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Marharyta Ratushniak

Business Response to Market Tendencies: Consumerism, Ai, E-Commerce, and Their Influence on Modern Societies

Businesses have a high reliance on consumer behavior due to the impact of tendencies and market forces. They continually adapt and change their performance to increase performance and consumer satisfaction in changing market conditions. Those forces include consumerism which requires substantial business preparation to satisfy customer demands. The development of AI leaves a visible trace in business-consumer communication, including moments of truth that can affect future communities. Compound components affect business marketing, advertising, and e-commerce presence. For this reason, this paper researches the influence of consumerism and the rise of AI on business accommodation and its role in modern societies.

Keywords: consumerism, AI, e-commerce, consumer behavior, interaction, digitalization.

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Nowadays, businesses function in a closely tied relationship with consumers due to the peculiarities of market conditions. The strategy of producing stocks and pushing them on consumers is no longer accurate. Instead, businesses try to include consumers in decision-making processes and product creation. Multiple companies actively engage consumers in communication to assess their needs and initial responses to the potential products. Businesses react to the slight-

est change in consumer preferences, values or trends by transforming the business offerings.

Aim of the paper

One of the significant factors affecting business propositioning includes consumerism tendency. At first glance, increased customer desire to buy new products and follow new inventions brings external benefits to the busi-

ness. Despite the debates between consumerism's usefulness and its disadvantages, most people accept the presence of consumer economies with "cross-advertising products that are disconnected from any reasonable assessment of needs all this in exchange for economic growth and high employment" [1, p. 2]. Even though consumer purchases do not necessarily fall under the need-driven category, each of them leaves a pattern in the business segment, including its planning.

Continually, consumerism as increased demand is a vital aspect for business preparation in terms of advertising, position, product, and service offerings. This paper aims to analyze the collective influence of consumerism and AI on future business adaptation and the potential reshaping of societal forces and responses.

Problem statement

On the surface, it may seem that businesses adapt to the market conditions and provide consumers with brand products and services at an opportune moment and price. In reality, companies have to do a colossal hidden amount of work in order to attract consumer attention, increase brand awareness, and stimulate feedback at the new product release (Fig. 1). Since the trends expand, consumerism has an undeniable influence on the development of future economics and organizational decision-making.

Discussion

Instead of waiting for the customers to show interest in the product or service, companies actively interact with them, engaging in conversations and collecting feedback. Zero Moment of Truth (ZMOT) enables companies to present an opportunity for the brands to get in front of potential clients [2, p. 466]. The stage allows consumers to look for information about the product and solidify their decision to purchase the product. Not only Google provides the data, but companies themselves also have informational websites and social pages, where consumers can regard the frequently asked questions and read experiences of other users.

However, the abundance of analyzed data is present from the business perspective as well as from the consumer. Organizations have to utilize the information to provide relevant news and product releases. They surround consumers with multiple product mentions, marketing appeals, and

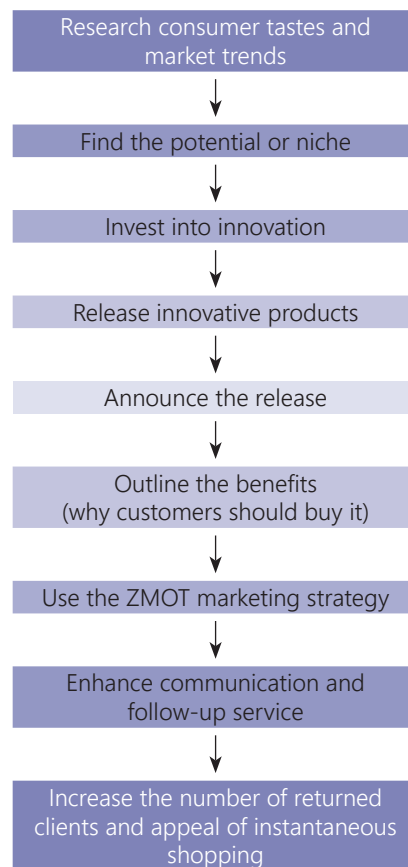


Fig 1. Businesses performance in the consumerism perspective (behind the curtains)

available data. They encourage numerous techniques involving celebrity endorsements, influencers, and word-of-mouth. Due to practice, successful companies hire celebrities to behave as a brand's representative "by encompassing personality, attitude, popularity, stature in a given environment in a field to the brand's entitlements" [3]. Various advertising tools prioritize the appeal to emotion over rational thoughts (Fig. 2). Namely, one of the reasons companies use celebrities in endorsements is due to the spokesperson's physical attractiveness and recognition that positively impact consumers' attitude toward the brand and purchasing intent.

It is noteworthy to mention the increased usage of internet advertising and celebrity endorsement over the

traditional marketing presence. With technological development, individual and business dependence on internet marketing grows. People value symbolic presence, and mature brands constantly remind consumers of their values [4]. While the leadership of marketing advertising is indisputable in the current modern era with high technological usage, the changes may occur. Based on the displayed in table 1 analysis of advertising messages with potential celebrity endorsements, it is possible to conclude that businesses rely on emotions in consumer communication ranging from the stimulus to subsequent moments of truth. The correctly communicated moment of truth increases the probability of consumers becoming brand ambassadors [5]. Companies influence consumer purchasing behavior through continuous interactions and communications. Modern society depends on connectivity with brands. In turn, companies depend on the internet marketing presence, and future consumerism, as well as AI, can intervene with the performance.

Since markets continually develop, technological advancement influences the future of economies and business' responses. One of the concerns for future business and economic develop-

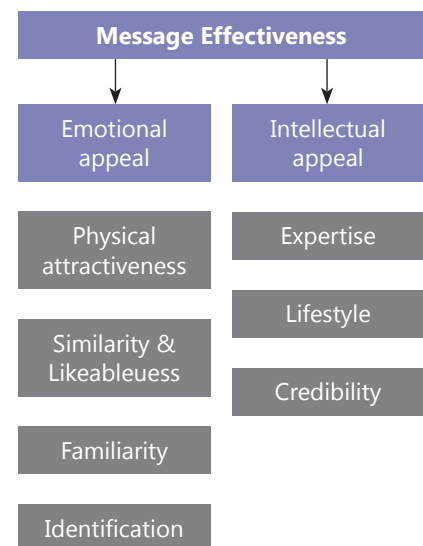


Fig. 2. Message effectiveness

ment lies in AI development. Currently, the use of AI includes famous examples of Apple's Siri [6], followed by Samsung's Bixby, Alexa by Amazon [7], and robot Sophia. Since the mentioned robots have an established set of rules, their increased consumer usage may redefine consumer purchasing behavior. According to Dawar, "technologies that revolutionize the way consumers interact with a marketplace also tend to reconfigure its dynamics" [8]. In other words, since AI and technological assistants act as intermediaries between businesses and consumers, they may affect the final outcome of consumer purchase through the impact on behavior and market forces.

Informational technology assists businesses in sustaining connectivity while creating internal benefits for organizational usage. For instance, CRM allows companies to qualitatively store the user data, categorize it, and transfer relevant information to consumers. Brands know the history of customer purchases, their habits, preferences, and individual characteristics. Due to the acquired data, companies can analyze consumer profiles and develop products with potential interests for the target audience. Smart technologies play a vital role in "practical notions of access to the store, consumer engagement and experience with the new forms of interaction that are at stake with the more social side of the shopping activity" [9]. Businesses rely on high interaction levels with consumers.

Consumerism may have a direct impact on e-commerce and its development due to technological innovation and leadership of internet sales. AI as a house assistant can order routine

and customary purchases. While this activity increases consumer convenience and decreases the time-spent, it also changes the decision-making algorithms. As previously outlined, current advertising has a high reliance on emotional appeals, including feelings, catching displays, songs, and slogans. It is supported by literary research in which "customer engagement is not only dependent on the customer interaction but also to what those brand interactions make the customer focus their attention on" [10, p. 212]. It is one of the essential notions for the researched business-consumer interactions, potential influences, and transformations.

People do not always research the product or brand to the scope of its foundation or do not browse through publicity, especially if a purchase is of low scale.

In contrast, AI has unlimited time and fast speed to analyze the data, check the credibility of public claims and financial statements. If technological assistants choose which products and companies to offer to consumers, it can significantly impact the number or qualities of organizations staying in business. Considering that AI continues to occupy the leading position in future economic development, companies may want to reshape their appeals. Similarly to fighting for first place in Google search, they can prioritize the AI filters to reach consumers.

For instance, modern society can increase its focus on sustainability. Unlike individuals, AI's behavior does not vary from its algorithms. If the user wants to increase social behavior, AI assistants may buy only brands with high CSR, responsible content, and

publicity. It involves the appearance of a new moment of truth or prioritization of the final, ultimate moment of truth (Fig. 3). It is imperative since it brings new consumers to the ZMOT and starts a new cycle [11]. Subsequently, it may change the order of business forces and organizational performance. Since the positioning of AI and Consumerism on the marketing scale of moments of truth is strategic, it undeniably affects business-consumer interaction. Besides changing the algorithms, it affects information allocation, decision-making, experience sharing, and after-service. Likewise, the intervention of AI and its increased usage in the business segment can lead to the increased digitization and remote work tendency.

Conclusion

Following this, consumerism and e-commerce can undergo changes, transform the market forces and require an adapted business response. Organizations rely on increased consumer demand in their plans and performance. Provided that an intermediary in the form of AI stands between the buyer and the marketplace, it creates an additional barrier in communication. This study hypothesizes that advertising, its shape, and quantity will change business relationships in the future. A changed amount of communication in the future society transforms the bargaining powers and position of parties.

Disclaimer

Despite the potential influencing predictions, there is no guarantee that digital and cognitive technologies, including AI, will determine a sort of high-tech revolution resembling or deviating from the previous ones [12]. Since businesses continuously adapt, their transformation in response to technological tendencies may be another step in the development and accommodation to market forces.

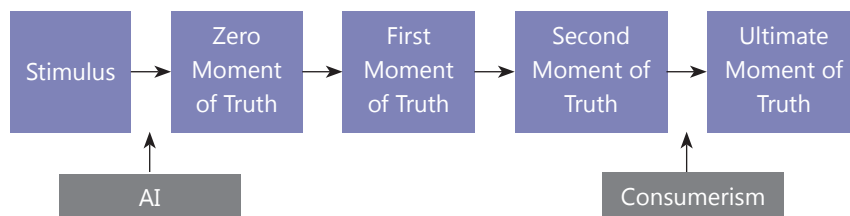


Fig. 3. Moments of Truth Paradigm and Influence of Tendencies

References

1. Ahmad, H. & Malik, Z. Khan, 2021. Historical background of consumerism. International Journal of Academic and Applied Research (IJAAAR), 3(02).
2. Ertemel, Adnan Veysel & Köksal, Gizem. (2017). Effects Of Zero Moment Of Truth on consumer behavior for FMCG. 7th International Conference of Strategic Research on Social Science and Education (ICoSSeSSE). At: Belek, Antalya, Turkey. (463-475).
3. Danjuma, N & Mbasua, Yakubu & Zakari, A. (2021). Celebrity endorsement & advertising effectiveness in telecommunication industry. Nigeria Journal of Business Administration. 18. 193-205.
4. Schimmelpfennig, C., 2018. Who is the celebrity endorser? A content analysis of celebrity endorsements. Journal of International Consumer Marketing, 30(4), pp.220–234.
5. Anon, 2020. The Moment of Truth — build desirable relationships with users and customers. The Interaction Design Foundation. Available at: <https://www.interaction-design.org/literature/article/the-moment-of-truth-build-desirable-relationships-with-users-and-customers>.
6. Guzman, A. L., 2017. Making AI safe for humans: A conversation with Siri. In Socialbots and Their Friends: Digital Media and the Automation of Sociality. Routledge, pp. 69–85. Available at: https://www.researchgate.net/publication/301880679_Making_AI_Safe_for_Humans_A_Conversation_With_Siri
7. Brill, T. M., Munoz, L. & Miller, R. J., 2019. Siri, Alexa, and other digital assistants: A study of customer satisfaction with artificial intelligence applications. Journal of Marketing Management, 35(15-16), pp.1401–1436.
8. Dawar, N., 2018. Marketing in the age of Alexa. Harvard Business Review. Available at: <https://hbr.org/2018/05/marketing-in-the-age-of-alexa>.
9. Pantano, E., 2019. The role of smart technologies in decision making: Developing, supporting and training smart consumers. Journal of Marketing Management (35), 1367–1369.. doi:10.1080/0267257x.2019.1688927.
10. Harrigan, P., Coussement, K., Lancelot Miltgen, C., Ranaweera, C., 2020. The future of technology in marketing; utopia or dystopia? Journal of Marketing Management 36, 211–215. doi:10.1080/0267257x.2020.1744382.
11. Anderson, C., 2016. The Zero Moment of Truth: Winning the micro-moments. Medium. Available at: <https://medium.com/@Chadvertising/googles-zero-moment-of-truth-the-shift-to-micro-moments-ab99bd0c0394>.
12. Mele, C., Polese, F., Gummesson, E., 2019. Once upon a time... Technology: A fairy tale or a marketing story? Journal of Marketing Management 35, 965–973.. doi:10.1080/0267257x.2019.1648722.

Ратушняк М. В.

Адаптація бізнесів до ринкових тенденцій: консюмеризм, штучний інтелект, е-комерція та їхній вплив на сучасні суспільства

Підприємства сильно покладаються на поведінку споживачів через вплив тенденцій та ринкових сил. Вони постійно адаптуються та змінюють фактор продуктивності, щоб підвищити ефективність та задоволення споживачів у мінливих умовах ринку. До цих сил належить консюмеризм або надмірне споживання, яке вимагає значної бізнес-підготовки, щоб задовольнити запити споживачів. Розвиток штучного інтелекту (ШІ) залишає помітний слід у спілкуванні між бізнесом та споживачами, включаючи так звані моменти істини, які можуть вплинути на майбутнє спільноти. Вищезгадані компоненти впливають на маркетинг, рекламу та присутність електронної комерції бізнесів. З цієї причини ця стаття досліджує вплив консюмеризму та зростання ШІ на економічний розвиток підприємств, а також їхню роль у сучасних суспільствах.

Ключові слова: консюмеризм, штучний інтелект, електронна комерція, поведінка споживачів, взаємодія, цифровізація.

УДК 330.3

JEL Classification R5, N75, Q01

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Electric Cars Market Development in Jordan and Ukraine (Comparative Analysis of Ukrainian and Jordanian Experiences)

This work is devoted to a comparative analysis of the electric cars market development in the Hashemite Kingdom of Jordan and Ukraine. The work gives the concept of advantages and disadvantages of electric cars. The main goal of the work is to study the socio-economic aspects of using electric vehicles in Jordan and to determine what experience Ukraine can gain from Jordan to optimize the electric cars market development.

Keywords: electric car market, internal combustion engine vehicles, electric vehicles, hybrid vehicles, market development, Bottom-up-approach.

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1. Introduction

World countries are striving in search for clean power sources to run the millions of different vehicles on the road on daily basis, as they are the main contributors to toxic emissions releases from internal combustion engines to the atmosphere. Wilberforce et al. [1] argued that these toxic emissions contribute to climate change and air pollution and impact negatively on people's health. Hardman et al. [2] stated that the automotive sector is moving towards a transition from primarily petrol and diesel fueled IC electric vehicles to more sustainable

HVs and BElectric vehicles. BElectric vehicles are considered to be the most beneficial of these due to them having zero emissions, high efficiencies and having the potential to be fueled entirely off renewable electricity. The transport sector is one of the main contributors to anthropogenic climate change worldwide, accounting for 23% of global energy-related greenhouse gas (GHG) emissions, which expected to double in 2050. This number is similar in the European Union (EU). Lévy et al. [3] stated that transport has the second biggest share, after energy industries, accounting for almost a quarter of total emissions. The model decomposition of transport GHG

emissions shows that road transport had the primary role in greenhouse gases emissions with a share of seventy three percent in 2014.

Ashby et al. [4] argued that at the end of 2014 there were 665.000 electric vehicles deployed globally, with the top three markets for electric vehicles being the US (39%), Japan (16%) and China (12%). It is estimated that the global production of electric vehicles – either hybrids, pug-in hybrids, or fully electric vehicles will exceed sixteen million per year in 2021 and will account for twenty percent of all vehicles manufactured. Electric vehicles, particularly, are seen as the new trend in road transportation.

Yang, et al. [5] and World's top 10 best-selling electric vehicles [6] mentioned that the popularity of the Tesla and other electric vehicles such as the Nissan Leaf, Toyota Prius and the recent introduction of the BMW i3 indicates that the automobile industry is investing heavily in transport electrification and believes that there is a market and future in electric vehicles. Figure 1 shows number of several BEV units sold in USA from January to August, 2017.

The market for electric cars in the world is gaining popularity. Given that in the early 2000s the electric car business was not considered promising, today we can say with confidence that the future lies in electrified cars. In 2016, the number of electric cars purchased worldwide amounted to 1 million, sales increased compared to 2015 by 53%. In 2016, investments in the development of electric vehicles amounted to more than 2 billion dollars, which is twice as much as in 2015. China, Sweden, France, the United States, Germany, Norway, the Netherlands are interested in environmentally friendly transport and stimulate their development in their countries. Large car manufacturers

and technology companies, relying on government support, plan to expand and improve their products. Thus, the prospects for electric cars in the near future become wider and more realistic.

Advantages and disadvantages of Emobiles

The popularity of electric cars in the world is due to the fact that they have a number of advantages over cars with internal combustion engines. Among the advantages of electric cars are the following:

- cheap refueling (the most economical electric cars consume an average of 10 kW per 100 km) and the ability to charge an electric car from a regular outlet;
- simple design of the electric car allows to simplify and make the most convenient its operation and use, to facilitate repair;
- ease of operation and cheap operation (no gearbox, internal combustion engine and various types of pumps);
- complete absence of harmful exhausts to human health. The electric car is completely safe for ecology;
- the electric car does not create strong noise pollution as its structure

contains much less technical details capable to create noise, unlike traditional cars;

- energy efficiency (efficiency of the fuel engine — 16%, and efficiency of the electric motor — almost 85%).

Despite the rather significant advantages, electric cars have disadvantages:

- high price when buying a car;
- limited mileage on one recharge;
- poorly developed infrastructure limits the range of trips;
- charging the car takes much more time; high price for battery replacement (approximately half the cost of the car); lack of consumer choice (the market of electric cars today is not as diverse as the market of cars with internal combustion engines). However, today electric transport in the world is developing rapidly due to government incentives, in particular, tax cuts and benefits, as well as bonuses for buyers of electric vehicles.

China (Government Support)

Electric cars are most actively distributed and produced in China. In 2009,

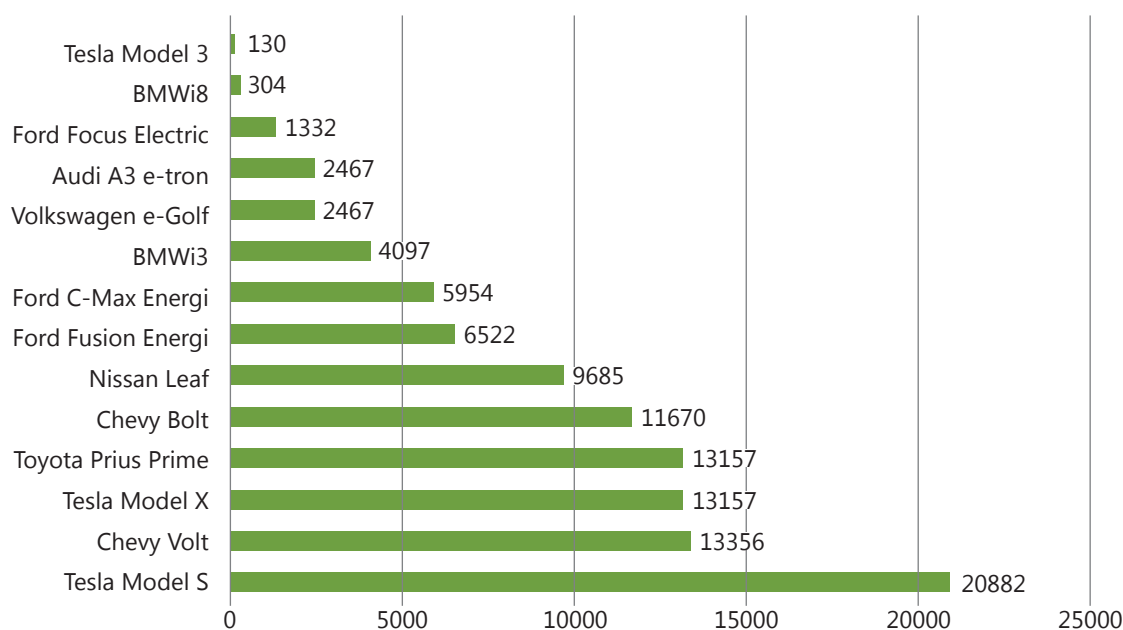


Fig. 1. USA electric vehicle sales (January to August 2017)

the country's authorities introduced a number of pilot programs in selected cities, based on the introduction of local subsidies for the development of electric vehicles. These projects aim is to improve the environmental situation in the country related to air pollution and reduce dependence on petroleum products. According to Chinese law, the purchase of electric vehicles provides national and local incentives. Thus, in 2011 China introduced subsidies for the first 50 thousand electric vehicles in the amount of 60 thousand yuan (9.281 US dollars). However, in 2013, these subsidies were changed to 67.710 yuan (\$9.800) for electric vehicles and 563.790.71 yuan (\$81.600) for electric buses. In 2014, the Chinese government decided that by 2016, 30% of all vehicles purchased by the state should be electric cars.

The buyer of an electric car in China also receives tax incentives: exemption from consumer tax. From September 1, 2014 to December 31, 2017 in the exemption from purchase tax; registration fee is reduced by 50%; exemption from import duties.

From 2017 to 2020, subsidies for electric cars should be reduced by 20% annually, due to violations in the provision of these monetary incentives, which, in turn, affects the number of purchased electric cars, because the level of sales directly depends on the level of financial subsidies.

Recently, Ukrainians have bought about 3.000 electric cars. Currently, 4% of the Ukrainian new car market belongs to electric cars. The rapid development of the electric car market in Ukraine has been confirmed by research of the largest independent publication on electric vehicles, InsideEVs.com. Ukraine ranked fifth in the international ranking of the pace of development of the electric car market, behind Iceland, Sweden, Norway, and China.

The publication estimates that this figure has increased fivefold over the past year, and the number of electric cars sold per year has exceeded 2.500. However, most electric cars were in use and came to Ukraine after more than

two years of use in European countries. Ukraine is significantly ahead of other Eastern European countries in terms of the pace of infrastructure development for electric cars.

Due to the difficult economic situation in the country and external armed aggression, the issue of developing energy-efficient, environmentally friendly modes of transport and infrastructure for it is extremely important.

One of the areas that will significantly reduce the consumption of petroleum products is the further promotion of vehicles equipped with electric motors among the population, which provides for significant changes in the country's legislation.

Thus, on December 16, 2015, the President of Ukraine signed amendments to the Law "On the Customs Tariff of Ukraine" regarding the abolition of import duties on electric vehicles.

The law provides for the abolition of import duties on vehicles equipped with electric motors, which makes it possible to reduce costs when buying a car.

Currently, the committees of the Verkhovna Rada of Ukraine are considering the draft Law № 5494 "On Amendments to the Tax Code of Ukraine on large-scale development of the electric car market in Ukraine" dated 06.12.2016. I. and others.

This law is designed to create at the legislative level favorable conditions to encourage the purchase and use of environmentally friendly transport in Ukraine. The purpose of the bill is to reduce the tax burden on the supply of electric vehicles, exemption from value added tax services for the transportation of passengers by taxi, equipped with electric motors, and the provision of passenger transport for rent (leasing, rental).

