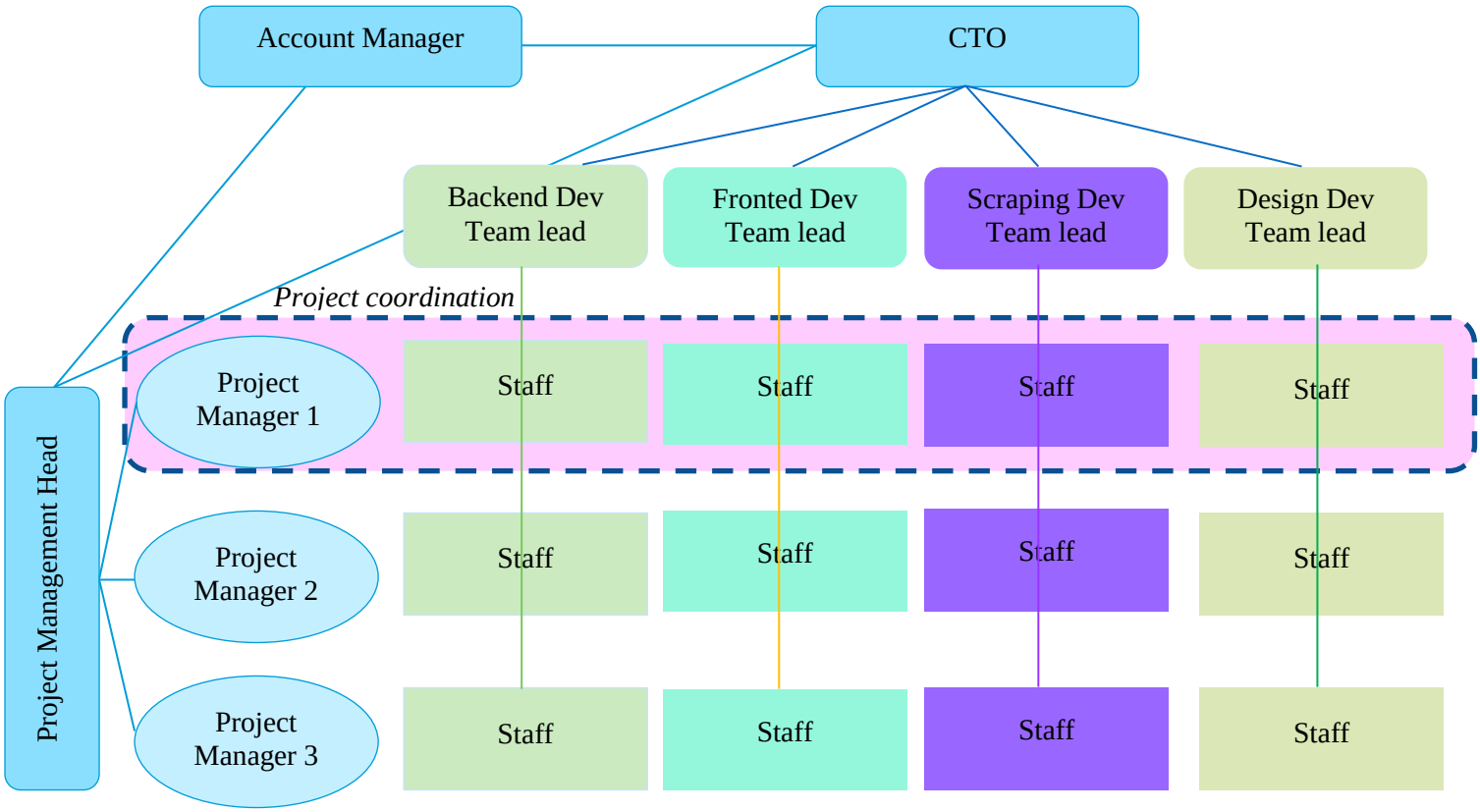
Additionally, to the constantly changing circumstances most of small IT businesses have to come up with a custom solution for the company management as the attraction of a new clients on the IT market is quite cost consuming and on the first steps usually the company would not have enough of finance resources that could be allocated for the creation of an effective and workable organizational structure which will meet all the requirement of a growing business. Which is why, early on in the company's development (with the number of employees not more than twenty people on board) the company management creates a simple line-functional organizational structure. This allows to provide a transparent and easy manageable system that is applicable and effective for a small IT company.

Since the IT companies are working on the project base, it is often met that the resources are shared between the projects within the company. This is made in order to provide a full-time occupancy of the resources and create a workload within the company. The line-functional organizational structure implies having one person in charge of all company's activities. With a small number of people on the board the company is able to stick to this organizational structure and remain profitable with fewer hiccups on its way for quite a long time. However, when the business decides to update the company goal to the growth this structure will undoubtable fail.

The average IT small company in Ukraine has approximately 30 to 80 people on the board. Such companies most likely would have a weak matrix organizational structure. The weak matrix organizational structure is useful in small companies (20-30 employees) when skills need to be shared across departments to complete a task and can allow companies to utilize a wide range of talents and strengths. The project manager or its lead is usually the one in charge of the whole power and decision-making process within the project. Often, in the companies with such structures, solution of actual problems of a department may lie beyond the authority of its head, for example, there are stable problems with downtime or lack of people resources, you need to constantly pull out the team to assess incoming projects. Problems are solvable, but they create discomfort.

The process of reengineering organizational structure in most cases is carried out without a proper planning and is applied in no time at all again due to the lack of the finance resources and skilled specialists who are able to smooth the transition process.

As it was mentioned earlier the IT companies are working on the project base (since the project is its main product). This means that the project manager must be the main role within the project, however, the weak matrix organizational structure usually implies that he or she performs the role of project coordinator rather than project manager. On the scheme 1.1 we have depicted the operations inside weak organizational structure.



Scheme 1.1 The weak matrix organizational structure

Source: Own compilation

On the scheme above it is shown that this type of matrix organizational structure is most similar to a traditional workplace hierarchy. A functional manager (team lead) oversees all aspects of a project and acts as the primary source of decision making. While there is a project manager who also acts as a point of authority, they ultimately answer to the functional manager.

