INNOVATIVE ENTREPRENEURSHIP: APPROACH TO FACING RELEVANT SOCIO-HUMANITARIAN AND TECHNOLOGICAL CHALLENGES

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CONTENTS

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Chapter 1
ENTERPRISE DEVELOPMENT ASYMMETRY DURING THE TECHNOLOGICAL CHANGES

Shvidanenko G. O., Kyryliuk O. V.

INTRODUCTION

Process to improve and transform the models of enterprise development is natural in the context of the world community transition to the principles of the digital economy. Significant changes in the macroenvironment dictate companies the criteria for development success, specially the availability of such characteristics as innovation and adaptability. Top management of companies make business decisions more difficult because of the scientific and technological progress dynamics, the rapid loss of relevance, the emergence of new spheres of economics, the strengthening of integration processes, changes in production methods. Thus, volatile market positions and new daily challenges become the realities of modern business.

It is worth noting that the situation in developing countries is complicated by problems such as property divestiture, globalization, a shaky system of financial institutions and lack of them, increased competition between national and transnational companies, lack of resources, a number of internal economic and environmental problems, outdated business, low cost of intellectual labor, etc. Such problems are the reason for the most enterprises of those countries to be the outsiders of the world market and to have little use of their potential.

That is not enough for modern companies to adapt to the changes that the world community dictates, it is necessary to be ahead of them, find ways to overcome difficulties and barriers. There are different views on the behavior patterns of modern businesses. The scientists consider about the adaptive behavior model. In environments with the constant changes in the economy, the company adopts the game rules of the market, it changes approaches to production, product quality, customers or competitors. Such views were also maintained by I. Ansoff, who considered the levels of turbulence of the external

environment and the corresponding necessary actions of the enterprise.[1] Despite the obvious obsolescence of such approaches, most companies still adhere to this type of behavior. More flexible companies manage to keep their business, but most remain unchanged and, after losing their positions, go bankrupt. Therefore, we think of an innovative enterprise development model that will allow companies not only to adapt to changes in the external environment, but to anticipate them. In order to approach the principles of creating an innovative model more abstractly and to build it, it is necessary to consider the concept of enterprise development, its types, features, etc.

The enterprise development is a research interest of economists of different disciplines. Therefore, approaches to the subject content of this concept and its synthesis with the other terms of the business environment are diverse and multifaceted. The analysis of the concept of "enterprise development" particularly such as A. Pakrukhin, T. Nadtok, S. Dund, Y. Pogorelov, G. Kakunina, B. Tviss, Y. Shumpeter, O. Pushkar, V. Tridid, P. Herbert, M. Lorenz, V. Isaacson, K. Schwab, A. Loleo, B. Gates, K. Moeller, G. Seliger, T. Stock, M. Albert, M. Timmer, B. Van Ark, E. Peters, J. Barney, J. Collins, P. Drucker, F. Lalu, J. Weils, N. Meshko, I. Malik, S. Kolyadenko, S.V. Mocherniy, A.V. Chernykh, F.I. Khmil, OD Korshunova, V.S. Ponomarenko made it possible to formulate a definition that fundamentally illustrates the key nature of the term. In the narrower aspect, we understand the enterprise development as a state of the company's activity change in terms of qualitative and quantitative parameters under the influence of external and internal factors, and broadly it is defined as an irreversible, regular process of a consistent continuous change of quantitative and qualitative states of the enterprise in time and space.

In general, development is a fundamental and broad concept. In the process of categorical-conceptual analysis of this term it is necessary to pay attention to the philosophically accepted interpretation of the term, as well as, in the context of the described problem, its derivatives. Particular attention should be paid to consideration of such tandems of concepts as enterprise development asymmetry, company development management, firm innovation development, development management modeling, development strategy, etc. If we follow the scientific heritage,

[1] Ansoff, I. (1999). Novaja korporativnaja strategija. [New corporate strategy]. St. Petersburg: PETER. [in Russian]

it can be noted that the typology of development in research has received little attention. Predominantly, scientists maintain a focus on the development management and strategies without understanding depth of the development issues. Since in order to build an effective company development management model (we regard company as an open, flexible, economic system) in the context of modern business realities, the issue of relations between the entity (company) and the management object (development) must be preceded by a detailed study of the object essence, because the development has an inherent high level of complexity and internal structure.

Thus, the main purpose of the article is to study in depth the concept of development and its types in order to create an effective model of development management in the context of technological change and modern realities of the world business.

1.1. The essence of enterprise development asymmetry

According to the academic dictionary of Ukrainian, development is a process that results in a quality change of something or a transition from one qualitative state to another.[2] In other words, development is irreversible, purposeful, regular change of tangible and intangible objects. The definition of "enterprise development" means qualitative changes and updating of its economic system and organizational structure, improving the efficiency of functioning on the basis of upgrading of technology, equipment and organization of work in all structural units, increasing the quality of products and provided services.[3]

Let us analyze each of the selected components of the enterprise development concept (Figure 1).

By most definitions, development means quantitative and qualitative changes that bring about positive effects. Of course, the effect of change is a relative characteristic, so it requires some concretization. It is sufficient to state the company development, if the changes brought a certain improvement for the company. We consider the development of the enterprise distributed in time as a process. Development is a process that has a certain duration. A company needs a period between

[2] Velykyy tlumachnyy slovnyk ukrayins′koyi movy (2001). [Big explanatory dictionary of the Ukrainian language]. Irpin : Perun. 1440. [in Ukrainian]

[3] Kyryliuk, O. V., & Shvidanenko, G. O. (2018). Katehorial′no-ponyatiynyy aspekt asymetriyi rozvytku pidpryyemstv v konteksti tekhnolohichnykh zmin [Categorical-conceptual aspect of enterprise development asymmetry in the context of technological change]. *Visnyk Khmel'nyts'koho natsional'noho universytetu. Ekonomichni nauky*. 3 (3): 73-76. [in Ukrainian]

the development point and the corresponding changes in order for a tangible effect of change to occur.[4] It should be noted that time distribution and duration do not imply stability or continuity. It is clear that the development of the enterprise is not permanent, that is, it is not necessarily present at every moment of the enterprise existence. It is a manifestation of asymmetry. The condition that there may be no enterprise development at any time indicates that development will not necessarily be continuous.

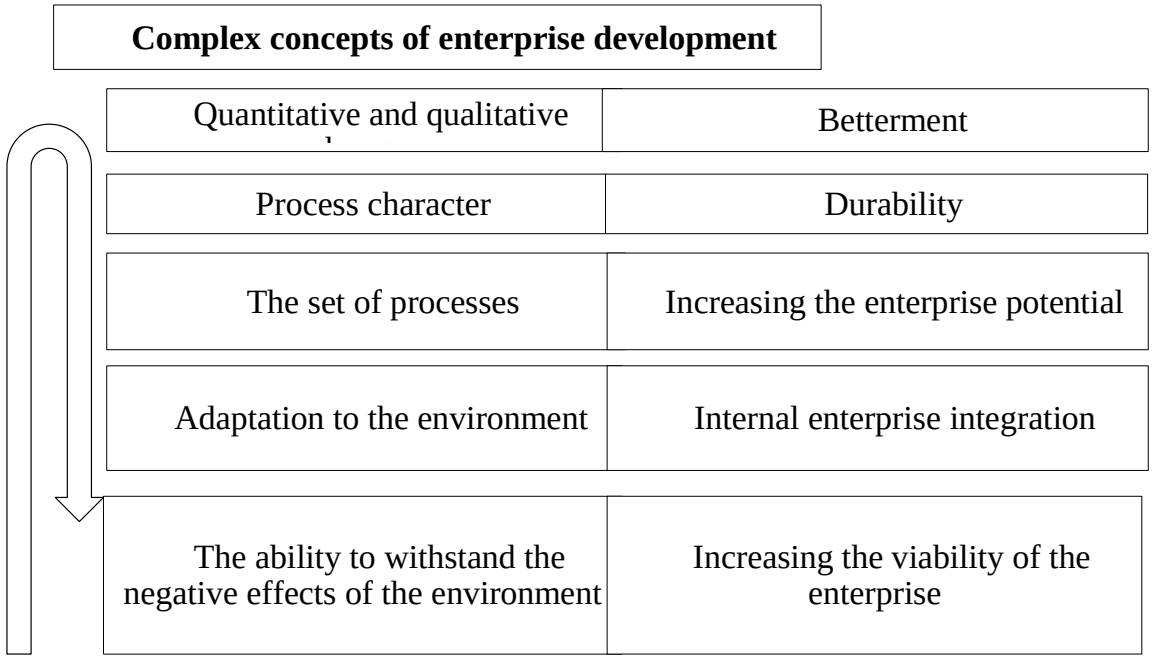

Figure 1. Complex concepts of enterprise development

Source: supplemented by the author

In its content, the enterprise development is a source of enterprise potential, since the totality of development processes leads to its multiplication. Clear examples of such processes are quantitative and qualitative changes, adaptation to the external environment of the enterprise and internal integration of the enterprise. Therefore, the result of development for the enterprise will be the realization of quantitative and qualitative changes, increasing the potential of the enterprise, ensuring the ability of the enterprise to counteract the negative effects of the external environment and increase the viability of the enterprise.

[4] Grinev, A.V. (2003). Innovacijny`j rozvy`tok promy`slovy`x pidpry`yemstv: koncepciya, metodologiya, strategichne upravlinnya. [Innovative development of industrial enterprises: concept, methodology, strategic management]. Kharkiv: INZHEK. [in Ukrainian]

Sometimes the concept of the enterprise development is synonymous with the concept of changes in the enterprise. In general, "change" is the development of new ideas or behaviors by an enterprise.[5] Change is an action that signifies the direction and strength of the development process itself. According to M. Besedin and V. Nagaev, changes are transformations that occur as a result of instability of the conditions evolution of the enterprises activity under the influence of such factors: production and commodity markets, geographical factors, internal company conditions, external socio-political conditions, etc. The degree of change is determined by the recurrence of events, the pace of these changes, and the predictability of the future.

Therefore, changes at the enterprise are the means of adapting to new conditions, increasing competitiveness, work efficiency and productivity. It is important for the enterprise to strike a balance between change and stability while opening the way for further technological, social and other changes.[6]

The category of development is quite complex. Therefore, it is necessary to consider the criteria for systematization of development and its various types at the scientific level. We describe two sets of criteria to identify types of enterprise development. The first group of criteria refers to the development in general, i.e. as an inter-scientific, philosophical and even general scientific concept. That is why such criteria are considered to be generally scientific. The second set of criteria is specific to the enterprise as the development object.

The development systematization is presented in table 1. The following comment should be provided. The table describes the criteria for systematization of development and indicates the types of development corresponding to them.[7]

Depending on its source or root cause, development is divided into exogenous and endogenous. Exogenous development is a development that is determined by external causes of the enterprise. This interpretation is controversial, because the very concept of development does not specify the necessary source or driving force of changes

[5] Dorofyeyeva, L.I. (2015). Upravleniye izmeneniyami kak osobaya forma menedzhmenta. Menedzhment: konspekt lektsiy. [Management as a special type of activity, its specificity Management: lecture notes]. Retrieved Nov. 10, 2019 from: http://www.stihi.ru/2012/12/10/9441. [in Russian].

[6] Grinova, V.M., & Kozireva, O.V. (2006). Social`no-ekonomichni problemy` innovacijnogo rozvy`tku pidpry`yemstv :Monografiya. [Socio-economic problems of innovative development of enterprises: Monograph]. Kharkiv: INZHEK. [in Ukrainian].

[7] John, F., & Sargent, Jr. (2012). Nanotechnology: A Policy Primer. Retrieved Nov. 20, 2019, from: https://digitalcommons.ilr.cornell.edu/key_workplace/1204/.

occurring. Endogenous development is the development, where the source and root cause is inside the developing object or system. The driving force behind endogenous development is the asymmetry within the development object, which occurrence leads to its qualitative changes. For exogenous development, some contradictions within the company may also be the basis. But such contradictions still extend beyond the object of development, i.e. in the external environment. In other words, it occurs between the enterprise and the external environment.

Table 1

Systematization of development types

Systematization criteria	Development types
Nature of changes	Evolutionary; transformational
Source of development	Exogenous; endogenous
The scale of the object	Individual; general
Form	Rectangular, ladder, translational, broken, wavy, spiral
Introducing the subject development	Projective, non-projective
Development vector selection	Vector, quasi-chaotic
The number allocated vectors	Single-vector, multi-vector, frontal
Complexity of changes	One-project, one-sphere, multi-sphere and holistic
Quantitative characteristics of changes	Progression, degression, ripple and invariant
In the direction of resource combinations distribution	Asymmetry; balance

Source: supplemented by the author

The following classification is carried out depending on the complexity of the object and is divided into individual and general. Individual development is the development of a separate, indivisible entity, in our case an enterprise. It is worth noting that the indivisibility of the object in this classification is not analyzed by the entirety criterion. An object may have a complex structure, but its individual parts do not always form the object integrity under certain conditions. For example, in cases when the company delegates its functions to expert organizations outsourced.

Development is manifested in various forms: straight, ladder, translational, polygonal, wavy, spiral, etc. The form of development is determined by the nature of the changes, the intensity over time, the frequency of the changes and their recurrence. It is worth noting that the most important thing is the repetition of changes, not cyclicality, which is a fundamentally different category.[8]

Enterprise development is also classified in the scientific literature by such criteria as the allocation of development vector, number of vectors selected, complexity of changes, quantitative characterization of changes, etc. Development, as noted above, requires some targeted movement or trajectory. According to the trajectory, the development is divided into vector or quasi-chaotic. A development vector is a set of continuous successive changes in the state of a development object, while maintaining its unity and integrity, but that are constrained by certain mandatory conditions or goals of the company. Vector development implies the presence and specification of the trajectory of development in the form of goals. Quasi-chaotic development is carried out without formalization of the development vector. Even the quasi-chaotic enterprise development is also a trajectory, it is located outside the entity and is not specified in the enterprise management system.[9]

According to the number of vectors selected, development is classified as single-vector, multi-vector and frontal. Single-vector and multi-vector development mean a certain number of vectors. In the frontal enterprise development there are several vectors that do not contradict each other or are targeted in one direction. Vectors in the frontal enterprise development contain different functional subsystems or control the behavior of the company in different markets.

According to the criterion of complexity of changes, the enterprise development is divided into one-project, one-sphere, multi-sphere and holistic. One-project enterprise development means the implementation of an individual project aimed to solve a specific problem. The implementation of such a project does not entirely change the activity of the enterprise. Of course, performing this task brings some changes in the activity of the enterprise, but they are not significant. One-sphere and multi-sphere enterprise development, respectively, cover several

[8] Koval′ov, V. M., & Yakovlev, Yu. V. (2012) Intehral′na otsinka metodiv ekonomichnoho upravlinnya pidpryyemstvamy i personalom [Integral evaluation of methods of enterprises's and personnel's economical management]. *Visnyk Berdyans'koho un-tu menedzhmentu i biznesu*. 2 (18) : 84–89. [in Ukrainian]

[9] Losev, A. F. (2005). Istorija antichnoj filosofii v konspektnom izlozhenii. [History of ancient philosophy in a synopsis.]. Moskow: CheRo. [in Russian]

activities or involve engagement of several functional subsystems. One-sphere development involves several projects of development that touch upon one sector of an enterprise's activity, either manufacturing, or finance, or social, or environmental, etc. Multi-sphere development changes simultaneously or sequentially in several enterprise sectors. Holistic development is interpreted as the complete development of an enterprise, covering all spheres of activity, and the next state of the company differs from the previous one in most qualitative and quantitative indicators.[10]

In the distribution direction of the resource combinations, development includes two concepts, such as asymmetry and equilibrium. At rest, the company's resource portfolio is proportionate and stable, so the company is in equilibrium, but there is a movement in the enterprise, resulting the resource combinations being redistributed in a new and disproportionate way. An asymmetry phenomenon occurs, it results in the accumulation of more resources in a particular structural unit than in another one. This provokes its faster development.

Let us go back even further in more detail on the asymmetry of the enterprise development.

Asymmetry in economics has many dimensions and is not just about information.[11] Along with information asymmetry, the impact of real asymmetry is also extensively explored in the economic literature. Asymmetry of costs, capacities, location, demand, market shares, strategies, etc. are explored at the firm level, asymmetry of regional and global development are explored at the macro level.

The relevant scientific literature mainly analyzes the effects of the isolated effects of real and informational asymmetries. Therefore, in our opinion, further studies should be related to the analysis of the combined influence effects of different types of asymmetry on the optimal and balance decisions of market agents.[12]

An enterprise is a complex mechanism that forms an open and flexible economic system at the micro level of the general economic environment, and therefore its development in space and time is

[10] Kyryliuk, O. V. (2019). Informatsiyni tekhnolohiyi v upravlinni asymetriyeyu rozvytku kompaniyi. [Information technology in managing the asymmetry of the company development]. *Visnyk Khmel'nyts'koho natsional'noho universytetu. Ekonomichni nauky*. 3 (3): 95-99. [in Ukrainian]

[11] Kyryliuk, O. V. (2019). Management of asymmetric development of enterprises in the digital economy. Economics of the enterprise: theory and practice, materials of international scientific-practical conference (14.10.2019): 12-18. Riga: Baltic International Academy.

[12] Fedulova, L. (2006). Tekhnolohichnyy rakhunok ekonomiky. [Technological account of economy]. *Ukraine economy*. 6 (6): 6. [in Ukrainian]

inevitably linked to changes within, that is to the irregularities and imbalances of the constituent elements. Being in the balance state, the economic system goes into a state of rest, which often leads to the establishment of barriers to change, so today, in uncertain market conditions, it is more appropriate to bring the economic system into motion. In describing this process, scientists use such concepts as asynchrony, imbalance, divergence, disequilibrium, etc. The analysis of the terms diversity allows us to trace the similarity of their internal characteristics. In our view, describing the phenomenon of uneven enterprise development, it is more appropriate to use the concept of asymmetry.[13]

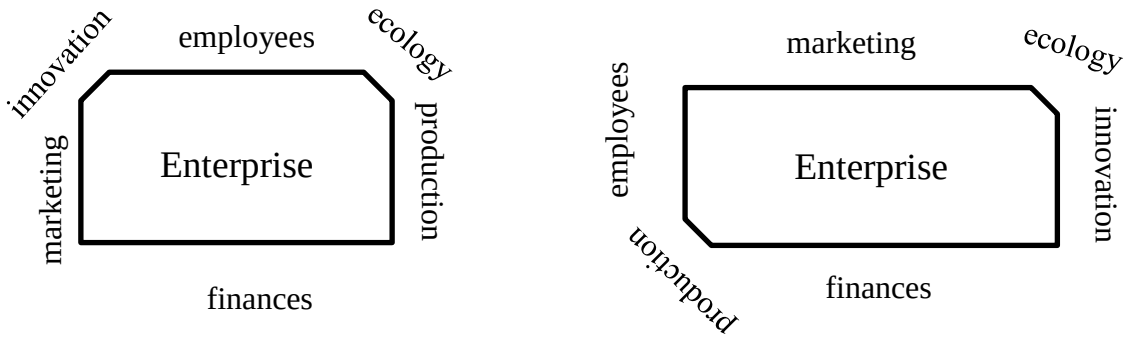

Figure 2. Enterprise development asymmetry

Source: author-generated

In a general sense, this term is synonymous with the symmetry breaking. It is used in the theories of many sciences, from medicine to arts, when describing the specific property of a particular object to reproduce the best shape of it with changes or transformations. We consider the concept of asymmetry in relation to the enterprise development and understand this symbiosis as a complex process of formation of unique resource compositions in the enterprise, which are directed to the development of a certain structural part of the company, which contributes to its more progressive development relative to others, and, therefore, the emergence of economic irregularities in the enterprise.[14]

[13] Fedorishchev, D. V. Asimmetrija razvitija jekonomicheskoj sistemy [Asymmetry of economic system development]. Retrieved Nov. 6, 2018, from: https://dlib.rsl.ru/viewer/01003241248#?page=27 [in Russian]

[14] Kyryliuk, O. V. (2019). Management of asymmetric development of enterprises in the digital economy. Economics of the enterprise: theory and practice, materials of international scientific-practical conference (14.10.2019): 12-18. Riga: Baltic International Academy.

The phenomenon of asymmetry of development can be both a threat and an advantage. The threat can be caused by concentration of attention on one element, inhibition in the development of others, or lack of resources to keep all business processes at the proper level. The advantage is possible when using the innovative segment of the enterprise as a bridgehead for growth and change of other business processes. As an enterprise is a system object where all elements and processes are interrelated, asymmetry of development is an inevitable process that has a positive effect on the development of the whole enterprise.

1.2. Intellectual-innovative model of the enterprise development in the context of technological changes

Modern technological development of countries and their cooperation in the scientific and technological sphere are manifested in two dialectically combined tendencies. On the one hand, there is a levels convergence of technological development of countries and regions, and on the other hand, there is a simultaneous widening of the technological gap between the leading world countries and the rest of them. Such a gap is related to the uneven study of the scientific and technological progress achievements of the different countries and the rapid introduction of elements of new technological styles into their national economies.