The draft law provides for temporary exemption from value added tax for operations on importation into the customs territory of Ukraine of vehicles equipped with electric motors and components for them; exemption from excise tax on vehicles equipped with electric motors and components for them; temporary exemption from

value added tax until 2021 for services for the carriage of passengers by taxi, equipped with electric motors, and the provision of passenger transport for rent (leasing, rental, transportation to order), if such wheeled vehicles are equipped exclusively with an electric motor. If the bill is approved, the cost of electric cars will be significantly reduced, which will ensure a rapid increase in demand among the population.

At the beginning of 2015, the draft Law № 1912 "On Amendments to Section XX "Transitional Provisions" of the Tax Code of Ukraine on Peculiarities of Taxation of Imports and Supplies of Vehicles Equipped with Electric Motors" was submitted.

The main task of the bill is to reduce the tax burden on imports of vehicles equipped with electric motors, which will reduce their cost by up to 20% and create the appropriate infrastructure for their use. The law provides for temporary, until January 1, 2020, exemption from value added tax and excise tax on transactions of import into the customs territory of Ukraine and supply in the customs territory of Ukraine of vehicles equipped with electric motors. However, the bill was rejected and withdrawn.

On December 20, 2016, the parliament registered an alternative bill № 5494-1 "On Amendments to the Tax Code of Ukraine to Stimulate the Development of Electric Vehicles" submitted by MP O. Ryabchyn. The draft law proposes legislative consolidation of temporary, until January 1, 2021, exemption from VAT and excise tax during the import of cars equipped exclusively with electric motors into the customs territory of Ukraine; temporary, until January 1, 2021, exemption from value added tax of operations for the supply of services for the carriage of passengers by taxi-electric vehicles; assigning to the executive bodies of councils, which are regional centers, the obligation to arrange parking spaces for paid charging of electric vehicles, in the amount of not less than 5% of the total number of parking spaces; free until January 1, 2025

parking spaces for electric vehicles on parking lots for state and municipal vehicles; allow electric cars and hybrids to travel in public transport.

Minister of Infrastructure of Ukraine V. Omelyan during a round table on the prospects for the development of electric transport in Ukraine, which took place on December 22, 2016, said that Ukraine should move in the European and global direction and continue to pay attention and support the development of electric transport. On April 13, 2017, V. Omelyan presented the Concept of Electric Transport Market Development in Ukraine, which was reflected in the draft law "On Amendments to Certain Laws of Ukraine on Stimulating the Development of the Electric Transport Sector in Ukraine."

The purpose of the bill is to give Ukrainians the opportunity to buy environmentally friendly vehicles, new or slightly used, instead of driving old cars that are exported from Europe due to non-compliance with environmental regulations.

V. Omelyan proposes to implement the project within three components, synchronized in time: "In the first component, which will last for five years, we are developing the market of electric transport. Under the second decimal component, we plan to attract strategic information resources in the production of finished products — electric vehicles and charging stations. The third, final component, which will last 15 years, is aimed at localizing the production of components for the electric conveyor, special batteries, as well as components for charging stations.

The project plans to exempt from January 1, 2023 from VAT the import and further supply of electric vehicles, as well as charging stations and exemption of electric vehicles from excise duty. After the return of VAT on electric vehicles, domestic and localized by strategic investors production of electric vehicles will remain competitive in terms of price due to measures. From 2028, it is planned to abolish import VAT on components for electric vehicles and charging stations. At

this stage, it is possible to start mass production of electric cars in Ukraine. From January 1, 2033, it is planned to introduce a zero VAT rate on electric vehicles manufactured in Ukraine, components for it, charging stations and components for them.

Today there is a draft law to stimulate the development of the electric car market, however, it is under discussion. The head of the Ministry of Infrastructure noted that electric cars for the population could become cheaper by more than 40% if the bill "On Stimulating the Development of the Electric Transport Market in Ukraine" is adopted in Ukraine [7]. This bill envisages measures to stimulate demand for electric transport, create favorable conditions for attracting strategic investors and develop national production, improve the business climate for small and medium-sized businesses in the field of passenger transport, develop infrastructure and increase the comfort of electric transport. The bill plans to amend the Tax Code, among which the most striking — a tax rebate of 20% on the purchase of a car: buyers are actually offered to reimburse 20% of the cost; zero excise duty on the purchase of a car, which allows the buyer to save the amount equivalent to 109 euros; abolition of VAT on imports of electric vehicles for five years, which will reduce the cost of electric cars by another 16.8%; exemption from paying the fee to the Pension Fund at the first registration of an electric car, which reduces its cost by another 4.8%; zero excise duty on electric motorcycles and electric bicycles (for vehicles with a motor up to 250 W is a reduction in price by 22 euros); permission of electric cars to move in public transport lanes.

If you add up all the discounts: 20% + 16.8% + 4.8% = 41.6% + 109 euros, the cost of purchasing and registering an electric car can be significantly reduced. This example of calculations was presented by deputies.

Case 1 — famous previously used electric car.

Approximate price: 340.000 UAH without VAT

	Now	Offered
+VAT 20 %	68.000 UAH	0 UAH
+ PF 5 %	17.000 UAH	0 UAH
+ excise tax	≈3.000 UAH	0 UAH
Tax discount	None	-61.200 UAH
Price for customer	428.000 UAH	278.8 UAH

Case 2 — new electric car at an average price.

Approximate price: 800.000 UAH without VAT

	Now	Offered
+VAT 20 %	160.000 UAH	0 UAH
+ PF 5 %	40.000 UAH	0 UAH
+ excise tax	≈3.000 UAH	0 UAH
Tax discount	None	-144.000 UAH
Price for customer	1, 003 million UAH	656.000 UAH

Business Support

0% VAT	Electric cars transportation
0% VAT	Rent, leasing, etc.
2 years	Minimum amortization period

General Director of Hyundai Motor Ukraine I. Gladkovsky, praised by the law about the installation of MPE on an electric car, it was a good step. This formula could be universal. Some countries provide direct grants, others tie subsidies to certain indicators, but

in general, if this law is passed, as well as in the case of increased competition and entry of official players, we can talk about reducing the cost by 30%.

State support for the development of the electric car market in Ukraine requires detailed calculations of its impact on the level of financial capacity of the state budget.

Ukraine has recently launched an interest-free loan program for the purchase of electric vehicles. State Bank Ukgasbank together with Oxygen Group and ULF Finance offer a minimum interest rate of 0.001% yearly for up to four years with a down payment of 40% of the car value. The Ministry of Energy and Coal Industry of Ukraine, the Ministry of Infrastructure of Ukraine and the State Automobile Agency of Ukraine have initiated a new project to establish a large working group to develop "Electric Strategy for Ukraine's Global Transition to Electric Vehicles".

During the presentation of the project, the Minister of Energy and Coal Industry I. Nasalik stressed the importance of one of the initiatives "Night Charging". He noted that the technology of production of batteries for electric vehicles is constantly being improved in the direction of increasing their capacity and reducing charging time, therefore, in 3–5 years, electric cars will be fitted with higher quality batteries with a much longer service life and other quality characteristics, which will facilitate the transition to electric cars. In addition, 57% of the country's energy balance is nuclear power, and such an initiative will make it possible to use nuclear power.

2. Hybrid and Electric Vehicles in Jordan

Tala El Issa [8] stated that Jordan is a unique example of Arab key players which invest in electric vehicles for a sustainable transportation system. In Jordan, the Tesla, Nissan electric Leaf, BMW i8 and i3 plug-in hybrids were available since 2015. Jordan has introduced fully Electric vehicles into pub-

lic transportation, such as "Tawsileh", which was launched in May 2016. According to Jordanian Department of Statistics (as cited in [9]), there are 5 Electric vehicles distributors, which are Nissan, Renault, Tesla, BMW, and BYD. Additionally, there were 3,586 Electric vehicles registered in May 2017 "Manaseer group" had established 8 fast charging stations in different sights in Amman, Jordan. Electric vehicles need forty-five minutes to an hour for a complete charge, knowing that Electric vehicles at homes require up to 8 hours for a full charge. The price of Hybrid and Electric vehicles is connected directly to fuel prices. As diesel and gasoline prices rise up, the hybrid vehicles operating cost increase too, at the same time the electric vehicles' operating cost does not increase at the same rate; therefore, it is becoming favored in Jordan to own an electric vehicle. Most individuals in Jordan like to own a family vehicle, unlike mini-vehicles. Some of considerable problems in Hybrid and Electric vehicles are the less kilometers that they can travel, plus less comfort that riders can have, because high speed and AC consume much energy stored in the battery.

3. Jordan Energy Trends

The European Union Support to Research, Technological Development and Innovation in Jordan project 2016 report stated that Jordan imports about 96% of its energy needs from outside. However, to overcome the threatened of increasing oil prices a strategy in energy mix in 2020 was adopted (Fig. 2).

Renewables had a share of 2% in 2013 and 7% in 2015. Renewables including solar and wind have an excellent energy share with 10%. This value is expected to increase next years, since green vehicles are involved rapidly in Jordanian renewables market. Future Fuel Strategies 2017 report stated that in 2014, 2015, 2016 and 2017, there were 9, 336, 885, and 2258 electric vehicles registered in Jordan, respectively. The accumulated number till 2017 is

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Social Interaction with Electric Vehicles

To find out the barriers concerning investment in hybrid and electric vehicles in Jordan, 19 vehicle showroom owners and 118 Potential vehicle buyers were surveyed by an interview for the same questions. The results are illustrated in Table 1.

4. Results and Discussion

The results of the surveyed sample of potential vehicle buyers were somehow astonishing. In the first question, for example, twenty eight percent did not wish to own an electric vehicle instead; they wished to own an internal combustion engine vehicle. They added comments such as "We prefer the characteristics of the internal combustion engine, we feel excited and thrilled when we hear the engine's sound". On the other hand, fifty-nine percent showed consent to own an electric vehicle. Their motives were obvious in their comment; "Electric vehicles are very important nowadays as fuel prices are very high in Jordan". Furthermore, thirteen percent were doubtful due to their lack of knowledge concerning electric vehicles. Sixty-nine percent of Jordanian individuals in response to the second question said: "Yes, the prices of electric vehicles are very high, but we wish to own them to save on fuel". Oth-

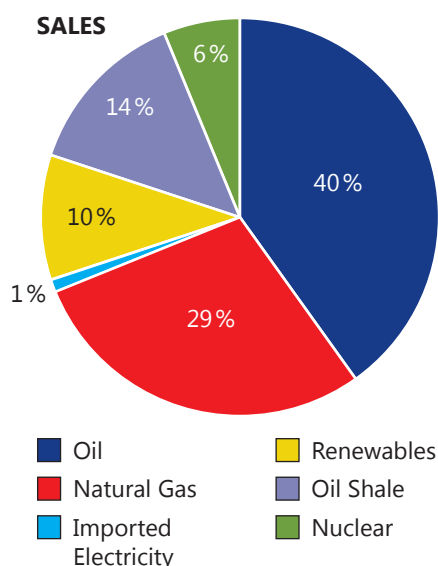


Fig. 2. Jordanian Energy Plan 2020

ers said "No" due to the fact that this issue is new to them. Moreover, sixty-four percent who have experienced electric vehicles said electric vehicles have higher performance than internal combustion engine vehicles; in response to the third question. The results in question four varied, because there was no tax on Electric vehicles until 2016. Anyone who owned an electric vehicle before 2016 gained a handsome amount of money when he decided to sell his vehicle after 2016 that is why thirteen percent approved the statement "Electric vehicles will have a high resale value". After this year, people said: "No", since electric vehicles that you buy now on will depreciate after a period.

Amazingly, fifty-one percent of the people surveyed said that Electric vehicles have some drawbacks. They

argued that the maintenance costs including vehicle's parts are still expensive. They said, in addition, that maintenance shops are not familiar with the new technology of this type of vehicles in Jordan. Despite the citizens' poor knowledge of Electric vehicles, most (ninety-one percent) believe that electric vehicles are sure friendly to the environment. Sixty five percent of the people surveyed were very optimistic that Electric vehicles will have an excellent future and believed that more than fifty percent of the Jordanians will own electric or hybrid vehicle after 10 years.

However, nineteen percent were not sure about that and sixteen percent electric vehicles will not be prevalent in the next ten years Around fifty percent were definite that their electrical bill will slightly increase if they

Table 1. Electric vehicles questionnaire

No.	Question	Potential Absolutely (%)	Vehicle May be (%)	Buyers Not at all (%)	Vehicle Absolutely (%)	Showroom May be (%)	Owners Not at all (%)
1	Do you prefer to own an electric vehicle?	59	13	28	N/A	N/A	N/A
2	Do you think that electric vehicles in Jordan are cheap relative to other countries?	14	17	69	18	15	67
3	"Electric vehicles have high performance". To what extent do you agree to this statement?	64	24	12	100	0	0
4	Do you think that electric vehicles will have a high resale value?	13	33	54	0	19	81
5	"Electric vehicles have some drawbacks". To what extent do you agree to this statement?	51	31	18	52	17	31
6	Do you think that electric vehicles are environmentally friendly?	91	9	0	N/A	N/A	N/A
7	Do you expect that next ten years electric vehicles will be more than 50 % of all total vehicles sold in Jordan?	65	19	16	62	28	10
8	Do you think that charging an electric vehicle in your home will raise your electrical bill value?	19	35	46	13	48	39

charge their electric vehicle from their house electric supply. Some thirty-five percent were not sure since electric vehicles are new for them. Regardless the slight experience in electric vehicles no one was against the idea that Jordanian government should support electric vehicles; ninety percent said yes in response to question ten. On the other hand, Question eleven asked for a personal opinion on the strategies that Jordanian government should adopt for Electric vehicles. Most of the answers emphasized the importance of adding more charging stations for electric vehicles in Amman and other provinces in Jordan, to train local mechanics on the maintenance of electric vehicles, to provide low interests loans for people wanting to own an electric vehicle and to increase public awareness about electric vehicles. It is worth to mention that Jordan Times daily journal reported that the Jordanian government is planning to build ten thousand electric vehicles charging stations in the near future, in their March 14, 2018 issue (as cited in [9]). The survey conducted with electric vehicle show room owners was just as important. Questions 2 and 6 were excluded, as they are not of interest to this group. Electric vehicles showroom owners stressed that Electric and hybrid vehicles have higher performance than internal combustion engine vehi-

cles. In response to the question five, fifty-two percent answered that electric and hybrid vehicles have some disadvantages. That is because of the high maintenance cost and limited battery lifetime. Electric vehicles showroom owners were also optimistic about the future of electric and hybrid vehicles as the sale figures of these vehicles between 2014 and 2018; show increase in demand (Table 2).

Question eleven asked for a personal opinion on the strategies that Jordanian government should adopt for Electric vehicles. Most of the answers emphasized the importance of adding more charging stations for electric vehicles in Amman and other provinces in Jordan, to train local mechanics on the maintenance of electric vehicles, to provide low interests loans for people wanting to own an electric vehicle and to increase public awareness about electric vehicles. It is worth to mention that Jordan Times daily journal reported that the Jordanian government is planning to build ten thousand electric vehicles charging stations in the near future, in their March 14, 2018 issue. The survey conducted with electric vehicle show room owners was just as important. Questions 2 and 6 were excluded, as they are not of interest to this group. Electric vehicles showroom owners stressed that Electric and hybrid ve-

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It is important to point out that hybrid vehicle sales in Jordan market started in 2015 and electric vehicles in 2018. The astonishing number of hybrid vehicle sales sharply dropping to one and zero in February and March 2018; respectively. This is because of the new legislation enforced in 2018 on hybrid vehicles that led to a huge reduction of the number of hybrid vehicles sold in Jordan. In response to the question eight which asked if they think that charging an electric vehicle at home will increase the electrical bill, showroom owners answered they are not sure or cannot give you a definite answer, as this depend on the electric vehicle user. Eighty six percent of showroom owners surveyed in response to question eight said that Jordanian government should encourage this type of technology rather to stop it. This can be done by increasing

Table 2. Sales figures in 2014–2018

Year/Item	Internal combustion engine vehicle	Hybrid vehicles	Electric vehicles
2014	62.047	—	—
2015	52.710	21.591	—
2016	44.011	26.906	—
2017	33.713	37.454	—
2018 Jan.	2.226	2676	299
2018 Feb.	1.499	1	311
2018 Mar.	1.853	0	464
2018 Apr.	1.910	13	548
2018 May.	2.041	186	723

public awareness of electric and hybrid vehicles. The response to question ten that states: "Do you think that recharging the battery of your electric vehicle will cover the distance you travel every day?" was vague and uncertain. Showroom owners said that it depends on the user journey's distance.

Vehicle showroom owners recommended in response to question eleven to reduce the maintenance cost by promoting the vehicles parts trade and enforce the vehicle's agency. They argued that one of the solutions that the Jordanian government should implement is to eliminate old internal combustion vehicles in service before the year 2000 and give incentives for people to replace them with electric or hybrid vehicles.

5. Conclusions

To conclude, most Jordanians are encouraged to buy an electric or hybrid vehicle as the fuel prices continue to fluctuate. However, some barriers stand against owning such vehicles. For instance, raising the taxes and customs, implementation of car recharging in car parks, and the need for a large vehicle that accommodate all family members. Depending on that, and after analyzing the answers in the questionnaire for showroom owners and potential customers, the answers show that Jordanian government should encourage the investment in electric vehicles as well provide loans with zero interest for members of the society to facilitate owning an electric vehicle.

As you can see, in Ukraine electric cars have prospects for development in the domestic market. The main problem in the near future, in our opinion, will be the speed of adoption of relevant legislative innovations that would stimulate this process. On the other hand, the experience of implementing state reforms has repeatedly shown that progressive ideas are held hostage to openly lobbying bills, and the desire of domestic lawmakers to offer something original and unlike

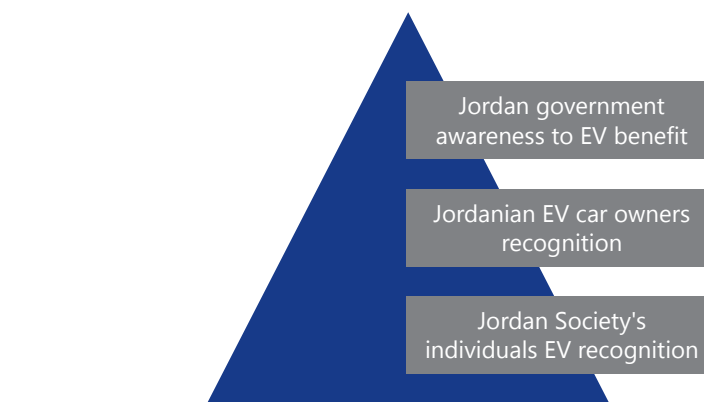


Fig. 3. Bottom-up-approach for helping electric vehicles idea succeed

others in the law, usually overrides the best intentions. Time will tell what will happen to electric cars, but the experience of the unresolved problem of so-called "average people" proves that the domestic car lobby at the level of legislative initiatives is based only on their own economic interests.

6. Recommendations

It is recommended, additional to proposed solutions, that Jordan government should adopt the Bottom-up-approach (Fig. 3) to increase the awareness of green vehicles for different residents who live outside Amman, since the first have a global promising future, besides making a social accepted price of these vehicles.

Bottom-up-approach stated that the citizens must recognize the importance of green vehicle that leads to encourage the upper society (policies and agreements) to distribute the product. Therefore, as Jordanian individuals are aware about these ideas, it becomes easy for political committees to encourage the use of electric vehicles all around the country.

References

1. Wilberforce, T, El-Hassan, Z, Khatib, F. N., Al Makky A, Baroutaji, A, G. Vehicleton J, G. Olabi A. Developments of electric vehicles and fuel cell hydrogen electric vehicles, *International Journal of Hydrogen Energy*, ScienceDirect, Elsevier, Available online 31 August 2017.
2. Hardman, S., Shiu, E., Steinberger-Wilckens, R, Comparing high-end and low-end early adopters of battery electric vehicles, *Volume 88, June 2016, Pages 4057-*
3. Lévay, P. Z., Drossinos, Y., Thiel, C., The effect of fiscal incentives on market penetration of electric vehicles: A pairwise comparison of total cost of ownership, *Volume 105, June 2017, Pages 524533-*
4. Ashby, M., F., Chapter 10 — Case Study: Electric Vehicles, 2016, Pages 151–166, *Materials and Sustainable Development*
5. Yang, Z, Li, K, Foley, A., Zhang, C., Optimal Scheduling Methods to Integrate Plug-in Electric Vehicles with the Power System: A Review, *IFAC Proceedings Volumes Volume 47, Issue 3, 2014, Pages 85948603-*
6. World's top 10 best-selling electric vehicles (January 18, 2017) Retrieved from: <https://gearheads.org/worlds-top-10-best-selling-electric-vehicles/>
7. Karpenko, Olga. (2017). Novyi Zakon pro Elektrokary Obeshchaet Skidki do 40%: Kak Budet Rasschityvatsia tsena [The New Law on Electrocars Promises Discounts of up to 40%: How the Price Will Be Calculated]. Retrieved from <https://ain.ua/2017/04/13/shto-daet-zakono-proekt-ob-elektrokarax.> [in Russian].
8. El Issa, Tala. (2017, October 15). Reasons behind the mushrooming of electric cars on Jordan's roads. Retrieved from <https://www.wamda.com/memakersge/2017/10/reasons-mushrooming-electric-carss-jordans-roads-qa>.
9. Bsisu, Khair Al-Deen, & Bahlawan, Mohammad A. (2019, May). The Socio-Economic Aspects of Using Electric Vehicles in Jordan. Retrieved from <https://www.re->

searchgate.net/publication/333934480_
The_Socio-Economic_Aspects_of_Using_
Electric_Vehicles_in_Jordan.

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**Розвиток ринку електромобілів у Йорданії та Україні
(порівняльний аналіз українського та йорданського досвіду)**

Дана робота присвячена порівняльному аналізу розвитку ринку електромобілів в Йорданському Хашимітському Королівстві та Україні. У роботі дається поняття про переваги та недоліки електромобілів. Основна мета роботи — вивчити соціально-економічні аспекти використання електромобілів в Йорданії та визначити, який досвід Україна може отримати від Йорданії для оптимізації розвитку ринку електромобілів.

Ключові слова: ринок електромобілів, транспортні засоби з двигуном внутрішнього згоряння, електромобілі, гібридні транспортні засоби, розвиток ринку, метод “знизу вгору”.

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Personnel Marketing as a Competitive Advantage of the Innovative Enterprise: Strategic Aspect

The article is devoted to the study of the role of personnel marketing in the formation of the competitive position of the innovative enterprise in the process of strategic management. The terms "personnel marketing" and "compensation policy" are defined. Personnel marketing is defined as a type of management activity aimed at long-term provision of the organization with human resources that form the strategic potential necessary to achieve its specific target priorities. Compensation policy is defined as a system of external incentives that encourage the employee to get a result that satisfies both the employee and the company. The concept of "strategic activity" is also given, which is defined as the ability of staff to implement strategic objectives, the ability to feel an integral part of the innovative enterprise, think analytically, respond quickly to change, effectively and timely decision-making. It is proved that the construction of any approach to personnel marketing in the process of strategic management begins with the formation of the main goals, which must be clear, positive and consistent. It is established that to promote the efficiency of personnel marketing, strengthen the competitive position of the innovative enterprise and the effectiveness of the strategy of the enterprise as a whole, will promote the use of a process approach, the tasks of which include improving quality, improving efficiency and providing new opportunities for development and optimization of the organizational structure of the innovative enterprise. The influence of strategic management and personnel marketing on the formation of competitive advantages of the innovative enterprise is schematically presented. The relevance of further research in the field of personnel marketing in the innovative enterprise is argued.