The average small IT company several main roles that are included in the project:

1. The C-level of management: CTO (Chief Technical Officer) who is the head of the delivery department and PMO (Project Management Officer) the head of the project management department. These roles are responsible for the project entrance. Before the project would be started the CTO and the PMO would have to decide based on the scope of the project to which functional manager (team lead) they should pass on the formulation of the project team and to which project manager the project will be assigned to.

2. The team leader. This role performer is the representative of a delivery department. The delivery department consists of 5 sub-units: Frontend development, Backend development, Data mining, Design, Quality Assurance. Each of the units has its own Team Leader. This position is occupied by a person who has been selected among those ones who expressed a desire to become one within a particular sub-unit, by the in-house voting. The team leader runs the sub-unit to which he or she has been assigned to. He or she provides guidance, instruction, direction and leadership to a group of individuals (the team) for the purpose of achieving a key result or group of aligned results.

Once it has been decided on the scope of the project the team leaders of a corresponding sub-units and the CTO will formulate the team of a corresponding developers. They will also make a decision on whom will be taking the position of a project lead.

3. The project lead. This role performer is selected among the project team that has been formulated earlier. Project lead within the weak matrix organizational structure is the main role who is responsible for the project performance. This position implies close collaboration of the team lead and the project manager performers.

4 The project manager. This person in this organizational structure performs the role of a project coordinator. In his or her responsibilities included the responsibilities such as providing the transparency between all the stakeholders of the project and the project coordination correspondingly.

To conclude the weakest spot of this organizational structure is the inoperative use of the project management resources as well as the complicated information flows within the company. Any decision that should made has to go through various levels of management which significantly reduces the main competitive factor on any growing business – the flexibility.

To picture this let's take a look at an example of projects management of the average small IT company which has a weak organizational structure. In order to provide the full load of the resources it is considered as a normal practice to share the developers across the projects. Usually, one developer would work on several projects at the same time – these processes could be compared with the Japanese Methodology Just-in-time (JIT) manufacturing, also known as just-in-time production or the Toyota Production System (TPS). As the project is a temporary endeavor undertaken to create a unique product, service, or result, each project would require developers with a different skill set on different project phases.

Due to the fact that the role performers on the project usually take part in several projects at the same time, the process of the project managing, and its boundaries are being blurred out. This creates a confusion for the lowest unit of the delivery department – the developer. With the weak organizational structure, the developer, would have several supervisors at one time and would not have a transparency of the priorities between them. In the ideal world all the decision that are applied should be considered and agreed by the top and middle management and only then shared with the project performers, however, in the real world, in most cases each representative of managing layer would give the developer priorities that could differ from the reality and/or the understanding of other managers.

Picture this, when a developer works on the project, depending on its type, he or she would have at least two managers: project lead (the main developer on the project – is responsible for the technical part) and project manager. What if developer has two active projects. Within small IT businesses it often happens that one developer could take several positions at one time on different projects. For example, developer has three projects: for the first one – provides a support; for the second – represents a project lead; and for the third one actively works as a developer. Each of these projects would have its own project manager and a team leader who do not have the communication processes set between them. Because of this the projects and the developers are constantly suffering from the lack the quality of management at the company.

RESULT AND DISCUSSION

After conducting our research, we concluded that the key factor that does not allows the small IT companies to take the path of a growing businesses is the wimpy organizational structure. This line-functional and the weak matrix organizational structure "ties up" the company's management due to the following reasons:

1. The complicated decision making paths;
2. The poor use of the project management resources.

As a concur solution for the above-mentioned structures we would like to suggest the small businesses to take a look into implementation of a strong matrix structure. The strong matrix

organizational structure provides the project manager with equal or more power than the functional manager (team lead and/or project lead). The project manager has primary control over resources and distribution of tasks. This type of structure is useful when skills need to be shared across departments to complete a task and can allow companies to utilize a wide range of talents and strengths. There are several benefits of implementing a matrix organizational structure within the workplace. These benefits include:

1. Increased communication efficiency. A matrix organizational structure allows multiple departments to easily communicate and collaborate on a project. Because employees report to multiple managers (that would be clearly specified before the start of the project), as opposed to various stakeholders, issues are resolved more quickly, and company-wide interaction is improved.

2. Improved employee motivation. In a matrix organizational structure, employees have much more autonomy and input in projects. This type of structure encourages employee contribution and places a higher value on workers' point of view. Matrix organization, employees work across multiple projects and with various departments within the company. This increases employee interaction and promotes a better sense of teamwork

3. Maximizes resource usage. This type of structure would allow the company resources to be maximized because of how equipment and employees are shared across projects. A matrix structure also would allow project managers to work in the areas of their expertise rather than being pulled across multiple projects, boosting the overall contribution of their talents.

4. Increased employee professional development. A matrix structure will provide employees with work across a wide variety of projects and require them to utilize and/or learn different skills. Being exposed to various job duties and responsibilities can increase employee development and enhance their professional skills. Nevertheless, it will also give the company the way to manage cross functional teams – which will enable the management to reach the maximum efficiency of the resources use.

As we have mentioned before the strong matrix organizational structure implies that the project manager would be the main authority within the project. Hence, the next step before applying the new organizational structure would be to rearrange the project management department.

The first and the most important factor that the company management should pay attention to is the proficiency of the project management role performers. Considering that the company who has the weak matrix organizational structure most likely has weak performers of the project manager’s role since their responsibilities cover only the project coordination. Which is why we believing the company management would have to make either one of two possible decisions. The first solution would be to replace the current members of the department with strong project managers. In order to carry out a strong matrix structure the project management department should be one of the strongest departments within the company. Now let’s identify what skill set should have a strong project manager representative.

We may highlight such primary components of the role of the project manager:

1. The basics of architecture and Release management.
3. Planning.
4. Communication.
5. People Management.
6. Mastery of tools.
7. Management of requirements and documentation.
8. Budget management.

These are the skills the project manager would need to have in order to occupy the main role of the project. Creating a strong project management team would help the companies to prosper by delivering a high quality of services and products and effective use of the project management resources. This will also allow the other role performers to dig dipper into their sphere of expertise by not spreading their powers on the management rather than on the developing the project itself.