Thus, the phenomenon of asymmetry is also present in the global dimension and is called interstate technological asymmetry. There are various forms of technological asymmetry. One of them is the establishment of the lion's share of global inventions in the 12 most technologically advanced countries in the world, which effectively integrated the fundamental and applied aspects of science and concentrated the world's financial, technological, human and intellectual resources in one place. One of the main indicators is the monopolization of the right to own such resources, control and redistribute within the world economy.[15]

Companies and individuals located within these countries own a dominant share of triad patent families, i.e. patents that are simultaneously registered with three of the world's leading patent organizations in the US, Japan and Western Europe. As early as 2009,

[15] World Intellectual Property Indicators (2011). Retrieved Nov. 17, 2018, from: https://www.wipo.int/edocs/pubdocs/en/intproperty/941/wipo_pub_941_2011.pdf.

there were 47,000 registered triad patent families in the world, 29.2% of their total array was in the US, 30.3% in EU countries (including 12.3% in Germany, 5.2 % in France, 3.4% in the United Kingdom, 2.0% in the Netherlands, 1.9% in Sweden) and 28.3% in Japan. Today, the other developed countries of the world, such as Canada, Switzerland, Australia and Israel, are involved in this process; in 2009 their share in patenting was 1.3%, 1.9%, 0.6% 0.7% respectively.[16]

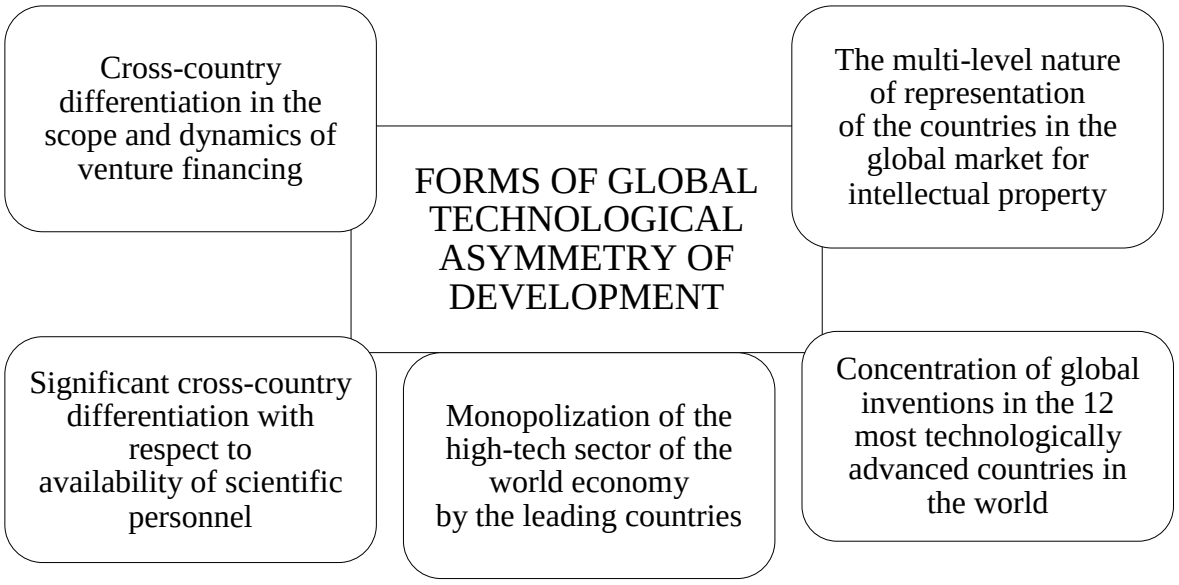

Figure 2. Forms of global technological asymmetries of development

The scale of modern interstate technological asymmetry clearly illustrates such key indicator as the countries technological development. It is the export of high technologies and the development level of information and communication technologies. At the beginning of the XXI century. the volume of high-tech exports in developed countries (15% of world population) exceeded the corresponding indicator of low-income countries (41% of world population) by 146 times; the number of mobile phones per 1,000 people by 17 times; the total number of personal computers by 22 times; and the number of Internet users (calculated using 1 thousand people) by 124 times. Meanwhile, more than 90% of the total number of Internet hosts is currently concentrated in the EU, the US, Canada and Japan, the backward countries of Africa and South America own only 0.24% and 1.07% of their total array and have 0.7% and 3.7% of all Internet users respectively.

[16] OECD Factbook 2011-2012: Economic, Environmental and Social Statistics (2011). Retrieved Nov. 17, 2018, from : https://www.oecd-ilibrary.org/economics/oecd-factbook-2011-2012_factbook-2011-en.

It is worth noting that interstate technological asymmetry is not only between developed and developing countries, but also within the leadership triad of the world economy (the USA – Europe – Japan). For example, in the United States, the world leader in the technological revolution, the number of personal computers per 1,000 people in the 1990-2000 period increased from 190-200 to 500, and the proportion of American families using the Internet increased from 6% in 1995 to 50% in 2000. At the beginning of the 21st century, the country accounted for 40% of the world's computer power, and in terms of the number of computers per resident and the proportion of families using the Internet, the US was 2-3 times ahead of Japan and Western Europe.

There is another form of manifestation of interstate technological asymmetry as monopolization by the leading powers of the world economy high-tech sector. The current technological grouping of the global economy is quite narrow. These include the United States, Japan, Germany, the United Kingdom and France. An indicator of the formation of new technology is the attraction of macro technologies. These countries own 46 macro technologies (out of 50 that guarantee the production of high-tech products in the world). Thus, they control nearly 80% of the high technology world market. At the same time, 20-22 macro-technologies serving competitive production are in the USA, 8-10 are in Germany, 7 are in Japan, 3-5 in England and France and 1-2 in Sweden, Norway, Italy and Switzerland.

The share of seven highly developed countries in the world today accounts for 80-90% of the production of high-tech products and practically the total volume of its exports.[17]

Another powerful impetus for the deepening of inter-state technological asymmetry is the increasing regional concentration of R&D in post-industrial countries, where 55% of the total number of patents registered in OECD countries accounts for only 10% of the organization's regions. However, the growing role of the science-intensive industries in modern tangible and intangible production has significantly exacerbated the competitive struggle between the three centers of global economic rivalry for domination in the high-tech segment of the global market, characterized by a clear country specialization. Meanwhile, as the United States monopolized virtually all

[17] Claudt, H., Buch, K., & Christensen, B. (2006). Nova ekonomika: formy vyyavu, prychyny i naslidky: monohrafiya. [The New Economy: Forms of Expression, Causes and Consequences: monograph]. Kiev: Taxon. 240. [in Ukrainian]

key segments of the high technology world market, in particular, aviation and space rocket equipment by 40%, telecommunications and navigation equipment by 20%, microelectronics by 19%, medical equipment by 19%, medical equipment and materials by 27 %, industrial and scientific instruments and materials by 28%, then other developed countries of the world can claim only for some of its segments.[18]

Another form of interstate technological asymmetry is the multi-level representation of countries in the global market for intellectual property. It is true, that royalty and licensing services are currently concentrated in only a few industrialized countries. However, the ratio of payments to receipts under such agreements in most countries (except the US and Japan) is clearly passive when payments exceed receipts.

This phenomenon is peculiar to the countries of the European Union, Korea, Canada, Singapore, China, and Thailand, i.e. to the countries-active importers of scientific and technical knowledge, which find themselves fully technologically dependent on the American monopolies. Only the United States shows the most active balance in trade in scientific and technical knowledge, which shows, on the one hand, the high level of scientific research in this country and its powerful scientific and technical potential, and on the other hand, the large-scale export of scientific knowledge to Western European and Asian countries, which hinders the development of national scientific research in these countries and enhances the inequality in trade with the United States.[19]

Another form of demonstration of interstate technological asymmetry is the significant country differentiation in the availability of scientific personnel. When analyzing this indicator, it can be seen that over the last decades, the world is once again retained by the United States, where for the period of 1995-2010 the number of researchers increased by an average of 5% annually, three times higher than the total employment growth rate.[20]

As far back as the early 1960s, the number of basic scientific personnel (engineers, researchers and technicians) in this country was 695.5 thousand people, while in Japan there was 187 thousand,

[18] Kostin, A. I. (2005). Ekopolitologiya i globalistika. [Ecopolitology and Global Studies]. Moskow: Aspekt Yekspres. 378. [in Russian]

[19] Main Science and Technology Indicators, Volume 2012, Issue 2 (2013). Retrieved Nov. 17, 2018, from: https://eric.ed.gov/?id=ED541311/.

[20] John, F., & Sargent, Jr. (2012). Nanotechnology: A Policy Primer. Retrieved Nov. 20, 2019, from: https://digitalcommons.ilr.cornell.edu/key_workplace/1204/.

105 thousand in Germany, 85.4 thousand in France, 159.5 thousand in the UK. Despite the narrowing of this gap in the 1970s, the United States is still the country with the largest scientific personnel in the world. In 2010, it amounted to 1.412.6 thousand people, or 33.6% and 45.3% of the total number of the scientific personnel, respectively, according to OECD countries and the G7. For comparison: in Japan, the number of the scientific personnel in the same year was 656.0 thousand people, 1567.7 thousand in the EU, 327.2 thousand in Germany, 234.2 thousand in France, 264.1 thousand in Korea, 235.4 thousand in Great Britain, 146.3 thousand in Canada, 92.4 thousand in Australia, 49.3 thousand in Sweden, 41.4 thousand in Finland, 38.2 thousand in Belgium, 35.9 thousand in Austria, and 1210.8 thousand in China.[21]

Another striking form of interstate technological asymmetry is the country's differentiation in the scope and dynamics of venture financing. Its target is mainly small firms, which have chosen venture capital as their specialization, the most risky but at the same time the most promising type of activity, unlike the large R&D companies. Comparing countries to venture funding as an indicator of their technological development, the United States has held the lead with up to 600-800,000 of such firms emerging every year since 1982, with about 23 million emerging in the last 25 years, with a total employment of 87 million people.

Ukraine has also set out to create a digital economy by 2030. The development of the digital economy has been made possible by a purposeful public policy. In the early 2020s, the Cabinet of Ministers and Deputies should prioritize the structural transformation of the Ukrainian economy, where innovation and digitalization will be the key drivers.[22]

The Digital Economy Development Strategy will create the basic conditions for its development, i.e. labor law, access to sufficient capital, including venture capital, an education system that will allow graduates to be competitive and meet the challenges of the current technological landscape.

[21] Science and Engineering Indicators 2012. National Science Board: 4-45.

[22] Rozporyadzhennya KMU vid 17 sichnya 2018 r. № 67-r "Pro skhvalennya Kontseptsiyi rozvytku tsyfrovoyi ekonomiky ta suspil′stva Ukrayiny na 2018–2020 roky ta zatverdzhennya planu zakhodiv shchodo yiyi realizatsiyi" (2018). [Order of the Cabinet of Ministers of Ukraine "On Approval of the Concept of Development of the Digital Economy and Society of Ukraine for 2018–2020 and Approval of the Plan of Measures for its Implementation"]. Retrieved Feb. 2, 2018, from: https://www.kmu.gov.ua/npas/pro-shvalennya-koncepciyi-rozvitku-cifrovoyi-ekonomiki-ta-suspilstva-ukrayini-na-20182020-roki-ta-zatverdzhennya-planu-zahodiv-shodo-yiyi-realizaciyi. [in Ukrainian].

From 2023, the Ukrainian jurisdiction will change. In Ukraine, both the number of patents registered and the number of startups that sell their products worldwide within the Ukrainian tax jurisdiction will increase rapidly. It will also create a new fiscal system that provides tax breaks for companies that produce innovative products.[23]

From 2020 to 2025, the Government of Ukraine will initiate and implement the following steps:

• identifying the country as a major player in the sector. The country will become a key consumer and user of innovation, lead the trend for digital culture, and promote education in the high-tech sector;

• legally enshrining the basic digital rights of the citizen;

• implementing the infrastructure projects (connection to fixed broadband Internet of all households, smart physical infrastructure, etc.);

• initiating and implementing of numerous digital transformation projects (e-government, smart cities, electronic identification, e-customs, etc.);

• creating the conditions for the emergence of over 300,000 new jobs in the digital economy;

• introducing universal digital services for citizens (standard mandatory minimum): education, medicine, transport, security.[24]

In essence, the country must transform itself, its internal governance, political life, internal structure so that everything is built on innovative solutions. Digitalization can have the impact on businesses, citizens, and eventually the budget, political elite will form a new agenda and introduce digital culture in the country.[25]

Analyzing the technological asymmetries of the development of countries in the global dimension, we can conclude that the digital transformation means the integration of digital technologies in all areas of business. This integration leads to fundamental changes in the way citizens, businesses and organizations act, how they deliver value to themselves, their employees, customers, partners, achieving their own, common, economic and social goals faster, cheaper and with the new quality. Digitalization is the saturation of the physical world with

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[25] Carayannis, E. G., & Alexander, J. M. (2006). Global and Local Knowledge: Glocal Transatlantic Public-Private Partnerships for Research and Technological Development. London: Palgrave Macmillan UK.

electronic-digital devices, tools, systems and the establishment of electronic-communication interaction between them. Digitization should be seen as a tool, not an end in itself. Under the systematic state approach, digital technologies will stimulate job creation, increase productivity, economic growth and quality of life for Ukrainian citizens.

It is clear that such trends affect primarily on business. Under the influence of the environment, there are inevitable changes within the enterprise, which deepens the asymmetry of the enterprise development. For its successful operation, the company must seek a new development model and be able to identify and manage internal asymmetric processes.[26]

Taking into account the above factors, it is possible to present an innovative model of Ukrainian enterprises development as follows (Figure 3). To date, Ukrainian enterprises are lagging behind in the technological development of the enterprises of the highly developed countries due to lack of sufficient attention and support for the development and implementation of innovative development models.[27]

The need to direct the entrepreneurial activity development in the direction of innovation, increasing the activity of innovative entrepreneurship is also due to the current globalization process, which stimulates the development of communication and information technologies. The trend of globalization, in particular, is reflected in the growing share of foreign funding for research in most developed and emerging industrialized countries, and in the creation of an increasing number of research units of multinational corporations in regions favorable to such activities.[28]

Activation of the innovation process is not possible without the encouragement and effective use of innovative mental work that creates new knowledge and new technologies. The mechanical use of other people's borrowed know-how is not so valuable today. From the sphere of requirements of time and limited material resources rational use, which reduces the cost of production and its price, competition of the world market has shifted to the sphere of technological progress, design and engineering improvement.

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[27] Cameron, E., & Green, M. (2011). Making Sense of Change Management. A Complete Guide to the Models, Tools & Techniques of Organizational Change. London : Kogan Page.

[28] Adkar: A Model for Change in Business, Government and Our Community: How to Implement Successful Change in Our Personal Lives and Professional Careers by Jeffrey M. Hiatt (2006). Retrieved Nov. 8, 2019, from: http://www.change-management.com.

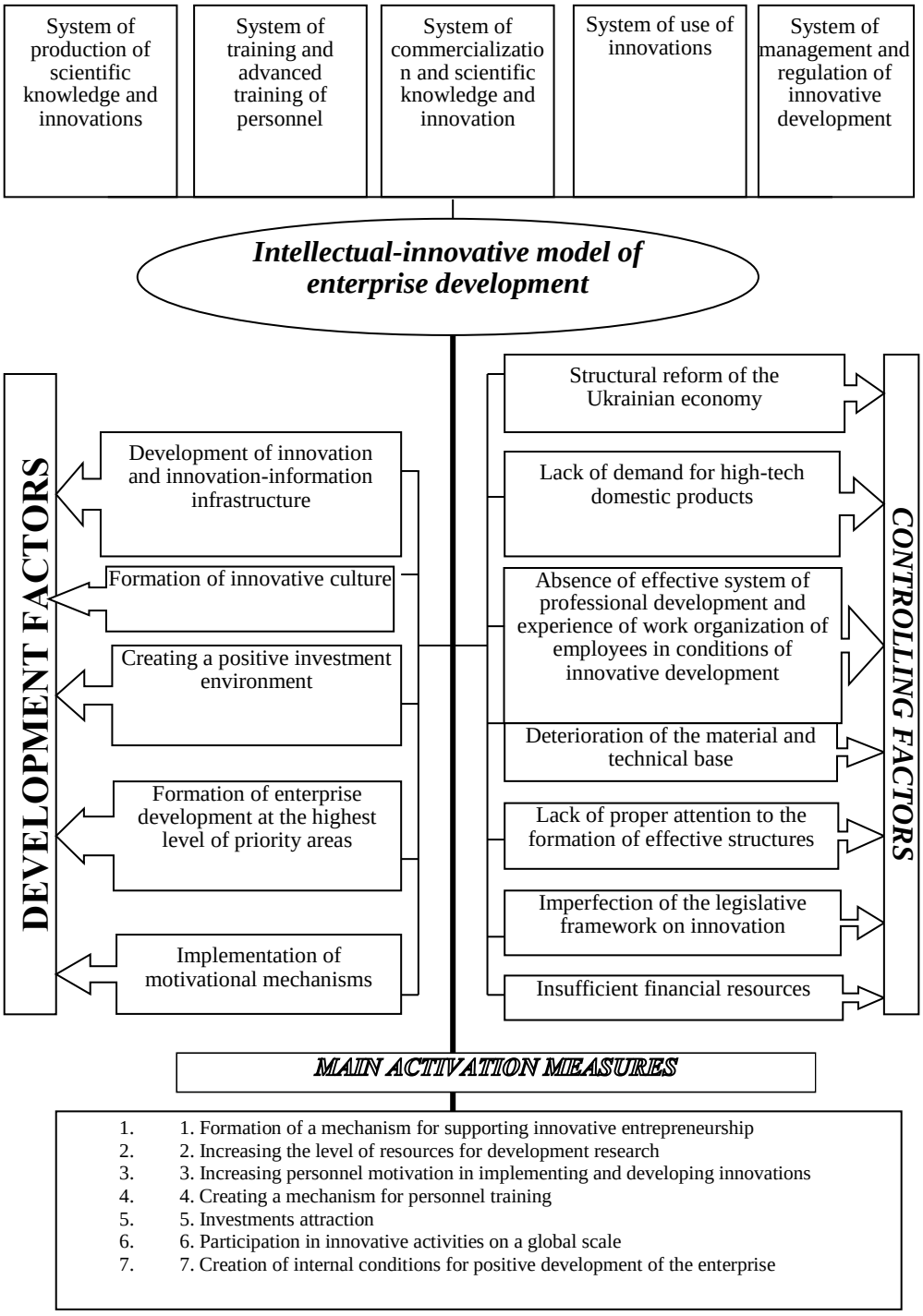

Figure 4. Intellectual-innovative model of company development
Source: Developed by the author

CONCLUSION

The study of the development concept, isolation of species and characteristic features of this definition made it possible to follow certain patterns in the process of enterprise development. Since the enterprise is

an economic system, it is exposed to external factors and responds to the movement of internal elements. Under this influence, an enterprise undergoes change, and it is always a movement that is impossible without breaking the balance and the emergence of asymmetry in the development of the enterprise.

Asymmetry of enterprise development is a continuous, regular, constant process of changing the qualitative and quantitative state of the enterprise due to the formation of unique resource compositions, which causes structural changes in the company. The process of asymmetry in the development of economic entities is particularly relevant in the current economic trends. The larger the company is, the deeper the process of asymmetry is in its development. Peter Drucker, in the Effective Executive, argues that company success is a non-static indicator. The reason is the constant desire of an effective leader for excellence, or in other words for a stable continuous dynamic development. Based on the operating experience in the leading companies, it is safe to say that as soon as the leader and personnel of the company are satisfied with the result, i.e. development ceases, the phase of stagnation and crisis begins. In the age of technological change, this particular feature of development becomes relevant and becomes the driving mechanism for achieving efficiency and high performance of the enterprise. The head of one of the most progressive investment companies in the country, UFuture, whose main focus is to attract investment in promising innovative projects, said: “I am always dissatisfied with something. But this is the way forward: look what doesn't work, what can be done better. As a whole, it's on the four. ”In this way, it provides its company with the potential for future growth through continuous development.

Technological changes require transformation in familiar models of company development. In particular, there is a multi-vector change in the organizational structure, which is described by the processes of debureaucratization, narrowing of functional specialization, decentralization, reduction of administrative levels. These cause the transition of enterprises to radically new organizational forms to mediate the asymmetry management processes in the enterprise, smooth out the negative manifestations of irregularities in the enterprise management system, turning them into competitive advantages of the enterprise.

SUMMARY

The basic approaches to identify the definitions of “development” and “enterprise development” are analyzed. The relation between the concepts of “development” and “change” is determined. The constituent characteristics of the concept of enterprise development are described. Classification of types of development is described. The classification group of asymmetry and balance as the type of development is formed. The enterprise development asymmetry is characterized. The forms of global technological development asymmetry are shaped. The main trends of the digital economy are investigated. An intellectually innovative model of modern enterprise development has been created.

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Chapter 2
INNOVATIVELY ADAPTIVE STRATEGIC PERFORMANCE MEASUREMENT

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INTRODUCTION

Globalization of activity, the instability of the economic environment and the changing paradigms of enterprise development have created completely new conditions and significantly complicated the achievement of high performance results. Rethinking and searching for innovative approaches to enterprise management require the use of modern tools for measuring performance, focused on substantiating mechanisms to ensure the level of strategic effectiveness necessary for the enterprise and the stable existence of business structures. According to the traditions of modern economic scientific schools, strategic performance is considered on the basis of a synergy approach[1] through a system of values that meet the needs of social development, and is interpreted as the ability of an enterprise to ensure the maximum level of consistency of its results with their targets for the key success factors of strategy implementation. In this context, the measurement of performance should act as an analytical tool for its assessment, present specific results of economic activity[2], provide an opportunity to develop and use a system that leads to continuous improvement, organizational training, change process management and strategic management of operational activities.