Keywords: marketing, personnel marketing, motivation, strategy, strategic position, strategic activity, competitiveness, competitive advantage.

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Stating the problem

The key to the successful development of any innovative enterprise is to strengthen its competitive position, which allows the company to maintain performance and efficiency. However, due to the crisis in the country, the question arises of finding new alternatives for development in order to maintain and expand market share. Today's realities of innovative enterprises are those that require the latest methods and forms of doing business, bringing the enterprise management process in line with requirements and standards, as well as emphasizing the formation and development of competitive advantages based on scientific and technical level of production and product, levels of marketing, levels of management, organizational and technical level of production processes, financial and economic level of the enterprise, levels of personnel, etc.

Under such conditions, the risk of weakening the position of innovative enterprises, deteriorating quality of customer service, reducing the investment attractiveness of enterprises and weakening the competitive position in general increases. Accordingly, there is a question of finding new tools to ensure the competitiveness of enterprises and manage their long-term development.

Focusing the modern management paradigm on the result contributes to the creation of new forms and ways to combine the determinants of effective enterprise management to ensure sustainable long-term development of innovative enterprises.

Analysis of recent research and publications

A considerable amount of literature has been published on theory of founding, organization and management competitiveness and personnel marketing. These studies were suggested by Tsimbalyuk S. [7], Petrova I. [8, 9], Reshetnikova I. [10], Dovgan

L. [11], Batenko L. [14], Isaenko T. [14], Tverdushka T. [14], Balabanova L. [12], Didkivska L. [15], Karakay Y. [11], Kholod V. [12], Artemenko L. [11], Oborskaya S. [17], Nalivayko A. [16], Yashkina N. [15], Gordienko P. [15], Shershneva Z. [17] and others. However, despite the presence of a significant scientific and practical base, scientists still continue exploring this field.

Formulation of the goal of the article

The aim of this study is to highlight new approach on theoretical justifications and applied elements that are necessary to ensure the implementation of effective personnel marketing in company's competitiveness.

Main research material

It is believed that the main purpose of enterprise management is to achieve strategic goals of the enterprise and the development of enterprise potential and support its effective operation in an unstable external environment. Today, this is made possible by effective personnel marketing.

Personnel marketing, in general, is a type of management activity aimed at long-term provision of the organization with human resources that form the strategic capacity needed to achieve its specific target priorities. As in any marketing, the task is to meet the needs of the consumer in a particular product, which is the workforce. The main purpose of personnel marketing is to meet the needs of the employer in the workforce of the required quality and reasonable cost. According to the marketing concept of personnel management, the most important condition for business success is the development of marketing strategy, study of supply and demand in the labor market, establishing a system of external and internal communications, advertising activities to attract labor, planning staff costs. It is important to clearly define the requirements for staff, identify the

needs of their lives and development and ensure that these requirements and needs are met in a more efficient way than competitors. Personnel marketing cover both external and internal labor markets. Accordingly, there are external and internal personnel marketing, as well as external and internal communications, which can be considered innovative technologies [13].

Since the concept of "personnel marketing" should be based on a person, in our opinion, one of the key in the process of personnel marketing is the function of motivating employees, which is associated with the development of a number of motivators that contribute to achieving strategic goals.

In the scientific literature there are many interpretations of the categories "motive", "motivation", "motivator" etc. After analyzing the definitions of leading scientists, we have identified and clarified the concepts that is used in the research process.

In our opinion, the most successful is the commonly used definition that the motive is an internally motivated urge to act [1, 3]. But we propose to clarify the concept of motive. According to the fact that motives are formed from needs, which are feelings of physiological or psychological lack of something, these two concepts are inextricably linked. In our understanding, motive is an inner awareness of the need that motivates action [2].

It should be noted that ensuring the continuous development of the innovative enterprise is impossible without the establishment of a stable competitive position of the enterprise. In order to achieve it, various management mechanisms are formed and function at enterprises. We believe that any company striving for sustainable development should be focused on strategic development, not on achieving a temporary result. Thus, each company must take measures to form a strategic activity, which is possible provided the use of personnel marketing in the strategic management of the innovative enterprise.

Accordingly, we can define the concept of "strategic activity of the

enterprise" as its ability to adapt to changes in the exogenous environment and make the most of all opportunities, avoiding threats [4].

It correlates with the concept of "strategic activity of personnel" which becomes possible with the use of effective staff marketing. This concept can be defined as the ability of personnel to implement strategic objectives, the ability to feel an integral part of the enterprise, think analytically, respond quickly to change, make effective and timely decisions.

Accordingly, the concept of "strategic activity" combines the strategic activity of the innovative enterprise and personnel, because with their effective and efficient relationship there is an increase in performance and efficiency of the enterprise, which indicates high marketing results and implementation of innovative enterprise strategy and gives impetus to further development.

In order to maintain the appropriate level of strategic activity of personnel, the innovative company needs to establish and operate personnel marketing, which will serve as a basis for strategic development.

Summarizing the existing approaches to the formation of personnel marketing, it should be noted that it is important to study the preferences and vision of employees of effective motivators in a particular innovative enterprise. Therefore, it is proposed to carry out constant monitoring, which is relevant for most companies, because such studies are conducted very rarely (in many companies less than once a year). This situation provokes the ineffectiveness of most tangible and intangible motivators, which leads to very low efficiency of personnel marketing by innovative enterprises as a whole [13].

In order to implement effective personnel marketing, all management actions must be performed consistently and in a timely manner. First, there is a list of factors of exogenous and endogenous environment that have a direct impact on employee motivation in the management of the innovative enterprise and influence the forma-

tion of compensation policy, which is a system of external remuneration to the employee for the results of his/her work at the enterprise (salary, allowances, bonuses, social package).

In addition, management should obtain as complete information as possible about the impact of these factors. Next, the information obtained for each impact factor should be evaluated and the magnitude of the potential impact predicted.

Thus, it is possible to identify all the opportunities and threats that affect the personnel marketing in the strategic period, as well as to identify its strengths and weaknesses. As a result, the basis for strategic analysis and identification of alternative strategies that will contribute to the effectiveness of personnel marketing in the innovative enterprise.

Paying attention to the fact that the company does not influence the force of pressure of some factors of the exogenous environment, again the question arises about taking into account the influence of key factors of the endogenous environment, and motivators and demotivators as key in building effective personnel marketing in innovative enterprises management.

Building any approach to personnel marketing in the process of strategic management begins with the formation of the main goals, which must be clear, positive and consistent. Usually, the vision of the future is determined taking into account the dynamics of consumer preferences, industry trends, the possibility of changing the current business model. However, management and employees may assess the situation differently. And in order to avoid possible problems, a common understanding of the main goal must be achieved by both management and operational staff. Practice shows that the main prerequisite for success is the consistency of strategy within the innovative enterprise. Usually, it must be supported by a document, and formulated in the form of mission, goals and principles of the innovative enterprise.

But the methodology of personnel marketing in the process of strategic

management of innovative enterprises must take into account that it will be necessary to increase the number of management staff, increase the number of information links between employees, possible conflicts between them.

Thus, when applying this methodology, emphasis should be placed on the "process" approach to management, which in contrast to the "functional" provides greater efficiency and interest of employees in the end result.

Undoubtedly, this "process" approach is most effectively used with the support of information technology. In modern systems for automation of management it corresponds to the Workflow technique, which provides clear execution of process according to its description. The methodology also includes a business process management mechanism that automates the chain of related operations aimed at achieving a common goal. When implementing and using such a mechanism, the following main tasks are solved [10]:

Improving quality. The rules for performing individual operations and their relationship are formulated and implemented. This allows to significantly reduce and even completely eliminate possible errors. A simple to-do list allows the employee to focus on immediate responsibilities.

Improving efficiency. There is a formalization of organizational activities and the functions of managing the joint work of employees on the program. This saves time.

Providing new opportunities for development and optimization of the organizational structure of the enterprise. Task performance data can be the basis for identifying bottlenecks and hidden resources.

It should be noted that in order to form an algorithm for building effective personnel marketing, it is necessary to analyze and systematize the relationship of strategic management of the innovative enterprise (which affects competitiveness) with the results of its activities. After all, practice shows that the main prerequisite for success

is the consistency of the processes of development and implementation of strategy within the innovative enterprise (Fig. 1).

Thus, the strategic activity of staff, formed through effective personnel marketing, is a key condition for improving the competitiveness of the enterprise formation of its strategic position. This relationship can be represented by a formula:

$$C = SP \times SA, \quad (1)$$

where **C** — competitiveness of the enterprise;

SP — strategic position of the enterprise;

SA — strategic activity of the enterprise.

The strategic position of the enterprise can be determined by the formula and used to monitor its activities:

$$SP = SPE \times EMP \quad (2)$$

where **SPE** — strategic potential of the enterprise;

EMP — personnel marketing efficiency.

In turn, the strategic potential of the innovative enterprise can be defined as a score of the strengths and weaknesses of the enterprise in an endogenous environment. At the same time, strategic activity determines the dynamic behavior of the enterprise in the direction of its development:

$$SA = SD \times SC \quad (3)$$

where **SD** — the degree of mastery of the enterprise tools for strategic development;

SC — strategic actions performed by the enterprise to increase the competitiveness of personnel.

Strategic actions are determined primarily by the strategic activity of personnel and can be calculated by the formula:

$$SC = \sqrt{ECP \times S act} \quad (4)$$

where **ECP** — effectiveness of compensation policy.

S act — the effectiveness of measures to stimulate the strategic activity of the enterprise.

This algorithm was built by the author on the basis of determining the competitiveness of the enterprise, proposed by Petrova I. L. and adapted according to the fact that the competitiveness of the innovative enterprise illustrates its strategic and depends on personnel marketing.

Thus, we can conclude that the motivation of strategic activity of staff and the company are inextricably linked and have a significant impact on the activity and efficiency of the innovative enterprise through the use of effective personnel marketing.

Conclusions

Today, many innovative companies are developing serious comprehensive personnel motivation programs. However, these programs do not always work effectively because they do not take into account the characteristics of individual employees and do not link them to the strategic goals of the innovative enterprise.

Since all existing mechanisms, including personnel marketing, are de-

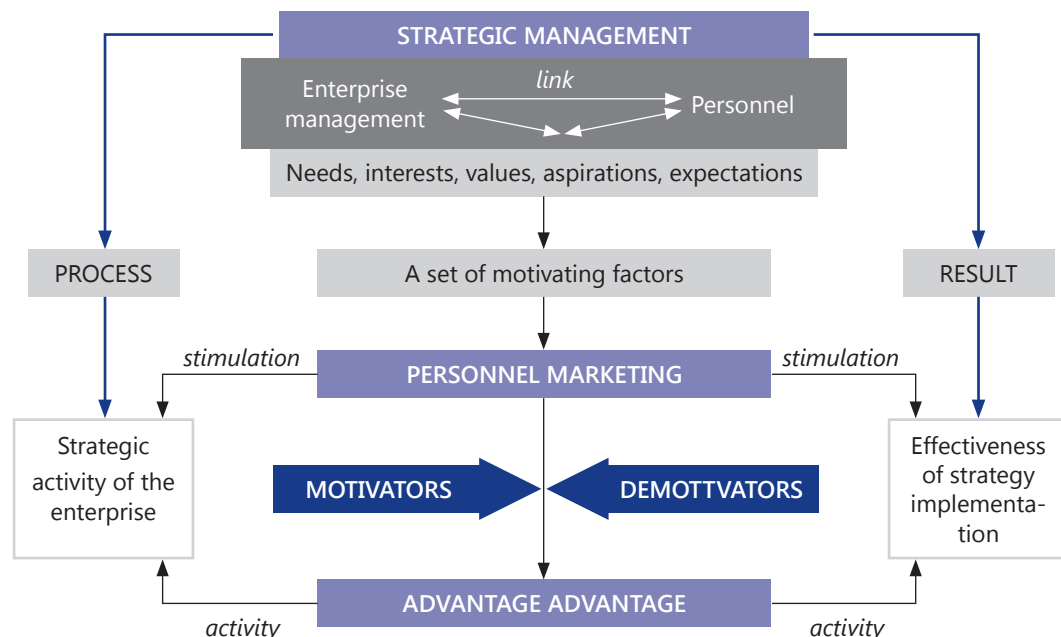


Fig. 1. The influence of strategic management and personnel marketing on the formation of competitive advantages of the innovative enterprise (Source: compiled by the author)

veloped and implemented in line with the overall strategy of the innovative enterprise, it is important to emphasize that the strategy itself is implemented in specific jobs. A balance is needed between the interests of the innovative enterprise as a whole and individual employee. Therefore, personnel marketing must be adjusted and communicated to each employee. It depends on whether personnel marketing will be a factor that will ensure the competitive advantages of the innovative enterprise.

References

1. Bielova O. I. Theoretical aspects of formation of the motivational mechanism of strategic management of trade networks. *Innovative economy*, Vol.10, 2012 [36], pp. 109–115.
2. Bielova O. I. Methodological approach to the formation of the content and structure of the motivational mechanism of strategic management of retail chains. *Kharkiv. Business inform*, Vol. BI-2–2013, pp. 155–163.
3. Bielova O. I. Formation of a three-dimensional matrix of states of the motivational mechanism of strategic management of trade networks. *Economist*, Vol.2, 2013, pp. 52–57.
4. Petrova I. L., Bielova O.I. Motivation of strategic activity of enterprises. *Scientific notes of KROK University*, Vol. 43. Kyiv. 2016. pp. 119–128.
5. Petrova I. L., Bielova O.I. Motivational strategy in increasing the competitiveness of the trade enterprise. *Kharkiv. Business inform*. 2015. Vol. 10, pp. 424–429.
6. Petrova I. L. Strategic human resources management: textbook, Kyiv, KNEU, 2013, 466 p.
7. Petrova I. L. Shpilova T.I., Sisolina N.P. Innovative activity: stimuli and obstacles: Monograph. Kyiv, Dorado, 2010. 320 p.
8. Petrova I. L. Personnel marketing as a tool of the labor market. "Current problems of economic development and education" Collection of materials of the international scientific-practical conference. Under common. ed. Sharifzod M.M., Rajabov R.K. "Irfon", Dushanbe. 2016. 572 p., pp. 124–127.
9. Petrova I. L. Marketing innovation in personnel management. "Socio-labor sphere in the coordinates of the new economy and global socioeconomic reality: challenges, ways of development" Proceedings of the International scientific conference. 11–12 Nov. 2020. Kyiv. KNEU, 2020. pp. 220–223.
10. Reshetnikova I. L. Internal marketing in the marketing system of the enterprise. *Marketing and innovation management*. Vol. 1. 2015. pp. 45–55. Access mode: http://nbuv.gov.ua/UJRN/Mimi_2015_1_6.
11. Dovgan L. E., Karakay Y. V., Artemenko L. P. Strategic management: a textbook. 2nd edition. "CUL" Publishing House. Kiev. 2011. 440 p.
12. Balabanova L. V., Kholod V. V. Marketing management of enterprise competitiveness: a strategic approach: a monograph. DonDUET named after M. Tugan-Baranovsky. Donetsk. 2006. 294 p.
13. Bielova O. I., Petrova I. L. Personnel marketing in company's compensation policy. *Scientific notes of KROK University*, Kyiv. Vol. 4 (60). 2020. pp. 82–87.
14. Batenko L., Isaenko T., Tverdushka T. Practical approaches to improving the efficiency of production processes. *Personnel manager*. 2009. № 7. pp. 59–67.
15. Gordienko P. L., Didkivska L. G., Yashkina N. V. Strategic analysis: a textbook. 2nd edition. Kyiv. Publishing House "Alerta". 2008. 478 p. pp. 464–473.
16. Nalivayko A. P. Theory of enterprise strategy. Current state and directions of development: Monograph. Kyiv. KNEU. 2001. 227 p.
17. Shershneva Z. E., Oborskaya S. V. Strategic management. Textbook. 2nd edition. Kyiv. KNEU. 2004. 699 p.
18. Вчені записки Університету "КРОК", Вип. 43. Київ. 2016. С. 119–128.
19. Петрова І. Л., Белова О. І. Мотиваційна стратегія в підвищенні конкурентоспроможності підприємства торгівлі. *Бізнес-інформ*, Харків. 2015. №10, с. 424–429.
20. Петрова І. Л. Стратегічне управління людськими ресурсами: навч. посіб. Київ, КНЕУ, 2013, 466 с.
21. Петрова І. Л., Шпиліова Т. І., Сисоліна Н. П. Інноваційна діяльність: стимули та перешкоди: Монографія Київ, Дорадо, 2010. 320 с.
22. Петрова І. Л. Маркетинг персоналу как инструмент рынка труда. "Актуальные проблемы развития экономики и образования" Сб. материалов междуна. научно-практ. конф. Под общ. ред. Шарифзода М. М., Раджабова Р. К. "Ирфон", Душанбе. 2016. 572 стр. С. 124–127.
23. Петрова І. Л. Маркетингові інновації в управлінні персоналом. "Соціально-трудова сфера в координатах нової економіки та глобальної соціоекономічної реальності: виклики, шляхи розвитку" зб. тез доповідей учасників Міжнар. наук.-практ. конф. 11–12 лист. 2020 р. КНЕУ, Київ. 2020. С. 220–223.
24. Решетнікова І. Л. Внутрішній маркетинг у системі маркетингу підприємства. *Маркетинг і менеджмент інновацій*. 2015. № 1. С. 45–55. Режим доступу: http://nbuv.gov.ua/UJRN/Mimi_2015_1_6.
25. Довгань Л. Є., Каракай Ю. В., Артеменко Л. П. Стратегічне управління: навчальний посібник. 2-ге вид. Видавництво "ЦУЛ". Київ. 2011. 440 с.
26. Балабанова Л. В., Холод В. В. Маркетингове управління конкурентоспроможністю підприємств: стратегічний підхід: монографія. Донецьк. ДонДУЕТ ім.М.Туган-Барановського. 2006. 294 с.
27. Белова О. І., Петрова І. Л. Маркетинг персоналу в компенсаційній політиці підприємства. *Вчені записки Університету "КРОК"*, Київ. № 4 (60). 2020. С. 82–87.
28. Батенко Л., Исаенко Т., Твердушка Т. Практические подходы к повышению эффективности организации производственных процессов. *Менеджер по персоналу*. 2009. № 7. С. 59–67.
29. Гордієнко П. Л., Дідківська Л. Г., Яшкіна Н. В. Стратегічний аналіз: навчальний посібник 2-ге вид. Київ. Видавництво "Алерта". 2008. 478 с. с. 464–473.
30. Наливайко А. П. Теорія стратегії підприємства. Сучасний стан та напрямки розвитку: Монографія. Київ. КНЕУ. 2001. 227 с.
31. Шершньова З. Є., Оборська С. В. Стратегічне управління. Підручник. 2-ге вид. Київ. КНЕУ. 2004. 699 с.

Список використаних джерел

Бєлова О. І., Петрова І. Л., Гончаров Д. Д.

Маркетинг персоналу як конкурентна перевага інноваційного підприємства: стратегічний аспект

Стаття присвячена дослідженню ролі маркетингу персоналу в формуванні конкурентної позиції інноваційного підприємства в процесі стратегічного управління. Дано визначення термінів "маркетинг персоналу" та "компенсаційна політика". Маркетинг персоналу визначено як вид управлінської діяльності, спрямованої на довгострокове забезпечення організації людськими ресурсами, що утворюють стратегічний потенціал, необхідний для досягнення її конкретних цільових пріоритетів. Компенсаційна політика визначена як система зовнішніх стимулів, що стимулюють працівника на отримання результату, що задовольняє як працівника, так і підприємство. Також наведено поняття "стратегічна активність", яке визначено як здатність персоналу до реалізації стратегічних завдань, здатність відчувати себе невід'ємною частиною діяльності інноваційного підприємства, аналітично мислити, швидко реагувати на зміни, ефективно і своєчасно приймати рішення. Доведено, що побудова будь-якого підходу до маркетингу персоналу в процесі стратегічного управління починається з формування головних цілей, які мають бути чіткими, позитивними й несуперечливими. Встановлено, що сприяння підвищенню ефективності використання маркетингу персоналу, посиленню конкурентної позиції підприємства та ефективності реалізації стратегії інноваційного підприємства в цілому, сприятиме використанню процесного підходу, до завдань якого відносяться підвищення якості, підвищення ефективності та забезпечення нових можливостей для розвитку та оптимізації організаційної структури інноваційного підприємства. Схематично представлено вплив стратегічного управління та маркетингу персоналу на формування конкурентних переваг інноваційного підприємства. Аргументовано актуальність подальших досліджень у сфері маркетингу персоналу в діяльності інноваційного підприємства.

Ключові слова: маркетинг, маркетинг персоналу, мотивування, стратегія, стратегічна позиція, стратегічна активність, конкурентоспроможність, конкурентна перевага.

УДК 330.131.5:502.132
JEL classification Q50,Q57

Колмакова В. М.

Ключові ознаки оцінювання екосистемних активів

Мета статті полягає в розробці наукових підходів та виявленні ключових ознак оцінювання екосистемних активів територіальних громад.

В статті досліджено сучасні наукові підходи до оцінювання екосистемних активів територіальних громад в умовах поглиблення процесів децентралізації управління. Розкрито сутність дефініції екосистемні активи із позицій екосистемного обліку, зокрема акцентовано на одній із їх найголовніших характеристик: здатності природних запасів (stocks) до забезпечення постійного потоку (flow) екосистемних послуг. Визначено необхідність врахування ринкової вартості екосистемних активів у процесі контролю над їх використанням і залученням у господарський обіг на місцевому рівні. У цьому сенсі розглянуто роль екосистемних послуг у забезпеченні зв'язків між екосистемними активами та бенефіціями. Досліджено основні характеристики екосистемних активів, виявлено їх спільні та відмінні риси від природно-ресурсних та виробничих активів просторових територіальних утворень. Запропоновано систематизацію узагальнених підходів методології оцінювання екосистемних активів згідно рекомендацій TEEB (The Economics of Ecosystems and Biodiversity), які доцільно застосувати для територіальних громад в якості ключових стратегічних орієнтирів сталого просторового розвитку. Рекомендовано включення показника "екосистемні активи" (EA) як обов'язкової складової до річних національних рахунків.

Подальші дослідження мають перспективи в таких напрямках:

- формування комплексного стратегічного підходу до запровадження оцінювання екосистемних активів на місцевому рівні;
- розвиток та запровадження ефективних методичних підходів до оцінювання екосистемних активів для формування інвестиційної привабливості території за рахунок використання місцевих природних ресурсів як екосистемних активів сталого просторового розвитку.

Ключові слова: екосистемні активи, екосистемні послуги, територіальна громада, оцінювання.

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Постановка проблеми

Серед низки гострих проблем, які сьогодні стоять перед державою, особливу актуальність набуває необхідність реформування системи екологічного управління на екосистемних засадах із урахуванням поглиблення загальних процесів децентралізації та євроінтеграції. Основні проблемні питання адекватної оцінки місцевого природно-ресурсного потенціалу, зокрема оцінювання екосистемних активів територіальних громад, пов'язані з недосконалістю загальної методології її проведення та відсутністю відповідної нормативно-правової бази: упродовж тривалого часу природні ресурси розглядалися окремо від проблем оцінки елементів національного багатства та їхнього відтворення.

Проте європейський досвід переконливо свідчить, що досягнення цілей проєктів сталого просторового розвитку на місцевому рівні забезпечується за рахунок повної мобілізації всіх видів місцевих ресурсів, зокрема через врахування вартісних оцінок екосистемних активів та та продукуваних ними екосистемних послуг, в інтересах підвищення добробуту та спроможності новостворених об'єднаних територіальних громад (ОТГ).