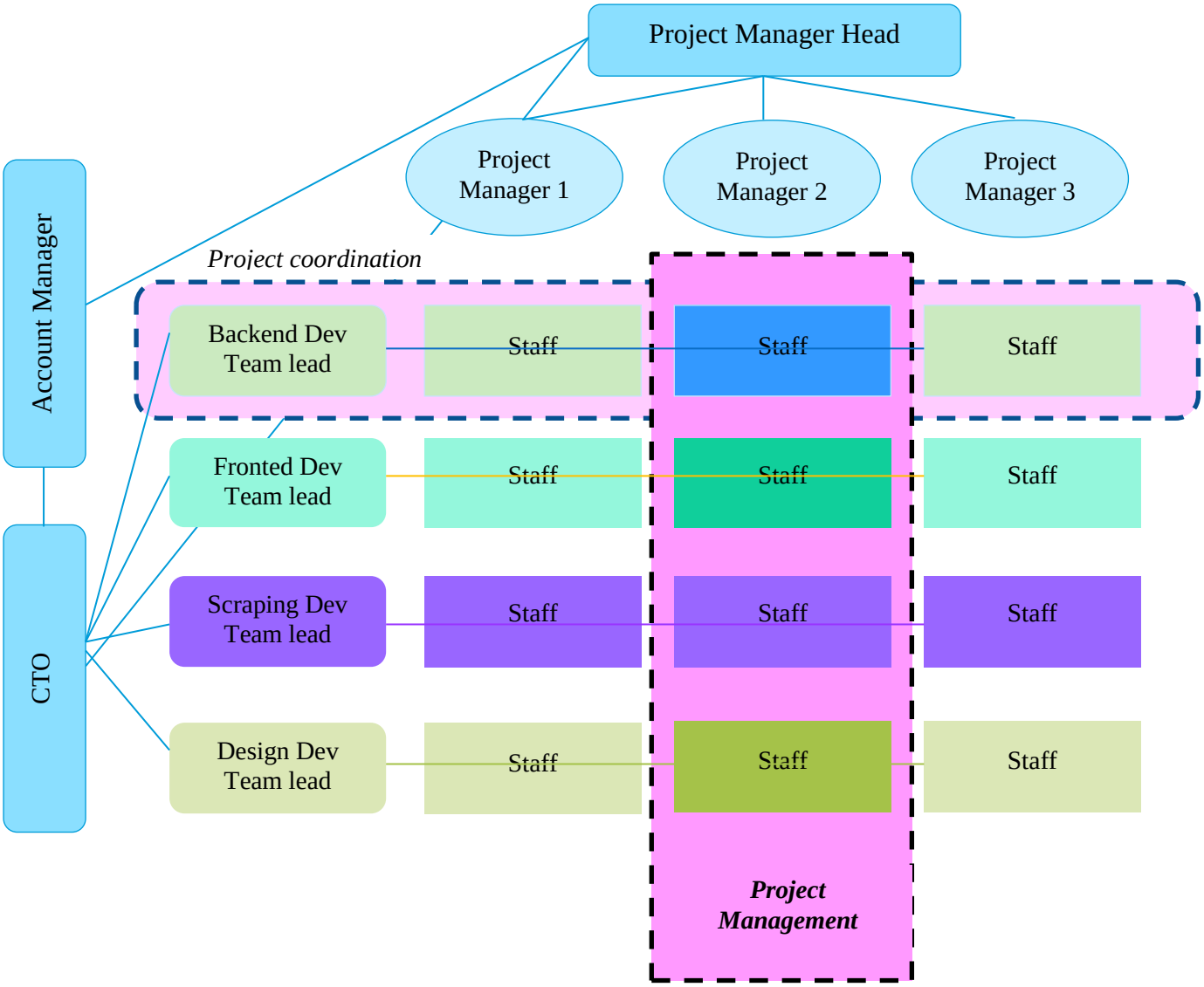
The second solution would be to stick with the team that the company already has but fulfill it with additional resources. It is considered as a good practice along the HR management to have a proportion of

highly skilled professionals and junior & middle level ones. This would help a company to create a competitive environment in the team.

The second factor that is as important as the previous one is to create a document where would be specified the relations within each department (and between the departments), the role representatives' area of responsibilities, required skills of the role representative, the workload of each role, etc., before applying any changes to the structure first. Every process, and how it is performed, who are the people you may ask for help. Setting up such document will help the current employees and the fresh one to easily infiltrate themselves with the new changes applied. This will also reduce the level of uncertainty for the developers in particular, as the document would also specify who is responsible for setting the priorities for a day/week.

Once the document that describes the new organizational structure and the skilled project managers would we set, the company would be ready to start the reorganization. We believe that applying the described above changes will create a proper structure of the company that will increase its profitability.

Below, on the scheme 1.2 it is shown what a strong matrix organizational structure for the small IT company would look like.



Scheme 1.2 The strong matrix organizational structure

Source: Own compilation

The strong organizational structure is useful when skills need to be shared across departments to complete a task and can allow companies to utilize a wide range of talents and strengths. It implies that

the project manager with have equal or more power than the functional manager (team lead and/or project lead). The project manager has primary control over resources and distribution of tasks.

The strong matrix organizational structure will help the company to overcome the disadvantages of the weak one. The disadvantages can be countered in the following ways:

1. There will be close cooperation between the project manager and the functional manager to avoid confusion and conflict.

2. Communication will be well defined and occur in all directions. This is important to gain support from executives, managers, supervisors, and employees.

3. The strong matrix organization would also force business to communicate their vision, objectives, and goals with their employees.

Since strong matrix structure implies that a project manager is the one who is responsible for the distribution of the resources between the projects, it will help the company to set up proper informational streams across the departments. In the strong matrix structure roles and responsibilities should be clear and communicated to employees to avoid confusion.

With the above mentioned, we would like to strongly suggest to the growing IT companies' management before applying any changes to the structure first to create a document where would be specified the relations within each department (and between the departments), the role representatives' area of responsibilities, required skills of the role representative, the workload of each role, etc. Every process, and how it is performed, who are the people you may ask for help.

Setting up such document will help the current employees and the fresh one to easily infiltrate themselves with the new changes applied. This will also reduce the level of uncertainty for the developers in particular, as the document would also specify who is responsible for setting the priorities for a day/week.