Measuring performance requires differentiated approaches and is a multidisciplinary topic[3]. Over the past three decades, a lot of domestic and foreign publications have been devoted to this issue both in specialized scientific literature in management theory and organization

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theory (P. Drucker, G. Cokins, V. Pareto, S. Sink, D. Norton, A. Neely, F. Hadow, P. Almstrom, S. Okwir, U. Bititci, M. Smith, S. Pokropivniy, A. Oleksyuk, V, Lavrenenko, H. Yanhol and others), and among expert practitioners at the level of development of information systems and business process management (G. Kanji, D. Heckl, P. Richard, T. Devinney, G. Yip, G. Johnson and others)[4,5,6]. Despite significant interest in this issue, there is a significant lag in the degree of development and resolution of issues of measuring the strategic performance of enterprises at both the theoretical and applied levels from the needs of the modern economy. This situation has led to a shift in the emphasis of the measurement process from the mechanisms of its provision to the actual assessment, which significantly complicates the preventive effect on the level of achievement of results. From the foregoing, the need for a critical rethinking of the applied aspects of the formation and development of methodological approaches to measuring the strategic performance of an enterprise follows.

2.1. Theoretical basis for the development of performance measurement

In its historical development, the measurement of performance has transformed from the practice of preparing financial statements to the use of multiple criteria for achieving value for owners, which form a certain system of performance indicators. Historically, their appearance was facilitated by the development of targeted management methods and the need to create a specific mechanism that would justify the establishment of organizational goals and track progress over time. The need for such a mechanism has been justified since the introduction of full quality management (TQM) in the 1980s: when groups of people whose functional duty was previously only an assessment of performance, became responsible for decision-making[7]. From that moment, in fact, enterprises began to adapt structures naturally

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distributed on the basis of hierarchical information exchange in the transverse direction. This distribution contradicted the flow of strictly hierarchical management structures that already existed in the enterprise, which led to the transformation of performance measurement systems. From that moment, the strategic goals and their values, multidimensional performance indicators, and the corresponding support infrastructure become components of the measurement system.

Historically, the first look at the role of measuring performance defined by Teige and Eilon (1973)[8] has three main goals: to ensure the achievement of organizational goals and objectives; evaluate, monitor and improve procedures and processes; Compare and evaluate the performance of various enterprises, groups and individuals. Chiesa et al. (2009)[9] complements PM's goals with diagnostic activities to support decision making, staff motivation, strengthen communication and coordination; learning; risk reduction and uncertainty. Thus, the study of the issue of measuring performance should be devoted to the formation of a certain system of indicators that would allow the implementation of the optional functions assigned to it. Moreover, under the performance measurement system (PMS), we should consider a monitoring, regulation and control tool with a quantitative assessment of indicators to support managerial decisions and assess the general condition of the enterprise.

The traditional monetary indicator systems began to apply the first, which should be divided into logical-deductive and empirical-inductive ones. The most widely used are the logical-deductive indicator systems (DuPont, Pyramid Structure of Ratios, ZVEI, RL), which are based on the decomposition of a certain top-level indicator into low-level indicators, inextricably linked with a key indicator. In the practice of financial management, systems of interrelated indicators were included in the management of the first large Western corporations, such as DuPont and General Motors. DuPont, recognized as the founder of a system for measuring financial performance, introduced the pyramid of financial indicators back in 1903[10]. An example of modern logical and

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deductive scorecards is the methodology for assessing the value of an enterprise, based on the concept of Value-Based Management (VBM), which are aimed at measuring indicators of value added (EVA, MVA, SVA, CVA) and cash profitability (CFROI).

Strictly determinate traditional measurement systems, using rigid causal relationships between goals and indicators, remain widely used in modern business practice. According to these methods, an enterprise is assessed as successful when it reaches its planned financial performance. According to the CIMA (Institute of Chartered Management Accountants)[11], financial indicators should be divided into three groups, namely, performance indicators that focus on measuring financial results (profit, profitability, working capital); indicators that assess the financial structure and solvency of enterprises; and a group of investment indicators that measure the attractiveness of enterprises to investors.

Over the past decades, the criticism of traditional systems of indicators has been quite often in the economic literature, which is mainly aimed at their retrospective (historical) nature, which significantly reduces their value for making managerial decisions[12]. In fact, traditional approaches to measuring business performance are becoming inadequate and incomplete in the new, turbulent conditions due to their short-term orientation. Changes in the environment, which are accompanied by internal business transformations (decrease in profitability, increase in stock prices, change of strategies, reorganization of business processes, the emergence of new technologies, new competencies, the need to attract and retain employees[13]) require redesign and adoption of new approaches to eliminate the shortcomings of existing measurement mechanisms based on the use of both financial ("hard variables" that can be measured and quantified) and non-financial indicators ("soft variables" such as creativity, motivation, flexibility and control, and so on. n., which can not be expressed in terms of classical performance), that is, those which would be based on a more balanced measurement perspectives.

During the 70-90s last century, a number of researchers (Kerr, Kaplan, Norton and others), summing up the activities of many

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companies, tried to solve the problem of creating a more comprehensive and adequate dynamic operating system for measuring performance. The research results led to the emergence in 1992 of the most popular and currently[14] multidimensional measurement model – a balanced system of business indicators (Balanced Scorecard – BSC) R.S. Kaplan and D.P. Norton, whose philosophy is based on the relationship between the parameters of the target results and the processes that lead to these results. Scientists and practitioners have developed BSC ideas further and consider this method as the cornerstone of the new strategic management system. A wide variety of options has blurred the boundaries between traditional planning and the BSC methodology, resulting in the development of BSC standards by R. Kaplan and D. Norton[15]. In modern conditions, BSC-systems are an integrated analytical solution.

Since the development of BSC, new approaches to assessing the performance of the enterprise and the formation of PMS have begun to appear, taking into account the interests of all interested parties. In the future, these approaches are generalized, as a result of which an innovative universal concept is formed, which is called the performance measurement concept (here in after PMCo)[16]. Measurement systems oriented to the strategic line of the enterprise come first, thereby confirming the point of view of P. Drucker on the priority of forming and evaluating the implementation of the strategy at the enterprise "The most important thing is to do the right thing, than to do the right thing"[17]. While traditional measurement systems are linked by forecasts, designing the future of companies, PMCo measurement systems are developing under the influence of accounting technologies (based on information systems) in the direction of managing processes to achieve the prospects of enterprises, that is, on the processes of realizing their potential today[18], focusing instead operational on strategic performance.

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PMCo's received theoretical development on the basis of systems theory, management theory or financial analysis tools[19] in the works of German authors: R. Gleichen, R. Hauber, T. Wetstein, M. Grüning, A. Baum and others. Almost all of them agreed that PMCo's measurement systems are a specific structure (model), which is based on conditional indicators or goals[20]. Within the framework of these approaches, the effectiveness of the implementation of the strategy is integrally assessed by monetary and non-monetary indicators, it covers the strategic and operational levels of management, past and future results, as well as internal and external aspects of organizations. A common characteristic of all modern, integrated, multidimensional models of measuring performance is their complexity or desire for comprehensiveness. Thus, gradually PMCo grows from an analytical tool into a universal philosophy of human activity in the economic environment. Supporting the opinion of Niili[21], it should be noted that the concepts, processes and methods proposed in the XXI century. contradict the actual application and do not provide specific tools, pointing to the need to develop systems that are more adaptive to modern conditions of functioning. Many scientists have understood the relevance of this topic, thereby creating a substantial database that has developed over the past decade.

In the 21st century, process-oriented management or business process management (BPM), which consists in "managing entire chains of events, activities and decisions that ultimately add value to the organization and its customers," has become especially common for measuring organizational performance. At its core, BPM is both a PMS and a management concept, representing the unity of integrated cyclic management and analysis processes for the selection of technology for the financial and operational activities of the company; focus on determining the strategic goals of the enterprise with a subsequent assessment of the effectiveness of their achievement, as well as

[19] Lavrenenko, V. V., & Yanhol, H. V. (2012). Vimiryuvannya rezul'tativnosti diyal'nosti pidpriємstva: suchasnij instrumentarij [Measurement of the companies performance: modern tools]. *Strategic development of the national economy, regions and enterprises*. T.4. Models and methods of effective strategic planning of socio-economic development: materials All-Ukrainian. scientific and practical. Conf., 15-17 leaf. 2012 Donetsk: DonSUU, 107-112. [in Ukrainian]

[20] Ivanov, A. A., & Shevchenko, S.Y. (2014). Mnogokriterial'naya ocenka koncepcij izmereniya rezul'tativnosti v upravlenii predpriyatiem [Multi-criteria evaluation of performance measurement concepts in enterprise management]. *Vestnik SUSU*, T. 8, 3, 66-74. [in Russian]

[21] Neely, A. D., Gregory, M. J., & Platts, K. W. (2005). Performance measurement system design: a literature review and research agenda. *International Journal of Operations and Production Management*, 25, 1228–1263.

managing the process of achieving strategic goals; compilation of consolidated reporting, modeling, analysis and monitoring of key indicators. Thus, at the heart of BPM is the idea of a continuous management cycle, from setting goals, modeling future development, planning activities to preparing financial and management reporting.

The central place among modern process-oriented models that have been developed in the BPM concept is the Performance Measurement Life Cycle Model proposed by Bourne and Bourne in 2011, which consisted of four stages: design, implementation, use and revision of PMS, and which was supplemented by Landstrom et al.[22] in 2018, the fifth stage is a double training cycle, which consists of the steps of comparing performance with strategic goals and assessing the compliance of strategic goals based on information about the company's performance (Figure 1). According to the model, the main element in the design of PMS adapted to a specific enterprise is the selection of adequate performance indicators for specific prospects for the implementation of the strategy.

With the development of BPM, there is an absolutely different new type of PMS within the framework of PMCo – a model of business excellence. To increase the efficiency and effectiveness of activities in such models, it is recommended to use the principles of Total Quality Management (TQM).

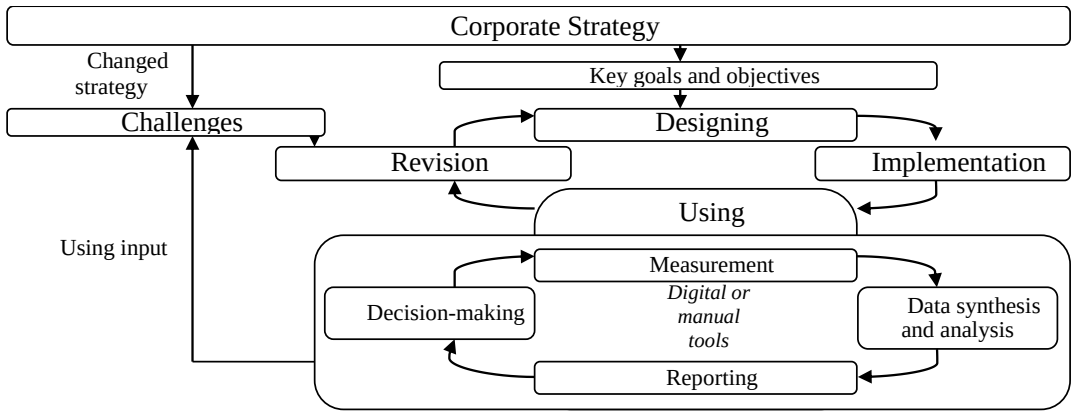

Figure 1. The BPMS life cycle

Source: M. Bourne, P. Bourne (2011)[23], Landström A. etc. (2018) [24]

[22] Landström, A. etc. (2018) A life cycle approach to business performance measurement systems. *Procedia Manufacturing*, 25, 126–133.

[23] Bourne, M., & Bourne, P. (2011). Handbook of Corporate Performance Management, first ed., John Wiley & Sons, Chichester, 280 p.

[24] Landström, A. etc. (2018) A life cycle approach to business performance measurement systems. *Procedia Manufacturing*, 25, 126–133.

The application of the concept of management and measurement based on business success was especially noticeable during the tough globalization, when companies used it to create, maintain and strengthen their competitive advantages. The most famous of these models is the Kanji Business Excellence Model (KBEM) combined with the Kanji BSC (KBS), developed by Kanji in 2002[25] and the Business Excellence Model of the European Foundation for Quality Management (EFQM-system, 2015). Both models define an organization as excellent that focuses on improving various aspects of activities in order to satisfy all interested parties and achieve a balance of interests. Achieving the best results in business, according to the models of business excellence, is ensured through the establishment of a relationship between different areas of activity, when improvement in one contributes to progress in the next, thereby ensuring continuous improvement. Thus, these models directly coordinate the PMS of the enterprise with their strategic goals, focusing on its components as a process. In fact, the search for new ways to increase the efficiency and effectiveness of activities becomes a necessary condition for long survival and development.

The last decade has been characterized by the spread of the ideology of sustainable development with the simultaneous digitalization of the economy, designing new systems and measurement models and indicators for companies, defining it as a key area of improvement. PMS within the framework of sustainable development is called Sustainable and Resource Efficient Business Performance Measurement systems (SuRE BPMS). The basis for the development of modern Sure BPMS is the concept of global sustainability performance "Triple Bottom Line", Sekara (2006)[26], which is used to assess the implementation of sustainable development strategies, including a combination of economic, social and environmental indicators. This concept maintains a balance between maximizing economic performance (primarily performance for shareholders) and maximizing social performance (maximum performance for all participants in the economic life from workers to the community, from suppliers to consumers, from investors and creditors to the state, from leaders and corporate governance to support the attention of the shareholder); increased environmental efficiency (activities that do not affect the environment) (Figure 2).

[25] Janjić, V., Todorović, M., & Jovanović, D. (2015). A comparative analysis of modern performance measurement and management models of companies. *Economic themes*, 53, 298–313.

[26] Fauzi, H., Svensson, G., & Rahman, A. A. (2010). "Triple Bottom Line" as "Sustainable Corporate Performance": A Proposition for the Future. *Sustainability*, 2, 1345-1360.

Improving the views of Triple Bottom Line and The BPMS life cycle is reflected in Almström SuRE BPMS (2017)[27]. The authors note that the use and improvement of performance measurement systems is closely linked with management systems, for example, environmental protection, quality and occupational health and safety, as well as operational development programs (OD) (for example, initiatives for continuous improvement).

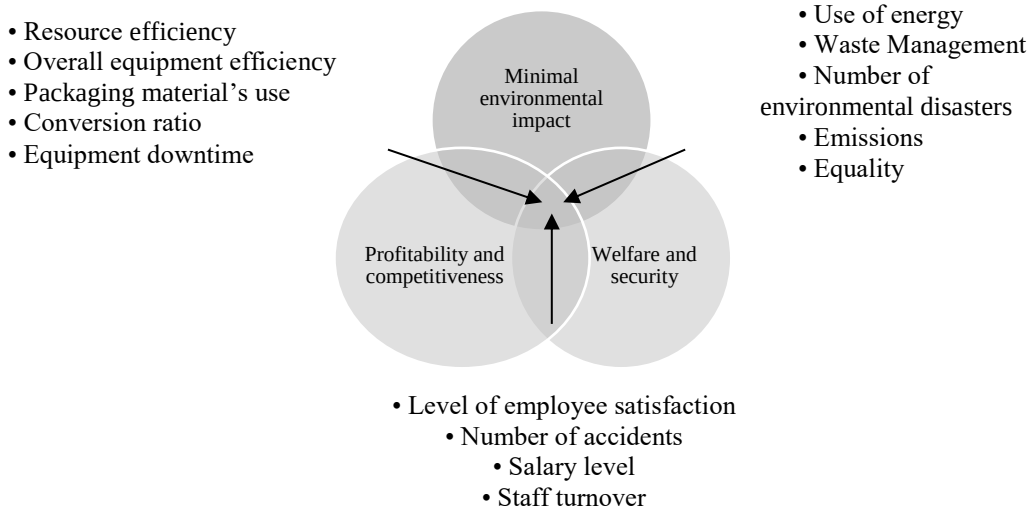

Figure 2. Sustainability Global Performance Concept "Triple Bottom Line"

Source: Pintea M. O. (2010). [28]

In addition, to achieve success with the coordination of PMS in operating systems, it is necessary to: focus on the improvement cycle (Plan-Do-Check-Act), implement management systems according to production development, standardize measurement, ensure integration with operational development methods and tools, use internal audit In Figure 3 shows an integrated management and performance measurement system by Almstrom.

Modern SURE models reflect the last stage of PMS development, forming the modern philosophy of innovative PMCo, which combines the elements of BSC, process-oriented life cycle models and business excellence models, subordinating PMS to a single strategic management

[27] Almström, P. etc. (2017). Sustainable and resource efficient business performance measurement systems. The handbook. Mölndal, Sweden: Billes Tryckeri, 45 p.

[28] Pintea, M. O. (2010). Performance – an evolving concept. University Babes-Bolyai of Cluj-Napoca: web-site. URL: http://feaa.central.ucv.ro/annals/ v2_2010/0038v2-008.pdf

system, which together creates a worthy basis for creating a modern integrated system measuring strategic performance.

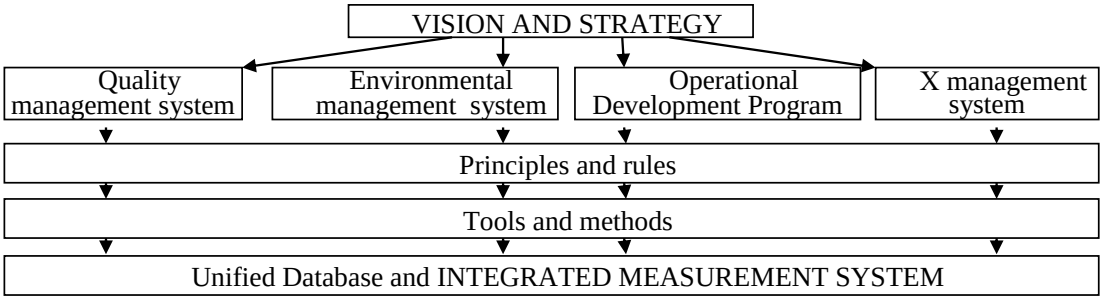

Figure 3. Almström SuRE BPMS

Source: Almström P. etc. (2017) [29]

The genesis of performance measurement systems makes it possible to highlight the main trends inherent in the modern stage of their development, including:

• focus on the system for measuring the prospects for implementing the strategy: a key element of strategic management, which determines decision making in the management and monitoring process;

• multidimensionality of models: an attempt to include the uncertainty of entrepreneurial reality;

• inclusion of external aspects and stakeholders: a broad understanding that the purpose of an enterprise is to provide services to interested parties, which may be not only shareholders, but also customers, auditors, investors, employees, suppliers, etc.;

• measuring performance as a form of internal governance and external communication, as well as institutional[30] legitimacy, reflecting a change in the nature of governance from transactional to relational.

An analysis of the works revealing certain elements of the methodological apparatus for measuring the strategic performance of an enterprise shows that the problem is developed only in certain areas. Most theoretical and scientific-applied measurement issues, due to their versatility and multi-levelness, do not take into account the characteristics of individual industries, the characteristics of products, and do not determine the overall level of strategy implementation, which is the basis for the strategic content richness. Consequently, the question

[29] Almström, P. etc. (2017). Sustainable and resource efficient business performance measurement systems. The handbook. Mölndal, Sweden: Billes Tryckeri, 45 p.

[30] Carneiro-da-Cunha, J. A., & Hourneaux, F. J. (2016). Evolution and chronology of the organisational performance measurement field. *Int. J. Business Performance Management*, Vol. 17, 2, 223–240.

arises of the need to develop an adequate methodology for determining the level of strategic performance of an enterprise, and its solution must be approached comprehensively, taking into account the degree of satisfaction of various groups interested in the stable operation of the enterprise[31].

2.2. An integrated approach to innovative and adaptive measurement of strategic performance

The study of the strategic performance of the enterprise from the standpoint of the synergy approach determines the concretization and logical and methodological expression of the mechanisms of its measurement based on the principles of the General Systems Theory, which develops within the framework of organization theory (mainly in the context of the theory of situational determinism and strategic choice (R. Dunkin, L. Donaldson, J. Child et al.)), management theory (in the direction of the development of the concepts of "change management" (J. Freeman, E. Van de Ven, S. Carraher et al.)) and Complex system theory – mainstream research the phenomenon of integration and interaction of measurement and performance management business in foreign scientific space in the XXI century (Bititci, Neely, Okwir, Nudurupati, Elzinga, Micheli, Cedergren, Smith, etc.).

From this point of view, the formation of approaches to measuring strategic performance should be considered on the basis of systems engineering, which encompasses efforts to develop and verify a variety of management decisions that are integrated and balanced in the life cycle of an enterprise, related to personnel, products, the strategic management process, and aimed at ensuring highly effective activities[32]. In this context, an enterprise should be considered as a complex and non-linear socio-economic system, which consists of a large number and variety of components, systems and people along the entire value chain[33], whose interaction with the performance measurement system determines their current and future behavior using a self-organized set

[31] Yanhol', H. V. (2013). Metodichni pidhodi do vimiryuvannya rezul'tativnosti diyal'nosti pidpriємstva [Methodical approaches to the companies performance measurement]. *Strategy of economic development of Ukraine*, 32, 225-231. [in Ukrainian]

[32] Levenchuk, A. I. (2018). Sistemnoe myshlenie: uchebnik [System thinking: textbook]. Publishing Solutions, 398p. [in Russian].

[33] The Complex Enterprise. *Cincom In-depth Analysis and Review*: web-site. URL: https://www.cincom.com/pdf/ CMUS1202016.pdf

rules for the formation of the order (rules for making managerial decisions[34]), which together ensure the achievement of target results.