Аналіз останніх досліджень і публікацій

Значний науковий внесок у дослідження загальних проблем концепції екосистемних послуг, зокрема їх економічної оцінки, зроблено в низці праць таких зарубіжних і вітчизняних вчених як: Х. Делі, Дж. Фарлея, Р. Констанци, Т. Оші, С. Бобильова, О. Варапаєва, О. Веклич, О. Врублевської, Т. Горобченка, І. Дегтярьової, Н. Дегтярь, Л. Загвойської, В. Захарова, Т. Кулешника, Н. Луців, О. Маценко, Л. Мельника, Є. Мішеніна, Т. Могиленець, В. Нестерова, Ю. Несторяка, О. Неверова, Р. Перельота, Н. Олійни-

ка, І. Соловія, І. Сотник, П. Тархова, Н. Шапочки, В. Юрак та інших. Різні аспекти вартості екосистемного капіталу в складі природного багатства ґрунтовно досліджувалися в працях І. Уайта, О. Янга, І. Деревяго, О. Неверова, І. Бистрякова, Д. Клиново-го та ін.

На сучасному етапі поглиблення інституціональних трансформацій зазначена проблематика також не втрачає своєї актуальності, проте залишаються малодослідженими питання щодо визначення вартісних оцінок екосистемних активів територіальних громад в умовах поглиблення процесів децентралізації та євроінтеграції. Попри те, що з'явилися окремі публікації за цією проблематикою, зокрема А. Думнова та Н. Рыбальського [1], О. Веклич [2, 3], які започатковують розробку сутнісних характеристик та базових операційних понять термінологічного апарату екосистемних активів, складність та нерозробленість зазначеної проблеми передбачає доцільність поглиблення наукових досліджень у цій площині, зокрема з позицій оцінювання екосистемного обліку на місцевому рівні.

Отже, мета статті полягає в розробці наукових підходів та виявленні ключових ознак оцінювання екосистемних активів територіальних громад.

Виклад основного матеріалу

Загальновідомо, що екосистеми здатні генерувати і надавати низку різної продукції, від якої безпосередньо залежить як повсякденний добробут територіальної громади, так і її потенційна економічна конкурентоспроможність. У цьому сенсі можна погодитися з думкою, що у найзагальнішому вигляді здатність екосистем генерувати / "надавати" екосистемні послуги залежить від наступних характеристик:

- площі території, на якій функціонує будь-яка екосистема (кількісна характеристика);

- стану даної екосистеми (якісна характеристика) [1].

Насамперед розглянемо, що означає дефініція актив. У найбільш загальному вигляді доцільно оперувати терміном актив, який означає: 1) потенційний прибуток або ймовірні майбутні економічні вигоди, одержувані конкретним господарюючим суб'єктом; 2) економічні ресурси чи права на доступ до майбутніх економічних вигод, що перебувають на балансі суб'єкта господарювання та здатні генерувати грошові потоки. Основною умовою набуття ресурсами активної форми є найбільш повне їх залучення до господарського обороту та взаємозв'язок із іншими активами в рамках ланцюгів створення вартості [4].

Наступним кроком розглянемо сутність дефініції екосистемний актив із позицій екосистемного обліку. По суті екосистемні активи є модифікованим поняттям "екосистема", з урахуванням загальних обмежень, що накладаються на категорію активів із позицій екосистемного обліку — з одного боку, тоді як із іншого — екосистемні активи можна розглядати як просторові області (укрупнені ділянки, spatial areas), що містять поєднання біотичних та абіотичних компонентів, які функціонують спільно і комплексно [5]. В останньому уточненому офіційному визначенні екосистемних активів відділом статистики ООН "Treatment of ecosystems assets in urban areas" (2019 р.) зроблено акцент на одній із найголовніших їх характеристик — як природних запасів (stocks), котрі забезпечують потік (flow) екосистемних послуг [6, с.4].

Зауважимо, що дефініцію екосистемний актив необхідно розглядати в контексті визначення екосистемного підходу, який, згідно Глосарію основних термінів ДУ ІЄПСР НАН України, трактується як "комплексний адаптивний управлінський підхід до збалансування ключових характеристик екосистем і суспільного природокористування для досягнення одночасно сталого господарювання й сталого потенціалу

екосистем на основі забезпечення їх відтворювальної здатності щодо функціонального продукування товарів і послуг з метою задоволення поточних і майбутніх потреб” [4].

До основних передумов формування та розвитку екосистемного підходу, зокрема теорії екосистемних послуг, слід віднести наступні:

- використання послуг екосистем вище межі їх природного відновлення;
- недоліки традиційного ринкового регулювання природокористування та заходів із охорони природи;
- низька ефективність методу “забруднювач платить”;
- зростання попиту на екологічно чисті продукти, послуги та енергію;
- збільшення чисельності та зміна структури населення;
- кліматичні зміни;
- посткризові проблеми розвитку більшості країн світу (обмеження фінансування природоохоронної діяльності);
- низька екологічна ефективність окремих технологій виробництва та природогосподарування;
- забруднення природного середовища тощо [7].

У контексті екосистемного підходу екосистемні послуги є також центральним елементом в рамках міжнародного екосистемного обліку в цілому і забезпечують зв'язок між екосистемними активами (ecosystem assets), з одного боку, і бенефіціями (доходами, надходженнями, вигодами тощо; benefits), якими користуються економіка і населення, – з іншого. Тобто відповідні бенефіції повинні включати:

- продукцію, вироблену економічними одиницями, наприклад продукти харчування, питну воду тощо. Ця продукція вважається бенефіціями в рамках чинної системи національного рахівництва (СНР);
- бенефіції, які безпосередньо одержують споживачі (наприклад, у вигляді атмосферного повітря, яке очищене лісовими деревостанами чи зеленими насадженнями), й не входять до складу бенефіцій, ви-

блених економічними одиницями. Ці бенефіції визначаються окремо поза рамками діючої версії СНР [1].

При цьому зазначимо, що існують певні відмінності між екосистемними та природно-ресурсними активами. Так, сфера та охоплення природно-ресурсних активів не є ідентичною відповідним параметрам для екосистемних активів, оскільки у складі перших є абіотичні (мінеральні та енергетичні ресурси), які не входять до сфери екосистемних активів. Отже, облік екосистемних активів у натуральному виразі, по суті, охоплює як оцінювання двох базових і укрупнених характеристик: стану конкретних екосистем та їх поширення (протяжності), так і похідні від них категорії – фактичні та очікувані потоки (“кошики”) екосистемних послуг.

У практичній діяльності територіальних громад економічну сутність екосистемних активів необхідно розглядати під кутом зору орієнтації на ринкову вартість, яка може контролюватися їх власниками на основі права власності. При цьому ринкова вартість є або фактичною ринковою ціною активу, або передбачуваною величиною прибутку. Тому в цьому сенсі можна погодитися з думкою І. Бистрякова, що природні ресурси, умовно кажучи, повинні “заробляти” на своє відтворення [8], що наразі є визначальним і для розуміння економічної сутності екосистемних активів територіальних громад у процесі контролю над їх використанням і залученням у господарський обіг на місцевому рівні.

Проте застосування економічного критерію не може бути однозначним для різних видів природних активів. Наприклад, повітря використовується, але не контролюється. Тоді як вода може бути об'єктом контролю при наявності відповідних технічних засобів їх експлуатації. У випадку культивування землі вона відноситься до категорії контрольованих активів. Отже, з економічного боку спостерігається чіткий розподіл активів, на “виробничі” та “неви-

робничі”. Тоді як з екологічної точки зору це не має такого чіткого прояву: діяльність живої природи не контролювана з економічної точки зору може створювати виробничі природні активи [9].

Зауважимо, що використання окремих екосистемних активів у межах певного просторового територіального утворення може призводити також до їх часткового чи повного виснаження (у кількісному вираженні), або не викликати зміни кількісних параметрів природного середовища, впливаючи лише на його якість. У першому випадку кількісні потоки з природного середовища в економіку розглядаються як природні товари. В іншому – використання природних активів можна визначити як потоки екологічних послуг із довкілля в економіку. Отже, використання екологічних товарів може призводити до виснаження природних ресурсів, а використання економічних послуг призводить до їх деградації (якісного погіршення) [10].

Необхідно також акцентувати й на відмінних рисах екосистемних активів від виробничих, їх основні характеристики наведено в таблиці (табл. 1):

Отже, на основі порівняльної характеристики екосистемних і виробничих активів виявлено, що вони мають як певні спільні риси, так і відмінності. Також необхідно акцентувати увагу на обмежувальних рамках активів у системі національних рахунків. Так, наприклад, на думку Є. А. Сергєєвої, обмежувальні рамки активів в системі національних рахунків дають підстави стверджувати, що вони носять проміжний характер, тобто національні рахунки включають в себе тільки економічні активи, тобто ті природні активи, які в перспективі можуть принести дохід [11].

Отже, на основі проведеного дослідження, враховуючи істотні характеристики екосистемних активів, зокрема притаманні для екосистемного обліку, можна запропонувати визначення екосистемних активів як частини природних активів у межах

Таблиця 1. Порівняння екосистемних та виробничих активів*

№	Екосистемні активи	Виробничі активи
1	Мають потенційну здатність до самовідновлення без/чи з частковою участю людини	Мають щоразу знову створюватися чи відтворюватися людиною
2	Здатність генерувати ("надавати") різноманітні і не-схожі між собою "кошки" екосистемних послуг упродовж багатьох обліково-звітних періодів	Попри здатність генерувати кілька капітальних послуг (capital services), в результаті відбувається утворення / надання одного і того ж набору послуг упродовж всього періоду експлуатації даного активу
3	Екосистемні послуги, які надаються будь-яким екосистемним активом, можуть споживатися низкою різних користувачів (підприємствами, домашніми господарствами тощо)	Капітальні послуги, що надходять від виробничого активу, використовуються лише його економічним власником. Зазвичай, капітальні послуги прямо й безпосередньо входять в елементи виробництва всередині даного підприємства і забезпечують можливість випуску певної продукції
4	Відсутня функціональна залежність між потужністю будь-якого екосистемного активу, з одного боку, і фактичним використанням екосистемних послуг у господарській чи іншій антропогенній діяльності – з іншого	Здатність генерувати капітальні послуги або повністю використовується, або передбачається, що використовується стабільно по відношенню до потенційної здатності ("потужності")

*Джерело: систематизовано автором за [1, с. 23]

певних просторових утворень, здатних генерувати постійні потоки (кошки) екосистемних послуг як можливих матеріальних (монетарних) і нематеріальних внесків у добробут територіальної громади за умови їх залучення у господарський обіг.

У цьому контексті особливої значущості набувають дослідження оцінки екосистемних активів із встановленням масштабу збитків у разі їх нерационального використання. Так, вітчизняна практика показує, що недавно створені ОТГ (понад 1469) ще не усвідомлюють, що екологічно чисте довкілля й послуги екосистеми є їх капіталом в умовах ринку, мають певну економічну цінність і можуть стати товаром. Тому збитки від забруднення навколишнього природного середовища та нерационального природогосподарювання під кутом зору екосистемного підходу слід розглядати не просто як втрату екосистемних послуг певної території, а як втрату стратегічного екосистемного активу й інвестиційної привабливості господарського простору для місцевої територіальної спільноти.

Нами запропоновано систематизацію узагальнених підходів методології оцінювання екосистемних активів згідно рекомендацій ТЕЕВ (The Economics of Ecosystems and Biodiversity) [12], які доцільно застосувати для ОТГ в якості ключових стратегічних орієнтирів:

- виявлення цінності екосистемних активів;
- оцінка вартості екосистемних активів (екосистемних послуг), її інтеграція в процес прийняття управлінських рішень ОТГ;
- врахування ризиків і невизначеності, застосування додаткових підходів: "мінімальний стандарт безпеки" чи "принцип передбачливості";
- аналіз співвідношення вигод і витрат із використанням низки різних ставок дисконтування;
- удосконалення системи національних рахунків: врахування вартості змін у запасах екосистемних активів;
- залежність добробуту ОТГ від залучення екосистемних активів (послуг) у місцеву економіку;
- прозора господарська діяльність: звітність і система рахунків компа-

ній і організацій повинні розкрити основні "зовнішні" впливи, включаючи зобов'язання, пов'язані з навколишнім природним середовищем, зокрема зміни у вартості екосистемних активів;

- орієнтація на керівні принципи "забруднювач платить" і "компенсація повної вартості";
- створення природоохоронних зон для збереження екосистемних активів та надання широкого набору екосистемних послуг;
- розвиток екологічної інфраструктури;
- демонстрація вартостей всього спектра екосистемних послуг через врахування екосистемних активів у стратегії розвитку ОТГ.

Висновки

У статті досліджено сучасні наукові підходи до оцінювання екосистемних активів територіальних громад в умовах поглиблення процесів децентралізації управління. Під кутом зору сучасних світових трендів "зеленої" економіки, які поглиблюють

і наповнюють новим змістом традиційні підходи до розуміння сталого просторового розвитку територіальних громад в Україні, актуалізується необхідність розроблення системи оціночних індикаторів екосистемних активів території, які дозволятимуть об'єктивно відстежувати зміни в еколого-економічній ситуації і приймати адекватні управлінські рішення на місцевому рівні. Отже, попри оперування традиційними показниками оцінки соціально-економічного розвитку й екологічного стану території, наприклад, валового регіонального продукту (ВРП), у процесі управління на всіх рівнях господарювання необхідно враховувати ключові характеристики місцевого потенціалу екосистемних активів як можливого агрегованого оціночного показника стратегічного розвитку територіальних просторових утворень. Такий підхід дає підстави внести пропозицію щодо включення показника "екосистемні активи" (ЕА) як обов'язкової складової до річних національних рахунків.

Подальші дослідження мають перспективи в таких напрямках:

- формування комплексного стратегічного підходу до запровадження оцінювання екосистемних активів на місцевому рівні;
- розвиток та запровадження ефективних методичних підходів до оцінювання екосистемних активів для формування інвестиційної привабливості території за рахунок використання місцевих природних ресурсів як екосистемних активів сталого просторового розвитку.

References

1. Dumnov, A.D. & Rybalsky, N.G. (2015). Makroekonomicheskiye otsenki na osnovе ekosistemnogo ucheta kak vazhneyshaya mezhdunarodnaya zadacha [Macroeconomic assessments based on ecosystem accounting as the most important international task]. Vek globalizatsii, 2(16). Retrieved from <https://www.socionauki.ru/journal/articles/300137/> [in Russian].
2. Veklych, O.O. (2020). Bazovi operatsiini poniattia terminologichnoho aparatu ekosystemnykh aktyviv [Basic operational concepts of the terminological apparatus of ecosystem assets]. Efektyvna ekonomika, 4. Retrieved from <http://www.economy.nayka.com.ua/?op=1&z=7817> [in Ukrainian]. DOI: 10.32702/2307-2105-2020.4.16.
3. Veklych, O.O. (2020). Sutnisna kharakterystyka ekosystemnykh aktyviv terytorialnykh hromad [Essential characteristics of ecosystem assets of territorial communities]. Efektyvna ekonomika, 5. Retrieved from <http://www.economy.nayka.com.ua/?op=1&z=7888> [in Ukrainian]. DOI: 10.32702/2307-2105-2020.5.17.
4. Khvesyk, M.A. (Eds.). (2018). Ekonomika pryrodokorystuvannia: hlosarii osnovnykh terminiv [Economics of nature management: a glossary of basic terms]. Kyiv [in Ukrainian].
5. United Nations. (2014). System of Environmental-Economic Accounting 2012 — Experimental Ecosystem Accounting. New York. Retrieved from <https://ec.europa.eu/eurostat/documents/3859598/6925551/KS-05-14-103-EN-N.pdf> [in English].
6. United Nations Statistics Division (2019), "Discussion paper 1.2: Treatment of ecosystems assets in urban areas. Paper submitted to the SEEA EEA Technical Committee as input to the revision of the technical recommendations in support of the System on Environmental-Economic Accounting. Version of 30 April 2019" Retrieved from https://seea.un.org/sites/seea.un.org/files/seea_eea_revision_wg1_discussion_paper_1.2_urban_areas_0.pdf [in English].
7. Mishenin, Ye. V., & Dehtyar, N.V. (2015). Ekonomika ekosistemnih poslug: teoretiko-metologichni osnovy [Economics of the ecosystem services: Theoretical-methodological bases] Innovation marketing and management, 2, 243–257. Retrieved from http://nbuv.gov.ua/UJRN/Mimi_2015_2_23 [in Ukrainian].
8. Bystryakov, I. K. (2014). Terytorialnyi pryrodno-resursnyi kapital u zabezpechenni konkurentospromozhnosti ekonomiky Ukrainy [Territorial natural resource capital in ensuring the competitiveness of the economy of Ukraine] Socio-economic problems of the modern period of Ukraine, 3 (107). Retrieved from <http://ird.gov.ua/sep/sep20143> (107)/sep20143(107) 200 _BystryakovIK.pdf [in Ukrainian].
9. Salin, V.N. (2006). Systema natsionalnoho rakhivnystva navchalnyi posibnyk [System of national accounting textbook]. M., Finansy i statystyka [in Ukrainian].
10. Khorin, A. N. (2006). Rynkovo oriyentovana finansova zvitnist: zvit pro vartist [Market-oriented financial reporting: security report] Bukhhalterskyi oblik, 16, 50–51 [in Ukrainian].
11. Serheeva, E.A. (2010). Ekologo-ekonomicheskiye aktyvy y ykh otrazhenye v sisteme sovremennoho schetovodstva [Ecological and economic assets and their reflection in the system of modern accounting] Voprosy upravleniya. Retrieved from <http://vestnik.uapa.ru/ru/issue/2010/03/08/> [in Russian].
12. Grunewald, K., & Bastian, O. & Drozdov, A. (2014). TEEB-Prozesse und Ökosystem-Assessment in Deutschland, Russland und weiteren Staaten des nördlichen Eurasiens, BfN-Skripten. Retrieved from <https://www.researchgate.net/publication/265912770> [in Russian].

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Key Signs of Ecosystem Assets Valuation

The purpose of the article is to develop scientific approaches and identify key features of the assessment of ecosystem assets of territorial communities.

The article examines modern scientific approaches to the assessment of ecosystem assets of territorial communities in the context of deepening processes of decentralization of management. The essence of the definition of ecosystem assets from the standpoint of ecosystem accounting is revealed, in particular, it is focused on one of their main characteristics: the ability of natural reserves (stocks) to provide a constant flow (flow) of ecosystem services. The necessity of taking into account the market value of ecosystem assets in the process of monitoring their use and involvement in economic circulation at the local level has been determined. In this sense, the role of ecosystem services in providing links between ecosystem assets and benefits is considered. The main characteristics of ecosystem assets are investigated, their common and distinctive features from natural resource and production assets of spatial territorial entities are revealed. A systematization of generalized approaches to the methodology for assessing ecosystem assets according to the recommendations of the TEEB (The Economics of Ecosystems and Biodiversity), which is advisable to apply for territorial communities as key strategic guidelines for sustainable spatial development, is proposed. It is recommended to include the indicator "ecosystem assets" (EA) as a mandatory component of annual national accounts.

Further research has prospects in the following areas:

- formation of an integrated strategic approach to the implementation of ecosystem asset valuation at the local level;
- development and implementation of effective methodological approaches to the assessment of ecosystem assets for the formation of investment attractiveness of the territory through the use of local natural resources as ecosystem assets for sustainable spatial development.

Keywords: ecosystem assets, ecosystem services, territorial community, assessment.

УДК 338.054.23: 378.1

JEL Classification I13, I25, D04

Natalia M. Protsun

Dayanna Cardenas

Innovation in Education and Educational Innovations in Conditions of Covid-19 Pandemic in Ukraine

In this article we will focus on the impact of COVID-19 on the educational market and the ways in which online studying can serve as a tool for international and national educational programs. We will also learn and compare the ways of educational institutions in the U.S. and Ukraine that were forced to carry out a massive experiment in proving online education promptly.

Keywords: educational innovation, technology, sustainable development, infra-structural development, innovation development, crisis management.

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Introduction

World pandemic of the coronavirus disease 2019 (COVID-19) caused global transitions in most important areas of wellbeing of the society. World health organizations, NGOs along with business structures and governmental institutions faced the necessity of finding new ways for maintaining sustainable development. The pandemic caused a global crisis, especially for the countries with high level of poverty, out-dated health systems and sanitation. At the same time a basic necessity in education requires a global cooperation and exchange of experience in proving effective measures for

providing safe educational programs offline and implementing tools for on-line learning.

The aim of the article is to explore ways of innovative development of educational institutions for providing safe learning process by implementing online tools and building up international collaboration with higher educational institutions.

For achieving this goal, we will need to learn general data regarding the online education industry in the United States, analyze it as a whole structure, identify the main characteristics of the market, the opportunities in the sector, describe the ways and tools to access the online market.

Discussion

The World Health Organization (WHO) officially declared the outbreak of COVID-19 a public health emergency of international concern on 30 January 2020. The WHO issued a new 2030 agenda for sustainable development, where it emphasizes that for achieving the sustainable development goals balancing three dimensions of sustainable development: economic growth, social inclusion and environmental protection [1].

COVID-19 pandemic shows that sustainable development goes beyond national strategies and requires international dialogue and cooperation.

Educational issues must be addressed in national strategies of the countries in order to provide educational programs in most safe and efficient way.

A lot of scientific works are devoted to the research of organizational aspects, marketing, management, fundraising and endowment of educational institutions. In Ukraine, this problem has been studied by such scientists as I. Alyoshina, I. Varyash, I. Kuklina, V. Klyuev, A. Pavlutsky, O. Radzetska, O. Skrypniuk, M. Tarasova and others [3, 4]. Fundamental to this issue are the works of V. Alexander, I. Ansoff, B. Asherwood, L. Bertlis, N. Bris, K. Klotfelter, F. Kotler, M. Mescon, R. Strechmts, J. Hood, M. Trimarchi and others [5, 6]. The aspects of pandemic COVID-19 and sustainable development goals is studied by Kristin Heggen, Tony J. Sandset, Eivind Engebretsen from Centre for Sustainable Healthcare Education in Norway.

Impact of COVID-19 on International Mobility in the United States

To get an idea of the magnitude of the study abroad source market in the United States, according to the latest Open Doors report on international mobility, in the 2017/2018 academic year there were 341.751 American students abroad, which represents a growth of 2.7% compared to the previous year [7]. Due to the effects of the COVID-19 pandemic, this positive trend will be affected in the 2020/2021 academic years by the restrictions on international student mobility as a result of this health, economic and social crisis. Thus, many universities in

the United States are cancelling their student exchange programs for the fall semester, so their students will not be able to participate in study abroad programs at foreign universities [8].

However, it is observed that the interest of American students to study abroad remains high, as 84.7% of the participants in the 2020 Snapshot Survey of Diversity Abroad are still interested in traveling abroad for their studies in the future [9].

On the other hand, in this same survey, 72% of students say they do not have fears and insecurities about traveling abroad in the future. On the other hand, from the point of view of the reception of international students, 88% of the educational institutions of the United States participating in the survey carried out by the Institute of International Education (IIE), foresee that the enrolment will be reduced for the 2020/2021 course. Furthermore, it is projected to fall by 25% without taking into account that this number had already been falling since 2016, with a fall of 10.8% [8]. Globally, some experts believe that the positive trend in the number of international students will take at least 3 years to recover [10].

One of the main reasons of significant decrease of the number of international students in the US is visa and flight limitation, especially from countries most affected by COVID-19 that the administration of United States ought to apply.

Now, let's consider the educational system of United States of America. It covers preschool education, second-

ary school, higher education. Corporate education and some specific vocational studies and courses can be also included in general educational system of the U.S. (Fig. 1).

Before obtaining higher education, students in the United States go to primary and secondary school, which combined lasts 12 years. Therefore, they correspond to the first twelve grades. Similarly to Ukraine, primary school (or "elementary school"), starts at the age of six. After studying for five or six years the children attend secondary school.