CONCLUSION

Setting up an effective organizational structure that will meet all the requirements and the peculiarities of the business is a mast have for any company. The small IT businesses in most cases do not pay attention to the planning phase of the company's organizational structure rearrangement process due to the lack of time and resources. However, by performing this investigation we're now able to state that as well as a strong base of the business (organizational structure) the planning phase plays one of the most important roles in the rearrangement. Ignoring it would lead to the same result the small IT companies already have – chaotic business processes; inefficient resource utilization; loss of flexibility of the processes within a project as well as the whole company.

Considering all the efforts that are required for the rearrangement of the company for the growing IT business we believe that the strong matrix organizational structure is an absolute "must-have". It will help the companies' management to set up the processes where all the resources will be used effectively; the informational flows will be transparent for all stakeholders evenly; and there will be no overload of employees.

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ВАЖЛИВІСТЬ ВПРОВАДЖЕННЯ ВІДПОВІДНОЇ ОРГАНІЗАЦІЙНОЇ СТРУКТУРИ ДЛЯ РОЗВИТКУ ІТ-КОМПАНІЙ В УКРАЇНІ

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Метою даного дослідження є вивчення проблем, з якими стикаються українські ІТ-компанії на шляху свого зростання через відсутність ефективної бізнес-структури. Дослідження зосереджено на слабких та сильних сторонах поточної організаційної структури, яку в середньому має будь-який малий український ІТ-бізнес. Початковою причиною для розробки цього дослідження було виявлення різного сприйняття між ієрархічними рівнями всередині малої ІТ-компанії в Україні. Використовуючи дослідницький підхід, метою було виявити перешкод, з якими стикається ІТ-бізнес на шляху свого розвитку, а також окреслити необхідність створення організаційної структури, яка враховуватиме всі вимоги та особливості ІТ-бізнесу. У цій статті аналізується український ІТ-ринок як одиниця, яка здійснює свою діяльність в умовах змін у XXI столітті. У цьому контексті аналізуються потреби та очікування широкого кола ІТ-бізнесів. У статті використано теоретичний підхід. Він містить аналіз огляду літератури щодо організаційних структур, огляду ІТ-сектору та питань, що стосуються зростання та ефективності ІТ-компаній в Україні. Результати дослідження свідчать, що специфіка ІТ бізнес-середовища та концепції організаційного управління ІТ значною мірою впливають на ефективність управління зростанням та результативністю бізнесу.

Ключові слова: менеджмент, управління проектами, організаційна структура, ІТ-бізнес.

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REGIONAL RENEWAL AND DEVELOPMENT OF UKRAINE'S ECONOMY ON THE BASIS OF CLUSTER POLICY

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Abstract. The article is devoted to the study of the process of state development of territories through the system of clusters. The state program which defines priority branches for development and formation of clusters has been analyzed, the regions needing cluster development for the purpose of achievement of economic growth have been determined. The paper investigated the impact of clusters on the economic growth of the European Union, their role in job creation, and prospects of their introduction into the Ukrainian economy. Particular attention is paid to the policy of regional economic growth while ensuring conditions for competition and anti-monopoly legislation. The paper demonstrates the success of cooperation between the EU and clusters to ensure their international competitiveness and remove trade barriers in the European market. In addition, the study pays attention to the need to create conditions for economic development of the territory, the introduction of support mechanisms for cross-border industrial and technological parks, economic and industrial areas, the creation of cross-border clusters. Statistical data are shown, according to which clusters in the EU provide 54 million jobs and wages are higher by 3%. In the study it was **found** that the innovative nature of cluster alliances would help develop competitive industries in Ukraine: helicopter and aircraft construction and production of advanced titanium alloys. The development of clusters in strategic industries will help the Ukrainian economy substitute imported components and create new jobs. Therefore, the prospect of cluster implementation and the creation of a targeted administrative policy will create a favourable effect on the economic development of the regions and could revive economically depressed regions. Having analysed the EU example of cluster management, development and support the main administrative documents that regulate this process were identified. Their legislative study and implementation into Ukrainian administrative management will help to create new innovative clusters, implement effective management strategies and ensure transnational cooperation.

Keywords: cluster, cluster policy, regional development, state support, administrative methods.

JEL Classification: H83, L51, O31.

INTRODUCTION

The global trends of economic processes and societal changes in recent years, caused by the post-pandemic consequences and the aggravation of relations in the distribution of resources and zones of influence, have increasingly demonstrated the inevitability of instability and the spread of conflict sentiments. The polarization of society and Russia's imperial ambitions led to full-scale aggression against Ukraine on 24 February 2022. The substantial losses of Ukraine's economy from the war (physical capital alone exceeds $90bn) are increasing on a daily basis. And today there is the super complex question of finding and justifying priority areas for the recovery and development of Ukraine's economy. As the territory of Ukraine is one of the largest in Europe and attractive to the world community according to a number of criteria, the attention and external pressure on the transformation processes are not subsiding. The chosen priorities are complicated by the post-Soviet past, which constrains the effectiveness of democracy, the whole process of transition to market capitalism and European integration.

It is known that economic growth is one of the priorities of any state. Research of many academic economists, who have already developed and substantiated many theories of economic growth and key success factors and international experience of regional development allows us to state the importance of clustering processes. Cluster formations based on the resources available in the region make it possible to mobilize them and achieve a positive economic effect through synergy. The creation of clusters contributes to strengthening regional specialization and allows increasing the synergy effect. It is this direction that we see today as one that would enable faster regeneration of Ukrainian regions and facilitate access to the international market through offering our own innovative and competitive products. The state should define today the cluster policy as a priority.

In the current context of military action in Ukraine, and the consequent destruction of many infrastructure facilities and logistics links, clustering of enterprises is becoming a more urgent issue.

LITERATURE REVIEW

Theoretical aspects of cluster policy have been studied by many scientists. Among foreign scientists we should highlight the groundwork made by M. Porter, the founder of cluster theory, who revealed the features of the phenomenon of clustering in a competitive environment, defined the essence and main features of cluster, the role of clusters in creating innovation and new business, analyzed and justified the preconditions and main stages of cluster development (M. Porter, 1990). Noteworthy are the conclusions made by Young Lawren E. concerning the coordinated interaction of cluster organizations within a close location in order to cooperate more quickly and closely, and to develop innovations (Young Lawren E, 1995). The work of J.-B. Zimmerman and Frederick Richen examines the place and role of clusters in the global knowledge-based economy (J.-B. Zimmerman, F. Richen, 2008). Studies by T. Roelandt and P. Hertog substantiate conclusions about cluster construction by participants in the value chain (T. Roelandt, P. Hertog, 1999). Among the Ukrainian scientists it is advisable to note the work of M. Voinarenko where clusters as important elements of the institutional economy are noted, the directions of improvement of the institutional environment and mechanisms of cluster development, etc. are substantiated. (M. Voinarenko, 2011). The study by Bezvushko Y. studied the impact and role of clusters in the revival and development of the economy of Podolia (Y. Bezvushko, 1999), and the works of Pushkar T.A. - The world experience of formation and development of network and cluster associations (T. Pushkar, V. Fedorova, 2021).