An effective attempt to combine the reference characteristics of all existing measurement systems based on system engineering into an integrated methodological approach, which in the process of use could both evaluate the level of implementation of the strategy, its prospects and key indicators, and justify specific areas for improving the business and maximize the use of all the opportunities created the internal and external environment of the enterprise, is an approach to measuring strategic performance H. Yanhol (2019)[35].

The author offers a five-level methodological approach to measuring the level of strategic effectiveness, which provides for: determining the overall level of strategic effectiveness; its structural decomposition into three perspectives of measurement (financial performance, realization of entrepreneurial potential and socially oriented management); identification of relevant success factors and determination of the parameters of group Key Strategic Performance Indicators (KSPI). The outlined prospects reflect the achievement of the necessary success factors as conditions for ensuring high results, namely: profitability, innovation, competitiveness, investment attractiveness, following the principles of sustainable development and corporate social responsibility. For each strategic performance perspective, the KSPI team has identified an appropriate system of performance indicators.

The primary thing in developing a methodology for measuring strategic performance should be an understanding of what should be influenced and how to do it. The initial phase of developing a strategic performance measurement methodology should cover four levels: the architecture of the measurement system (PMS), the key measurement perspectives, a specific set of measurement perspective parameters (group KSPI) and KSPI in each perspective, the individual definition of KSPI, and the target value of KSPI. This requires the formation of certain methodological principles for the selection of indicators. According to the approach, the methodological principles of innovative

[34] Brown, S. L., & Eisenhardt, K. M. (1997). The art of continuous change: linking complexity theory and time-paced evolution in relentlessly shifting organizations. *Administrative Science Quarterly*, 42, 1–34.

[35] Yangol', A. (2019). The assessment methodology of the level of integrated strategic performance of metallurgical enterprises based on worldwide experience in management of innovation development. Organizational-economic mechanism of management innovative development of economic entities: collective monograph / ed. by M. Bezpartochnyi, in 3 Vol. / Higher School of Social and Economic. Przeworsk: WSSG, Vol. 2. P. 383-395.

and adaptive measurement of the level of strategic effectiveness should be: its synchronization with the strategic management of the enterprise; the formation of the architecture for measuring strategic performance through hierarchical cascading (decomposition) of indicators; digitalization of the method of data collection and processing; use of advanced benchmarking research tools.

The use of benchmarking is aimed at designing the optimal architecture for measuring the level of strategic effectiveness, identifying key measurement prospects and their parameters – group KSPIs. Individual KSPIs are proposed to be selected by structural decomposition, taking into account the requirements of SMART-tasks. The definition of the KSI system for the formation of a methodology for measuring strategic performance is a fairly creative process that requires an instant response to the situation both within the enterprise itself and in its relationship with the external environment. The measurement perspectives should reflect certain areas of strategy implementation (corporate or key functional) that combine corporate and market goals with enterprise resources, in order to make adequate strategic decisions and establish appropriate goals in the future. The way that the company plans to achieve its goals at a strategic corporate level is a carrier of competitive advantages that are able to withstand macro and meso factors of influence on business performance and ensure the achievement of high strategic effectiveness, the maximum possible in modern realities. Such competitive advantages should be value guidelines for the development of the enterprise, and their number should correspond to the number of group KSPIs. The basis for building single KSPIs should be elements that are the lowest level of the hierarchical structure that complex (group) and / or high-level KPIs (proxy variables) create.

So, for each prospect of analysis, it is necessary to determine the group KSPI – conditions for ensuring results based on key strategic values, actually KSPI – calculated indicators for determining the satisfactory conditions for such conditions, as well as proxy variables based on correlation and regression relationships that determine the KPI necessary to model optimal decisions of national companies in view of “the best global business practices”.

The next step in developing a methodology for measuring strategic performance is the selection and implementation of tools for collecting and processing the necessary data. This step involves setting up work procedures for data collection, visualization, and aggregation. Based on

the definition of KSPI and the elements included in the mathematical formulation, it is necessary to identify the data source for each element. The conversion of data into information and its further understanding is crucial for deciding on actions to be taken if goals are not met. The support infrastructure necessary for the implementation of the measurement should include: measuring equipment, databases for storing information, analytical tools for converting data into information, the selected collection procedure for measuring indicators. Effective implementation and benchmarking research within the framework of the approach is possible only with the use of digital tools that will allow you to track strategic transformations of global leaders as quickly as possible, collect the necessary information, adaptively adjust the measurement prospects, and therefore the goals of enterprises. An element of the implementation of data collection and processing tools is generalization and analysis – a prerequisite for establishing information and understanding how to act for improvement; and reporting – creating a scheme for presenting information to relevant stakeholders at the right time, which should optimize the decision-making process, provide information about the possibility of improvement and determine priorities between actions.

Further, it is necessary to establish target values for each of the KSPIs, which should be a compromise between the goals and interests of various stakeholders[36]. In the context of the critical influence of global trends on the development of business entities, the target values of enterprises using benchmarking studies are proposed to be established with subsequent empirical modeling of their flexibility by analyzing the correlation and regression relationships between the key indicators of strategic performance of industry leaders, their group values and proxy variables. Empirical models of such results should be interpreted not only as targeted, but also as maximum possible in the existing business environment.

After the approach to measuring strategic effectiveness is formed, it is necessary to proceed directly to its use, which involves measuring and evaluating the range of improvement of strategic effectiveness. Using the methodology is the most informative step and involves measuring performance with the goal of monitoring and transmitting information

[36] Meekings, A., Briault, S., & Neely, A. (2011). How to avoid the problems of target-setting. *Measuring Business Excellence*, 15, 86–98.

within the enterprise to determine priorities and initiate actions to achieve corporate strategic goals.

Based on the measurement of the level of simple and group KSI, a comprehensive indicator of the actual level of strategic performance of the enterprise should be measured. The actual level of strategic performance should be considered as a consequence of certain measures to ensure them. The second step of use involves comparing the target values with the actual level. Evaluation of the range of improvement of strategic performance as the difference between the modeled and the actual value, indicates how effectively the enterprise's potential is used to achieve (ensure the maximum level in the current conditions) strategic effectiveness, and whether it is possible to achieve its maximum level without applying transformational / adaptation changes.

The interpretation of the actual level of strategic performance and the presence / absence of a range of improvement justifies decisions that should be made as a result of measuring strategic performance. The adoption of managerial decisions regarding the necessary changes to ensure effectiveness at a strategic level, aims to justify the need to adjust the mechanism for ensuring strategic effectiveness based on adaptation to changes in both the internal and external environment of the enterprise by evaluating the effectiveness, that is, comparing the effectiveness with strategic goals and identifying sources discrepancies between the target (simulated) and actual strategic performance, followed by Selecting the direction of change. It is proposed to make decisions on choosing the direction of changes and the need to form a new mechanism for ensuring strategic effectiveness based on an analysis of the sources of mismatch between the target (simulated) and actual strategic effectiveness according to the following algorithm:

A) if strategic results have not been achieved, but there is a range of improvement – due to the transition to the formation of a new mechanism to ensure the highest possible level;

B) if the strategic results are not achieved or significantly exceed the 100% level of achievement of the target values for group KSPI and there is no improvement range, the inconsistency of the support mechanism or measurement approach is recognized and systemic changes in corporate strategic management are justified;

C) if the strategic results are sufficient, but there is no improvement range, there is a reasonable recognition of the need to redesign the

measurement system to form a new mechanism for ensuring strategic effectiveness;

D) if the strategic results are sufficient, the range is also present – it is reasonable to return to the stage of measuring the actual level and the range of improvement until the discrepancy appears (this is a signal of the need for changes).

Thus, the formation of a new mechanism to ensure the highest possible level of strategic effectiveness should be highly conditioned, which will eliminate the risk of "wrong decisions". At this stage, managers must form (simulate, design) a mechanism for ensuring the highest possible strategic effectiveness in order to determine the strategic decisions necessary for 100% use of the improvement range (in all perspectives). From the author's point of view, modeling is optimal by tracking correlation interdependencies between the top level of strategic performance, group KSPIs and simple KSPIs based on regression analysis using a filter to achieve exceptionally high strategic results. The proposed mechanism justifies the formation of hierarchical sequences of strategic goals for each of the group KSPI.

Thus, the innovative and adaptive measurement of strategic performance should be implemented within the framework of strategic management and focus on a generalized assessment of the level of strategic performance, which provides a comprehensive set of modeling, support and measurement of a comprehensive indicator of such performance, starting with the identification of global factors of industry influence and their coordination with key directions (prospects) of the implementation of the strategy, which should be defined as wear and key benefits.

SUMMARY

Based on a scientific study of the evolution of performance measurement systems, it was determined that the optimal approach to measuring strategic performance should be adaptive to the challenges of a functioning environment. The development of an innovative approach to measurement should be based on the synergistic use of continuous improvement systems through tools of integrated life cycle models and an intensified management model based on corporate social responsibility principles. The introduction of such a system contributes to the continuous measurement of the level of strategic performance, and provides a comprehensive set of modeling, support and measurement of

a comprehensive indicator of such performance, starting with the definition of key prospects that should be identified as carriers of key benefits. To optimally identify such advantages, the use of benchmarking tools has been proposed, which opens up a circle of potential opportunities for the strategic development of industry enterprises. Identification of key success factors for global industry leaders will allow us to implement best company management practices and achieve results, as well as achieve specific strategic goals of the company and develop a strategy based on ensuring long-term business sustainability.

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Chapter 3
VENTURE BUSINESS DEVELOPMENT: THE UKRAINIAN CONTEXT

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INTRODUCTION

Venture business, due to its appearance, thanks to the rapid development of small business in the US in the late 1950s of the twentieth century. Thanks to venture capital, small innovative firms were able to realize the entrepreneurial idea, and venture investors who deliberately went for risky investments subsequently received income, which covered the initial investment at times. This is how the world learned about Silicon Valley, Microsoft, Intel and Apple Computer. Later, thanks to venture capital, the leading high-tech companies DEC, Compaq, Sun Microsystems, Lotus and others were created. The success of the American venture business in the 1960s and its dynamic development has attracted considerable attention from financiers in other countries. This gave impetus to the expansion of venture business in a number of the European countries in the 1980s. It was at this time that the venture business infrastructure began to take shape, which contributed to its development. In contrast to the US and European countries, venture business in Ukraine is only emerging in the face of numerous obstacles in its path. However, this issue should become a topic for discussion in the broad scientific and professional community, a tool to support innovative entrepreneurship in our country. It should be noted that the vast majority of researchers analyze the overseas experience of establishing the venture business and its ability to finance the creation of innovative products and services. Systematic studies of the venture business development in Ukraine have hardly been conducted, which actualizes the need for them to find financial alternatives to activate innovative entrepreneurship in the country.

3.1. Formation of venture business in Ukraine

The most common among domestic and foreign scholars is the interpretation of the concept of the venture business as an entrepreneurial activity or its separate sphere. Kiev scientists

O.P. Zinchenko, V.P. Ilchuk, L.F. Radzievskaya and V.M. Yevtushenko are of the opinion that the venture business is an area of entrepreneurial activity related to the implementation of risky projects and investments mainly in the field of scientific and technological innovations. In this interpretation, scientists emphasize not only that the venture business is an area of entrepreneurial activity, but also that it is associated with a high degree of risk[1].

The above-mentioned position regarding the interpretation of the venture business concept is also adhered to by other scholars, for example, V.L. Kisil and R.V. Sadlovsky's "Venture Business in Ukraine, its Status and Features" also indicate that venture business is a business activity related to the implementation of risky investments in high-tech industries[2]. In addition, they focus on venture capital funding, and indicate that those may be banks, investment firms, specialized venture firms, or independent investors. The authors also add that this type of business is at high risk and is often referred to as risky. There have been periods in the history of our country's development when virtually any investment in a Ukrainian company was considered a venture investment. At the moment, the payback period of investments in most types of economic activity is quite predictable, if we talk about already operating business, which plans expansion, modernization, diversification and more. The exceptions are the subjects of innovation, which are still associated with a high degree of risk for the investors to lose their investment.

Venture entrepreneurship is an important type of business that facilitates the commercialization of research and development in science-intensive and high-tech industries, where there is no guarantee of success and a high degree of risk exists. It plays an important role in the creation of new viable business entities, promotes the technical re-equipping of industries, increases the employment of highly skilled workers and improves the principles of management of business entities. The venture business ensures consistent communication between innovation customers and their contractors. Among the key factors for

[1] Zinchenko, O. P., Ilchuk, V. P. Radziyevska, L. F., & Yevtushenko, V. M. (2014). *Stan rozvytku organizacijnyx form venchurnogo pidpryyemnycztva i jogo infrastruktury v krayinax svitu ta v Ukrayini* [The state of development of organizational forms of venture entrepreneurship and its infrastructure in the countries of the world and in Ukraine]. Kyiv : NDISEP, 80 p.

[2] Kysil, V. L. & Sadlovskyj, R. V. (2011). *Venchurnyj biznes v Ukrayini, jogo stan ta xarakterni rysy* [Venture business in Ukraine, its condition and characteristics] 190–194. URL: http://www.rusnauka.com/13_NPN_2014/Economics/65283.doc.htm.

the venture business development in a particular country, scientists note: the presence of scientific schools; stable demand for research and development; the development of financial institutions; stock market activity; political and macroeconomic stability; number of Start-ups; availability of capital investments.

Generalized data on expert evaluation of the venture business development in Ukraine are shown in Figure 1.

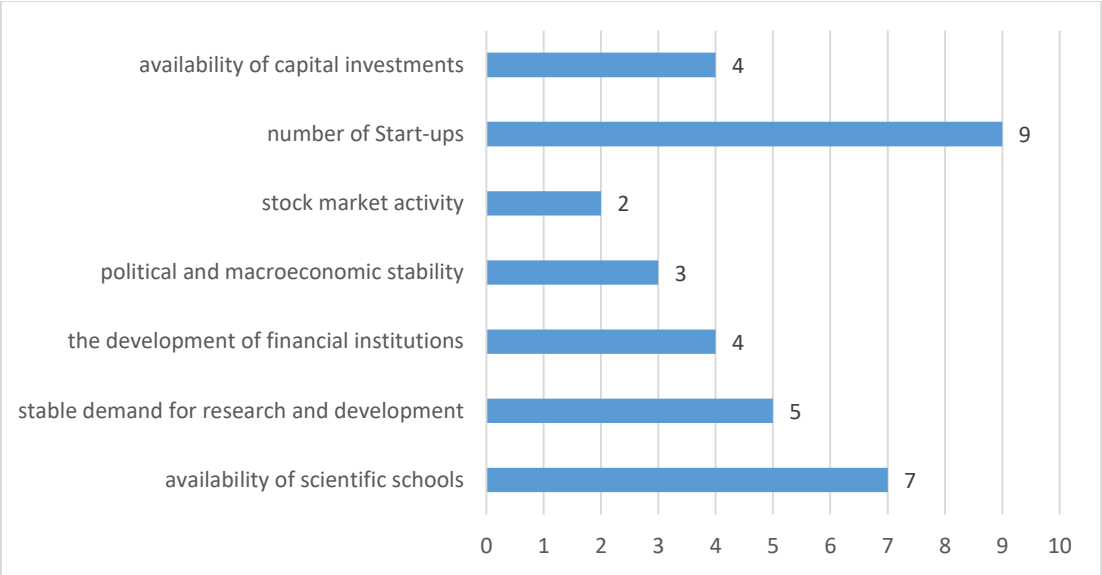

Figure 1. Factor analysis of prerequisites for the venture business development in Ukraine on a 10-point scale[3]

The factorial analysis of the preconditions for the venture business development in Ukraine showed its high sensitivity to political and macroeconomic stimulators. However, the presence of powerful scientific schools and young entrepreneurs in the country is a prerequisite for its development.

According to official figures, the venture capital market of Ukraine is currently around $ 300 million, although there is a real demand for venture financing twice as much as it is now[4]. Venture funds are an important source of investment for small and medium-sized businesses whose development is constantly in need of additional external

[3] Ryepina, I. M., & Raputa, K. O. (2018). Rozvytok venchurnogo biznesu v Ukrayini [Venture business development in Ukraine]. *Ekonomika ta pidpryyemnycztvo.* Kyiv: KNEU, 40, 34-42.

[4] Obsyag venchurnyx investycij v ukrayinski startapy u 2017 roci zris u try razy do $300 miljoniv [The volume of venture investments in Ukrainian startups in 2017 grew three times to $ 300,000,000]. URL: https://economics.unian.ua/finance/10022489-obsyag-venchurnih-investiciy-v-ukrajinski-startapi-u-2017-roci-zris-u-tri-razi-do-300-milyoniv-mert.html

financing. They invest in companies whose shares are fully distributed among shareholders in exchange for a stake in the company, and can also provide equity in the form of a loan for a term of 3 to 7 years. Venture funds are the main link between investment and innovation as the components of the economic growth.

In Ukraine, venture capital funds operate in the form of Joint Investment Institutions (CII). According to the Law of Ukraine "On Joint Investment Institutions", they may be unitary and corporate by their legal form. Asset management of the joint venture companies is managed by the asset management companies (AMCs). They operate under a license issued by the National Securities and Stock Market Commission. The first venture capital firm similar to the current was a financial partnership established in the mid-twentieth century. The Venrock Associates Venture Fund, created by the Rockefeller family, is co-owned by the Ambassador to the United Kingdom, J.H. Whitney, a shareholder of the American Research and Development.[5].

Among the largest venture capital funds and companies operating in Ukraine are the following: Western NIS Enterprise Fund, the US $ 150 million capital allocated by the US Government to invest in the Ukrainian economy over the last ten years, has funded 31 innovative enterprises; Ukrainian Growth Funds (UGF) have invested about $ 55 million in 75 Ukrainian companies; Ukrainian Private Equity Fund also provided financial assistance to 31 companies worth more than $ 22.5 million.

Venture fund activities are associated with investing in risky innovation projects, as they are the main source of large profits. They choose companies that have potential and their ideas are new and can maximize profits in the future. Venture funds seek to create demand for new products and to take a strong competitive position in the market. They are able to exploit a product, create demand for it, and generate big profits. One of the important aspects of venture capital activity is the acquisition of shares of an innovative firm, its management, as well as the expansion of production and product improvement. The risks that arise in the course of the activity are shared between the project developer and the investor. There is no guarantee that the idea will be successful and profitable, so the part of the shares of the innovative

[5] Kareba, M. I. (2016). *Upravlinnya venchurnym biznesom: opornyj konspekt lekcij* [Venture business management: mainstream lecture notes]. Mykolayiv: MDAU.

enterprise is the pledge. The advantage of the venture funds is that they have minor regulatory constraints, smaller regulatory requirements, and their operations are flexible. The competitiveness of the venture funds depends on the support and accumulation of funds from insurance and investment companies, banks and the country. The venture capital fund must have a strong competitive position in the market in order to ensure timely financing of companies in need of investment.

3.2. Analysis of the Competitiveness of Venture ISAs of Ukraine by Porter

The ability of a market entity to compete is determined by the concept of competitiveness. It characterizes the complex of potential capabilities of the subject to meet the needs of consumers in comparison with competitors. Competitiveness is the result of the competitive advantages realization and the ability of the entity to maintain a competitive position in the market. The market situation is constantly changing, so business entities need to be able to secure and maintain competitive positions, as well as create the preconditions for their growth and strengthening. Competitiveness is a comparative advantage over other entities in the same industry. It is the basis for effective economic development. Venture investing is an important component of developing an innovative type of economy. Therefore, ensuring the competitiveness of venture capital funds is a prerequisite for the economic growth of an innovative type.

The competition reflects the contradictions of interests of market participants, so the analysis of competition in the venture capital market of Ukraine can be carried out according to the method of structural analysis of five competitive forces according to M. Porter (Figure 2).

This model characterizes the scope of market contradictions of the subjects and does not reflect the effectiveness of the rivalry process. The analysis of competition in the venture capital market of Ukraine according to the model of M. Porter can be carried out on the example of six asset management companies, the information of which is presented in Table 1.

For analysis, we need to know the company's main competitors. The main competitors of LLC AMC Investment Partners (share of assets in the market is 7.7%) are LLC AMC ACF Ukrainian Funds (share of assets in the market is 4.2%) and LLC Crystal Asset Management AMC (share of assets in the market is 3.85%). An important role for the

analysis is played by potential competitors, such as LLC AMC UDP Asset Management (share of assets in the market is 3.51%), LLC AMC Budkepital (share of assets in the market is 3.42%) and LLC AMC Svarog Asset Management (share of assets in the market is 2.65%).

Figure 2. Model of Porter's Five Forces Competition

Based on the analysis of the shares of assets in the market of venture co-investment institutions, it can be concluded that LLC AMC Investment Partners has the largest share of 7.7%, which allows to have great competitive advantages: higher level of customer service, at the expense of higher cost. Management assets have the ability to finance innovation effectively, provide more guarantees for services.

If we analyze the competition in the venture capital market of Ukraine by the model of M. Porter, exploring the existing competitors, we can see that 7.7% of LLC AMC Investment Partners is the strongest rival in the market. LLC AMC ACF Ukrainian Funds with the market share of 4.2% and LLC Crystal Asset Management AMC with 3.85% market share, which are the main competitors of LLC AMC Investment

Partners. They occupy a less competitive position of LLC Crystal Asset Management AMC with a share of assets in the market of 3.51%, LLC AMC Budkepital with a share of assets in the market 3.42% and LLC AMC Svarog Asset Management with a share of assets of 2.65% in market competition.