Secondary school has two programs: "middle school" or "junior high school" and the second is "high school." The students obtain a diploma or a certificate when graduate from high school. After graduating from 12th grade, American students can go for higher education in colleges or universities.

Corporate education refers to the companies that provide education primary for adults, mostly focused on their employees of a certain company. In the United States companies are interested in investing in training for staff, because market is constantly developing and requires new skills from employees. We can also call it a proactive corporate behavior, as the companies apply innovative approach in such way.

There are some partnerships between educational institutions and business representatives provided on social bases. It is frequently practices to send managers who represent certain business or industry as members of the board of trustees at educational institutions. Also, prominent managers from business can undertake respectful position of teaching in the university, which also enhances the links between the university and business. Some organizations provide programs and grants to scientists and welcome them in the laboratories and production premises of the producers and innovation driven entities.

Universities may receive equipment from corporations, thus introducing the students to the latest tech-

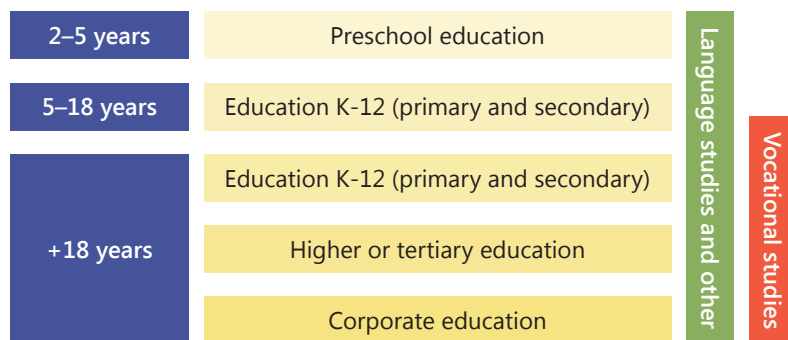


Fig. 1. Educational levels in the United States of America [7]

nology and better understanding of the industry development.

We should also mention that students are welcomed to pass their practice or internship in their potential employer. At the same time this is beneficial for corporations that have access to new human resources and can invest in the future employees [8].

In comparison with the U.S. educational system, Ukrainian students start going to school at the age of six. After graduating from school from ninth or eleventh grade they can enter a technical/medical school for incomplete higher education or a university for complete higher education, respectively (Fig. 2).

Similarly to the U.S. educational system, there are practices and internships and internships for students in Ukraine. Students at different universities can choose to go for practice to the company from private sector or state entity. In fact, by the Ukrainian Law the students, who obtained their education on state's expense and were provided with monthly scholarships, must work for the state during three years.

There are four levels of accreditation according to the status of higher education institutions:

- the first level is a technical school, a school, other higher education institutions equal to them;
- the second level is a college, other higher education institutions are equivalent to it;
- third and fourth levels (depending on the consequences of accreditation) — institute, conservatory, academy, university.

Bologna Process is implemented in Ukraine and considered as a national education system in universities of the state. Therefore, the diplomas are equal to the European ones. Now, let's consider educational and qualification levels of higher education in Ukraine structured in a table.

We should note, that non-governmental organizations (NGO) play an important role in educational sphere. They provide scholarships, help people with disabilities, organize training course, summer camp for children and other activities.

There are many contests and grants for the students in Ukraine. One of the most prominent and active non-government foundations in educational sector is the Victor Pinchuk Foundation, which is an international, private and non-partisan philanthropic founda-

tion based in Kyiv. The goal of Pinchuk Foundation is to empower future generations to become the change makers of tomorrow. To achieve this goal, the foundation has developed a variety of projects, built strong partnerships in Ukraine and worldwide, and keeps investing in three main areas [12]:

- in people, to boost human capital,
- in society, to promote social responsibility,
- in the world, to foster a more integrated world.

We should note two main projects of The Victor Pinchuk Foundation that carry our educational activities: Zavtra. UA and WorldWideStudies. The programs are aimed at the young generation, mostly students from third grade and higher.

Among active non-profit non-governmental organizations, we should mention The Institute of Ukrainian Studies. The mission of the organization is to promote inclusive society in Ukraine by engaging people with disabilities to active social life and educational activities concerning the protection of their rights. In its daily activities our NGO organizes projects aimed at increasing cooperation with local youth, ensuring active participation of young people in local life, especially youth with disabilities and youth with fewer opportunities. Regarding international department, they have partnerships in most of the countries in Europe and Caucasus. Their participants regularly take part in Erasmus+ training courses and youth exchanges [13].

As an example of cooperation between social area, business and government is worth to highlight the information about a quickly developing educational NGO called GoCamp. It is the biggest volunteer program in Eastern Europe that gives children the opportunity to learn English with foreign volunteers in Ukraine [20].

GoCamp is also about educating a new generation of Ukrainians, teaching them 21st century skills, active citizenship and breaking cultural barriers. GoCamp Global Office is an NGO aimed at fostering informational, polit-

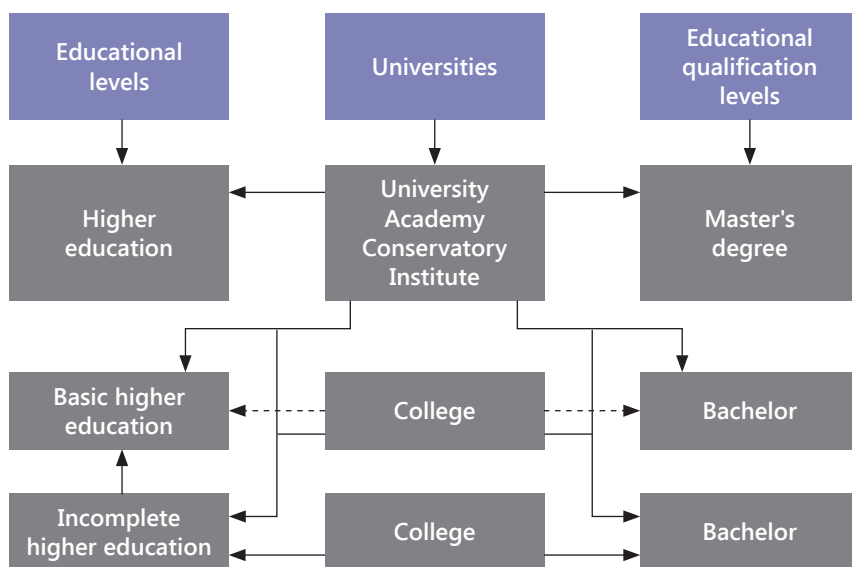


Fig. 2. Educational levels in Ukraine [11]

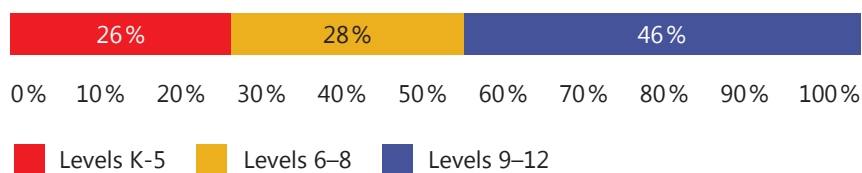


Fig. 3. Distribution of kindergarten, elementary and secondary students over total students with a full-time online school in U.S. [14]

ical, economic, cultural and social integration of Ukraine into global community, as well as internal integration. This NGO initiates and implements projects that promote internal and external integration into global context and creating a framework for educating the new generation that shares the values of the free world. GoCamp Achievements are: 800 volunteers from 65 countries of the world; 1356 schools-participants of GoCamp; 144.000 children from all over Ukraine [20].

Now, let's draw our attention to online education. The students with disabilities or those who for personal reasons chose home education, quite frequently preferred having online classes.

Before the Covid-19 epidemic, the main reasons why American students from kindergarten, elementary and middle school to high school were receiving online education were temporary causes such as illnesses, accidents, behavior problems, and other causes such as frequent changes of address or having professions that require a lot of dedication (athletes, actors, etc.). However, in high school, the main reason was the delay with respect in understanding the material in comparison with their classmates [7].

Nowadays, there are a large number of online platforms used for classes, among which the most popular in U.S. and in Ukraine are Zoom, Skype, Microsoft Team and Google video/conference platforms. In China, where Google and many other platforms are blocked, the most common class teaching platforms are MOOC (Massive open online course) and Tencent [15, 16, 17].

Let's have a close look at Google Meet, more popular among corporations and universities' studies, and

Zoom, which is more popular for secondary schools' pupils (Fig. 4):

In terms of core features, the leading platforms offer very similar products, which we will compare in the Table 1 [15, 16, 17].

Now, we can make a ranking based of most important features that the users receive from the applications for learning motives. We will analyze the characteristics evaluated by the scale where the highest point is 10 and the lowest point is 1.

As we can see from the tables 1, where the highest level is 10 and the lowest is 1, the applications for online video calls include such basic capabilities:

- video conferencing;
- digital audio calling;
- instant messaging;
- screen sharing;
- call recordings and transcripts;
- virtual/blurred backgrounds.

Therefore, most of the significant distinctions are in call length and participant limits, and special features. In future article we should study more thoroughly international programs possible for adaptation in Ukraine and Ukrainian tailor-made programs such as Shkola, Prometheus and others.

Conclusions

In this article we explored different options for innovative development of



	Google meet	Zoom
Free Option	Yes	Yes
Price range (monthly)	6–25\$ per user*	14.99–19.99\$ per host
Maximum participants	Up to 250	Up to 1.000**
Platforms supported	Windows, MacOS, Android, iOS	Windows, MacOS, Android, iOS
Call Recordings	+	+
Screen Sharing	+	+
Group Messaging	+	+
Integrations	Other Google services, Skype, Pexip Infinity	Workplace, Salesforce, Google services
Other Features	Encrypted calls	Polls, whiteboard, encrypted calls

* All advanced Meet features are now included at no additional cost for all G Suite subscriptions until September 30, 2020.

** Support for 1.000 participants requires Large Meeting add-on.

Fig. 4. Comparing Google Meet and Zoom [16]

Table 1. Comparing video/conference platforms

Name	Ease of set up	Users friendly	Target audience	Brand awareness
Google Meet (Hangouts)	8	7	Mostly users of Google services, corporate clients	8
Skype	6	9	Business and private individuals, mostly adults	9
Zoom	7	8	Younger users, mostly students and pupils	7
Apple FaceTime	9	9	Users of Apple products	6
Join.Me	5	6	Businesses, organization, entrepreneurs	5
GoToMeeting	7	9	Targeted at people and entities who need to do business presentations, meetings and collaborations	4

educational organizations in order to provide learning process safely in the conditions of pandemic. We learned that most educational institutions opted for online education. In this study we considered the online education sector as a temporary solution to the COVID-19 crisis and as a market with potential for the development in nearest future both as a substitute of traditional face-to-face education, and as an alternative way of studying. We analysed famous available online learning platforms in the world after which the authors made a comparison of the most popular tools for online conferences and meetings.

References

1. Universal declaration human rights. Internet Source. URL: <https://www.un.org/en/universal-declaration-human-rights/>. Retrieved 10.03.2021.
2. CONCEPTS AND FUNCTIONS OF NGO — [Internet Source] — Available at: http://164.100.133.129:81/econtent/Uploads/CONCEPTS_AND_FUNCTIONS_OF_NGO.pdf.
3. I. Kuklina. Global Security Trends: The Collapse of Power and Law // Asia and Africa in modern world politics. Editors: D. Malysheva, A. Rogozhin. M.: IMEMO RAS. — 2012. — № 4.
4. Paula Friero Padín, Carmen Verde-Diego, Tamara Fernández Arias & Rubén González-Rodríguez (2021) Burnout in Health Social Work: an international systematic review (2000–2020), European Journal of Social Work, DOI: 10.1080/13691457.2020.1870215
5. Social Innovation: New Forms of Organisation in Knowledge-Based Societies. Editors: Carmen Ruiz Viñals, Carmen Parra Rodríguez. 246 p. — Routledge Publishing House. ISBN 9781136181818.
6. Advancing the Common Good: Strategies for Businesses, Governments, and Nonprofits. Santa Barbara. California. Praeger — 2019. — ISBN: 978-1-4408-7244-0
7. Forbes 2020. Foreign Student Enrollment at US Universities May Plummet this Fall. Internet Source. URL: <https://www.forbes.com/sites/prestoncooper/2020/06/01/foreign-student-enrollment-at-us-universities-may-plummet-this-fall/#7ae27f93aa76> Retrieved 10.03.2021.
8. 2020 Snapshot Survey: Student Study Abroad Experiences During COVID-19 by Diversity Abroad.
9. NAFSA (2020). Losing Talent 2020 An Economic and Foreign Policy Risk America Can't Ignore. Available in: <https://www.nafsa.org/sites/default/files/media/document/nafsa-losing-talent.pdf>
10. The Ministry of Education in Ukraine. Internet source. URL: <https://mon.gov.ua/ua>. Retrieved 14.03.2021.
11. About ZavtraUA. Internet source. URL: <https://pinchukfund.org/en/projects/9/41>, <https://pinchukfund.org/en/projects/8/42>. Retrieved 09.04.2021.
12. Institute of Ukrainian Studies Organisation. Internet Source. URL: https://europa.eu/youth/volunteering/organisation/56289_de?language=ro.
13. Aurora Institute (2015). Keeping Pace with K-12 Digital Learning — An Annual Review of Policy and Practice.
14. Startpack Ltd. Internet source. URL: <https://startpack.ru/compare/google-hangouts/zoom>. Retrieved 12.04.2021.
15. Edgar Cervantes. Zoom vs. Google Hangouts: Which is best for your needs? Internet source. URL: <https://www.android-authority.com/zoom-vs-google-hangouts-1109265/> Retrieved 11.04.2021.
16. Eztalks official web site. Internet source. URL: <https://www.eztalks.com/video-conference/join-me-vs-gotomeeting-which-one-is-better.html> Retrieved 10.03.2021.
17. Class Central. Internet source. URL: <https://www.classcentral.com> Retrieved 21.03.2021.
18. Ukrinform. Internet Source. URL: <https://www.ukrinform.ua/rubric-technology/2824491-fedorov-nazvav-riven-pokritta-ukraini-internetom.html> Retrieved 12.04.2021.
19. Ukrainian Internet Association Internet Source. URL: <https://inau.ua/news/v-ukrayini-znachno-vyrosla-internet-penetraciya>. Retrieved 12.04.2021.
20. "NGOs-members". Internet Source. URL: <https://rpr.org.ua/en/go/> Retrieved 12.04.2021.

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Інновації в освіті та освітні інновації в умовах пандемії COVID-19 в Україні

У цій статті ми зосередимося на впливі COVID-19 на ринок освіти, а також на тому, як онлайн-навчання може стати інструментом міжнародних та національних освітніх програм. Ми також вивчимо та порівняємо практики освітніх закладів США та України, які були змушені провести масштабний експеримент з оперативної реалізації онлайн-освіти.

Ключові слова: освітні інновації, технології, сталий розвиток, інфраструктурний розвиток, інноваційний розвиток, антикризове управління.

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Higher Education Innovatics: The Role of Innovative Environment in Transformation of the Sphere of Higher Education and Science

Innovative transformations in the field of higher education and science, as a rule, take place within the framework of an innovation policy determined by the leaders of this field. It should be noted that innovation policy in the field of higher education is the link between the policy of research and scientific (scientific and technical) activities, the search and dissemination of knowledge, education and training of qualified specialists in the field of technological development, industrial policy, and environmental policy.

Innovation policy in the field of higher education and science is one of the main components of the state socio-economic policy of social development and is aimed at creating favorable conditions for bringing new ideas created in this area to the market.

The article is devoted to the further development of the theoretical foundations of innovation in higher education. The main issues of the organizational theory of innovation in higher education are considered; national and international components of innovation in the field of higher education and science, as an open educational, scientific and cultural system; orientation and influence of innovation processes in the field of higher education and science on objects and subjects of innovative transformations; the most important tasks of the state in the management of innovative activities in the field of higher education and science; activities promoted by innovators in higher education; innovative environment.

The main directions of the innovative policy of the entrepreneurial university and innovative relations in the field of higher education and science are studied.

The problems of compulsory or emergency distance learning are also analyzed.

Keywords: higher education innovatics, innovative policy, innovative environment, management of innovation activities.

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1. Introduction

During this study, a large amount of useful information was obtained about the positive impact of academic capitalism on the social-economic and social-humanitarian spheres of human activity. Analyzing the impact of academic capitalism on the development of academic or university entrepreneurship and further promoting the spread of innovation in higher education and science, the authors proposed to create and introduce a new scientific and applied field, namely: higher education innovatics [1–2]. The idea of creating this new scientific and applied field is based on the following task: “higher education innovation is designed to systematize a comprehensive study of innovative changes in higher education and science to further disseminate them in higher education and science systems of different countries.”

Let us consider some publications that contain the fundamental foundations of the theory of academic capitalism, the theory of innovation, innovation management, academic or university entrepreneurship, innovation activity, innovation policy, and innovative environment — the main factors of innovative management in higher education and science innovative transformation. These works formed the basis of the theory and practice of the multidisciplinary direction of higher education innovatics. Within the framework of higher education innovatics, the authors will consider the types, varieties and direction of innovative (transformational) changes in the field of higher education and science. The main goal of all such changes is to build an innovative model of the higher education and science system aimed at creating a knowledge society.

According to S. Slaughter and L. Leslie [3], the essence of “academic capitalism” is the transformation of scientific and teaching activities into a kind of entrepreneurship: the implementation of research projects is directly dependent on the receipt of

cash subsidies from individual corporations: “Academic capitalism deals with market and market-like behaviors on the part of universities and faculty” [3, p. 21]. Within the framework of “academic capitalism”, the activities of research institutes and centers within the university structure are aimed at increasing the potential for public application of knowledge. The authors give the following interpretation of definition of academic capitalism: “To maintain or expand resources, faculty increasingly had to compete for external dollars that were tied to market-related research, which was referred to variously as applied, commercial, strategic and targeted research, whether these monies were in the form of research grants and contracts, service contracts, partnerships with industry and government, technology transfer, or the recruitment of more and higher fees-paying students. We call institutional and professorial market or market-like efforts to secure external monies academic capitalism” [3, p. 17]. Note that the term “academic capitalism” was first introduced by E. J. Hackett [4] to denote important structural changes in science.

“Academic capitalism” sets new directions for the development of modern higher education and manifests itself on three levels: institutional, departmental, individual. Academic capitalism at the institutional level is realized against the background of changes in the funding of higher education institutions, the reduction of public funding and the need to find sources of additional funds. The study of academic capitalism at the departmental level is of interest because it is here that various activities are carried out, employees adapt to new values. At the individual level, within the framework of academic capitalism, there is a revision of the distribution of time between the main activities of the teaching staff: teaching, research, services [5].

In its essence, the environment of academic capitalism, which has covered the sphere of higher education and science (as well as all other social, public

and humanitarian spheres of human activity) with market and market-like relations, is also a new phenomenon in the general system of capitalism. It was in the environment of academic capitalism that the powerful innovative development of both the socio-humanitarian and industrial spheres of human activity began. Accelerated innovation has spawned the digital revolution and has become an objective reality for today's globalized world.

The complete description of innovation processes was done by J. Schumpeter: he analyzed the “new combinations” of changes in the development of economic systems. He added a definition of innovation as “new combinations” of new or existing knowledge, resources, equipment and so on [6, p. 65]. Also, he underlined that innovation needs to be distinguished from invention: he saw innovation as a specific social activity (function) carried out within the economic sphere and with a commercial purpose, while inventions in principle can be carried out everywhere and without any intent of commercialization. For Schumpeter innovations are novel combinations of knowledge, resources etc. subject to attempts at commercialization (or carried out in practice). This “combinatory” activity he labeled “the entrepreneurial function” and the social agents fulfilling this function “entrepreneurs” [7, p. 21]. Also, Schumpeter [8] and Mensch [9] introduced the term “innovation” into scientific circulation, which was defined as the embodiment of a scientific discovery in a new technology or product.

Surveys of the literature on innovation have found a great number of variety of definitions. Thus, in 2009, Baregheh et al. found around 60 definitions in different scientific papers [10, p. 1325], while a 2014 survey found 41 [11, p. 1394]. Based on their survey, Baragheh et al. attempted to define a multidisciplinary definition and arrived at the following definition:

“Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate

themselves successfully in their marketplace" [10, p. 1394].

In an industrial survey as to how the software industry defined innovation, the following definition, given in 2010 by Crossan and Apaydin and built on the Organization for Economic Co-operation and Development (OECD) manual's definition, was considered to be the most complete:

"Innovation is: production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and the establishment of new management systems. It is both a process and an outcome" [11, p. 1400–1401].

Two main dimensions of innovation were degree of [novelty] (i.e. whether an innovation is new to the firm, new to the market, new to the industry, or new to the world) and types of innovation (i.e. whether it is product, process, market or organizational innovation) (ibid, pp. 1394–1395).

Well-known and influential scholar Everett Rogers offered the following description of an innovation: "An innovation is an idea, practice, or project that is perceived as new by an individual or other unit of adoption" [12, p. 12].

Peter Drucker defined the essence of innovation as follows:

"Innovation is the specific function of entrepreneurship, whether in an existing business, a public service institution, or a new venture started by a lone individual in the family kitchen. It is the means by which the entrepreneur either creates new wealth-producing resources or endows existing resources with enhanced potential for creating wealth" [13].

Theoretical foundations of innovation, innovative development and innovation management, include a global study of innovation management 2006–2016 given in the book [14], in an article [15] and the papers of Bouwer [16–17].

In the comprehensive book Damapour [18] synthesizes research from the past 50 years of innovation studies, addressing the main elements of innovation and providing a connected perspective on innovation within organizations. The author provides an overview of key concepts, terms and theory, explores the generation and adoption processes of technological and nontechnological innovations, and examines innovation activity and internal mechanisms and procedures in organizations.

This research is based on the following conceptual foundations of innovative development of higher education:

- H. Etzkowitz's concept of innovative development of society by the "triple helix" model [19–24], which is successfully used in many developed countries (USA, UK, Canada, Australia, Japan, Germany, Sweden and many other countries of the EU) and in the developing world (China, Russia, Brazil, some other South American countries, etc.);
- B. Clark's concept of transformational changes of conventional universities into innovative universities focused on in-house entrepreneurial activities ("business universities") [25–27], which has been validated in higher education systems in many countries of different continents (North and South America, the United States of America, Western Europe, Japan, Africa).

The authors also paid great attention to the problems of innovation of:

- governmental strategies and innovation in higher education [28];
- fostering innovation in higher education [29];
- real opportunity to commercialize R&D results emerged, leading to rapid development of university and academic science and technology [30];

- global innovation of teaching and learning in higher education [31];
- conceptualizing innovation in higher education [32];
- teaching practices and pedagogical innovations [33];
- roles of innovation in education delivery [34], etc.

For more than 50 years the sphere of higher education and science has been subject to various innovative changes, the direction of which depends on the goals set by the innovators. Since almost all areas of social, economic, and public-humanitarian activities of mankind are connected with the sphere of higher education and science, it is advisable to investigate, identify, and group innovations according to the areas of application and the tasks assigned to them.

To systematize and comprehensively study the theory and practice of innovation in the field of higher education and science, the authors of this article have developed and proposed a new scientific and applied multidisciplinary direction — "higher education innovatics" [1–2].

1.1. Relevance of the topic

Higher education plays a crucial role in the development of human society, both historically and in modern conditions. The integrated role of universities in the period of globalization is presented in the publication [35]. Universities are the engines of socio-economic development of societies and their national institutions. They play a central scientific role in society, in the multiplication, preservation and dissemination of knowledge, and are defined as intellectual centers and international organizations. It is the universities that must ensure the accessibility of higher education and the fair provision of educational services to all layers of the population. Universities should both solve the problems of general education and develop economic science and academic (university) entrepreneurship. They must realize their historical prospects

for the further development and improvement of humanity. Therefore, the broad and purposeful introduction of innovations, best practices, techniques and technologies in the field of higher education and science should ensure the implementation of the integrated role of universities in the period of globalization.