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Despite the multidimensional range of research on the prerequisites for achieving economic development of regions, the cluster method of development in Ukrainian practice has not been investigated for a long time. The study of reasons and mechanisms of cluster management and support in the EU will allow to determine effective administrative and legal methods of implementation in Ukraine.

PAPER OBJECTIVE

The purpose of this paper is to investigate the processes of clustering and the implementation of EC experience in the regional context and the development of Ukraine's economy on the basis of a cluster policy.

METHODOLOGY

In the process of scientific research, general scientific and special research methods were used. The method of system-structural analysis and synthesis was applied to innovation policy which is implemented by means of clusters. The method of scientific desk research of various sources and normative-legal acts is also used. The relationship between the policies outlined in the Strategy and the cluster policy in the area of its implementation was analyzed.

RESULT AND DISCUSSION

The invasion of Ukraine by the Russian army has led to a new reality, which forces businesses to once again reconsider their own capacity for recovery, stabilization and development. It becomes relevant to build new ties while disrupting stable resource inputs, production, logistics and potential demand. The aforementioned circumstances once again entail a new push for consolidation of Ukrainian society, which is gradually manifesting itself through the expansion of the cluster initiative.

Clusters and cluster policy are at the centre of economic research in today's economic environment. The reason for so much research and attempts at implementation is the effectiveness of clusters as elements of the economy. Due to globalization processes and constant competition from MNCs, small enterprises or underdeveloped regions are not always able to withstand international competition. MNCs by their very nature possess a large number of resources: financial, scientific, human and sometimes political. Their competitors, whether operating in local markets or going international, cannot cope with this level of competition. The result is the economic decline of certain regions or the closure of businesses, resulting in job losses. That is why, when innovation becomes the main driving force of dynamic development of social production, and economic growth is based on innovation with active use of modern scientific and technological achievements, the ability to produce and commercialize innovations, the interaction of various market actors in the cluster community is important. The main task of clusters or cluster associations is to combine local research centres and enterprises, to ensure efficient use of resources and production of innovations.

Clusters are formed in order to strengthen own business positions, to gain more significant advantages on the market compared to stand-alone own activities. Clusters allow uniting and coordinating all levels of innovation policy, as they provide concentration of resources and create a favorable environment for economic breakthrough through innovation, promote competitiveness at the micro-, meso- and macro-level, rapid innovative development of local territories, easier access for enterprises to different resources and technologies, reduction of financial risks, etc. (A.V. Karpenko, 2018). The clusters ensure the collaboration and synergy of scientists, business, authorities and the public, they are based on developed legal support and discipline, development of institutions of trust and responsibility, tolerance and solidarity in society.

According to the definition, an economic cluster is a network of enterprises and institutions in a specific geographical environment. A cluster consists of manufacturing companies, suppliers of raw materials and services, enterprises operating in related fields and public institutions (e.g. research centres, university, etc).

According to Michael Porter's theory, a cluster is a group of geographically neighboring interconnected companies (suppliers, producers, etc.) and related organizations (educational institutions, public administration, infrastructure companies) working in a particular area and complementing each other (M. Porter, 1990). In other studies, we can see this position on clustering, as "these agglomeration economies manifest themselves in clusters - geographical concentrations of related industries and related institutions. In regional clusters, firms and related institutions (i.e. trade organizations, universities and local governments) can work more efficiently and innovate faster through sharing common technology, infrastructure, pools of knowledge and skills, resources and responding to local customer requirements (M. Delgado, M.E. Porter, S. Stern, 2015).

The formation of clusters is not new to Ukraine. The impetus for the creation of new clusters has already happened several times in the last decades. However, the experience of their development shows that the duration of active cooperation period is predominantly insignificant – 1 – 3 years, and then it fades away. In Ukraine, the development of clusters has not been systematic for a long period of time. This is due to a number of negative factors: the absence of regulations on the definition and regulated set of measures to create clusters in Ukraine; no approved programme of cluster development; weak information support for the creation and development of clusters; insufficient interest of enterprises to unite; lack of appropriate investors; irrational approaches to the organization and management of cluster activities in domestic practice and insufficient attention of authorities at all levels to cluster development issues, In addition, clustering problems arise primarily due to poor business interaction discipline and compliance practices, often threatening the loss of business or parts of it through raiding or other illegal activities. A significant obstacle is the lack of interest of government representatives to initiate and support various kinds of associations without personal interest (A.V. Karpenko, N.M. Karpenko, 2021).

Consequently, for a long time the cluster movement in Ukraine was poorly organized at the national level and grew mostly spontaneously, as there were no responsible bodies in the central government, relevant national policies or cluster development programs.

Table 1

Types of government influence on clusters

Types of influence	Characteristic
Remuneration policy	Allocating funding to priority sectors for development
Cluster leverage policy	Creation of subsidies or grants to indirectly influence the cluster or its efficiency, regional or sectoral subventions
Central administration	Creation of centralized cluster management, state intervention in cluster life, forced merging of enterprises
Market impact	Creating government order, increasing competition policy, removing trade or fiscal barriers

Source: Own compilation

Using the data in Table 1 (developed by the authors), it is possible to draw conclusions about the main principles of governmental influence on clusters. Analyzing the Ukrainian dimension, it should be noted that according to the Decree of the Cabinet of Ministers of Ukraine "On Approval of the State Regional Development Strategy for 2021-2027" of 5 August 2020, Annex 2 to the Strategy, called "Operational objectives and main tasks for achieving strategic goals" (On approval of the State Strategy for Regional Development for 2021-2027) points out the

need to comprehensively promote the reindustrialization of agglomerations and large cities on the basis of innovation, involving the creation and development of regional economic clusters for the efficient and sustainable use of resources, and the integrated development of an innovative economy.