Table 1

AMC on the value of venture ICI assets in management as of 01.01.2018

Rank	The name of the AMC	in management, thousand UAH.	Share of assets in the venture ICI market, %
1	LLC AMC Investment Partners	18 583 486,8	7,7
2	LLC AMC ACF Ukrainian Funds	10 148 146,3	4,2
3	LLC Crystal Asset Management AMC	9 289 535,8	3,85
4	LLC AMC UDP Asset Management	8 463 297,6	3,51
5	LLC AMC Budkepital	8 248 037,9	3,42
6	LLC AMC Svarog Asset Management	6 400 102,7	2,65

Source: UAIB (Ukrainian Association of Investment Business) information www.uaib.com.ua.

According to M. Porter's model, firms offering substitutes have an important influence on competition in the industry. In this area they are absent.

The venture capital market in Ukraine is attractive because venture funds are exempt from the many regulatory constraints inherent in non-venture funds. Venture fund assets may consist entirely of real estate, corporate rights, and securities not admitted to trading on stock exchanges. Assets also include debt, bonds and promissory notes. A venture fund may grant a loan from its assets only to those legal entities where the fund is a co-owner of a part of the authorized capital. To date, the venture capital fund is one of the best tax minimization tools. The income tax on the venture fund's activity is not paid until it closes. The Fund may not pay the tax for a long time. However, the country regulates the activity of venture funds, setting appropriate requirements for reporting, financial monitoring, licensing conditions. In

conclusion, it can be noted that, overall, the industry is attractive and the threat of new competitors is high.

The sources of financing for venture capital institutions in Ukraine are the free capital of firms, foreign private and institutional investors. The fund's contributors are legal entities. But, imperfect legislation, insufficient investment attractiveness of the Ukrainian business environment impedes the attraction of funds from foreign investors. In Ukraine, the venture capital market has no guarantees for a venture investor that would limit its risks. Therefore, analyzing the threat to the power of suppliers, we can say that it is high and has a significant impact on the subjects of market relations.

The next stage in the analysis of the venture capital market in Ukraine by M. Porter's model is to determine the impact of consumers. The consumers of venture capital services are legal entities. They are the innovators who make up the innovation competition market. However, the weakness of the Institute for the Protection of Intellectual Property, the lack of “quality” projects, and the overall unfavorable country policy to stimulate innovation processes are an obstacle to strengthening the venture capital market in Ukraine. Consumer power is high.

The conducted analysis of the competition in the venture capital market of Ukraine according to the model of M. Porter shows that in the venture capital market of the Ukrainian companies, in order to provide themselves with resources for life, are forced to seek as much power as possible. There are few good investment and innovation projects, so venture capital funds have to invest in the seed stage to develop the most successful projects in the start-up phase. That is, the consumer power is high. Competition in the venture capital market of Ukraine is strong; there is a threat of new entrants. Therefore, the venture capital fund should be large enough to be able to invest in innovative projects. Venture funds invest in particularly risky projects in the innovation field. Venture capital is an important and progressive form of financing and a source of innovation development in the country. If successful, venture investments generate huge profits, so despite the high risk, this is an attractive investment. In Ukraine, public authorities are not interested to invest in risky innovation projects, and the state budget has lost its investment function. Imperfect legislation is an obstacle to attracting investors' funds. In Ukraine, the level of research and development results commercialization is low, there is no information support information support for the innovation market, no exchange system

between innovation developers and investors, and the network for supporting the development of innovative entrepreneurship is slowly developing. The venture capital market in Ukraine is under development and formation. The limitations of the technological and financial plan act to determine the fund's strategy and investment policy.

For the sake of clarity of the results of the analysis, it is possible to draw up a map of strategic groups of competitors in the venture capital market of Ukraine according to the indicators “Assets in management – Share of assets in the market of venture co-investment institutions”.

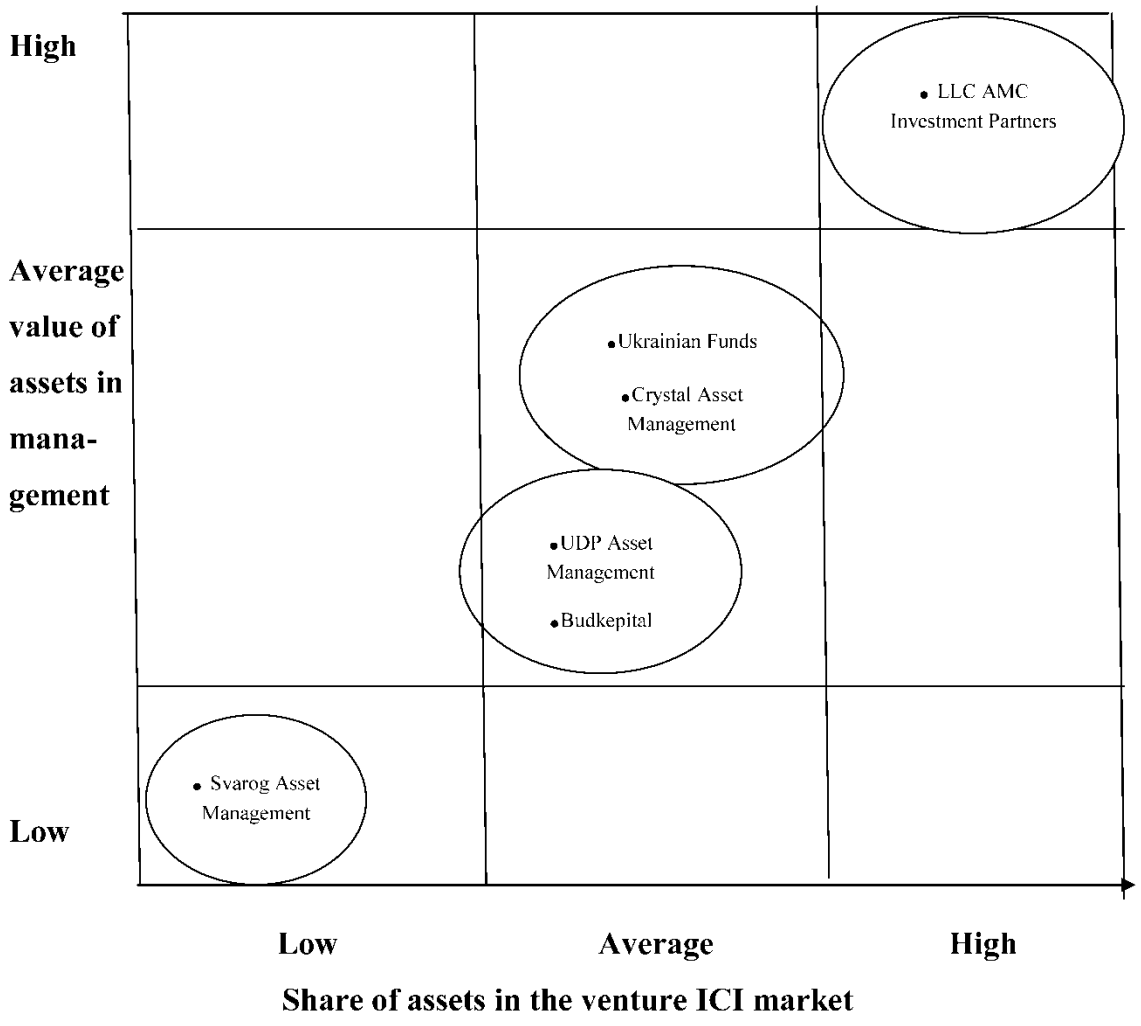

Figure 3. Map of strategic groups of competitors in the venture capital market of Ukraine

Source: Developed by the author

The above map of the strategic groups of competitors shows that LLC AMC Investment Partners, having a 7.7% market share, has a high

competitiveness and a stable competitive position with 4.2% share of assets in the market and LLC Crystal Asset Management AMC with a 3.85% market share, which are the main competitors of LLC AMC Investment Partners. LLC AMC UDP Asset Management with a 3.51% market share and LLC AMC Budkepital with a 3.42% market share are potential competitors of LLC AMC Investment Partners. Asset Management, with a 2.65% market share, is less competitive in the venture capital market and does not pose a major competitive threat to LLC AMC Investment Partners.

3.3. Integral competitiveness of Ukrainian venture business

In order to evaluate the effectiveness of the rivalry process, it is possible to calculate the indicators of the integrated competitiveness of asset management companies in the market of venture co-investment institutions. The problematic area of research is the use of competitiveness assessment characteristics, which precede the analytical conclusions formation. They should serve as a sound information base for making appropriate management decisions[6].

It is impossible to determine competition in the market by the share occupied by the firm, since the market share of the firm decreases with the advent of a new competitor. Therefore, the system of indicators is used to analyze the competitiveness for receiving a correct assessment of the competitiveness in the market.

The assessment of competitiveness, as a relative characteristic of the implemented competitive efforts of market participants, should provide an opportunity to compare the results obtained without additional calculations. Therefore, the general principle of such an assessment is the ratio of the relevant valuation of the enterprise to the average value of this indicator in the study set of direct competitors.

An important indicator for assessing the competitiveness of a market entity is the calculation of competitiveness established. It is determined by the formula[7]:

$$Ce(i)=Ci/Ca \quad (1),$$

[6] Smolin, I. V. (2016). Formy proyavu ta metodychnyj instrumentarij ocinyuvannya konkurento-spromozhnosti pidpryyemstva [Forms of manifestation and methodological toolkit for assessing the competitiveness of the enterprise]. *Strategiya ekonomichnogo rozvytku Ukrayiny*, 39, 40-51.

[7] Smolin, I. V. (2005). Systema strategichnogo planuvannya rozvytku pidpryyemstva: avtoreferat do dysertaciyi na zdobuttya naukovogo stupenya doktora ekonomichnyx nauk [System of strategic planning of enterprise development: abstract for the dissertation for the degree of Doctor of Economic Sciences]. Kyiv: KNTEU. URL: https://www.irbis-nbuv.gov.ua/…/cgiirbis_64.exe.05sivprp.rtf.

where Ci is the amount of equity of the i-th enterprise;

Ca is the average amount of equity in the market enterprises;

if Ce > 1, then the competitiveness is high (above average), if Ce < 1, then the competitiveness is low (below average)[8].

Ca = (18583486,8 thousand UAH+10148146,3+9289535,8+8463297,6+ +8248037,9+6400102,7)/6 = 61132607,1 thousand UAH/6 = =10188767,9 thousand UAH.

Ce1 = 18583486,8 thousand UAH/10188767,9 thousand UAH = 1,82;

Ce2 = 10148146,3 thousand UAH/10188767,9 thousand UAH = 1;

Ce3 = 9289535,8 thousand UAH/10188767,9 thousand UAH = 0,91;

Ce4 = 8463297,6 thousand UAH/10188767,9 thousand UAH = 0,83;

Ce5 = 8248037,9 thousand UAH/10188767,9 thousand UAH = 0,81;

Ce6 = 6400102,7 thousand UAH/10188767,9 thousand UAH = 0,63.

The calculations prove that LLC AMC Investment Partners has the largest share of 7.7% in the venture capital market and is characterized by the highest competitiveness of 1.82 compared to its industry competitors. LLC AMC Investment Partners (Ce > 1) and LLC AMC ACF Ukrainian Funds (Ce = 1) is characterized by high competitiveness (above average level). LLC Crystal Asset Management AMC, LLC AMC UDP Asset Management, LLC AMC Budkepital and LLC AMC Svarog Asset Management are characterized by a low competitiveness (below average) as Ce <1.

Another indicator to characterize the competition in the investment market is the indicator of functional competitiveness. Data for calculations are presented in table 2.

In the investment market, functional competitiveness is determined by the rate of return on capital, which is a factor in the established competitiveness managing. Functional competitiveness is determined by the formula:

$$Cf(i) = Pci/Pca \quad (2),$$

where Pci is the capital profitability of the i-th enterprise;

[8] Smolin, I. V. (2017). Formy ta pokaznyky konkurentospromozhnosti pidpryyemstva na produkcijno-vyrobnychomu rynku. Suchasni pidxody do upravlinnya pidpryyemstvom [Forms and indicators of competitiveness of the enterprise in the production market. Modern approaches to enterprise management]. URL: https://conf.management.fmm.kpi.ua/proc/article/view/101182.

Table 2

Open-end funds as of 01.01.2018

Rank	The name of the ICI	The name of the AMC	Profitability for the current period, %	Profitability for the previous period, %	Average quarterly return since beginning of the fund's activity, %
1	KINTO – Kaznatsheysky	KINTO	15,34	4,80	3,34
2	Argentum	LLC AMC Ozone	14,63	13,07	-1,90
3	Sophiyvskiy	LLC AMC Iveks Asset Management	13,51	9,92	1,92
4	Univer.UA / Yaroslav Mudriy: Stock fund	LLC AMC Univer Management	11,48	6,11	-0,82
5	Nadbannya	LLC AMC Art-Capital Management	7,59	9,39	0,14
6	OTP Stock Fund	LLC AMC OTP Capital	7,01	8,11	0,60

Source: UAIB (Ukrainian Association of Investment Business) information www.uaib.com.ua

Pca is the average return on equity for market enterprises[9].

Pca = (15,34%+14,63%+13,51%+11,48%+7,59%+7,01%)/6 =

= 69,56%/6 = 11,59%.

Cf1 (KINTO – Kaznatsheysky) = 15,34/11,59 = 1,32;

Cf2 (Argentum) = 14,63/11,59 = 1,26;

Cf3 (Sophiyvskiy) = 13,51/11,59 = 1,17;

Cf4 (Univer.UA) = 11,48/11,59 = 0,99;

Cf5 (Nadbannya) = 7,59/11,59= 0,65;

Cf6 (OTP Stock Fund) = 7,01/11,59 = 0,60.

The calculations show that in terms of functional competitiveness, the competitiveness of KINTO – Kaznatsheysky is 1.32, and the smallest AMCI of OTP Stock Fund is 0.60.

[9] Smolin, I. V. (2017). Formy ta pokaznyky konkurentospromozhnosti pidpryyemstva na produkcijno-vyrobnychomu rynku. Suchasni pidxody do upravlinnya pidpryyemstvom [Forms and indicators of competitiveness of the enterprise in the production market. Modern approaches to enterprise management]. URL: https://conf.management.fmm.kpi.ua/proc/article/view/101182.

An important step for the characterization of competition in the market is to determine the strategic competitiveness that characterizes the prospective, potential and long-term characteristics of the competitive ability of the entity. LLC AMC Investment Partners in the venture capital market of Ukraine has the highest share of 7.7%, the highest coefficient of establishes competitiveness is 1.82. In terms of functional competitiveness in the investment market, KINTO – Kaznatsheysky has high competitiveness with the ratio of 1.32, which has also the highest profitability. The lowest ratio of 0.60 is for OTP Stock Fund.

The competitiveness determines the subject's own competitive position relative to the position of competitors in the market. Therefore, it is important to know and correctly evaluate the competitive position of competitors, which is expressed in the concept of strategic danger of competitors, its analysis can be carried out by the following algorithm:

1) To determine the territorial significance of a competitor[10]:

– by the assets value:

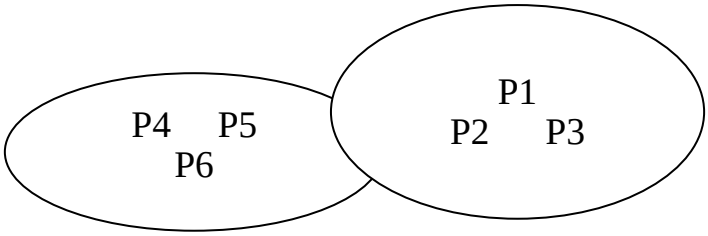

Figure 4. Competitive groups of Asset Management Companies in the venture ICI

P1 – LLC AMC Investment Partners;
P2 – LLC AMC ACF Ukrainian Funds;
P3 – LLC Crystal Asset Management AMC;
P4 – LLC AMC UDP Asset Management;
P5 – LLC AMC Budkepital;
P6 – LLC AMC Svarog Asset Management.

Competitive groups of asset management companies in the ICI venture market by value of assets in Figure 4 shows the division into two groups of competitors, namely P1, P2 and P3 make up the group of stronger competitors and P4, P5 and P6 are the weaker.

– by profitability:

[10] Smolin, I. V. (2005). Systema strategichnogo planuvannya rozvytku pidpryyemstva: avtoreferat do dysertaciyi na zdobuttya naukovogo stupenya doktora ekonomichnyx nauk [System of strategic planning of enterprise development: abstract for the dissertation for the degree of Doctor of Economic Sciences]. Kyiv: KNTEU. URL: https://www.irbis-nbuv.gov.ua/…/cgiirbis_64.exe.05sivprp.rtf.

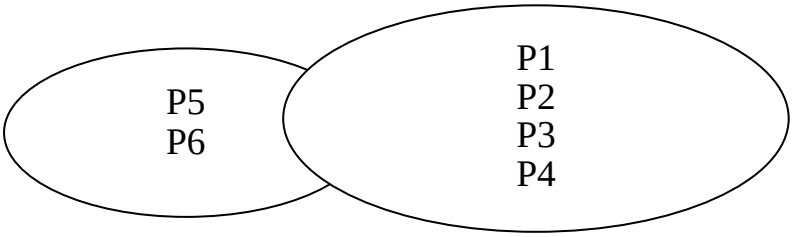

Figure 5. Competitive groups of ICI in the investment market

P1 – KINTO – Kaznatsheysky;
P2 – Argentum;
P3 – Sophiyvskiy;
P4 – Univer.UA;
P5 – Nadbannya;
P6 – OTP Stock Fund.

The competing groups of mutual investment institutions in the investment market are shown in Figure 5, where the group of significant competitors is P1, P2, P3 and P4, the less significant are allocated to another group P5 and P6.

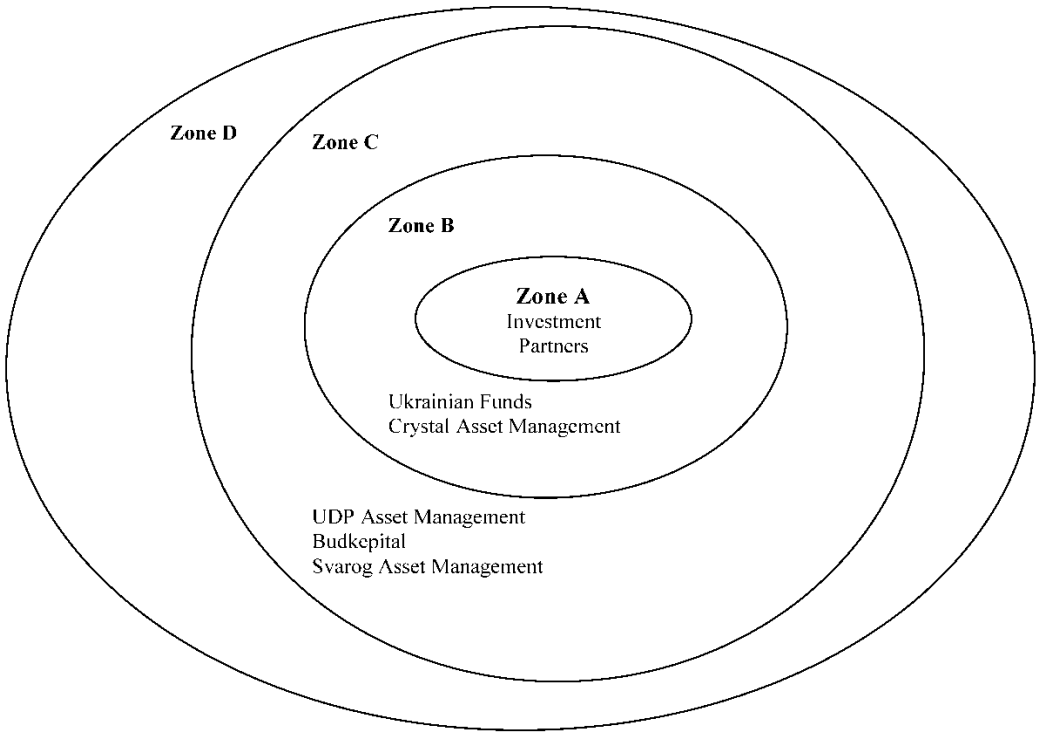

Figure 6. Zone of competition for asset management companies in the venture ICI market

Source: Developed by the author based on the source[11]

[11] Smolin, I. V. Konkurentospromozhnist pidpryyemstv. Mezhi konkurentnogo rynku. [Competitiveness of enterprises. Boundaries of the competitive market]. URL: https://www.google.com/slideshare.net/alegre380/ss-16735418.

Coefficient of territorial significance Cts for zones A, B, C (zones of significant competition):

Cts (A) = 1;

Cts (B) = 0,6;

Cts (C) = 0,3 [10].