Building a knowledge society with an innovation-oriented type of economy in any country requires fundamental reform of its socio-economic and humanitarian spheres, innovative development of the system of higher education, science and scientific and technical activities. At the same time, a reasonable combination of the best foreign experience with national traditions is necessary. The priority of the state policy of innovative development of higher education requires the early introduction of innovative entrepreneurship of various types and organizational and legal forms. At the same time, the basis of economic reform and the main lever in the new model of the economy is the activation of all types of entrepreneurship, including innovative academic or university entrepreneurship, as an integral socio-economic process. Accelerated creation, development and implementation of innovations in higher education and science, promotion of innovative methods, technologies, and innovative entrepreneurship is especially important in the period of search for new economic models and strategies that will contribute to the accelerated development of the social and economic system. In this regard, it is necessary to study and develop the theory of innovation in higher education, to determine the types and directions of innovations for the early implementation in this area.

1.2. Statement of the problem

The interdisciplinary scientific-applied direction in the field of higher education and science — “higher education innovatics” study, systematize and further disseminate

innovative transformations of subjects of higher education and science in the conditions of academic capitalism. The spread of market mechanisms in all spheres of socio-economic and humanitarian activities of mankind, the appearance of the phenomenon of academic entrepreneurship, commercialization of knowledge and R&D need to develop and scientifically substantiate the theory and practice of innovative development of higher education and science. It is necessary to contribute to the practical implementation of innovative changes, to find, investigate, and implement appropriate directions, ways and mechanisms of innovative transformation of the higher education sector in general, and its subjects — of higher educational institutions, organizations and bodies related to higher education.

2. Analysis of recent studies and publications

Among the latest publications on innovations in higher education, the following works seem to be interesting.

In “Innovation in higher education; will there be a role for “the academe/university” in 2025?” Eddie Blass and Peter Hayward [36] presents five scenarios for the future of higher education underpinned by drivers of funding, the ownership and exploitation of ‘research’, the provision of good ‘teaching’, and the potential missing link of social innovation development. The authors emphasize that by refocusing on facilitating social innovation, the university can find a new means of adding value to society that will sustain its existence beyond 2025.

In his paper Dustin Swanger [37] explores the current state of higher education and the pressures facing colleges. He also explores innovation and some of the challenges to innovation in higher education, as well as

some of the successes. This paper will recommend some changes that can be implemented on any campus to improve outcomes and efficiencies.

The background report to the second Global Education Industry Summit, held in Jerusalem on 26–27 September 2016 [38], covers the available evidence on innovation in education, the impact of digital technologies on teaching and learning, and the role of digital skills and the education industries in the process of innovation, using data from OECD surveys. Innovation will be essential to bring about qualitative changes in education, as opposed to the quantitative expansion seen so far. These changes are needed to increase efficiency and improve the quality and equity of learning opportunities. Education can also foster innovation in society at large by developing the right skills to nurture it. These skills, including critical thinking, creativity and imagination, can be fostered through appropriate teaching, and practices such as entrepreneurship education. Governments should develop smart innovation strategies for education with the right policy mix to give meaning and purpose to innovation, including creating an innovation-friendly culture. Understanding the education industries better, including their market structures and innovation processes, would help to create a more mature relationship with the education sector. Innovation in the industry — which develops the products and services that could drive innovation in schools — does not happen in isolation from what is happening in the education sector. Only when there is an innovation-friendly culture in education systems, supported by an innovation-friendly business environment and policies, will industries start to engage in risk-intensive research and development. Governments can support this by fostering a climate of entrepreneurship and innovation in education.

The article of P. Serdyukov [39] is devoted to the problem of innovation in American higher education. Analyzing the publications of American ex-

perts in the field of higher education and innovation, studying the real state of affairs with the use of innovations in higher education institutions, he notes the following: "Unbundling is the process by which products previously sold together are separated into their component parts." In work [40], the author states that in higher education there is a dynamic separation of teaching and research. This dynamic separation was driven primarily by financial motivation and was driven by the commercial sector, but also had pedagogical motivation through an emphasis on personalization and employability. The article presents a theoretical analysis of the trend and proposes new conceptual tools with which to map regulatory implications.

The article [41] is devoted to the institutional innovation and some models of innovation in higher education. The author concludes that contemporary innovation research informs us of models and the nature of innovation and its basic facets:

- TAR model;
- a stakeholder model;
- the structural model;
- governance structured models and
- triple helix and quadruple helix innovation models.

In the book [42] the modern problems of pedagogical science and education are studied.

In their book Branch, et al. [43] are presenting primary examples of innovative teaching and learning practices in higher education. The book is truly international, containing contributions from Australia, Denmark, England, Hong Kong, Italy, Qatar, Scotland, South Africa, Tasmania, Vietnam, and USA. Although the educational contexts are very different across these countries, there appears to be a striking similarity in the approach to innovative teaching and learning.

The following works are devoted to a critical study of the problems of academic capitalism.

The increasing trend toward academic capitalism and profit-oriented entrepreneurial practices in the fields

of education and research is discussed in the work [44]. This occurs as universities, in different ways and subject to greater or lesser financial, administrative, and ideological pressures, act less like centers of disinterested education and research and more like economic enterprises that aim to maximize their revenues and/or advance the economic competitiveness of the spaces in which they operate.

The article [45] provides a definition of academic capitalism, presents an overview of the research literature, outlines the prospects for academic capitalism in the Americas, and discusses the implications of academic capitalism for Latin America. Estimates are given of what is useful in academic capitalism for Brazil.

In the work [46] the author: a) describes the most important features of academic capitalism and their impact on science, as well as on the evolution of scientific knowledge; b) notes that academic capitalism is located in the intersection of scientific research, economic profit maximization, and innovation policy; c) examines the institutional conflicts of interest associated with corporate research funding. He argues that academic capitalism is a unique hybrid that combines the scientific search for truth and the economic maximization of profit, and turns universities into enterprises competing for capital accumulation, and enterprises into knowledge producers looking for new discoveries that can be turned into patents and profitable goods.

The series of publications is devoted to the problems of organizing distance learning education process during the COVID-19 pandemic. For example, in works [47–50] the authors study the information, communication, organizational and pedagogical problems of organizing distance learning in periods of natural disasters and for-major conditions.

3. Purpose of the article

The main purpose of the article is to further develop the theory and prac-

tice of the interdisciplinary scientific and practical direction of "higher education innovatics", to determine the tasks, directions, and features of innovative transformations in the field of higher education and science. An important issue of the research is the effective organization of management in the field of innovative transformations, innovation policy, and innovation relations in the subjects of higher education and science — universities and research institutes.

As it is well-known, the issues of the theory of "pedagogical innovatics" [51–52] are studied at the Institute of Educational Innovations of the Russian Academy of Education at the Khutor-skoy Scientific School.

However, unlike pedagogical innovation, higher education innovation is the result of the development of academic capitalism and studies mainly both its market innovation processes that have spread to the field of higher education and their impact on the social-economic sphere of society. The authors consider the further development and dissemination of the theory and practice of innovative development of higher education institutions, formulated in the work [53], to be a very important task of the innovatics of higher education and science. No less important is the theory and practice of the development of innovative corporate culture in the subjects of higher education and science — universities and research institutes.

4. Research methods and methodology

The authors used such research methods as:

- dialectical approach to the analysis and understanding of the content and features of innovative development of higher education under the influence of market relations of academic capitalism and university entrepreneurship;
- analysis of innovative transformations as economic categories in the system of socio-economic relations

and relations of the integral economic system of the modern knowledge society;

- methods of abstraction, system-structural and information-theoretical approaches are used to study the conditions for the formation of new innovative forms of university entrepreneurship, the features and essence of university entrepreneurial activity;
- critical study of the impact of innovative transformations and academic entrepreneurship on the financial stability of higher educational institutions;
- methods of analysis and synthesis are used to study various innovative approaches and technologies in higher education and to form a holistic picture of the complex innovative activities of subjects, objects, and the higher education system as a whole.

The research methodology includes:

- methods of empirical research of innovations in the field of higher education, including: observation, experiment, comparison, measurement, and comparison;
- statistical methods of scientific description and study of various innovative phenomena in the system of higher education, allowing quantitative (numerical) expression;
- critical study and awareness of the concept of innovation in higher education;
- analysis of literary sources, including electronic and computer tools; comparison and verification of the feasibility or necessity of introducing various types of innovations, analysis of their effectiveness, and the possibility of spreading and implementing them to objects and subjects of the higher education system; forecasting ways to form new innovative approaches, methods, and technologies; integration of research results and formation of scientific-theoretical, methodological, and practical provisions of a new direction-innovation of higher education.

5. Presentation of the main research material

5.1. Innovative activity in the sphere of higher education and science

As higher education innovatics is a branch of knowledge aimed at studying, creating, explaining, and effectively implementing innovations in the sphere of higher education and science, the authors will consider the main results of their research of types of innovations in higher education and science and direction of their implementation as the practical use of innovatics theory and practice.

The core of higher education innovatics as a science is the general organizational theory of innovation with a focus on application in the sphere of higher education and science including academic or university entrepreneurial activities.

The object of research in the higher education innovatics is the process of conducting innovations in the sphere of higher education and science; the subject is the theoretical, methodological, and organizational bases for implementing this process; the product is a system of scientific and practical provisions that ensure the development, implementation, and support of innovations in the sphere of higher education and science, as well as their explanation and foresight.

The basic issues of organizational theory of higher education innovatics include (Fig. 1):

- classification of innovations in the sphere of higher education and science by their focus on the types of activity;
- classification of innovations by their type and model used;
- stating their goals;
- identification of conditions and methods of innovation;
- forecasting and planning;
- risk assessment;
- error prevention.

There are two general types of innovation: sustaining innovation or disruptive innovation [54].

Such models of innovations can be used: radical, incremental, architectural or modular [55].

Also, innovation can be used for profit generation (commercial) or for non-for-profit purpose: social, sustainable or green innovation and responsible innovation [56–57].

The organizational theory of higher education innovatics covers such groups of problems as:

- scientific (basic and applied);
- educational and pedagogical;
- managerial;
- technological;
- informational;
- legal;
- organizational;
- financial and economic;
- socio-psychological and cultural;
- personnel (HR).

The latter group is of particular importance and results in the basic principle of innovation. Innovations are formed and implemented by people (personnel). Therefore, the main actor in any innovation process is a person and the basic principle of higher education innovation can be formulated as follows: the effectiveness of the innovation process in the field of higher education is ensured by managers and participants in this process, their creative potential, energy, and talent. Since the innovation process in the field of higher education takes place at different levels, accordingly, managers and participants in this process should be persons who are endowed with appropriate official powers, as well as have the desire and internal strength to experiment, a vision of the problem and prospects, creativity, the courage to take responsibility for the development and implementation of changes, and other properties and character traits necessary for innovation. The ability to work in an ever-changing world is a necessary quality for both senior management personnel, as well as for specialists of all other management levels.

A very important reflection of the crucial importance of innovation in the field of higher education and science is the innovation policy, innovation

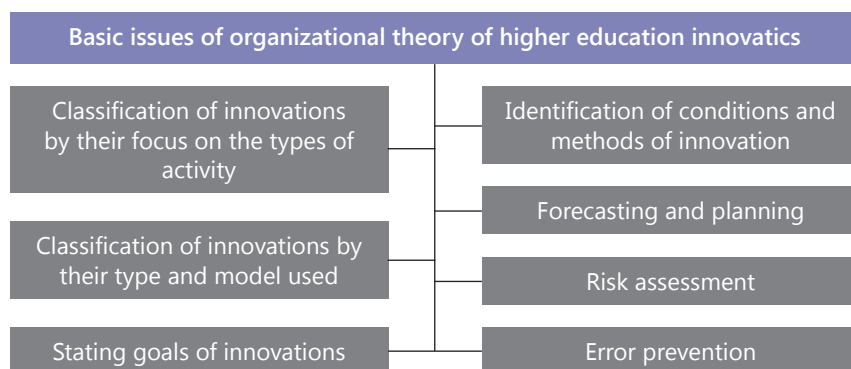


Fig. 1. The basic issues of organizational theory of higher education innovatics

relations, and innovation culture of the subjects of this field. This sphere includes all higher educational institutions, scientific institutes and organizations and legal entities involved in the educational and scientific sphere. The problems of innovation policy, innovation relations, and innovation culture of the subjects of higher education and science — universities, scientific (research) institutions and other organizations related to these areas, which find themselves in the conditions of academic capitalism, require further research. Also, in our opinion, a very important issue for further research is the formation of a corporate innovation culture of employees at all levels of higher education and science in the conditions of academic capitalism. In the future publications, the authors will consider the main provisions concerning innovation policy, innovation relations, and innovation culture of higher educational institutions on the example of innovation-oriented entrepreneurial universities.

Innovations in higher education and science, as an open educational, scientific and cultural system, should be classified according to their complexity, significance, and functional purpose. For example, large-scale innovations are aimed at improving the efficiency of higher education as an industry that is part of the socio-economic and public-humanitarian complex of the entire country. Innovations implemented at the regional level are medium-sized.

Individual innovations are carried out at the level of HEIs, scientific institutions and their individual divisions.

Taking into account the level of significance, it is advisable to distinguish international and national educational, scientific and cultural innovations that are aimed at services in the field of education, science, and culture by their scope of application (Fig. 2).

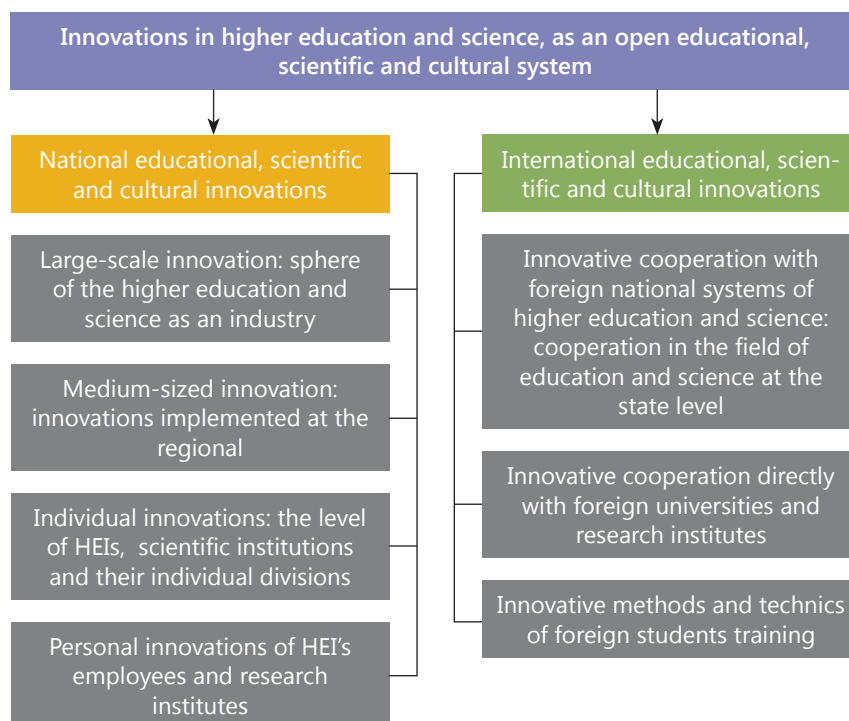


Fig. 2. National and international components of the innovations in the sphere of higher education and science, as an open educational, scientific and cultural system

The problem of innovation management in the field of higher education is not to optimally implement individual innovative projects, but to build structural-transformational innovative techniques and qualitative structures of new mechanisms, methods, and forms of activity. At the same time, the primary principle of the process of organizing innovation activities in the higher education system is the purposefulness and specificity of innovations. The goal system should have a well-built hierarchical structure.

Analysis of the direction and impact of innovation processes in the field of higher education and science on the objects and subjects of innovative transformations (Fig. 3, Fig. 4) certifies the necessity and importance of intensifying the processes of search and formation of new knowledge, identifying their scientific, technical, and applied significance for the further socio-economic development of society, science and technology.

That is, the development of mechanisms for effective search and further accelerated use of new knowledge is the core of innovative transformations both in society as a whole and in its individual branch — the system of higher education and science. In the field of higher education, new socio-economic mechanisms of innovation activity should certainly include university or academic entrepreneurship, the latest methods of accelerated transfer of technologies, the formation of start-up and spin-off business structures, and so on.

Innovative changes in the field of higher education and science occur at the state, industry, regional, and domestic (at the level of subjects of the higher education and science system) levels. State support is the foundation of innovation in the sphere of higher education and science. State administration of scientific, technical, and innovative activities in the sphere of higher education and science is an integral part of the country's socio-economic strategy. So, it should be carried out by means of:

- monitoring and analysis of the state of achievements of the world and national systems of higher education,

- science and technology, technologies, and innovations;
- development of an image of the future (expected) state of the higher education system, its provision with the necessary scientific, technical, and human resources;
- justification of key areas of development of the higher education system in the short, medium, and long term;
- creation and support of innovation infrastructure, including its environmental component;
- legal support of state support for innovation activities;
- financial support for priority areas of innovative development of the sphere of higher education and science;
- targeted funding for education and basic research.

State measures should also ensure:

- capital inflows to innovative development of higher education;
- a high level of innovation is required;
- training a sufficient number of engineers, scientists and management personnel;

- facilitating access of national higher education and science to foreign markets.

The role of the state in the management of innovation activities in the field of higher education and science is an important task of the state. For the state, it is necessary to solve the following most important tasks (Fig. 5):

1. To determine the technological, economic and main goals and a plan for macroeconomic transformations that will mobilize society with a single focus on innovative development.
2. Creating the necessary conditions that best contribute to the innovation and investment process.
3. Combining the efforts of government agencies with business to support innovative initiatives of higher education and science subjects, stimulating innovation management in this area, and spreading innovations in this industry. Support and practical implementation of H. Etzkowitz's concept of innovative development of society by the H. Etzkowitz "triple helix" model [19–24].

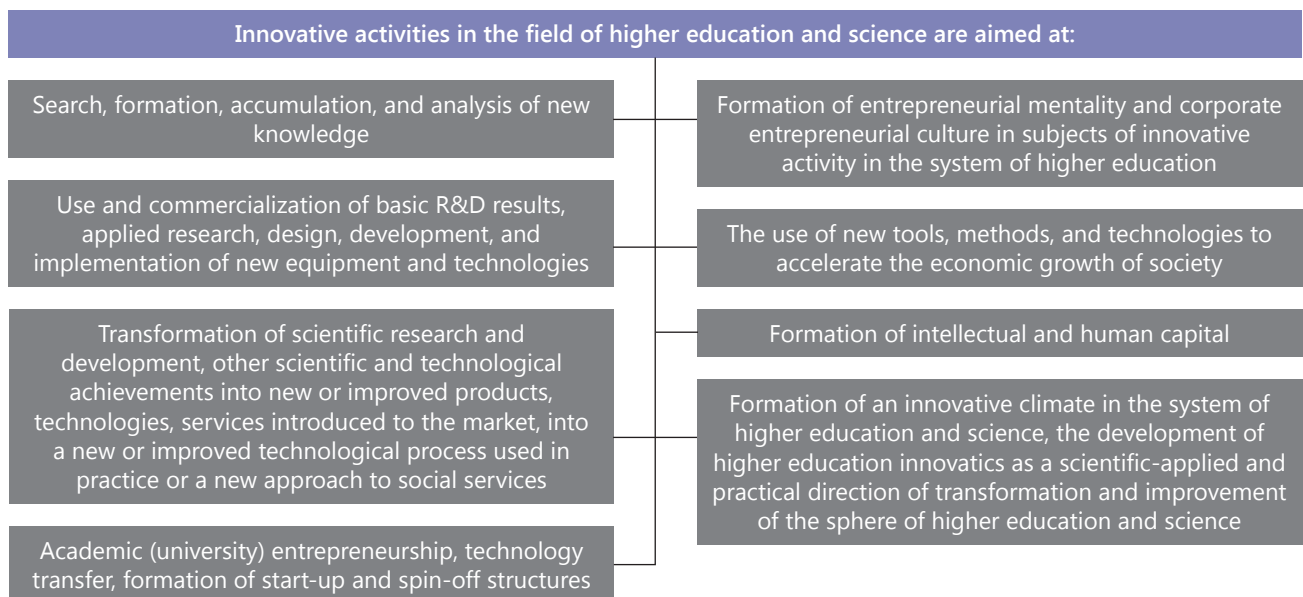


Fig. 3. Orientation of processes of innovative activity in the field of higher education and science on objects and subjects of innovative transformations

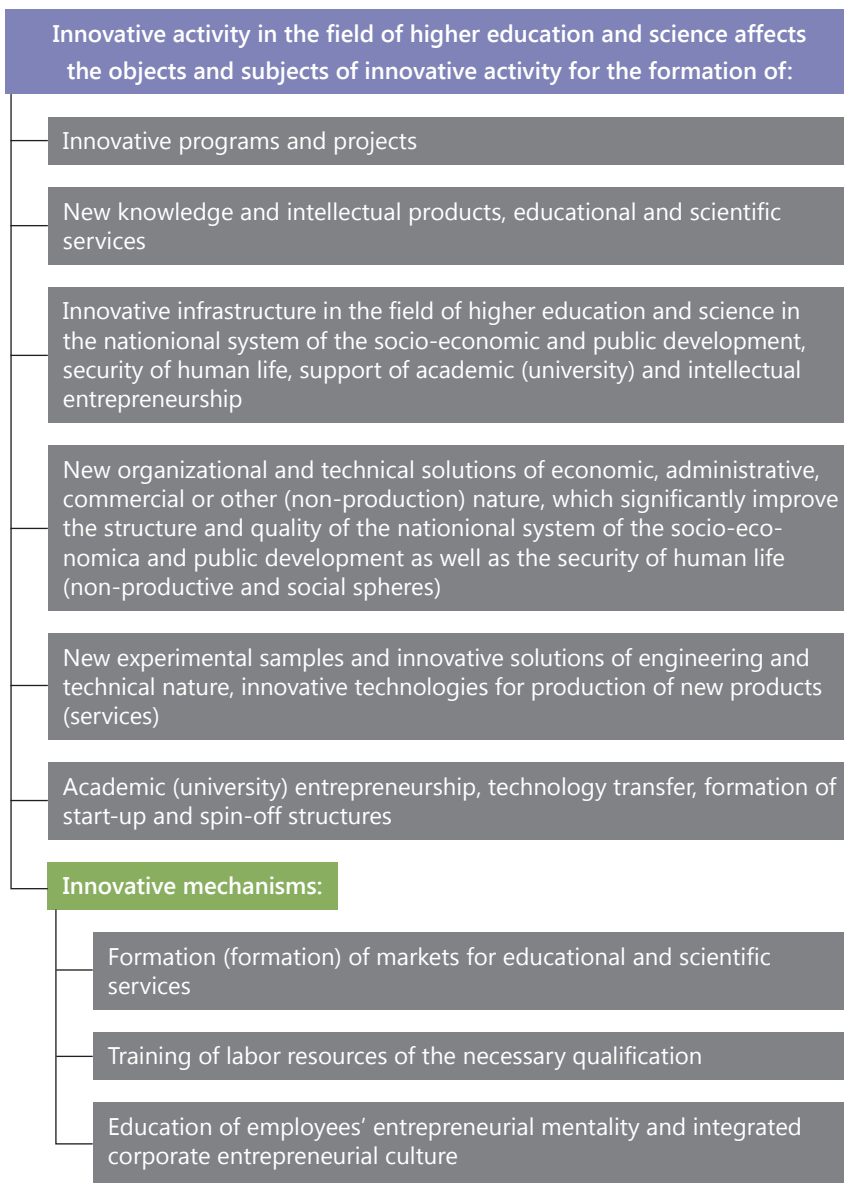


Fig. 4. Influence of processes of innovative activity in the field of higher education and science on objects and subjects of innovative transformations

4. To use and improve the advanced world experience in the field of innovative development of the sphere of higher education and science.