A special attention in the State Strategy is given to the "Development of the territories of the Ukrainian part of the Danube region and cross-border cooperation", which involves the creation of conditions for the economic development of this territory, the introduction of support mechanisms for cross-border industrial and technological parks, economic and industrial areas and the creation of cross-border clusters.

The Strategy also pays attention to "Social and economic transformation of territories where coal mining and coal processing enterprises are under closure", but the cluster formation and development issue is not considered in this task. However, it is known that the modernization of the economies of industrial regions cannot be achieved rapidly without current losses and substantial investment. The development and implementation of scenarios of structural and technological modernization of industrial regions of Ukraine should be carried out as part of the long-term economic development strategy of the country" (M. M. Yakubovsky, V.I. Lyashenko, 2016).

The territory of Dnipropetrovsk, Zaporizhzhia, Poltava, Donetsk and Kharkiv regions accounts for a large volume of industrial production in Ukraine. This industrial load has a negative impact on the anthropogenic, environmental and social state of these regions, which leads to necroindustrial processes. However, in contrast to the practice of developed countries these problems are not on the government's agenda and there is no strategic shift towards modernization and overcoming the negative effects on the respective territories, no consolidation of different stakeholders is ensured.

The European experience proves that a significant role in cluster development is played by the government at the central or regional level in order to ensure technological development and restructuring of the economy. Because clusters increase the depth of processing of products, create new value within the network, ensure concentration of economic activity, expand the market, increase competitive advantage, generate new value chains, create systemic synergies and are a priority in the actions of government at different levels (A.V. Karpenko, N.M. Karpenko, 2021b). The evidence is the cluster policies developed and implemented. The aim of the European cluster policy "is to help develop clusters of global significance with competitive production and supply chains that cross various sectors". Identifying the important role of clusters and targeted cluster policy, the European Commission (Industrial cluster policy. Internal Market, Industry, Entrepreneurship and SMEs) notes that there are 3,000 specialized clusters in Europe, providing 54 million jobs. These clusters show stability during economic crises and contribute to job growth. Wages in these clusters are 3% higher and 67,700 enterprises in the fast-growing clusters had more employees than other enterprises (35 as opposed to 24) (Industrial cluster policy. Internal Market, Industry, Entrepreneurship and SMEs).

EU member countries have traditionally differed in their innovation and regional strategies from those of other countries. The strategies always included horizontal actions of industrial policy which pursued a neutral position from the point of view of the sector and the industry and was oriented towards improvement of general conditions and creation of possibilities for innovation development (development of higher education institutions, human resources, creation of intellectual property objects, development of IT infrastructure and increasing the scope and efficiency of scientific and research activities, etc.) (A. Karpenko, N. Karpenko, O. Doronina, 2021).

Strategic decisions in Ukraine are not easily implemented, thus there is a lack of clarity and synergy between the Development Strategy and practical implementation. Thus, according to the Order of the Cabinet of Ministers of Ukraine from December 16, 2020 "On approval of the list of priority investment projects for the state until 2023" among the defined projects only in one place attention is paid to clusters: division of Cherkasy region into clusters for the purpose of introduction

of the complex system of solid domestic waste management (On approval of the list of priority investment projects for the state until 2023). Therefore, in the practical implementation of the state policy as opposed to certain priorities in the regional development strategy, no attention is paid to the development of regional clusters, only the division of the area into clusters, in order to better manage production with waste is stated.

Among the prospects for regional development through clusters are the promising investment projects listed in the "List of priority investment projects for the state until 2023". One of the prospects for regional development is the implementation of an import substitution strategy. Thus, the "List of priority investment projects for the state until 2023" defines one of the important goals of design and research work for the production of components and materials for the AN-1x8 family of aircraft – and their serial production, modernization of the AN-124-100 aircraft. The list also includes the organization of serial production of turbine blade forgings for the machine-building, aircraft and helicopter industries; these forgings will also be important for the development of the shipbuilding industry. In order to fulfill this list it is necessary to create a cluster association on the basis of Zaporizhzhia enterprises: Motor Sich JSC, Ivchenko-Progress SE, ZDARZ, Migremont SE, Zaporizhzhia Titanium-Magic Plant LLC. It is the development of imported products cluster that will contribute to the development of Zaporizhzhia region. This cluster will also play an important role in the international environment, as international companies do not buy parts for aircraft and helicopter building from Russia due to sanctions, but the need for such parts remains. Determining international demand and the international environment for parts and components for the aircraft industry will help determine strategic directions for the development of production facilities and create new jobs in the region. Construction of new and development of existing enterprises to modernize and repair aircraft will enhance the international image of both the region and the state, and attract new investment.

Zaporizhzhia Cluster EAM (Engineering-Automation-Machinery) was established in Zaporizhzhia region in 2020. The cluster united 20 enterprises and organizations and continues to attract into its ranks the leading players of Zaporizhzhia region in the sectors of industrial engineering, automation, IT and mechanical engineering in order to form regional value chains and join the global ones, increasing its own competitiveness. Zaporizhzhia Cluster EAM members on a regular basis hold networking meeting, hold consultations for each other, visit new enterprises, work on joint projects and discuss possibilities of creating joint products, constantly learn and take part in organized professional events, jointly participate in exhibitions, etc. (A. Karpenko, R. Sevast`yanov, 2022).

Among the important industrial sites that have been planned for financing are titanium powder and finished titanium products plants, and the construction of titanium and aluminum tubes and heat-resistant alloys. Manufacturing technology, as well as the search for new metal compounds that will provide a longer service life – is one of the cutting-edge areas of modern research. The organization of a cluster for the production of such alloys, as well as titanium products, will make it possible to meet the needs of the aviation, defense and space sectors. The creation of this cluster is impossible without the involvement of universities, laboratories and research centres. On the practical implementation of the above-mentioned, the modernization and construction of new workshops at existing enterprises should be explored rather than the construction of new ones. The presence of such enterprises in Ukraine will lead to the need to locate enterprises that will service the technological process of production, monitor the condition and quality of production, compliance with international standards. According to studies, during the period from 2021 to 2026 the market for titanium products will grow by 3.5% annually and Ukrainian companies will be able to meet the demand for titanium products (On approval of the State Strategy for Regional Development for 2021-2027). Alpha alloys such as i-6Al-2Sn-4Zr-2Mo+Si, Ti-5Al-2.5Sn and Ti-8Al-1Mo-1V for production of steam turbine blades, autoclaves, aircraft and jet engines and fuel tanks are in the highest demand (Titanium Alloy Market, 2021). The introduction of production of these alloys will help to provide high quality raw materials for aviation and defense enterprises.