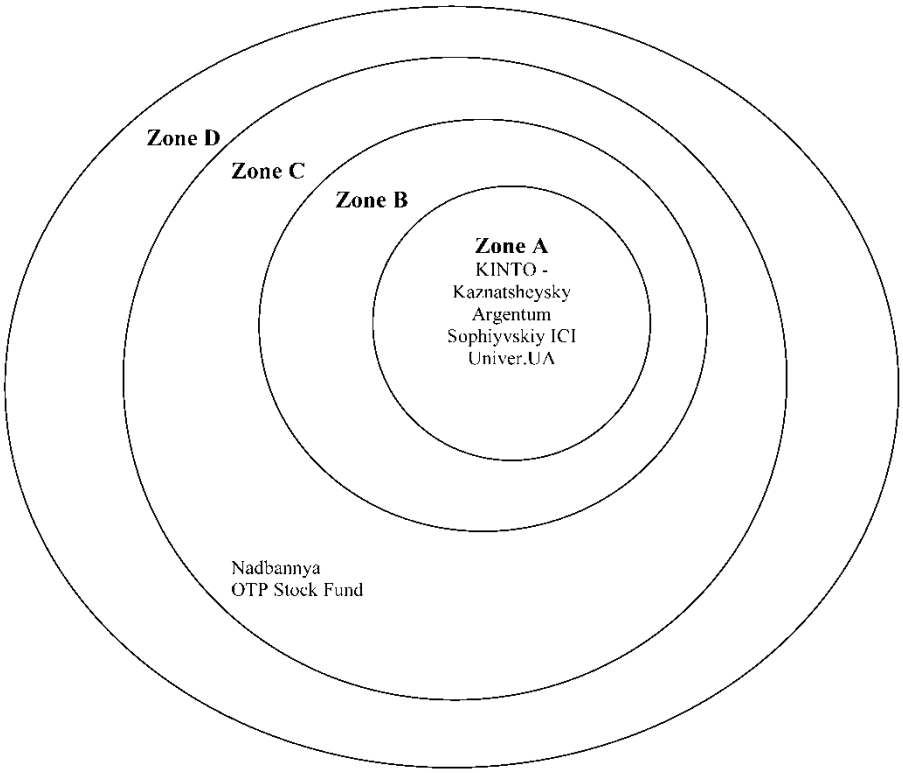

Figure 7. Zone of competition of ICI in the investment market

Zone A of significant competition,

Zone B of moderate competition,

Zone C of weak competition,

Zone D of a significant competition.

Source: Developed by the author based on the source [9]

2) To evaluate the current competitive importance of the opponent (Cci):

$$Cci = Ce \times Cts \quad (3)\ [10].$$

Cci (Investment Partners)(A) = 1,82x1 = 1,82;

Cci (Ukrainian Funds)(B) = 1x0,6 = 0,6;

Cci (Crystal Asset Management)(B) = 0,91x0,6 = 0,55;

Cci (UDP Asset Management)(C) = 0,83x0,3 = 0,25;

Cci (Budkepital)(C) = 0,81x0,3 = 0,24;

Cci (Svarog Asset Management)(C) = 0,63x0,3 = 0,19.

The analysis shows that LLC AMC Investment Partners holds a leading position in the venture capital market and has high competitiveness. Analyzing the coefficients of the current competitive importance of the competitor, it can be said that the most dangerous competitors for LLC AMC Investment Partners in the venture capital market will be LLC AMC ACF Ukrainian Funds and LLC Crystal Asset Management AMC, which have coefficients 0,6 and 0.55 respectively, corresponding to the competitive zone B and characterized by a moderate competitive force. LLC AMC UDP Asset Management, LLC AMC Budkepital and LLC AMC Svarog Asset Management do not constitute a menace to the company, having low coefficients of current competitive importance and belonging to the zone C of weak competition.

Among the funds analyzed, the most competitive is LLC AMC Investment Partners, which holds a stable competitive position in the venture capital market and has significant advantages among competitors, holds the largest market share and has the highest competitiveness coefficients. Thus, the state of venture financing market is depended on the efficient funds perdormance.

CONCLUSION

Venture financing in Ukraine has several advantages: it acts as a reliable source of financing at all stages of the development of an innovative project, offers flexible forms of financing, the venture fund does not aim to acquire a controlling stake for an entrepreneur, provides financial assistance in the form of consultations, which improves the quality of management.

But the venture market has obstacles to its effective formation and operation. Among the main obstacles hindering the development and efficient functioning of the venture capital market in Ukraine are the following:

1) Imperfect legislation. There are no clear rules that would allow the owners of innovative projects to dispose of the intellectual property on technological innovations that underpin Ukrainian venture projects freely.

2) Low innovation and business culture of society. Because of the lack of understanding of the business component by their developers, many innovators are not ready for the market conditions of their projects and are not used to share risks with investors.

3) Immaturity of domestic investment, i.e. innovative projects and proposals.

4) Low transparency of business.

5) Lack of the country support and general economic situation.

Therefore, a number of changes need to be made to improve the situation in the venture capital market of Ukraine, namely:

– to establish and enforce clear rules for the protection of intellectual property rights;

– to provide comprehensive support for all aspects and participants in venture funding;

– to develop and implement schemes for attracting private capital to the applied research funding;

– to promote the formation of the venture funds network in Ukraine, including with the involvement of the foreign capital;

– to create a business friendly innovation environment in the country.

Only a high level of competition can increase the implementation of the scientific and technological achievements and innovations.

SUMMARY

As a summary, we can propose the following ways of further development of the venture business in Ukraine:

- to design the national concept of venture business development;
- to simplify the venture financing procedure for SMEs;
- to embed the tax incentives for investing in Seed companies;
- to improve the venture business infrastructure and its information support;
- to transfer the country to a radically innovative way of development using the entrepreneurial potential of youth.

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Chapter 4
EVOLUTIONARY PRECONDITIONS FOR THE ENTREPRENEURIAL ACTIVITY DIGITALIZATION

Rudenko M. V., Hariaha L. O.

INTRODUCTION

The dialectical approach to the analysis of the features of the digitalization of modern entrepreneurship provides a retrospective study of the evolutionary prerequisites for changing technology, organization, and management of production processes. The solution of the set scientific problems requires an in-depth analysis of scientific and technological progress to understand the ideas of predecessors and to identify the features of the process of innovative development of economic entities.

Permanent topicality of research into the problems of digitalization of entrepreneurial activity is conditioned by scientific and technological progress and change of socio-economic environment of the functioning of producers. This problem is of particular relevance in the context of the galloping development of information and communication technologies and digital technologies, not only in the field of production but also in the field of management.

The scientific and technological progress that underpins the evolutionary changes of technology, technology, organization and management of production processes is an integral part of modern economic development of any society. Technological renewal of both the production process and its management is the basis for the effective functioning of economic systems and a guarantee of increasing the competitiveness of the latter in a changing market environment. The level of use of technologies has an integral influence on economic, technical, technological, social, environmental on other aspects of the activity of enterprises of all without exception of the branches of the domestic economy.

The intensification of the interest of the scientific community in the problems of digitalization of entrepreneurial activity is conditioned by the profound transformational changes of national economies under the

influence of globalization and integration processes, which have significantly changed the nature of production and commercial activity of economic entities. The digitalization of economies and the accelerated development of the scientific and technological base of social production violates the existing stability of functioning of open socio-economic systems and necessitates the optimization of the use of advanced technologies in the context of new opportunities and threats for entrepreneurial activity.

4.1. Evolutionary preconditions for the development of modern production

The impulse for the process of gradual digitization of entrepreneurship in various sectors of the economy is the renewal of the technological and technological base of production, which is not only a technical or economic task, but above all a social one, since the technological way of production determines the fate of all mankind in the medium and long term. To determine the place of technological basis in the socio-economic system in general, and in the context of individual business entities in particular, we should conduct an in-depth analysis of technological methods of production and outline the main stages of the development of human-technical relationships in the production process.

The first technical assets used by society in the course of its life were the stone tools of labor by which people learned to produce fire, which was the impulse for the gradual development of metallurgical production and the use of iron tools. The next stages of human development (the transition from the original community to slavery and feudalism) are accompanied by the development of technical means, but labor remains manual using the physical and muscular strength of the worker, which was a key factor in the production process. Under these conditions, the main technological operations in the process of social production are performed by a person who sets in motion the tool, manages the production process, coordinates its activities with other participants in the technological chain. In the historical literature[1,2,3,4] the

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method of combining man and tools of labor is named instrumental technological way of production, which has passed the millennial stage of development and gradually exhausted itself in the conditions of the growing needs of society.

Labor productivity with the use of hand-held equipment remained low and could not meet the urgent needs of society, which gave impetus to the development of brand new tools of work, so the era of machine use began. Machine production is already an industrial-technological method of production, where the basis of the system of man-technology is already a machine, and man complements the work of the system. During this period, mechanized labor was replaced by manual labor, which became the material basis of an industrial revolution, which resulted in the establishment of a capitalist mode of production in Western Europe, which replaced feudalism and proved to be highly effective.

The industrial-technological method of production involved the use of a system of machines, which consisted of a working machine, engine and transmission device, and the person was an appendage of the system. The use of machines in the production process has made significant changes in the economic development of society and has created the prerequisites for the transition to scientific and technological progress in the economy as a whole, and the context of individual sectors in particular.

Scientific and technological progress (STP) has two main forms – evolutionary and revolutionary[5]. The first form implies the improvement of existing production technologies due to the partial modernization of the used machines and equipment, that is, the existing production technologies are being improved. The revolutionary form of STP is based on the use of completely new technical and technological solutions and principles of organization and management of production processes, which dramatically changes the efficiency of production and leads to large-scale shifts in the economy.

The past century has been filled with technical upheavals and inventions, which has greatly strengthened the revolutionary path of development of production processes with radical changes in virtually every branch of production. The above was the cornerstone of the

[5] Azhnyuk, M. O., & Perederiy, O. S. (2008). *Osnovy ekonomichnoyi teoriyi* [Fundamentals of economic theory]. Kyiv: Knowledge. [in Ukrainian]

scientific and technological revolution that began in the mid-fifties of the twentieth century (the creation of OEMs, the entry of man into space, the use of atomic energy, the invention of artificial materials, etc.)

The scientific and technological revolution has contributed to the dramatic increase in the efficiency of the use of productive forces of society[6]. A key aspect of revolutionary transformation was the large-scale automation of the production and management process. The fundamental changes occurred not only in technologies, means and objects of work, organization of production, management, but also in the system of scientific knowledge.

The classic system of use of machines, which consisted of a working machine, engine and transmission device, is complemented by a new element – a control device, which minimizes the need for human contact with the working equipment. For the first time, a person changes his status from a production process participant to a controller of an automated technology system and is no longer tied to a single line, machine, machine or unit, which greatly expands the capabilities and the need for self-development to control the automated system in the complex.

They analyzed historical changes of technological methods of production allow us to draw intermediate conclusions about the irreversibility of evolutionary transformations that have taken place and are taking place in the modern world. Technological development is based on innovations that periodically improved the methods of production, methods of management and fundamentally changed the foundations of human civilization. The beginning of the 21st century is characterized by the rapid development and widespread dissemination of the latest information and communication and digital technologies, which requires a large-scale updating of the production and management processes of all sectors of the economy without exception.

The basics of technological renewal and management of innovative entrepreneurship under the conditions of digitalization are based on the accumulated knowledge about technological structures and the possibilities of applying the achievements of NTP directly in the practical activity of economic entities. The state of technological renewal of individual business entities influences the nation-wide

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development of the country and determines the level of its competitiveness in the conditions of increased competition in the domestic and foreign markets. The cyclicality of the development of society and economics has been studied by prominent scientists with world names: F. Brodel, J. Van Dane, S. Glazyev, A. Kleinknecht, M. Kondratiev, S. Kuznets, G. Mensch, M. Tugan-Baranovsky, R. Foster, J. Schumpeter, Y. Yakovets and many others.

A reliable scientific foundation for the renewal of the world's economies is recognized by the overwhelming majority of scientists in the theory of cyclicality of socio-economic development, which is based on the works of M. Kondratiev, M. Tugan-Baranovsky and J. Schumpeter. The Russian scientist M. Kondratiev saw the reasons for the cyclical development of the economies of the world in the scientific discoveries and the possibilities of their application, which were to change the technological component of production[7]. The scientist has analyzed the economies of the most powerful countries in the world of the USA, Germany, the United Kingdom, and France for a considerable time and concluded that there are cycles of economic conditions. The processing of large volumes of statistical information (wages, price dynamics, production volumes, gold prices, foreign trade volume, interest on capital, etc.) collected over a century and a half has allowed M. Kondratyev to construct a coherent theory of wavy fluctuations in economic dynamics and to highlight short cycles (up to 3.5 years), medium cycles (up to 15 years) and long cycles (up to 55 years).

Deepening his research, M. Kondratiev argues that the cyclicality of socio-economic development is a natural process associated with scientific and technological progress and inventions (discoveries). In his fundamental work, Long Waves of Conjuncture[8], the scientist emphasizes that wavy changes occur due to the deviation of the economy from equilibrium states and each wave has the following phases: recovery, recovery, a crisis of overproduction and, consequently, depression.

The new (next) wave of the long cycle began with the introduction into the production of new technical inventions and achievements of

[7] Kondratiev, N. D., Yakovets, Y. V. & Abalkin, L. I. (2002). *Bol'shiye tsikly kon'yunktury i teoriya predvideniya. Izbrannyye trudy* [Big business cycles and foresight theory. Selected Works]. Moskow: Economics. [in Russian]

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science (there were significant changes in the conditions of the economic life of the society), which proved the thesis about the direction of economic development. It can be argued that M. Kondratiev presents his scheme of long waves of innovations, as an evolution of scientific and technological progress. Ignoring scientifically grounded laws over time has negative consequences for the development of individual businesses, industries, and economies as a whole.

Carrying out an in-depth analysis of M. Kondratiev's theory, Austrian economist J. Schumpeter concluded that the fundamental causes of cyclical development are, first and foremost, the processes that shape innovation. On the example of his research[9], the scientist showed that the inventions are fairly evenly scattered over time, but innovations are "accumulated" by waves. The rising wave of each long cycle is preceded by significant changes in production technologies (great inventions and discoveries), which significantly affect the socio-economic development of society.

In his works, J. Schumpeter developed the postulates of the theory of cyclical economic development, which is due to the introduction of innovations. The scientific achievements of the researcher suggest that during the last phase of the long cycle (depression) the previous technological innovations have exhausted their potential and groups of basic innovations are gradually forming, which lay the foundations of the future technological way. The author's hypothesis, which explains the long waves, is based on the periodic concentration (clustering) of significant innovations over a small period. The researcher divided the time intervals of long waves into an innovation component (basic innovation) and a simulation component (improving innovation). Subsequently, G. Mensh[10] adds the following component – pseudo-innovation, by which the author understood the slight refinement of existing technologies or methods of management.

From the modern science of innovation (innovation), the theory of long waves consists of economic recovery (basic innovation), growth (improving innovation), recession (pseudo innovation) and depression (technological path)[11]. In times of depression, social tensions increase in

[9] Schumpeter, J. A. (1983). The Theory of Economic Development: An Inquiry Into Profits, Capital, Credit, Interest, and the Business Cycle. London: Transaction Publishers.

[10] Mensh, G. (1979). Stalemate Technology: Innovation Overcome the Depression. Cambridge: Mass.

[11] Ilyashenko, S. M. (2013). *Upravlinnya innovatsiynoyu diyal'nistyu: mahisters'kyy kurs (osnovy innovatsiynoho menedzhmentu)* [Innovation Management: Master's Course (Fundamentals of Innovation Management)]. Sumy: University Book. [in Ukrainian]

a society that needs accelerated change, which is based on favorable conditions for technological innovation and a new wave of economic development.

While detailing the theory of long waves, the scientist noted the uneven development of individual sectors and sectors of the economy, some sectors showed rapid growth, others against stagnation and stagnation. J. Schumpeter investigated the above situation in the framework of his innovative theory.

J. Schumpeter's criticism of the combination of innovation theory and the theory of cyclical economic development was made by S. Kuznets[12], who revealed several contradictory facts, essentially casting doubt on the author's scientific claims. S. Kuznets in his study[13] emphasized the need to justify the mechanism of long-wave formation, that is, innovations should be large-scale and significant, which destabilize the economic system, although such sizes and amounts of innovations are extremely rare. It was unclear to the scientist why the effects of innovations lasted for decades, not years, and why, without deep explanation, the author claims that significant innovations appear periodically and unevenly[14]. One of S. Kuznets' important contributions to economic science is the combination of economic cycles with innovation cycles.

One of the first followers of J. Schumpeter, who developed the ideas of innovative theory and cyclicality of economic development was the famous German economist G. Mensh[15]. Stagnant in the development of the technological component of the economy, the researcher called the "technological path" and justified the regularity of its occurrence. The Technology Path describes a situation where the global economy is in a crisis and a way out is only possible if innovation is introduced, as existing technological solutions have already exhausted their vital resources.

G. Mensh developed his own "model of metamorphoses" according to which each long cycle has the form of an S-shaped curve that describes the life cycle trajectory of the existing technological mode of

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production. The moment of gradual transition from one technological way of production to another is described by the "technological path" of the past mode of production. The large-scale concentration of basic innovations allows us to overcome the "technological path" and to provide economic growth at a new level. The transition from one technological path to another is shaped by industrial and agrarian development. Thanks to the work of G. Mensh's theory of cyclical economic development of Kontratyev-Schumpeter has been supplemented and enriched with new ideas, justifications, improved interpretations of basic concepts and more. An analysis of G. Mensch's scientific work suggests that the economic crisis is a driving factor for the innovative development of enterprises.

The contribution of the national scientist M. Tugan-Baranovsky[16] to the theory of cyclical development of economy should be considered from the following points:

– first, the scientist justified the reasons for the emergence of crisis phenomena and their cyclical nature;

– secondly, it tied the downturns, the depressions and the rise of economies to the technological potential of the tools of labor;

– third, he studied the market situation based on the statistical method (based on the example of one of the leading capitalist countries – England);

– fourthly, outlined the main features of the phases of the industrial cycle and made the forecast of market conditions.

The scientist-economist emphasized that technological development of the economy needs improvement and introduction into practical activity of innovations and this process is a priority. The introduction of new technologies will be the search and implementation of new methods of management and organization of production processes, which will allow the economy of the countries to advance to the next stage of development.

According to J. R. Hicks[17], the deliberate and continuous use of innovations will allow the capitalist economy to minimize the negative effects of a crisis and save society from deep social upheavals.

[16] Tugan-Baranovsky, M. I. (1997). *Periodicheskiye promyshlennyye krizisy. Istoriya angliyskikh krizisov. Obshchaya teoriya krizisov* [Periodic industrial crises. History of English crises. General theory of crises]. Moskow: ROSSPEN. [in Russian]

[17] Hicks, J. R. (1993). *Stoimost' i kapital. Issledovaniye nekotorykh fundamental'nykh printsipov ekonomicheskoy teorii* [Value and Capital. Investigation of some fundamental principles of economic theory]. Moskow: Thought. [in Russian]

R. Foster[18], who emphasized the need to involve highly intelligent personnel in the management process, considered the regularities of innovative development of industry on a scientific basis, because he considered one of the reasons for the emergence of crisis phenomena in the economy the underestimation of the role of innovation in both enterprise development and economic development in general.

The formation of the technological system in the framework of the theory of cyclical development of the economy was investigated by C. Freeman, J. Clark and L. Soete[19]. English scientists viewed the technological system as a combination of interdependent technological and social innovations and linked economic growth to the development or decline of technological systems. The mechanism of technological system development was considered the process of diffusion of innovations, which required favorable conditions and appropriate stimulation. The decline and aging of technological systems lead to a lag of the country's economy from the world leaders, which explains the unevenness of interstate economic development[20]. Differences in the pace of implementation of scientific and technological progress into practical activity are one of the main reasons for the lagging of some countries concerning others in technological, economic and social development.

The theory of cyclical development of the economy has played an extremely important role in shaping the concept of modern technological updating of the economies of the world. Paying tribute to the founders of the above theory, M. Kondratiev and J. Schumpeter, let us note that it is the scientists listed above who first raised questions about the place and role of scientific and technological progress in the long-term economic development of the world's economies. In their works, scientists outlined the basics of the future problem of uneven technological development of countries. The concept of the cyclicality of the economy and the idea of uneven technological development are gratefully finished, thanks to the works of G. Mensch, K. Freeman, A. Kleinknecht, and others. The scientific work of these scientists can be

[18] Foster, R. (1987). *Obnovleniye proizvodstva: atakuyushchiye vyigryvayut* [Production Update: Attackers Win]. Moskow: Progress. [in Russian]

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considered a fundamental place for their innovative fluctuations, the cyclicality of development, long waves, uneven implementation of technological solutions not only in the economic literature but also in the work of practitioners, economists, officials, politicians, etc.

Usually, the subject area of research has a number of discussion points, namely a significant part of the work is focused on the sectoral level (or the level of individual inventors or their groups), taking into account macroeconomic problems, but it is extremely difficult to determine the role of individual innovations in the overall economic development. Research problems are exacerbated by the subjectivity of selection of the most significant innovations, differences in the expediency and timing of implementation, the need to attract knowledge from other fields of science, etc. The problematic aspects of determining the contribution of scientific and technological progress to the overall economic growth is generally a separate independent topic of scientific research, which already has hundreds of works in different directions, so we concentrate further author's research on the impact of the achievements of scientific and technological progress on updating production capacities of economic entities and the development of innovative entrepreneurship in the digitalization of world economies.

4.2. The impact of digitization on changing technological modes of production

The cyclical nature of the development of the economy in general, and particular sectors in particular, within the framework of the modern theory of innovation, must be considered in the context of changes in technological modes of social production. Each technological way of production is characterized by a common technical level of means of labor, availability of innovative technologies, the sufficiency of workforce qualification for implementation of technological solutions in practical activity, and opportunities to realize the scientific and technical potential of society.

Changing long-term cycles of economic development is reflected in the global transition from existing technology and technology to new technological solutions that arise as technology changes. There is a process of allocation of basic directions of technical and technological development within a separate technological structure. The current trends of the latest technological way can be considered: biotechnology (genetic

engineering, technological biochemistry, bioinformatics, hybridization technology, engineering enzymology), nanotechnology (colloid chemistry, colloid physics, molecular biology, microelectronics).