Innovation management should turn into a consolidated interaction of government and business mechanisms. Creating conditions for achieving agreement between the interests of the state and the employee in the

field of higher education and scientific and technical activities is the main task of the state level of management. This level becomes strategic, giving tactical and operational control to new innovative individual firms and specialized structures in the field of higher education and science.

At the same time, academic or university entrepreneurship was noted as one of the main motivators and

engines of innovation in the sphere of higher education and science.

Summarizing the results of a comprehensive study of the phenomenon of academic (university) entrepreneurship the authors noted that entrepreneurial institutions of higher education implement their activities in higher education in the current market laws of the economic system, interacting with internal forces of society (with response to its challenges and inquiries) under the influence of globalization pressure of the world community. Innovations in the higher education system should directly lead to innovative changes. It is reasonable to consider HEIs' innovative activity in the higher education system as an economic category related to the capitalization and commercialization of intellectual products — knowledge, technology, educational and scientific services, etc.

5.2. Innovative environment factor in the innovatics of higher education

Further development of the sphere of higher education and science directly depends on the quality of innovation policy and the intensity of innovation in this area. The main role is played by the human factor, which creates an innovative environment and uses the necessary innovative technologies, methods, techniques, and approaches.

Analyzing publications on this topic, it can be noted that the article [58] examines some of the issues of innovation policy of heads of the higher education system and universities in the process of constructing innovative ecosystems as an environment for the development of higher education and science.

Significant is the work [59] on how governments and leaders focus (and should focus) on competency building (including education, training, skills, and practical experience) in the design and implementation of innovation policies. "Competencies should be defined as a set of knowledge, skills and experience that people and orga-



■ Fig. 5. The role of state in the management of innovation activities in the field of higher education and science

nizations have. They can be considered as a set of acquired methods and inclinations to perform a specific activity, which often includes a certain set (analytical, physical, etc.) techniques and methods; and based on a certain level of past experience. Further, competencies are the result or outcome of the process to which people or organizations are exposed (learning scheme and/or series of new tasks). The literature usually distinguishes between different types of competencies: managerial competencies or skills; competencies in science, technology, engineering and mathematics (STEM); or more general social and communication competencies."

The article offers a typology of internal and external, and individual and organizational sources of competencies related to innovation. This is necessary to examine the most common initiatives that governments are taking in this regard. The paper highlights three common shortcomings and imbalances in innovation systems in terms of education, training, and skills: a) insufficient level of competencies in the system, b) time lag between short-

term needs of firms in specific competencies, and c) long time required for their development, and imbalance between internal and external sources of competence in firms. A set of general criteria for restructuring policy instruments to address these tensions and imbalances has been developed by the authors.

In the publication [60] the authors believe that higher education in the 21st century faces global forces that require innovative research, innovative pedagogy, and innovative organizational structures. A theoretical understanding of innovation is essential for the further development of higher education and science. The authors set out such a conceptual framework based on innovative literature in various academic disciplines. Thus, there are four inevitable trends in higher education that can lead to innovative responses. Working definitions of creativity, innovation, and entrepreneurship are generated by clarifying several terms related to innovation. The concepts of sustainable and destructive innovations are discussed. This shows how change and innovation have been

a constant feature of higher education since its inception. Three aspects of innovation are considered — diversity, intrinsic motivation, and autonomy. These aspects have a positive effect on the ability of people in higher education to be innovative. It then examines three complementary concepts — time, efficiency, and trust — that are important for careful consideration of innovation in an institutional setting.

Further, if we turn to the United States, we get confirmation that the American system of higher education is considered to be an important factor in national economic, scientific, and social progress. More than four thousand public and private institutions of higher education, awarding degrees and professional qualifications, significantly improve the quality of their educational and scientific activities by using innovative technologies, methods, techniques, approaches, and solutions.

Due to the increasing complexity of production processes in all spheres of human activity, the demand for higher, professional, and special technical education is constantly growing. Experts published before the COVID-19 pandemic estimated that the number of full-time students was expected to be over 23 million by 2025 [61].

Over the past 20 years, growth in college enrollment has come mainly from non-traditional students (i.e., students who do not enroll in college immediately after high school and students who do not attend college full-time), who now account for about 40 percent of all students.

The serious problem of expanding access arises after decades of skyrocketing tuition fees. The reasons for this escalation are many, from unprecedented competition for outstanding faculty and student talent, to administrative bloat, changing student tastes, and transforming their status from diligent knowledge consumers to market consumers demanding more services, and reducing the teaching load of full-time teachers. Despite higher income from tuition, many colleges and universities are under severe financial pressure because operating costs rise

faster and government support for government agencies declines. In this sector, innovation is critical to meet US needs in the coming years.

Innovation in US higher education can be defined as the introduction of new methods and customs to improve the efficiency of production [62].

For most teaching and learning-oriented sectors, this means recruiting students and providing them with degree opportunities (ultimately with the hope of nurturing productive and successful citizens), which is the result of some kind of learning process coupled with a range of operational support services. Innovation is possible with both learning and operational support, and involves creativity, risk taking and experimentation at the institutional level.

Whether a HEI or another organization innovates depends on a mix of factors, including the availability of new technological opportunities, and the market and social context in which they operate. Labor intensive industries innovate using a number of approaches, including:

- the use of information technology;
- different work strategies, such as greater differentiation of job roles, the use of contingent workers, and creative compensation schemes;
- re-engineering of key processes, for example, through subcontracting;
- emphasis on core mission and separation of support activities.

Federal policy plays a critical role in promoting innovation in higher education through funding levels and regulations, as well as the broader regulatory environment that affect learning and operations.

The authors made recommendations in three major areas: reworking student financial aid, creating a regulatory framework conducive to institutional experimentation, and generating new exemplars for wider adoption [61].

Analyzing the data from many scientific sources and summarizing the results of their own research, the authors propose to consider activities

promoted by higher education innovatics (Fig. 6) and innovative environment of these activities (Fig. 7).

Innovation in higher education should comprehensively promote such activities:

All these activities take place in such an innovative environment.

One of the tools of innovation management in the sphere of higher education and science is the innovation policy (policy of innovation). As it is known, the innovative policy is the state policy directed on control and maintenance of balance between the rights of owners of the information and necessity of innovations and technical progress. On the other hand, innovation policy is also a link between research and technological development policy and industrial policy. It is aimed at creating favorable conditions for bringing ideas to market.

The authors suggest that innovation policy in the sphere of higher education is the link between the policy

- of research and scientific (scientific-technological) activities;
- of search and dissemination of knowledge;

- of education and training of qualified specialists — on the one hand;
- of technological development;
- of industrial policy;
- of environmental policy — on the other hand.

In general, innovative policy in the sphere of higher education is one of the main components of state socio-economic policy of society development and is aimed at creation of favorable conditions for bringing new ideas created in this sphere to the market.

In this case, the following levels can be considered: state; industry (the sphere of higher education and science); regional or local; subjects of industry subordination (universities, colleges, different educational institutions or scientific institutions, other organizations of the system of higher education and science, etc.) [53]. When considering a university or research institute, it is necessary to distinguish between external and internal innovation policies.

External innovation policy is a joint, coordinated by the team line of behavior of the university or research insti-

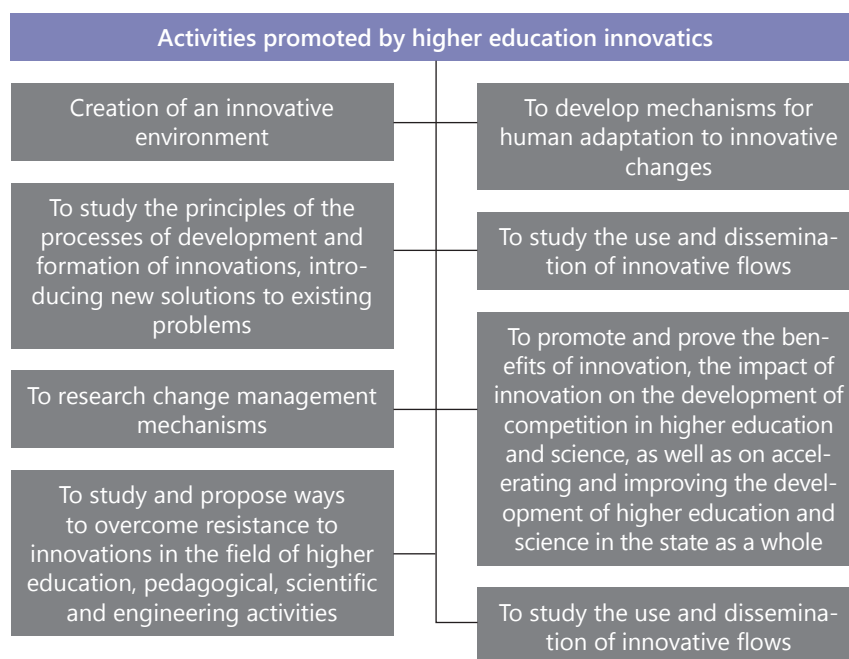


Fig. 6. Activities promoted by higher education innovatics

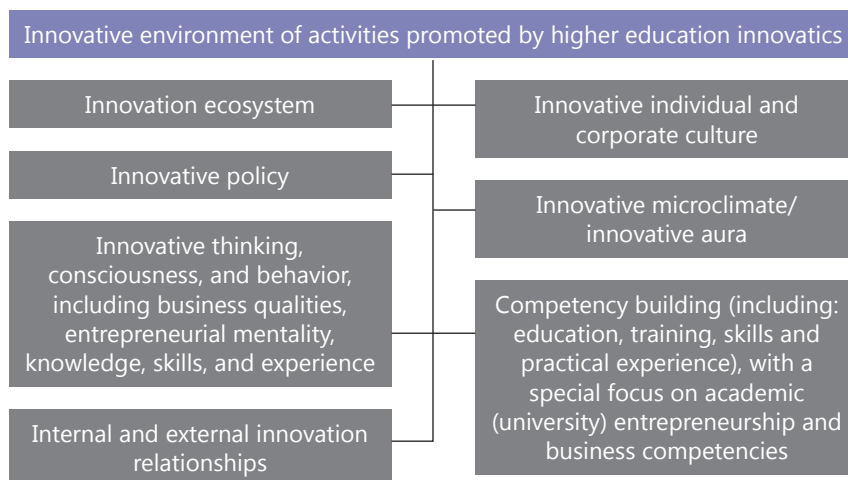


Fig. 7. Innovative environment of activities promoted by higher education innovatics

tute in the market of educational and scientific services, determines priority innovation projects and that leads to an increase in the level of development of the university or research institute.

Internal innovation policy is the regulation of personnel behavior aimed at the innovative type of development of the university (research institute). The essence of staff behavior is determined by the relations that develop between employees in the innovative field of activity of a university or research institute. In general, the innovation policy of a university or research institute is a guide to the selection of priority areas of the innovation process, the development and implementation of innovative plans and projects, the formation of the necessary relations between employees in the university (research institute). By its type, the innovation policy of a university or research institute can be different: narrowing (reduction); stable functioning; growth (expansion).

The policy of narrowing (reduction), stable functioning or growth (expansion) is based on the analysis of the goals of the university or research institute, which is defined as the specific final state (final position) of the university or research institute, or the desired result.

In determining the purpose contraction (decrease) in the final state (position) of the university or research

institute is seen in sustaining, maintaining production volumes of research and educational services, the share of developed market of such services, wages and number of workers or in the gradual slowdown in the growth of production volumes of research and educational services, hoping for the possibility of advancement in the future. The goals of narrowing (reduction) are chosen by universities and research institutes operating in unfavorable conditions. Investments in innovative projects in this case are either absent or random. It is a survival policy.

The innovation policy of stable functioning provides for comprehensive improvement and improvement of the quality of educational and scientific activities through the introduction of innovative methods and technologies. At the same time, there are no plans to increase or decrease the scope of statutory activities. Targets for growth (expansion) suggest a positive trend, the difference between them depends on their content and they can be aimed at:

- achieving a high level of educational, scientific, methodological and technological development, which is manifested in the state of the implemented educational and scientific processes and training technologies — in the degree of their novelty, quality, economy, productivity, progressiveness;

- achieving a high level of economic development of a university or research institute, which is manifested in increasing the competitiveness of educational and scientific products and services, increasing its market share, expanding volumes, improving financial results and financial condition;
- achieving a high level of social development of a university or research institute, which is revealed in the socialization of the results of activities and increasing the role of a person — the humanization of the management process.

Investments in innovation in the growth policy are regular and have a clear focus that characterizes the innovation policy. Innovative growth policy is characterized by external (socialization of performance results) and internal (humanization of the management process) social orientation.

Innovative growth policies can be extensive or intensive, risky or moderate, and allow for the use of alternative sources of financing and investment.

The main principles of the external innovation policy of the sphere of higher education and science and its structural units — universities and research institutes are:

- the unity of scientific and educational processes, administrative and managerial activities and their focus on the economic, social and spiritual development of society;
- optimal combination of state regulation and budget financial support with self-government and self-earning funds;
- formation of innovative projects in priority areas of research defined by the state and regional innovation and scientific and technical policy;
- support of leading scientists, research teams, scientific and scientific-pedagogical schools capable of providing advanced level of education and scientific research, development of scientific and technical creativity of young people;
- conducting a full cycle of research and development, ending with the

- implementation of ready-made services and products, the formation of startups (spin-off and spin-out);
- support for entrepreneurial activity in the scientific field, wide commercialization of R&D results;
- internationalization of education with the subsequent integration of science and education into the international community;
- formation of network structures in the organization of innovative and scientific-technical activities; formation of the world base of scientific knowledge.
- Internal innovation policy should be formed and implemented on the basis of the following principles:
- continuous development of the innovative potential of the university or research institute, which is necessary for the implementation of innovations;
- integrated implementation of innovations, in which all types of innovations are closely interrelated and mutually promote each other;
- creation of a structural unit responsible for the formation and implementation of innovation policy, strategy;
- staff mobilization, maximum use of financial, material and intellectual resources for the implementation of innovation;
- material, moral and social encouragement of innovation activity;
- risk accounting and assessment.

The innovation policy of an entrepreneurial university, as a tool for managing its development, is a decisive factor in innovation activity, one of the important elements of the innovation process in the university, research institutes, etc. This policy should promote the disclosure of innovative potential, the creation of innovative-active, effective behavior of personnel.

The innovation policy of an entrepreneurial university should take into account the specific features of the activity of an educational institution focused on academic entrepreneurship. The main components of the innovation policy of an entrepreneurial university are:

1. Environment:
 - external-favorable, neutral, unfavorable:
 - › regional (municipal) level;
 - › regional (municipal) level;
 - › national level;
 - › international level;
 - internal.
2. The goal of university development:
 - narrowing (decreasing);
 - growth (expansion):
 - › extensive;
 - › intensive.
3. The attitude to risk:
 - risky;
 - moderate (moderate).
4. Field of activity:
 - educational;
 - scientific (scientific and technical);
 - cultural and educational activities;
 - administrative and managerial support;
 - financial;
 - academic and entrepreneurial;
 - related business (provision of various paid services);
 - economic, commercial, auxiliary, and other types of university activities;
 - sports, leisure, everyday life, extra-curricular activities of the university.
5. The nature of innovation selection:
 - selective;
 - indicative;
 - comprehensive.
6. Sources of funding for universities:
 - budget;
 - extra-budgetary;
 - your own;
 - multi-channel system for finding, attracting and accumulating funds.
7. The method of forming the innovation policy of universities:
 - traditional;
 - intuitive;
 - scientifically based.
8. The nature of the implementation of the innovation policy of universities:
 - stable;
 - unstable.
9. The degree of entrepreneurship implementation:
 - low (medium);
 - high.
10. Expected results of the implementation of the innovation policy of universities:

- innovative development of higher education institutions;
- innovative development of the region;
- local, regional and national economic growth.

The external and internal policies of universities are understood in the same way as for enterprises (organizations). The feature of modern exterior innovation policy of the university is implementation of advanced foreign experience of leading universities in the world for international education, internationalization of higher education, the introduction of distance learning, partnerships with foreign universities and sharing them with students and teachers. The same applies to exchanges with entrepreneurial universities.

Extensive innovation policy is a policy of changes in the direction of quantitative development of certain characteristics of the activities of universities that are amenable to innovation.

Intensive innovation policy — is the policy of changes in the direction of qualitative improvement of the relevant characteristics.

In terms of risks, a moderate innovation policy is typical for universities.

Taking into account the specifics of the activities of universities, risk-taking can only be carried out in scientific activities (research and implementation of the results of the latest scientific and technical developments and technologies). But the university must develop a risk management program. Among the methods of risk management, preference should be given to risk insurance and the distribution of responsibility of the participants (main performers) of the innovation project. Indicative innovation policy means that the university should develop in accordance with the civil and public indicators (standards, norms) established by the society. Selective innovation policy means development in the priority areas defined by the external innovation and industrial policy of the state and the region.

The traditional approach to the formation of innovation policy means that it does not take into account the requirements of the external environment, qualitative changes in the internal environment, and the level of development of the university itself. The intuitive approach involves the development of an innovation policy by one person based on intuitive feelings. A science-based innovation policy is a collective social process of improving the activities of universities based on established traditions, advanced foreign experience, trends in the development of the university and the country, with mandatory consideration of national characteristics.

The innovation policy of the entrepreneurial university can include such main directions (Fig. 8):

- educational (organization of the educational process, provision of statutory educational services, development of educational technologies, organization of methodological work, etc.);
- scientific, scientific and technical (organization of scientific research in priority areas of science and technology, automation and informatization of all areas of the university, implementation of design work, development of new equipment and high technology);
- cultural and educational (upbringing, education of children, parenthood, cultural and educational work with students, organization of socio-hu-

manitarian and socially useful activities of students and teachers, providing patronage assistance to schools, participation in charitable projects, etc.);

- administrative and managerial (making administrative and managerial decisions at different levels of management of the university: rectorate → deans → departments → executors; councils → implementation of council decisions);
- financial (new forms of using financial savings; expanding sources of financial resources, funds; new methods and measures to preserve and increase the financial resources of the university);
- academic-entrepreneurial (patent and licensing activities, technology transfer and dissemination of new knowledge, commercialization of R&D results, creating of new technologies and startups);
- economic (administrative and economic activities), commercial (obtaining additional income through: commercial use of real estate and material and technical means of the university; organization on commercial terms of related and additional educational and scientific services, professional advice and expertise; provision of premises and equipment for forums, conferences, seminars on a rental basis; production and sale of souvenir products of the university; organization on contractual terms of publishing activities for internal and

external customers, etc.), auxiliary and other (by type of activity of the university);

- sports (organization of sports competitions, leisure time for students and teachers, health promotion and life improvement of students and teachers);
- cooperation with the "outside world" (business contacts with customers and consumers of educational and scientific services, commercialized R&D results, representatives of the state (government), industry (business), presence in the markets of educational and scientific services, participation in competition with other universities and scientific (research) institutes;
- extracurricular activities of the university (organization of different competitions, cultural events, humanitarian and international programs).

Budget innovation policy is one that is fully funded from the budget of all levels: state, regional, and municipal. Extra-budgetary innovation policy is financed from the financial resources of extra-budgetary funds, firms, enterprises, organizations and institutions, the population, sponsors, and foreign sources. With its own funding, the university carries out innovative activities at the expense of earned funds (financial resources). A multi-channel innovation policy implies that funding comes from all the sources listed above, and financial resources (loans) from banks can also be attracted.

By the nature of implementation, an innovation policy can be stable, that is, one that is implemented in accordance with the adopted program and plans of innovation activity, or unstable, that is, implemented to the extent of objective and subjective necessity.

Innovation policy can be based on a low (medium) or high degree of entrepreneurship implementation in higher education institutions. Budget (state, municipal) universities with substantial state support can afford to use only some types of entrepreneurship (marketing, advertising, and search for customers of educational and scientific services and potential employers

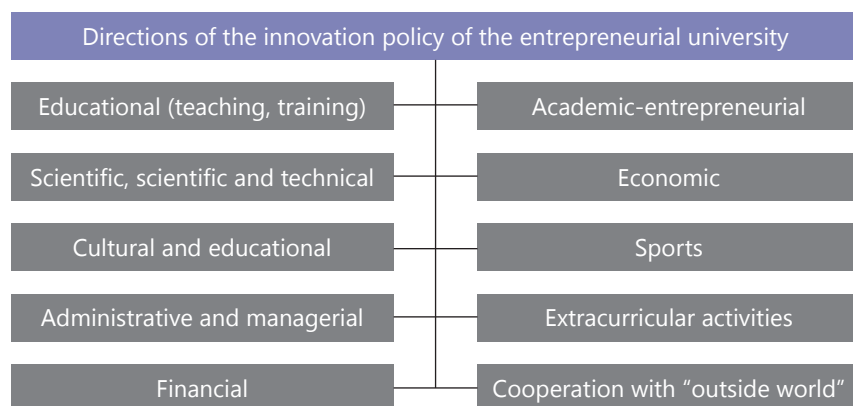


Fig. 8. The main directions of the innovation policy of the entrepreneurial university

for graduates). For private educational institutions, entrepreneurship is the main tool for implementing statutory activities.

In practice, it is possible to conduct external intensive, moderate in degree a sustainable innovation policy based on a multi-channel (multi-resource) financing model and effective statutory business activities. The internal policy should correspond to the external one. Otherwise, the university will not only not be able to develop, but may even cease its activities.

It is expected that the results of the implementation of the innovation policy of universities can be both the internal innovative development of universities, and the innovative development of the region, local, regional and national economic growth. The introduction of innovations in industry (business) can be carried out through the transfer of innovative technologies, the transfer (transplantation) of new types of industry, the opening of new firms and companies (startups), the improvement and innovative transformation of existing industrial facilities, and so on. Together with the perfect academic entrepreneurial activity that allows commercializing the results of R&D, local, regional and national innovative development is a significant contribution of universities to the socio-economic improvement of society.

Any process corresponds to certain relationships that develop between its participants. Innovation policy is characterized by innovative relations that should be implemented by the subjects and objects of management.

The subject of management relations is the active link that influences these relations; the object of management relations is the passive part of the relationship, perceives the influence and is exposed to it. In this sense, any subject (carrier) of managerial relations is to some extent both an active and a passive link. The subjects (carriers) of innovative relations of higher education are all members of society, social groups, social structures that are somehow related to the field of education, science and production. They

can be individual and associated (collective).

The University can also act as the subject and the object of interaction with the external environment at the macro, meso, and micro levels (from the perspective of the innovative relationship to the environment and the importance of action, as well as on spatial scope and effect of the action). From the standpoint of macroeconomics, universities themselves, which are the institutional links of the formal education system, can also act as subjects of innovative relations. At the same time, they act as control objects. A university can act as an economic entity in the scientific and production complex, in the regional educational system, and in the system of continuing education, entering both internal (internal university, internal-institute, internal-corporate) and external management relations with the environment. At the micro level, the subjects of innovative actions are the heads of universities, the structural unit responsible for innovation policy. The objects of management are, on the one hand, innovation activities, on the other — the entire staff of the university. Actually, innovation relations arise between people about the formation and implementation of innovations. At the same time, the processes associated with the production and reconstruction of the new (new knowledge, new products or services, new management combinations, new social relations) or simply with the introduction of changes in the already known, existing, should not be spontaneous, unconscious, but necessarily consciously put on a scientific basis and have the character of specialization. Since then, when innovative relations become such that they are constantly reproduced, we can talk about a special type of managerial relations — innovative relations that are present in any sphere of human life, including in higher education and science.