Consequently, the issue of regional economic development based on the creation of clusters is extremely important for Ukraine. However, in practical terms there are no elaborated stimulating measures for cluster development, sources and tools for their financing, no consideration of current actions to develop and implement a cluster policy.

In 2020, at the initiative of Industry 4.0 community members and APPAU itself, a National Cluster Development Programme until 2027 was developed (National Cluster Development Programme until 2027), which was sent to the Ministry of Economy for approval to establish a guiding document for all stakeholders of cluster development in Ukraine. In spite of the strong action, this programme has gone unheeded by the authorities. And once again, imbued with ideology and on its own efforts today this community is trying to promote the cluster movement.

Today more than 50 clusters have already been registered in Ukraine, whose activities are beginning to acquire a new stage of development. The military state imposed on the territory of Ukraine and the loss and rupture of value-added chains prompted the merger on March 24, 2022 of 16 clusters and cluster organizations of Ukraine into the Ukrainian Cluster Alliance (UCA), which undertakes the mission of developing the entire cluster movement in Ukraine (Ukrainian Cluster Union) and promoting the ideas of clustering in the national economy. This is what proves that the issue of cluster policy development and implementation is gaining new momentum.

Cluster policy, in view of the significant effects of the development of network cluster structures, in the last two or three decades has become part of the public policy of many industrialized countries (M. Kyzym, V. Zahorskyi, V. Khaustova, 2010). It is aimed at removing constraints and creating prerequisites for productivity growth to a greater extent on the established specialization of the region, taking into account innovation potential. It is a set of measures and tools for stimulation of clusters and acceleration of their development, it can be implemented at different territorial levels (simultaneously at the national and local ones) in order to accelerate the innovation dynamics, to increase the competitiveness of economy and to create jobs. The peculiarity of cluster policy is that the leading role in its formation is played by regional authorities, which, together with cluster participants, develop and implement cluster strategies and programs. In addition, a high level of economic freedom is guaranteed for cluster participants (T. Onipko, 2017).

In the classical sense, cluster policy stimulates the formation of bottom-up linkages, i.e., when prerequisites are created to find profitable partnerships by the community members themselves in order to increase their own profitability and competitiveness. This practice is predominantly characteristic of European countries. However, the Asian experience demonstrates a different pattern where a top-down system of networking prevails. This experience is based on the application of territorial advantages through the creation of free economic zones that offer benefits to investors, including a separate customs zone (duty-free benefits) and streamlined procedures (A.M. Kowalski, 2020).

The study of the relationship between the types of national cluster policy and clusters allows us to state that cluster policy and cluster management differ in the world practice. The main differences are related to the peculiarities of built innovation systems, which are taken into account in the formation of the system of relationships between different market actors and peculiarities of national cluster policy. The preferred practice of cluster policy implementation is based on a different set of incentives, which should be consistent with cluster management (H. Okamuro, J. Nishimura, 2015). That is, the specifics of institutional development and internal features of each national economy indicate that it is impossible to copy absolutely the elements of successful cluster policy of a certain country and use them effectively in other realities.

A detailed analysis of cluster policies is presented in a report by the European Observatory for Clusters and Industrial Change (European Commission, 2019) indicating support for national clustering programmes in 20 countries and 55 regional programmes in 27 regions. Although each specific cluster policy design and implementation varies from territory to territory depending on the context and overall rationale in relation to national/regional policies, some similarities can be found in all (L. Shyiko, 2021).

– Clusters are supported by separately identified or by integration into other economic support programmes (strengthening cooperation structures of various stakeholders, increasing the competitiveness of small and medium-sized enterprises, internationalization activities (at country level) or industrial modernization (at regional level) (Europe), promotion of growth oriented firms (Canada), promotion of R&D and high-tech industries (Canada, China), support for the development of clusters (Canada, China).

– More often than not, cluster policies are related to innovation, research, development and technology support;

– Cluster support is also often focused on the promotion of small and medium enterprises (SMEs), the business segment that represents the majority in many industrial ecosystems;

– Most cluster policies pursue a mixed strategy, supporting both emerging and mature industries aimed at industrial transformation, using clusters as facilitators of change.

Analyzing the legislative and executive practices of the EU, one of the leading documents regulating the cluster policy and having a plan for cluster development in the EU is the Communication from the Council of Europe, European Parliament, European Economic and Social Committee, and Committees of the Regions "Towards World-Class Clusters in the European Union: Implementing a Broad Innovation Strategy" {SEC (2008) 2637} as well as the European Cluster Memorandum. The aim of adopting these documents is to ensure the sustainable and innovative development, creation of new workers and ensuring competitiveness (The concept of clusters and cluster policies and their role for competitiveness and innovation, 2008).

According to the definition in {SEC (2008) 2637} "a cluster is a group of enterprises, related economic entities and institutions which are located in a neighborhood and have reached sufficient scale to develop specialized research, services, resources, supplies and skills" (The concept of clusters and cluster policies and their role for competitiveness and innovation, 2008). This Commission Communication foresees a decentralized cluster policy to be developed and implemented at local, regional and national levels.

This Communication from the Committee is a prerequisite for an understanding of market policy and ensuring market competition, as clusters are both a market and an occasional phenomenon. Nevertheless, it is worth noting that in the early 1990s the long-standing state policy was the basis for the development of the economic and scientific potential of certain regions. The European Cluster Alliance was created to unify standards as well as to strengthen economic cooperation between regions. The members of this alliance are ministries, state administrations which are responsible for the development and implementation of cluster policy.