In the vast majority of scientific literature[21,22,23], the technological way is treated as a complex of self-sufficient technical and technological innovations on a homogeneous scientific and technical base. The set of technological innovations is an interconnected chain of sequential technological processes of production, the supply of raw materials and management, which are combined by related technological operations of other sectors of the economy involved. Basic technological innovations form the basis (core) of technological structure. The above-mentioned innovations, as a rule, emerge in the leading sectors of the economy and determine the speed of development and spread of a new technological way.

The life cycle of each technological facility involves the following phases and is determined by a sufficiently long period:

– emergence (in the bowels of the previous technological structure new technological sets, basic innovations are formed, which have a completely new technical approach to the existing mode of production);

– growth (speed of implementation of basic innovations is high and has a global character, new industries, products, innovative activities, professions are emerging. The process of creating better innovations is gaining momentum, the demand for new products is increasing, production efficiency is increasing, costs are being reduced, investment efficiency is increasing maximum);

– maturity (the intensity of implementation of basic (radical) and improving innovations is significantly decreasing, the pace of technological development of economic sectors is slowing down, the expansion of production is almost stopping);

– recession (characterized by insignificant technological changes, which are essentially pseudo-innovations. The potential of existing technological solutions is exhausted, which instantly affects the efficiency of production (profitability decreases, costs increase). Living

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standards decrease the impulse to search for new technological solutions and the formation of new technological ways).

It should be noted that the basis of life cycle formation of the new technological way is the basic innovations introduced in new products, technological solutions, management and communication systems that meet the existing and just formed demands of the main population.

The problems of using technologies of different modes of production in the domestic economy were investigated by the luminaries of Ukrainian science – V. M. Geets, L. I. Fedulova, A. A. Chukhno and others. In their works, highly respected scientists have researched the actual state of technology use in the Ukrainian economy, in the context of different technological structures, and outlined the most optimal options for the development of the domestic economy based on available resources.

We will conduct an in-depth analysis of existing and future technological structures to outline the role and place of digitalization in the processes of the formation of new production methods and mechanisms for managing modern complex economic systems. Table 1 provides a brief description of the technological contexts and describes the technologies that have dominated and, in our opinion, will dominate in the specified period and the near future.

Table 1

Characteristics of existing and prospective technological structures

Technological mode (period of dominance)	The core of the technological way	Major economic achievements
I – 1770-1830	Textile production and mechanical engineering, iron smelting, iron processing, trunk line construction	Mechanization of production processes, the concentration of production in factories and manufactories
II – 1830-1890	Rail transport (steam engine), coal industry, mechanical engineering, ferrous metallurgy	Increasing the scale and volume of production, increasing the speed of delivery of raw materials and goods, industry concentration
III – 1880-1940	Heavy engineering, steel production, steel rolling, shipbuilding, power line construction, inorganic chemistry	The flexibility of production, increase of assortment of goods, improvement of product quality, standardization of production, urbanization

Table 1. (Continued)

Technological mode (period of dominance)	The core of the technological way	Major economic achievements
IV – 1930-1980	Automotive, electronics, non-ferrous metallurgy, synthetic materials, organic chemistry	Mass and batch production, conveyors, regulatory standardization of production processes, problems of overproduction, the formation of corporations
V – 1970-2030	Computing, measurement, electronic, optical fiber engineering, software, information services, aviation, robotics	Industrialization of production, automated systems of production management, command approach in management, accessibility of most goods to the main population, growth of services, acceleration of the speed of goods turnover
VI – 2020-2080	Biotechnology (genetic engineering, technological biochemistry, bioinformatics, hybridization technology, engineering enzymology) nanotechnology (colloid chemistry, colloidal physics, molecular biology, microelectronics), robotics, photonics, nanomaterials, nanoelectronics, nanoelectronics	Robotization of production, 3D production, reduction of a production defect, production of goods with new properties, development of innovative corporate culture, galloping introduction of information-communication and digital technologies
VII – 2070-2130	Biocomputer systems, biomedicine, unconventional energy, CALS technologies, robotics, interconnection technologies of artificial and organic systems	Digital production, repair of breakage before its appearance, "personal factories", production in space, alternative modes of transport

Source: grouped and organized by the author based on[24]

Analyzing the data in Table 1, we can say that the processes of digitalization are actively influencing the emergence of new ways of production and management mechanisms of modern complex economic systems since the fifth technological way. The implementation of

[24] Lobas, M. G., Rossokha, V. V. & Sokolov, D. O. (2016). *Upravlinnya innovatsiyno-tekhnolohichnym rozvytkom ahrosfery* [Management of innovation and technological development of the agrosphere]. Kyiv: IAE. [in Ukrainian]

automated control systems inti production, the growth of services, the formation of a team approach to management forms the basis and at the same time requires the use of information and communication and digital innovations based on the use of the Internet, mobile and space technologies (including IoT, Big Data, digital platforms, blockchain, start-up contracts, 3D printing), multifunctional sensors and high-tech sensors, artificial intelligence, robotics, machine learning, etc. The gradual transition to higher technology is, in fact, dependent on the use of modern and future digital technologies as their production and management processes become more intelligent and technological.

CONCLUSION

Thus, outlining the main economic achievements of existing and promising technological structures for domestic enterprises and entrepreneurs should be principally orientated in the development of existing and promising technologies. The mentioned problems are investigated by the author through the prism of substantiation of the special role of technological structures in the further development of innovative entrepreneurship and the search for mechanisms of adaptation of existing digital technologies to the realities of entrepreneurial activity in the territory of our country in order to improve the efficiency of domestic business entities.

Digitization, as a direction of modern transformation of business activity, requires deep rethinking in the search of possibilities of application of separate components of technology depending on the direction of work of the business entity. The above reinforces the author’s assertion about the necessity, expediency, and inevitability of the use of digitization technologies in each enterprise since the above is a question of the survival of producers under the present conditions of doing business.

SUMMARY

The problems of forming the evolutionary prerequisites for the digitization of entrepreneurial activity have been researched in the article. The topicality of the work has been conditioned by the profound transformational changes of national economies under the influence of globalization and integration processes, which have significantly changed the nature of the production and commercial activity of economic entities. The in-depth analysis of technological methods of

production has been conducted and the main stages of development of human-technical relations in the production process have been outlined. It has been found that the scientific and technological revolution contributed to the dramatic increase in the efficiency of the use of productive forces of society. The life cycle phases of each technological unit have been described to identify the basic innovations that are introduced in new products, technological solutions, control systems, and communications. The brief description of technological structures has been presented in the article and technologies that dominated and will dominate in the specified period, as well as soon have been described. It has been determined that modern high-performance entrepreneurship requires the use of information and communication and digital innovations based on the use of the Internet, mobile and space technologies, multifunction sensors and high-tech sensors, artificial intelligence, robotics, machine learning, which is the basis for the development of innovation mechanisms for adapting existing digital technologies to the realities of entrepreneurial activity in our country to increase the efficiency of domestic business entities.

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Chapter 5
INNOVATIVE BUSINESS MODELS IN THE INTERNET BUSINESS ENVIRONMENT

Shulha O. M.

INTRODUCTION

The digital transformation of the economy and society can be named the digital revolution having a decisive impact on most areas of activities and in our opinion, it can be compared to the industrial revolution of the XIX century.

A significant impulse in the digital economy sphere came from the broadening of the Internet in the 1990s. It significantly changed the attitude towards digital communication of all market members. The development of digital business was the beginning of the process of digitalization and dissemination of information technologies. As of the end of the second decade of the XXI century, successful companies used information technology also for the development of fundamentally new business models, products and services. Not only do IT innovations support the modern economy, they allow to transform economic processes and value creation radically. This leads to changes in the structures of entire industries thus blurring the boundaries between industries.

In recent years, considering the rapid development of business activity on the Internet in Ukraine, the issue of analysis and practical application of the world experience of business activity on the Internet, taking into account Ukrainian realities, becomes really actual. However, the term "business model," which became relevant to business researchers only from the late 1990s-early 2000s is of particular interest. It is used to describe a wide range of informal and formal key aspects of business, including purpose, target customers, offers, strategy, infrastructure, organizational structure, trading practices, management processes and more. The business model is the basis for the existence and development of any form of entrepreneurship. The choice of a particular model is determined by the goals and objectives of the entrepreneurs as well as the trends of consumer behavior.

5.1. The genesis of the formation and development of the digital economy and Internet entrepreneurship

The history of the appearance and development of entrepreneurial activity on the Internet can be divided into several successive stages. Let us consider them.

In the first stage (1960-1989) the prerequisites for the appearance of entrepreneurial activity on the Internet were formed. There were two processes simultaneously:

first, the creation of global networks and the appearance of the Internet;

second, the creation and development of e-commerce and business systems.

We can divide these processes considering the events that proceeded in chronological order. They are presented in Table 1.

Table 1

Prerequisites for the appearance of e-commerce on the Internet

Years	Development of the Internet	E-commerce development
1960-1970	In 1961 Leonard Kleinrock formulated the key principles of global information networks. In 1962 J. Licklider published the work named Galactic Network. His prediction reflects the modern device of the Internet. In 1966 the project on creation of ARPA computer network has begun.	1960. The first e-commerce system SABER allows to reserve flights seats automatically. The mid-1960s. The appearance of the first magnetic credit cards, which made it possible to automate settlements
1970-1980	In July 1977, Vinton Cerf, program director of SATNET (ARPA department), firstly demonstrated data transmission using TCP under three different networks. The transmitted information passed the path of 150 thousand km and did not lost a single bit.	1971. Creation of the NASDAQ Electronic Securities Exchange. 1972. Telecommuting as a concept of work organization. The mid-1970s. The appearance of the first means of electronic data interchange (EDI) and translation of financial calculations (EFT).

Table 1. (Continued)

Years	Development of the Internet	E-commerce development
1970-1980		1976. The idea of digital signature; creation of FOREX electronic market. 1977. Creation of the system of SWIFT international bank payments
1980-1989	1983. ARPANET network has completely switched to the TCP/IP communication protocol. This day is considered the official date of birth of the Internet. In 1989, Tim Burnes-Lee developed the WorldWideWeb (WWW) standard, a global hypertext system.	1980-1984. The appearance of the first client banking systems.

With the commercialization of the Internet in the future, these processes start to intersect and a separate consideration of the development of e-business loses meaning, therefore, we will consider only the part that relates to business activity in the Internet.

The second stage (1990-1993) is the appearance of business activity on the Internet.

In 1990, commercial organizations were admitted to the development of the Internet infrastructure, their developments dramatically expanded the network's capabilities resulting in an increased audience and the Internet became interesting commercially.

The major events that occur over the years are presented in Table 2.

The third stage (1994 – now) is the development of business activity on the Internet. It can be divided into 2 waves: 1994-2000 and 2000-now, when the shares of Internet companies on the stock market crashed ("dotcom crash" in 2000), many companies went bankrupt and the development of Internet entrepreneurship slowed down.

In 1994-2000, all the main types of Internet entrepreneurship appeared. However, not all of them immediately became effective and popular as for the active development of the market demand was little and the audience of the Internet was not large enough. Entrepreneurs and investors did not understand the features of the network and the rules of

doing business resulting in many organizations were unprofitable but at the same time were well evaluated on the stock market and attracted significant investments. It could not last long and the stock market crash happened, shares of all high-tech companies, even successful ones, fell. Over the next few years, entrepreneurs and investors reconsidered the meaning of the Internet paying attention to business models of business activity and their efficiency, which further led to the growth of the market and its civilization.

Table 2

The appearance of e-commerce in the Internet

Year	Development of the Internet
1990	Large private corporations were allowed to support and use the Internet and later administrative functions were transferred to private companies. Creating the first text browser greatly simplifies the use of the Internet for non-professionals.
1991	WWW standard was officially approved on May 17, 1991. The first Internet server has appeared.
1992	Creation of Mosaic browser allows to navigate on the Internet with a mouse and watch graphics. A few months after the creation of Mosaic, the number of used copies of the program exceeded one million and Internet traffic increased by 10 thousand times. The US Congress has approved the commercialization of the Internet. This is where the history of business development on the Internet begins.
1993	Dutch mathematician David Chaum invented mechanisms for the practical implementation of electronic money. For the first time, on October 26, 1993, the President of the United States was asked to create an electronic system for the purchase of products for state needs. This is how the B2G segment was created.

In our opinion, it is reasoble to divide the history of development of Internet entrepreneurship into separate types of business activities on the Internet and to consider them separately.

Particularly interesting is the history of website development. Although virtually all types of sites have appeared online very quickly, the leading types have consistently changed each other.

Information sites were the first to appear, along with the appearance of the World Wide Web, info.cern.ch appeared in 1990. The same site was the first catalogue (with author-filled content). Yahoo! foreign catalogue has appeared in 1994 and Ukrainian resources such as bigmir.net, ukr.net, meta.ua started to appear.

Searching systems, having appeared just as early (1990 – Archie, 1993 – Wandex, 1994 – WebCrawler, 1995 – AltaVista) have long been in the shadow of other resources due to a small amount of information on the web (there were quite a few search catalogues) and the imperfection of search technologies of that time. In Ukraine, the first searching systems appeared in 1996-1997 (1996 – Rambler, Aport, 1997 – Yandex). Google, the current world leader, emerged in 1998 and became one of the first searching systems to offer rankings of sites in search based on the number of links to them (similar to the index of citation of scientific papers and journals). As a result, search quality became much better than its competitors.

Searching systems development history suggests that pioneers are not always the leaders and new ideas and technologies can be the key to success.

Public mail services did not exist for a long time, although e-mail appeared long before the appearance of the World Wide Web. Hotmail.com mail service was opened in 1996, Russian Mail.ru, which is still the leader of the Russian e-mail market, appeared in 1998. Yandex.Mail opened in 2000 could not bypass a competitor. In addition, Ukrainian mail services, such as mail.i.ua, mail.ukr.net, mail.meta.ua and others, appear on the basis of large resources. But there is a new global leader Gmail mail service from Google opened in 2004 and is now one of the most popular in the world. The main competitive features of email services are the user-friendliness of the interface, the amount of storage space available and spam protection.

Social networks appeared in 1995 when Classmates.com was founded. However, the penetration of the Internet at that time was not so dense even in Western countries for a large number of friends to be found on the Internet. The rapid development of social networks began in 2002 with the appearance of Friendster, which, in fact, does not differ from dating sites. The network's audience has grown rapidly with new projects emerging accordingly. In 2003, LinkedIn, a professional business network appeared but the actual revolution took place in 2004 with the appearance of Myspace and Facebook sites. In the next few

years, social networks began to appear in the Russian market: Moi Krug in 2005, VKontakte and Odnoklassniki in 2006, My world@mail.ru and MirTesen in 2007. Google had been trying to enter the market since 2003 but its attempts were unsuccessful; its Orkut project was able to capture only the regional market of India and Brazil, where there were no competitors at that time. Therefore, Google is launching the social networking service Google+ in 2011, which has also not found much support from users.

With the growth of the Internet audience, social networks are emerging as new leaders. It is worth mentioning that there is much more diversity in social services than in searching systems. This can include photos (e.g. Flickr) and video services (YouTube), blogging services (LiveInternet, LiveJournal, Habrahabr), microblogging (Twitter) appeared in 2006.

Let us now consider the development of trading business models on the Internet. One of the first online stores in the modern sense, Amazon.com, was founded in 1995. Starting with the book trade, today it offers virtually all manufactured goods. It is the largest online store in the world with an annual turnover of tens of billions of dollars. The first Russian analogue is OZON.ru store which appeared only in 1998. Now it is also one of Russia's largest online stores, but its leadership is not so clear. In Ukraine, the development of online commerce begins in the early 2000s with the appearance of price aggregators like price.ua, hotline.ua, and classic online stores rozetka.ua, sokol.ua, fotos.ua and others, most of which are now the leaders of the Ukrainian e-commerce segment.

It is difficult to determine the exact start time for virtual goods sales. In the same Amazon.com, music tracks and videos have been on sale since 1998. The largest Russian and Ukrainian SoftKey software store which was founded in 2001. The current world leader is the digital store named iTunes Store from Apple which opened only in 2003.

Throughout the history of the development of online stores, both real and virtual goods and their capabilities have changed gradually and not for a lot. The opportunities to compare products, evaluate them and write reviews appeared. According to the development of financial intermediaries, possible options and payment methods were added. Recently, online stores are overflowing with social functions: a list of goods that a person wants "as a gift," recommendations from friends, goods that are selected based on preferences and so on.

We can separately distinguish the industry of virtual reality merchandise. E.g. games can be virtual equipment for virtual warriors, homes for virtual residents and so on. Among the founders of this industry are games Second Life, 2003 and World of Warcraft, holding the title of leader since 2004.

Recently, more people are spending time on social networks, accordingly, games on social networks and selling goods in games are developing. Playing with acquaintances is much more interesting than playing with strangers. The leader in this industry is Zynga Corporation, creator of social networking games (since 2007).

The market for services emerged at the same time as the appearance of the network because sites needed to be created and developed and many other services were convenient to provide through the network. For example, EPAM Systems, a remote software development company, was created in 1993. The company is currently one of the world leaders in this field. Gradually, offers of other types of services from consulting to educational services started flowing to the network.

Paid services on the Internet began to appear as demand emerged. As well as in services, technical ones like domain registration, hosting (hosting) sites and all kinds of telecommunication providers appeared. As demand grew, attendance statistics systems, paid online games, B2B business services (online accounting) started to emerge and the opportunity to lease various software as a service (SAS systems) became available.

The AuctionWeb trading and intermediary service (online auction, “flea market”) appeared in 1995, and was renamed into Ebay in 1997. Hammer.ru, the Russian analogue, started operating in 1999 and has long been the market leader. However, in 2010, it was relegated to second place by another service – Avito, which was created only in 2007. Aukro.ua online auction establishes in Ukraine but later it is replaced with slando (olx) online classifieds.

The development of advertising intermediary services began with banner advertising systems. All systems of this kind operate on the following principles: the system exchanges banners of different sites, the service receives a certain percentage of banner impressions and sells them at a fixed price.

The operation principle of contextual advertising is usually different. There is an auction of sellers and buyers. Overture, the first such service, was created in 1997, and Google AdWords, the current

world leader, appeared in 2000. Russian systems emerged much later: Yandex.Direct appeared in 2001 and Runner in 2002. Ukrainian Internet entrepreneurs, as a rule, use advertising services from Google and Yandex.

Link exchanges allowing to promote sites in automatic mode appeared in 2004 (textlinkbrokers.ru) but their rapid development began in 2006 with the appearance of Sape.ru service.

Currently, contextual advertising and link exchange systems are combined by different aggregators adding additional tools and allow to work with multiple systems at once. The first of these aggregates Seopult, was created in 2006.

The first payment system (electronic money system) First Virtual was created in 1995. The opportunity to pay for goods and services online through Visa and Mastercard appeared in 1996. However, due to frequent data theft, use of cards was considered dangerous. PayPal appeared in 1999 and linked payment cards and online payments, adding the possibility of a refund guarantee and thus making payments safer. Other leaders in the Internet payments market – Webmoney and Yandex.Money appeared in 1998 and 2002, respectively.

Having considered the world and Ukrainian experience of entrepreneurial activity, we turn to the results. In general, analyzing the history of business development on the Internet abroad can draw the following conclusions:

1. Entrepreneurship on the Internet is a relatively new area of business that has less than 20 years of development (e-business – 50 years).

2. The Internet is a very dynamic market development strategy. But not always the pioneer company becomes a leader. The audience have to get “mature” and then the boom begins. The significant thing for companies is to get to the beginning (or at least the middle) of this boom until the audience is taken by competitors. And pioneers not only rarely become leaders, but they don’t always live up to the boom. For example, the first social sites appeared in 1994, but the size of the audience was insufficient and users were not ready for such kind of use of the network.

3. During the development of e-entrepreneurship its orientation changed. It was pure e-commerce at first, then the development was mainly in the field of B2B, and with the appearance and widespread adoption of the Internet, e-entrepreneurship has become more user-

oriented and covers all areas of traditional business (B2C). Now it is difficult to find an industry that is not represented on the Internet.

Having analyzed the history of entrepreneurship development on the Internet in Ukraine, we come to the following conclusions:

1. Entrepreneurship on the Internet in Ukraine is developing mainly simultaneously with the global entrepreneurship on the Internet and goes through same stages, similar projects are appearing.

2. The statement that the Ukrainian Internet is a few years behind the world (and was always lagging) is not entirely true. Some business models and types of sites appeared later, but some even earlier than their foreign counterparts. And it should be noted that before we had high-tech projects, but later – projects that require a large audience for their existence. This is due to two factors – technological and geographical.

The technological lagging has been restored relatively quickly. As for the geographical factor, the sheer size of the space and low population density lead to the slow development of the Internet infrastructure, primarily to cheap low-bandwidth network access. This is confirmed by the fact that the amount of investments of telecom operators into the development of the Internet still exceeds their income from its use. The rapid pace of Internet dissemination in Ukraine in recent years has almost completely offset this gap. It is worth noting that the "world" Internet market is usually understood to be the western, first of all, the US market, where the largest Internet companies operate. Ukraine looks, saying the least, worse in comparison to other countries. A similar situation is observed among social networks and other types of Internet projects. So, Ukraine is more likely to be compared with other developing countries and original Internet markets, such as China.