In the higher education, there are innovative relations of both objective and subjective nature (Fig. 9). They are implemented through the interests of the subjects and objects of higher education.

Objective innovative relations in education are socially and economically dependent, directed by the interests of society and dependent on it. These include:

- innovative economic, including innovative market (innovative entrepreneurial);
- innovative pedagogical;
- innovative managerial, including innovative organizational;
- innovative financial;
- innovative operations with property.

The subjective innovative relations include innovative psychological and innovative moral, affecting feelings, emotions and subjective ethical assessments of people. They also include the relationship of innovative corporate culture.

Innovation-psychological, in particular, is the psychological contour of relations that express the psychology of economic entities and the university. For example: the expectation, patience, and remaining confidence in the authorities on the part of the scientific and pedagogical corps regarding the fair distribution of the rich in their potential and at the same time limited resources.

They are an important part of the socio-psychological relationships that remain in the field of education last, when everything else disappears. Teacher, scientist — these are the professions in which the primary importance is the vocation, talent, talent, desire to create and serve humanity. These professions will be alive as long as a person lives.

Relations of innovative corporate culture or innovative-moral relations are such relations between people that can be evaluated from the point of view of good and evil (for example, it is honesty, reliability of social relations of economic entities). The innovative corporate entrepreneurial culture of the university is important (see below). Also, innovative moral and ethical norms of relations in educational institutions are very important, which can act as a guard against abuse and corruption.

All the above-mentioned types of innovative relations in education are carried out in the system of reproduction of goods and resources, sectoral, regional and intersectoral relations: between the spheres of economy and society, between education and society.

Changes in innovation and economic relations in higher education, carried out on a systematic scientific basis, accelerate social progress. Other types of innovation relations, especially innovation-financial and innovation-management relations, can and should contribute to such progress by synchronizing innovative changes. These types of relations are typical for both the external and internal innovation policy of the university.

The new types of innovation policy in higher education and science are caused by global changes, emergencies, and force majeure circumstances. Forced or emergency distance learning (F/EDL) is a temporary transition of teaching to an alternative mode due to crisis circumstances. This type of training is extraordinary and is characterized by the fact that: first, online learning is becoming the main type of teaching and learning, but not all teachers and students of many universities around the world are ready to constantly work on the internet remotely. Secondly, the educational and methodological support of training courses for use exclusively online has not been massively developed and implemented in the higher education system of many countries. Third, after the end of the crisis circumstances, most universities in the world will return to the usual classroom hybrid full-time and distance learning, which the vast majority of students and teachers dream of. The innovation of F/EDL lies in the instant transition from the usual form of university education, based on direct classroom face-to-face contact between teachers and students, to the remote location of students from teachers and classrooms on university campuses. In addition to an insufficiently developed educational and methodological base, a successful educational process can be hindered by students' lack of control during testing

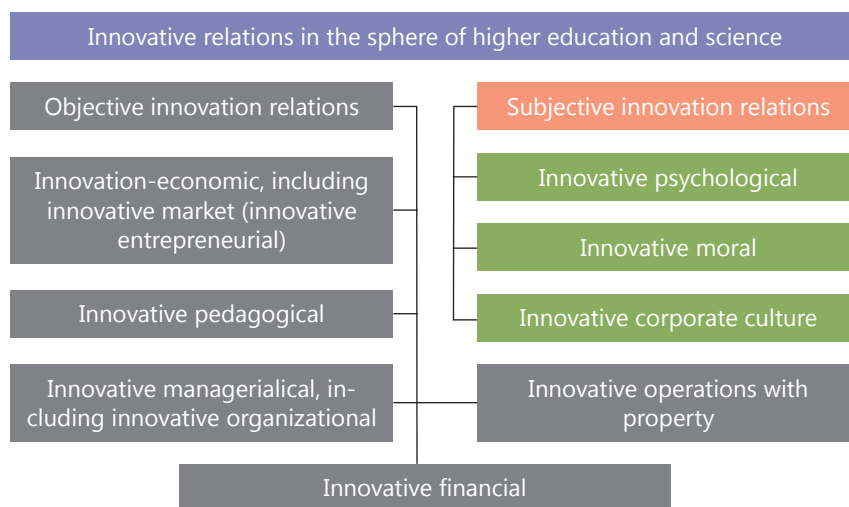


Fig. 9. Innovative relations in the sphere of higher education and science

and passing exams online. New technological and methodological developments are needed to solve these problems. The main feature of F/EDL is the difference between the delivery of on-line courses and distance teaching — training with the help of professors, and distance learning — learning of courses by students studying themselves. For the successful organization of long-term online training, it is necessary to simultaneously solve problems of information and communication nature, organizational, pedagogical, and methodological nature, as well as problems of ethics and integrity in the process of independent training of students and monitoring their progress (Fig. 10).

6. Conclusion

Academic capitalism makes the innovative development of higher educa-

tion and science real and inevitable. For a better understanding of the promising directions of such development, both theoretical research and practical experiments are required, as well as the creation of fundamental knowledge in this area.

It is the innovatics of higher education that aims to combine theoretical research and practical experience in order to better understand the essence of innovation in higher education and science. The study examines some of the main issues of the organizational theory of innovatics in higher education, the orientation of innovation processes in the field of higher education and science to objects and subjects of innovative transformations, the impact of innovation processes in the field of higher education.

In the system of higher education and science, objects and subjects of innovative transformations are high-

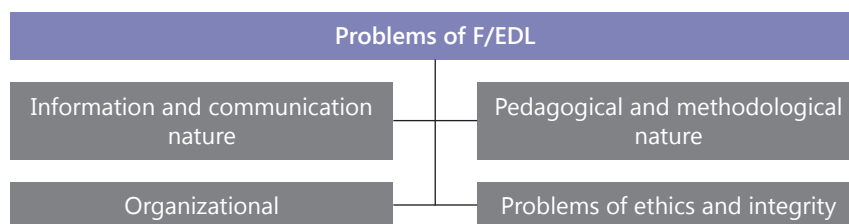


Fig. 10. Problems of the forced or emergency distance learning

lighted, the most important tasks of the state in the management of innovations in the field of higher education and science are considered, as well as the activities promoted by innovators in the field of higher education and the innovation environment around them.

The analyzed main directions of the innovation policy of the entrepreneurial university and innovative relations in the field of higher education and science can form the basis of the scientific and practical direction of research — innovatics of higher education. The problems of competencies underlying innovation policy in the field of higher education and science deserve further research.

References

- Romanovskiy, O.O. and Romanovska, Yu.Yu. (2019) Innovation in University Education as a Factor of Sustainable Development of Ukraine. Theoretical Approach, Business, economics, sustainability, leadership and innovations, (2019)3, 67–84. URL: <https://www.besli.org/index.php/besli/article/view/28>.
- Romanovskiy, O. and Romanovska, Yu. (2020) Higher educational innovatics as the newest interdisciplinary direction of higher school and higher education science. Interdisciplinary Studies of Complex Systems, 17(2020), 83–101. URL: <http://iscs-journal.npu.edu.ua/article/view/216975>.
- Slaughter S. and Leslie, L. (1997) Academic capitalism. Politics, Policies, and the Entrepreneurial University. — Baltimore (MA, U.S.A.): The John Hopkins University Press. — 276 p.
- Hackett E.J. (1990) Science as a vocation in 1990s: The changing organizational culture of academic science, Journal of Higher Education, 61, 241–77.
- Leslie L., Oaxaca R. and Rhoades G. (2001) Technology Transfer and Academic Capitalism. In Albert Teich, H., [and others], editors. AAAS Science and Technology Policy Yearbook. Part 7, Article 23, Pp. 261–277.
- Schumpeter, J.A. (1934) The Theory of Economic Development: An Inquiry into Profits, Capital, Credits, Interest, and the Business Cycle. Transaction Publishers, Piscataway, 255 p.
- Fagerberg, J. (2008) A Guide to Schumpeter, pp. 20–22. URL: https://www.researchgate.net/publication/270794018_A_Guide_to_Schumpeter.
- Schumpeter, J.A. (1976) Capitalism, Socialism and Democracy. Routledge, 437 p.
- Mensch, G. (1979) Stalemate in technology : innovations overcome the depression. — Cambridge, Mass.: Ballinger Pub. Co., 241 p.
- Baregheh, A., Rowley, J., Sambrook, S. (2009) "Towards a multidisciplinary definition of innovation". Management Decision. 47(8): 1323–1339. URL: https://www.researchgate.net/publication/41104662_Towards_a_Multidisciplinary_Definition_of_Innovation
- Edison, H., Ali, N.B., & Torkar, R. (2014) Towards innovation measurement in the software industry. Journal of Systems and Software, 86(5), 1390–1407. URL: <https://torkar.github.io/pdfs/jss-edisonNT13.pdf>.
- Rogers, E. M. (2003) Diffusion of innovations (5th ed.). New York: Free Press, 576 p. URL: <https://books.google.com/eg/books?id=9U1K5LjUOWEC&printsec=frontcover&hl=ru#v=onepage&q&f=false>.
- Drucker, P. (2002) "The Discipline of Innovation." Harvard Business Review. August 2002. URL: <https://hbr.org/2002/08/the-discipline-of-innovation>.
- The Quest For Innovation (2006) A Global Study of Innovation Management 2006–2016. American Management Association, 86 p. URL: https://www.amanet.org/assets/1/6/hri_innovation.pdf
- Chen, J., Viardot, E. and Brem, A. (2019) Innovation and innovation management. The Routledge Companion To Innovation Management, Routledge, pp. 3–36. URL: https://www.researchgate.net/publication/331189067_Innovation_and_innovation_management
- Bouwer, L. (2015) Capabilities-Driven Innovation Management Framework: Crossing the Innovator's Chasm. Conference: International Association for Management of Technology 2015. Cape Town, South Africa. URL: https://www.researchgate.net/publication/278016420_Capabilities-Driven_Innovation_Management_Framework_Crossing_the_Innovator's_Chasm
- Bouwer, L. (2017) The Innovation Management Theory Evolution Map (Working Paper). Innovation Management Research Institute (IMRI), 7 April. URL: https://www.academia.edu/32687747/The_Innovation_Management_Theory_Evolution_Map
- Damanpour, F. (2020) Organizational Innovation: Theory, Research, and Direction. Rutgers University, USA, EdgarOnline Business Collections. URL: https://www.researchgate.net/publication/342788468_Organizational_Innovation_Theory_Research_and_Direction
- Etzkowitz, H. (2003) Innovation in Innovation: The Triple Helix of University-Industry-Government Relations. Social Science Information, 42(3), 293–337. URL: https://www.researchgate.net/publication/249733214_Innovation_in_Innovation_The_Triple_Helix_of_University-Industry-Government_Relations.
- Etzkowitz, H. (2008) The Triple Helix: University-Industry-Government Innovation in Action. New York & London: Routledge, Taylor & Francis Group, 164 p.
- Etzkowitz, H. (2019) Is Silicon Valley a global model or unique anomaly? Industry and Higher Education, 33(2), 83–95. URL: <https://journals.sagepub.com/doi/abs/10.1177/0950422218817734>.
- Viale, R., and Etzkowitz, H. (2010) The Capitalization of Knowledge. A Triple Helix of University-Industry-Government. Edward Elgar Publishing, 368 p.
- Dzisah, J., and Etzkowitz, H. (2012) The Age of Knowledge: The Dynamics of Universities, Science and Societies. Leiden-Boston, Brill, 360 p.
- Cadorin, E., Klofsten, M., Albahari, A., Etzkowitz, H. (2019) Science Parks and the Attraction of Talents: Activities and Challenges / Eduardo Cadorin, Magnus Klofsten, Alberto Albahari, Henry Etzkowitz, Triple Helix Journal, September 2019, 1–33. URL: https://www.researchgate.net/publication/336278817_Science_Parks_and_the_Attraction_of_Talents_Activities_and_Challenges.
- Clark, B.R. (1998) Creating Entrepreneurial Universities: Organizational Pathways of Transformations. Oxford, Pergamon-Elsevier Science, 180 p.
- Clark, B.R. (2000) Collegial Entrepreneurialism in Proactive Universities: Lessons from Europe. Change: The Magazine of Higher Learning, 32(1), 10–19. URL: <https://www.tandfonline.com/doi/abs/10.1080/00091380009602704>.
- Clark, B.R. (2004) Sustaining Change in Universities. Continuities in Case Studies and Concepts. The Society for Research into Higher Education & Open University Press, England, McGraw-Hill, 232 p.
- Vught, F. van. (1989) Governmental Strategies and Innovation in Higher Education (1989) Michigan University, Jessica Kingsley Pub., 232 p.

29. Haddawy, P., and Igel B. (2006) Fostering Innovation in Higher Education https://www.researchgate.net/publication/228862454_Fostering_Innovation_in_Higher_Education. Retrieved 11.01.2021.
30. Slaughter, S., Rhoades, G. (2009) Academic Capitalism and the New Economy. Markets, State and Higher Education. The Johns Hopkins University Press, 384 p.
31. Layne, P.C., and Lake, P. (2019) Global Innovation of Teaching and Learning in Higher Education: Transgressing Boundaries (Professional Learning and Development in Schools and Higher Education). Springer, 369 p.
32. Tiemey, W.G., Lanford, M. (2016) Conceptualizing Innovation in Higher Education, 40 p. URL: https://www.researchgate.net/publication/303208037_Conceptualizing_Innovation_in_Higher_Education/stats.
33. Vieluf S., Kaplan, D., Klieme, E., and Bayer, S. (2012) Teaching Practices and Pedagogical Innovations: Evidence from TALIS. OECD Publishing, 169 p. URL: [https://www.oecd.org/education/school/Talis-Ceri%202012%20\(tppi\)--Ebook.pdf](https://www.oecd.org/education/school/Talis-Ceri%202012%20(tppi)--Ebook.pdf)
34. Blouin, R.A., Riffe, W.H., Robinson, E.T., Beck, D.E., Green, C., Joyner, P.U., Persky, A.M., and Pollack, G.M. (2009) Roles of Innovation in Education Delivery. Am J Pharm Educ., 73(8), 154. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2828315/>.
35. Altbach, F. (2008) The complex roles of universities in the period of globalization. Higher Education in the World 3, pp. 5–14. URL: https://www.researchgate.net/publication/277128834_The_complex_roles_of_universities_in_the_period_of_globalization/stats.
36. Blass, E., Hayward, P. (2014) Innovation in higher education; will there be a role for "the academe/university" in 2025?. European Journal of Futures Research, 2, 41 URL: <https://doi.org/10.1007/s40309-014-0041-x>
37. Swanger, D. (2016) Innovation in Higher Education: Can Colleges Really Change? Fulton-Montgomery Community College, NY, 58 p. URL: <https://www.fmcc.edu/about/files/2016/06/Innovation-in-Higher-Education.pdf> Retrieved 10.01.2021.
38. OECD (2016) Innovating Education and Educating for Innovation: The Power of Digital Technologies and Skills, OECD Publishing, Paris, 150 p. URL: <http://www.oecd.org/education/ceri/GEIS2016-Background-document.pdf>.
39. Serdyukov, P. (2017) Innovation in education: what works, what doesn't, and what to do about it? Journal of Research in Innovative Teaching & Learning, 10(1), 4–33. URL: <https://www.emerald.com/insight/content/doi/10.1108/JRIT-10-2016-0007/full/pdf?title=innovation-in-education-what-works-what-doesnt-and-what-to-do-about-it>.
40. McCowan, T. (2017) Higher education, unbundling, and the end of the university as we know it, Oxford Review of Education, v. 43, i. 6, p. 733–748. July, 2017. URL: <https://doi.org/10.1080/03054985.2017.1343712>
41. Jakovljevic, M. (2018) A model for innovation in higher education. South African Journal of Higher Education, 32(4), 109–131. URL: <https://www.journals.ac.za/index.php/sajhe/article/view/2432>.
42. Mandel B. R. (2018) Sovremennyye problemy pedagogicheskoy nauki i obrazovaniya: uchebnoye posobiye dlya obuchayushchikhsya v magistrature [Modern problems of pedagogical science and education: a textbook for students in the master's program]. Moscow, Berlin, Direkt-Media. 303 p. (in Russ.). URL: https://fileskachat.com/download/68276_b6072fc79f34bf6c7e05bde5042371cc.html
43. Branch, J., Hørsted, A., and Nygaard, C. (2018) New Innovations in Teaching and Learning in Higher Education (Learning in Higher Education series). Libri Publishing, 480 p.
44. Jessop, B. (2018) On academic capitalism. Critical Policy Studies, 12(1), 104–109. URL: <https://doi.org/10.1080/19460171.2017.1403342>.
45. Somers, P., Davis, C., Fry, J., Jasinski L. and Lee, E. (2018) Academic capitalism and the entrepreneurial university: some perspectives from the Americas // Roter, Joaoba, v. 43, n. 1, p. 21–42, jan./abr. 2018. URL: https://www.researchgate.net/publication/324458855_Academic_capitalism_and_the_entrepreneurial_university_some_perspectives_from_the_Americas.
46. Münch, R. (2020) Academic Capitalism. Oxford University Press. Published online: 09 May 2016 & 30 April 2020. URL: <https://oxfordre.com/politics/view/10.1093/acrefore/9780190228637.001.0001/acrefore-9780190228637-e-15>. Retrieved 12 January 2021.
47. Coronavirus and Higher Education Resources (2020) Bryan Alexander blog, March 17. URL: <https://bryanalexander.org/coronavirus/coronavirus-and-higher-education-resources/>. Retrieved 30.11.2020.
48. Grajek, S. (2020) How Colleges and Universities Are Driving to Digital Transformation Today / by Susan Grajek, EDUCAUSE Review Special Report (January 27, 2020) URL: <https://er.educause.edu/articles/2020/1/how-colleges-and-universities-are-driving-to-digital-transformation-today>
49. Guidance for Interruptions of Study Related to Coronavirus (COVID-19) (2020) Federal Student Aid, Information for Financial Aid Professionals (IFAP), March 20. URL: <https://ifap.ed.gov/electronic-announcements/030520Guidance4Interruptionsrelated2CoronavirusCOVID19>. Retrieved 29.11.2020.
50. Hodges, C., Moore, S., Lockee, B., Trust, T. and Bond, A. (2020) The Difference Between Emergency Remote Teaching and Online Learning. EDUCAUSE Review. March 27. URL: <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>. Retrieved 29.11.2020.
51. Khutorskoy A.V. (2005) Pedagogicheskaya innovatika: metodologiya. teoriya. praktika: Nauchnoye izdaniye [Pedagogical innovation: methodology, theory, practice: scientific publication]. Moscow, Publ. UNTs DO, 222 p. (in Russ.) URL: http://www.khutorskoy.ru/books/2005/ped_innovat/index.htm.
52. Polyakov S.D. (2007) Pedagogicheskaya innovatika: ot idei do praktiki [Pedagogical innovation: from idea to practice]. Moscow, Pedagogicheskij poisk, 2007, 167 p. (in Russ.) URL: <https://www.twirpx.com/file/427278/>.
53. Devyatkina, M.A., Miroshnikova, T.A., Petrova, Yu.I., et al. (2006) Innovatsionnaya politika vysshego uchebnogo zavedeniya [Innovation policy of higher education institutions]. Moscow, Publ. ZAO "Izdatelstvo "Ekonomika", 178 p. (In Russ.) URL: <http://www.economizdat.ru/shop/product/400>
54. Bower, J.L., and Christensen, C.M. (1995) Disruptive Technologies: Catching the Wave. Harvard Business Review (January–February). URL: <https://hbr.org/1995/01/disruptive-technologies-catching-the-wave?registration=success>
55. Henderson, R M., and Clark, K.B. (1990) Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms. Administrative Science Quarterly. 35(1), 9. URL: <https://www.jstor.org>

- org/stable/2393549?read-now=1&refreqid=excelsior%3Adcd-d4a70be0a1fc9b085add516785d7&seq=2#page_scan_tab_contents
56. Schiederig, T., Tietze, F., and Herstatt, C. (2012) Green innovation in technology and innovation management — an exploratory literature review. *R&D Management*. 42(2), 180–192. URL: <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1467-9310.2011.00672.x>
 57. Blok, V., and Lemmens, P. (2015) The Emerging Concept of Responsible Innovation. Three Reasons Why It Is Questionable and Calls for a Radical Transformation of the Concept of Innovation. *Responsible innovation 2: Concepts, Approaches and Applications*. Chapter 2. Springer International Publishing, pp. 19–35. URL: https://www.researchgate.net/publication/274085469_The_Emerging_Concept_of_Responsible_Innovation_Three_Reasons_Why_It_Is_Questionable_and_Calls_for_a_Radical_Transformation_of_the_Concept_of_Innovation
 58. Cai, Y., Ma, J., and Qiongqiong C. (2020) Higher Education in Innovation Ecosystems Sustainability, 2020, 12, 320 p. URL: <https://www.mdpi.com/books/pdfview/book/2956>
 59. Borrás, S. and Edquist, C. (2015) Education, training and skills in innovation policy, *Science and Public Policy*, 42(2), 215–227, URL: <https://doi.org/10.1093/scipol/scu043>
 60. Tierney W.G., Lanford M. (2016) Conceptualizing Innovation in Higher Education. In: Paulsen M. (eds) *Higher Education: Handbook of Theory and Research. Higher Education: Handbook of Theory and Research*, vol 31. Springer, Cham. URL: https://doi.org/10.1007/978-3-319-26829-3_1
 61. Brewer, D.J., and Shirley, M. (2017) Federal Policy to Promote Innovation in US Higher Education, Urban Institute, USA, Washington, DC, September 2017, URL: <https://files.eric.ed.gov/fulltext/ED578896.pdf>
 62. Brewer, D.J., and Tierney, W.G. (2011). "Barriers to Innovation in US Higher Education." In *Reinventing Higher Education: The Promise of Innovation*, edited by Ben Wildavsky, Andrew P. Kelly, and Kevin Carey, 11–40. Cambridge, MA: Harvard Education Press.

Романовський О. О., Романовська Ю. Ю., Романовська О. О., Ель Махді М.

Інноватика вищої освіти: роль інноваційного середовища у трансформації сфери вищої освіти і науки

Інноваційні перетворення у сфері вищої освіти та науки, як правило, відбуваються в рамках інноваційної політики, яка визначається лідерами цієї сфери. Слід зазначити, що інноваційна політика у сфері вищої освіти є сполучною ланкою між політикою досліджень та науковою (науково-технічною) діяльністю, пошуком та розповсюдженням знань, освітою та підготовкою кваліфікованих фахівців у галузі технологічного розвитку, промислової політики та екологічна політика.

Інноваційна політика у сфері вищої освіти та науки є однією з основних складових державної соціально-економічної політики суспільного розвитку та спрямована на створення сприятливих умов для виведення на ринок нових ідей, створених у цій сфері.

Стаття присвячена подальшому розвитку теоретичних засад інноватики вищої освіти. Розглянуто основні питання організаційної теорії інноватики вищої освіти; національна та міжнародна складові інновацій у сфері вищої освіти та науки, як відкритої освітньої, наукової та культурної системи; орієнтація та вплив процесів інноваційної діяльності у сфері вищої освіти та науки на об'єкти та суб'єкти інноваційних перетворень; найважливіші завдання держави в управлінні інноваційною діяльністю у сфері вищої освіти та науки; діяльність, яку просувають інноватори у сфері вищої освіти; інноваційне середовище.

Вивчаються основні напрямки інноваційної політики підприємницького університету та інноваційних відносин у сфері вищої освіти та науки.

Також аналізуються проблеми примусового чи екстреного дистанційного навчання.

Ключові слова: інновація вищої освіти, інноваційна політика, інноваційне середовище, управління інноваційною діяльністю.

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