Through an effective and long-standing economic policy, the EU has enough clusters, but due to market fragmentation and the presence of sectors which need to be developed and updated (e.g. seaports), not always EU clusters can be competitive in the international environment, which is why their development is needed. To ensure true competition and compliance with EU antitrust laws, clusters do not have to be supported individually, i.e. from the side of the state or municipal authorities. In particular, there is support as defined in the Communication of the European Commission "Working together for growth and jobs. A New Start for the Lisbon Strategy" {SEC(2005) 192}, {SEC(2005) 193} (Working together for growth and jobs. A new start for the Lisbon Strategy, 2005).

One of the main tasks of the European Commission is to complement regional and national cluster policies by removing trade barriers: for example, facilitating academic mobility and accessing local markets. This aspect also requires ensuring that financial instruments are adapted so that the participating countries optimize them in line with national standards. The European Territorial Cooperation Group actively promotes instruments to ensure a regional integration policy, using the advantages offered by the EU single market: e.g. the use of vouchers or grants.

European Cluster Memorandum is addressed to all participants of cluster policy and encourages them to active cooperation in order to ensure the response to economic competition challenges (The European Cluster Memorandum). The signatories to the European Cluster

Memorandum are obliged to: consider dynamic clusters as a driving factor for innovation and development, helping regions to create specialized opportunities for regions. The memorandum calls for the elimination of barriers to trade, the creation of conditions for competitive development and stronger cooperation between enterprises, state institutions and institutes. The signatories to the memorandum will have to support the creation and development of dynamic innovation clusters, implement strategies and more efficient assessment methods, designate specific programmes for competitive clusters, and provide for transnational cooperation. This memorandum was signed by prominent figures in science, business, politics in the EU, as well as representatives of chambers of commerce and industry. Accordingly, the said practice demonstrates the priority of cluster policy, which stimulates strategic innovative changes in the economic space of Europe.

Consequently, within the framework of the cluster policy Ukraine is able to create conditions for effective formation and use of human and scientific and technological potential of the regions and the country as a whole, to identify priorities and support their development through a system of financial, credit and tax instruments. Effective implementation of cluster policy in Ukraine assumes a clear definition of the main priorities and patterns of interaction between cluster participants, adoption and implementation of the cluster development programme, fully supported at all levels. Alignment of interests of scientific and educational institutions with a network of specialized suppliers, main producers and consumers connected by a technological chain for faster and more effective diffusion of innovations in a local ecosystem, supported by authorities and the public, is able to ensure regional development.

CONCLUSION

The study found that cluster policy is a priority area of state innovation policy in foreign countries around the world. Accordingly, it should certainly become an important component of Ukraine's economic growth. The experience of introduction and implementation of the cluster movement in Ukraine is not widespread today, but attempts to do so have been made in different time horizons in recent years. The main problem of the lack of systematic development in this direction is related to the limited attention to this direction at all levels of government, which makes once again turn to good practice and justification of significant benefits. The scale of the global cluster movement implemented in cluster policies allows solving significant problems at regional, sectoral, national and global levels.

In the European Union cluster policy plays an important role and is shaped by many directives, regulations and communications. Its main goal remains to ensure economic competition, development of innovative clusters, elimination of trade barriers, development of cross-border cooperation. Research on the cluster policy of the European Union and individual measures of the Ukrainian authorities can be seen that there is a gradual unification of the main provisions on cluster development and innovation. The signing of joint documents and memoranda, the provision of a development-oriented state strategy and the development of cooperation, are priority tasks in the direction of the cluster movement. Accordingly, modern innovation policy in Ukraine should be based on the cluster effect, which will ensure networking of all participants of innovation activities; the target area will be the growth of the quality of life based on the strategy of innovation commercialization. The main directions of formation and development of innovation cluster policy in Ukraine, the basic prerequisites for its effectiveness should be the principles of social responsibility, public-private partnership and maximum inclusion. Formation of a system of incentives for territorial interaction of scientific and educational institutions with a network of specialized suppliers, main producers and consumers connected by a technological chain for a faster and more effective diffusion of innovations in the local ecosystem can ensure the development of the region. A conscious understanding of the feasibility of clusters by all participants in economic relations at the regional level will allow to fully use the full potential and ensure the effective implementation of competitive advantages.

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РЕГІОНАЛЬНЕ ВІДНОВЛЕННЯ ТА РОЗВИТОК ЕКОНОМІКИ УКРАЇНИ НА ОСНОВІ КЛАСТЕРНОЇ ПОЛІТИКИ

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Анотація. Стаття присвячена дослідженню процесу розвитку територій через систему кластерів. Проаналізовано державну програму, яка визначає пріоритетні галузі розвитку та формування кластерів, визначено регіони, які потребують розвитку кластерів з метою досягнення економічного зростання. Досліджено вплив кластерів на економічне зростання Європейського Союзу, їх роль у створенні робочих місць та перспективи їх впровадження в українську економіку. Особлива увага приділяється політиці регіонального економічного зростання при забезпеченні умов для конкуренції та антимонопольного законодавства. Стаття демонструє успішність співпраці між ЄС та кластерами для забезпечення їх міжнародної конкурентоспроможності та усунення торгових бар'єрів на європейському ринку. Крім того, у дослідженні звертається увага на необхідність створення умов для економічного розвитку території, запровадження механізмів підтримки транскордонних індустріальних та технологічних парків, економічних та промислових зон, створення транскордонних кластерів. Наведено статистичні дані, згідно з якими кластери в ЄС забезпечують 54 мільйони робочих місць, а заробітна плата вища на 3%. У дослідженні було

виявлено, що інноваційний характер кластерних альянсів сприятиме розвитку в Україні конкурентоспроможних галузей: вертольото- та авіабудування та виробництва новітніх титанових сплавів. Розвиток кластерів у стратегічних галузях допоможе українській економіці замінити імпортні компоненти та створити нові робочі місця. Отже, перспектива впровадження кластеру та створення цілеспрямованої адміністративної політики сприятливо вплине на економічний розвиток регіонів та може відродити економічно депресивні регіони. Проаналізувавши приклад ЄС щодо кластерного управління, розробки та підтримки були визначені основні адміністративні документи, що регулюють цей процес. Їхнє законодавче вивчення та впровадження в український адміністративний менеджмент сприятиме створенню нових інноваційних кластерів, реалізації ефективних стратегій управління та забезпеченню транснаціонального співробітництва.

Ключові слова: кластер, кластерна політика, регіональний розвиток, державна підтримка, адміністративні методи.

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