5.2. Formation of models of business activities on the Internet environment

It is impossible to build a modern, flexible and timely business model that is responsive to environmental changes without information technology in the XXI century. Modern information technologies affect all structures of the economy: horizontal (different markets) and vertical (objects of economy: enterprises, corporations). Due to the appearance of technology such as the Internet, which also includes the Internet of things, mobile Internet, etc., it becomes necessary to identify the key features of its impact on building an effective business model.

Before giving methodological approaches to the formation of effective business models in the Internet environment, it is necessary to try to give some historical perspective to the first methodological approaches to the construction of classic business models.

So, Paul Timmers[1], Director of the European Commission, was the first to classify business models and define this term accurately. In his work, the set of products, services and information flows, as well as the description of different participants in the business process, their roles, potential benefits and the description of sources of profit is defined as the concept of "business model". Other researchers, such Michael Vitale and Peter Weill[2], have defined the term "business model" as the relationship between customers, consumers, partners and suppliers.

Jane Linder and Susan Cantrell[3] of the Accenture Institute for Strategic Change identified three types of business models: component, dynamic and real-world business models.

Linda Applegate[4] perceives the business model as a holistic integrated system that clearly outlines its structure, shows the interconnections between the elements and offers the opportunity to study its interaction with the real world.

Joan Magretta[5] also perceives the business model as a single system, but, in her opinion, the model itself does not carry information about various possible outcomes and competition.

Alexander Osterwalder[6] also studied business models. In his book called "Building Business Models: The Book of Strategists and Innovators," he gave the definition that most significantly describes the concept. So, according to Osterwalder, a business model is a certain plan of the company that determines in which direction it is necessary to move in order to be realized within its internal structures, processes and systems.

The strategy for building a business model proposed by A. Osterwalder is quite original. The strategy offers to use nine blocks that comprehensively describe the organization's activities: cost

[1] Timmers, P. (1998). Business Models for Electronic Markets. *Electronic Markets*, *8*(2), 3–8. doi: 10.1080/10196789800000016

[2] Weill, P., & Vitale, M. R. (2001). Place to space: Migrating to eBusiness Models. Boston, MA: Harvard Business School Press.

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[5] Magretta, J (2002), Why business models matter, *HBR*, May, 86-92

[6] Osterwalder, A. (2010). *Business model generation*. Hoboken, NJ: Wiley-Blackwell.

structure; revenue streams; key partners, resources and activities; customer relationships; value propositions; customer segments and sales channels. Thus, having considered them in detail, we can conclude that the Internet directly affects the characteristics of each of them.

This way, niche and mass markets, multidisciplinary enterprises and more can be distinguished in the consumer segment. This block describes the client base specific to a particular company; the variety of sub-points is determined by differences in sales channels, customer requests and company offers.

Value propositions are a set of products offered by the company, focused on a specific segment of consumers and have certain qualities.

Among the sales channels, the author distinguishes own and affiliate, noting the merits and disadvantages of each. They determine how the product will reach the ultimate consumer. Online and offline distribution channels are widely used by both small and multinational companies.

Customer relationships can be expressed in personal support, automated self-service, and so on, depending on the company's motives.

Company's income streams arise from the sale of assets, advertising, intermediary interest and the transfer of temporary rights.

The key resources are used by the company for profit and interaction with consumers. Different business models are characterized by their key resources, but there is no business model that can work without them. Thus, company's online resources (e.g. website) also have some value.

Key activities are the basic characteristics of a business model. There are activities such as manufacturing, service delivery and support. Some types of services, mainly in the IT field, are impossible without the existence of the Internet (e.g. internet banking).

Key partners are companies with which the organization during its existence enters into partnership arrangements and cannot support infrastructure that ensures the existence of its business model without them. For example, vendor-level arrangements (significantly simplified with the development of the Internet) or strategic non-competitive cooperation.

Cost structure includes all the expenses necessary for the existence of this business model. Modern information technologies allow to optimize them.

Thus, modern information technology enables modern businesses to identify new types of business models based on new sales channels, key resources and value propositions. For example, with the globalization using the Internet, the ability to provide services remotely in real time (e.g. internet banking) has emerged. The “free” model is widely used when a customer receives a core product for free, but is have to pay for the application needed to use it.

Thus, the impact of information technology is to create many new types of competitive business models: aggregator companies (B2B2C), the formation of “E-government,” online stores and software vendors. We can assume that with the deeper integration of the Internet into everyday life, fundamentally new business models that exist exclusively in the “virtual” space are beginning to appear.

Therefore, from the point of view of classical methodology of formation all business models are divided into the following types:

1. Franchising is a type of market relations, where one party gives the other the right to use some kind of activity (business). This contributes to the rapid expansion of the main company (franchises of online stores, online portals, etc.).
2. A direct sale is the sale of certain products/services that is carried out by the direct relationship between the seller and the consumer without the obligatory special facilities for trading (Amway, Oriflame, Choice).
3. B2B (Business to Business) is a business for business, that is, a kind of economic and informational interaction between legal entities.
4. B2C (Business to Consumer) is a business for the consumer, that is, a form of e-commerce in which the sale is made to the consumer without any intermediaries (Ikea, Amazon, eBay, Prom, Rozetka).
5. B2G (Business to Government) is a business for the government, that is, the link between business and government. Most often, this type of business is attributed to public procurement and leasing relations (the official website of the single information system in the field of procurement is Prozorro).
6. G2B (Government to Business) is a government for business, that is, some kind of online interaction between the executive and the commercial organizations (the official government resource of legislative framework zakon.rada).

With the appearance and development of the Internet environment, new types and types of business models are beginning to emerge. In

addition, the Internet allows to update already tried and tested models. One of the most prominent scientists who initiated the methodology and classification of business models on the Internet was professor Michael Rappa[7] of North Carolina State University. In his paper entitled "Business Models on the Web," he classified the Internet-based business model, consisting of forty-one models, which fall into nine major categories, such as: 1) Brokerage Model; 2) Advertising Model; 3) Infomediary Model; 4) Merchant Model; 5) Manufacturer (Direct) Model; 6) Affiliate Model; 7) Community Model; 8) Subscription Model; 9) Utility Model.

Another scientist, Professor Linda Applegate[8], offers a different, more advanced methodological approach to the formation and classification of business models in an entrepreneurial online environment. In her paper called "Information Technology and the Future Enterprise: New Models for Managers," the author highlights the distinctive features of models, such as: possible revenues, possible costs, examples and trends that may affect the development of these models for each category. Let us take a closer look at some categories of business models by Linda Applegate: 1) Focused Distributor Models – they provide products and services within a specific industry or market niche. 2) Portal Models, where the Portal is the entrance, and on the Internet, the portal's business model provides input for clients so that they can access content and services. 3) Infrastructure Provider Models – unlike previous models using digital infrastructure, these models provide this infrastructure (computers, networking equipment and software).

As part of another methodological approach, Peter Weill and Michael Vitale[9] offered eight "nuclear business models". Instead of trying to make a complete list, as R Rappa[10] and Applegate[11] did, these authors identified 8 models that could be combined into different forms to reflect virtually any business model. Thus, nuclear business models:

1. Content Provider. Provides content (information, digital products and services) through intermediaries.

[7] Rappa, M. (n.d.). Business Models on the Web: Professor Michael Rappa. Retrieved November 24, 2019, from http://digitalenterprise.org/models/models.html.

[8] Applegate, Lynda M. (2001) in *Information Technology and the Future Enterprise: New Models for Managers*, edited by Dickson, G. W., & DeSanctis, G. Upper Saddle River, NJ: Prentice Hall., 49-94.

[9] Weill, P., & Vitale, M. R. (2001). *Place to space: Migrating to eBusiness Models*. Boston, MA: Harvard Business School Press.

[10] Rappa, M. (n.d.). Business Models on the Web: Professor Michael Rappa. Retrieved November 24, 2019, from http://digitalenterprise.org/models/models.html.

[11] Applegate, Lynda M. (2001) in *Information Technology and the Future Enterprise: New Models for Managers*, edited by Dickson, G. W., & DeSanctis, G. Upper Saddle River, NJ: Prentice Hall., 49-94.

2. Direct to Consumer. Provides products or services directly to the customer, often bypassing traditional distribution channel members.

3. Full Service Provider. Provides a full range of services within one industry (e.g. financial, healthcare, chemical) without intermediaries and tries to close the relationship with directly.

4. Intermediary. Brings buyers and sellers together by providing information.

5. Shared Infrastructure. Brings together many competitors who collaborate using a common IT infrastructure.

6. Value Net Integrator. Coordinates actions in the value network, collecting, combining and disseminating information.

7. Virtual Community. Creates and promotes a community of people with shared interests, thereby allowing them to interact and provide services.

8. Whole of Enterprise. It is a single point of contact through which you can access all the services of an organization that has many units.

A fundamentally new methodological approach to business model formation in the enterprise Internet environment has been offered by Armir Hartman and John Sifonis with John Kador[12]. In their paper called "Net Ready: Strategies for Success in the E-Conomy," they identified 5 (five) advanced business models that transform customer service practices. Successful "Internet Ready" organizations use 1 (one) or more of these models. Many experts consider the description of the model of the mediator in this book as one of the best. Thus, under the definition of the authors these are the following models:

1. E-Business Storefront. An organization that conducts business using both established and new distribution channels.

2. Infomediary. An organization that provides content, information, knowledge or experience that add value to an e-business deal. Also known as content aggregators.

3. Trust Intermediary. An organization that creates an atmosphere of trust between buyer and seller. These companies provide a secure environment in which buyers and sellers can make transactions safely.

4. E-Business Enabler. An organization that creates and maintains an infrastructure within which suppliers of goods and services can conduct transactions safely and securely.

[12] Hartman, A., Kador, J., & Sifonis, J. (2000). *Net ready strategies for success in the E-conomy*. New York: McGraw-Hill.

5. Infrastructure Providers/Communities of Commerce. Participants gather around complementary interests (goods, content and services) and markets. Communities of businesses organized around common interests through shared infrastructure.

Paul Timmers[13], another researcher, in his paper "Model for Electronic Markets," offered a methodology for building business models on the Internet based on benefits (for business, customers and suppliers). Within one separate category, "Business Models for Electronic Markets," the author identifies 11 (eleven) types of business models in terms of preferences. Thus, these are the following business models:

- e-shop;
- e-procurement;
- e-auction;
- e-mall;
- third party marketplace;
- virtual community;
- value chain service provider;
- value chain integrator;
- collaboration platform;
- information brokerage;
- trust services.

Denis Viehland[14], another author, adds 3 (three) new business models created through the Internet:

- virtual retailer;
- distributed storefront;
- buyer-led pricing.

The authors of the book "E-Commerce: Business. Technology. Society." Kenneth Laudon and Carol Traver[15] offer other methods to build business models online. Yes, they offer to create business models depending on the type or means of e-commerce:

- B2C (portal, e-tailer, content provider, transaction broker, market creator, service provider, community provider);

[13] Timmers, P. (1998). Business Models for Electronic Markets. *Electronic Markets, 8*(2), 3–8. doi: 10.1080/10196789800000016

[14] Viehland, D. (1999). Proceedings of the 17th Annual International Conference of the Association of Management. In *New Business Models for Electronic Commerce* .

[15] Laudon, K. C., & Traver, C. G. (2019). *E-commerce 2018: business, technology, society*. Upper Saddle River: Pearson.

- B2B (e-distributor, e-procurement, exchanges, industry consortia, single-company networks, industry-wide networks);
- others (C2C, peer-to-peer, mobile commerce).

It is necessary to highlight the innovative business models that have emerged in the context of the new globalization separately. The merger of technological, social and geopolitical developments has fundamentally changed the economy of doing business worldwide. There has been a radical reconsideration of globalization by combining growing economic nationalism, expanding digital reach and changing consumer behavior. Thereby, new characteristics of globalization were created where the world became even more connected and more dependent on all its subjects. However, many companies are finding enormous opportunities in this transformed global economy. And in many cases, such an opportunity arises from innovative business models. These models are less based on physical movement of products and fixed investments in markets and more on the use of digital communication and global ecosystems. I can distinguish the following business models used by companies to change the competitive environment in the new global era:

- A cross-border service model where the focus is on services for international ultimate consumers;
- A lightweight asset model where most assets are outsourced (for example, a taxi service without a fleet of vehicles; an online shop operating in several countries at the same time and not having a single warehouse and courier service);
- A model of value-adding through software that modifies or extends the capabilities of existing hardware and software and on this basis adds a new value-added software product to the underlying hardware;
- A model of global digital ecosystems that proposes to shape modern organizations and enterprises in the form of interaction between people and various digital assistants (Internet of things, robotics, etc.);
- A global personalization model where ultimate consumer behavioral data are accumulated and their preferences are explored using artificial intelligence;
- A multichannel (distributed) production model where the production of one final product is split into several countries (an example is a distributed assembly of cars when individual components are produced in one country and a car assembly in another).

Thus, it can be concluded that there are currently many forms and types of business models in the online business environment, however, the main purpose of any business model is to make a profit to maintain its existence. Accordingly, there are two fundamentally significant components of the business model of business activity in the Internet environment:

1. Value proposition (what customer needs the chosen business will fulfil).
2. Revenue model (the way a business or e-commerce project will generate revenue).

Focusing on these two important components, we can choose a viable business model for Internet-based entrepreneurship.

Thus, the basis of effective development of business models in the Internet environment are the following management and organizational principles:

1. Organizational and innovation processes;
2. The concept of business formation;
3. Processes of continuous optimization of activity;
4. Effective management with respect to trends and changes in the external environment.

For the development of business models of Internet entrepreneurship, it is necessary that the models take into account the change of the environment, which can be achieved due to the dynamic properties, which is due to the dynamism of the Internet market in which they operate.

In addition to the above properties, various metrics are used to analyze the effectiveness and efficiency of business models in the online environment. Metric development is an effective tool for evaluating chosen business model, controlling costs, social media performance and selling products and services. These dimensions help to choose the most effective areas for development. Almost any measurement can be a measure of performance and efficiency (KPI) if data collection is feasible.

Thus, researchers F. J. Riggins and Mitra, S.[16] offered a methodology for collecting information for metrics of three different

[16] Riggins, F. J., & Mitra, S. (2007). An E-valuation framework for developing net-enabled business metrics through functionality interaction. *Journal of Organizational Computing and Electronic Commerce*, *17*(2), 175-203. doi:10.1080/10919390701294129

types, which should be taken into account when evaluating the efficiency and effectiveness of e-business development.

Another scientist, F. F. Reichheld[17], offered a method of assessing consumer satisfaction or a consumer loyalty index based on determining customer satisfaction with a purchased service or product. The buyer is asked only one question: what is the probability that they will recommend a product or service to another person, such as a friend? If the buyer intends to recommend the company to friends, acquaintances or loved ones, they can be considered extremely loyal to the brand.

Also, a lot of work is devoted to quantitative methods of assessing the effectiveness of e-business such as determining the cost of customer acquisition, calculating the lifetime value of the customer, as well as methods of evaluating the effectiveness of the sales funnel – an indicator of the number of customers who have passed from the category of potential buyers to the category of real buyers. Quantitative metrics are an effective tool for modeling and managing the process of Internet entrepreneurship development using which we can predict, control and analyze its main stages.

CONCLUSIONS

E-business is a relatively young type of business and its appearance dates back to the mid-90s of the XX century, primarily in connection with the spread and popularization of the Internet. Innovative business models are possible by the technological, geopolitical and social forces that are changing the global business, enabling companies to leverage significant growth opportunities in the form of access to new markets and new ways to add value to their customers. The very development of business models on the Internet is closely linked to the dynamics of scientific and technological progress.

The current pluralism of approaches to the definition of types of business models allows to note the rapid development of the sphere of innovative entrepreneurship on the Internet.

Regarding our country, factors such as the advancement of information technology, expansion of the range, introduction of innovations, growth of the audience of potential and regular customers create new opportunities for the development of this industry in Ukraine. Analyzing the history of business development on the Internet in

[17] Reichheld, F. F. (1993). Loyalty-Based Management. *Harvard Business Review, 71*(2), 64-73.

Ukraine, we can draw the following conclusions: 1.) Internet business in Ukraine is developing mainly simultaneously with the global business on the Internet – passes same stages, similar projects appear. 2.) The statement that the Ukrainian Internet is a few years behind (and always behind) the world is not entirely true. Some business models and site type later appeared, some even before their overseas counterparts. And it should be noted that the first in Ukraine appeared high-tech projects, later – projects that require a large audience, which is related to two factors – technological and geographical.

SUMMARY

Background, a step-by-step study of the appearance of the Internet and the appearance of business in it allowed the authors to conclude that there is a pluralism of approaches to the definition of types of business models nowadays, which testifies the rapid development of the sphere of innovative entrepreneurship on the Internet. And with the shortest period Internet entrepreneurship has changed the nature of the market as a whole, provided new driving forces and key success factors and most importantly, created the conditions for the development of new e-business business models. Competitive application of e-business methods and models for many companies are becoming one of the main competitive resources. It is important that the electronic business form allows to track customer satisfaction within a specific business model and adjust it for improvement.

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9. Riggins, F. J., & Mitra, S. (2007). An E-valuation framework for developing net-enabled business metrics through functionality interaction. *Journal of Organizational Computing and Electronic Commerce, 17*(2), 175-203. doi:10.1080/10919390701294129

10. Timmers, P. (1998). Business Models for Electronic Markets. *Electronic Markets*, *8*(2), 3–8. doi: 10.1080/10196789800000016

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Chapter 6
ENERGY SECURITY PROVIDING IN THE CONTEXT OF THE FOSTERING THE INNOVATION AND INVESTMENT BUSINESS ACTIVITIES

Tepliuk M. A.

INTRODUCTION

Modern society is a witness and participant of the balance disruption between humanity and nature, resulting in the development of productive forces, leading to an increase in the number of negative environmental phenomena and trends and disproportion between the dialectical unity of its components. The global contradictions between the growing needs of the population and the decline and degradation of the environment indicate the necessity of a harmonized combination of economic, social and ecological components of development, change of emphasis of the world economy in favour of the environmental component, which requires a significant adjustment in the activities of all economic entities and policy.

In modern conditions of functioning and dynamic development, the business environment is characterized by the involvement of intellectual resources, which are the basis for innovative entrepreneurial activity. In the conditions of globalization processes, the priority mission for innovative business development is the vector of the so-called industrial breakthrough. That is, the effective functioning of the market relations subjects is possible through the identification of key factors for the enterprises development in the current circumstances. It should be noted that the fourth industrial revolution, or Industry 4.0, describes processes at the enterprise as a chain of "organization – production – distribution – consumption – utilization – recycling", which components` interaction is based on the principles of the application of interaction between human, devices and technologies, and provides overcoming the human-machine barriers as well as their integration.

That is, a model of "smart" production is being formed, where computerized systems control physical processes and are able to make decentralized management decisions based on the principles and mechanisms of self-organization. The application of the latest

technologies in the organization of such an interaction allows to save resources, including time, to minimize the operating expenses, to diversify production of goods or services based on sophistication of human needs and mass individualization of the supply.

The other characteristics of Industry 4.0 are the formation of an information society; reforming of the educational system and taking it to a fundamentally new level; accelerating mergers and acquisitions of companies; widespread application of artificial intelligence; greening the production, in particular its ecological-oriented development and implementation the concept of the "without people production". In this aspect, it is advisable for domestic enterprises not to adapt to it, but to use the so-called resource asymmetries effectively, in order to achieve competitive advantages in a dynamic market environment.

Resource asymmetries are proposed to be understood as the disproportion of the unique resource combinations that contribute to the formation of sustainable competitive advantages of the enterprise in the sectoral market during a certain period of time. Resource asymmetries can be considered as rare competitive resources, which are not owned by other enterprises and cannot be copied even with the proper allocation of expenditures. Therefore, intellectual resources that other enterprises do not have are key resources able to provide competitive advantage to the enterprise, together with material resources.

Most of the competitive advantages in an innovative economy depend, first of all, on the successful use of knowledge. One of the key success criteria is the ability to create and deliver innovation, in the context of profits maximizing. The pace of technological change implementation is increasing more rapidly than previously thought possible in the energy sector.

All the aspects of the value chain are involved in this process: starting from electricity generation and power grid management, in other words, "over the counter." Most frequently, businesses operating in the energy sector have to develop completely new manufacturing processes, technological moves, customer service platforms and business models. Note that instead of a centralized and standardized energy model, a digital, distributed and personalized system is coming.

The driving force for changes has become, on the one hand, the economic impact from the use of new technologies, and on the other, changes in customer behaviour that make a significant adjustment to the relationship as between the supplier and the consumer.

Businesses aware of this systemic shift will surely ensure themselves excellence and will become valuable suppliers of innovative solutions for customers and partners. At the same time, those who fail to appreciate the benefits of the new technology-driven model of the market in time will lose their natural rights to develop and strengthen their relationships with the customers. Creating an innovative ecosystem is a sophisticated and complex process that creates the conditions for increasing energy security.

The feasibility of its creation and development is confirmed by the successful experience of the numerous companies in many countries of the world. In the conditions of the created innovative ecosystems, the application of complex approaches to management becomes possible, leading to ensuring the efficient use of energy resources of enterprises operating in the conditions of innovative ecosystems. Most scientists actualize the concept of “innovative ecosystem”, where in their works draw analogies between natural ecosystems and the innovation system.

The theoretical and methodological basis of the research is the elaboration of domestic and foreign scientists on the functioning of different innovative ecosystems in the economy, in general, and energy, in particular. The paper uses a systematic approach – to analyse the key prerequisites for the establishment of an innovative energy security ecosystem, as well as a method of profound analysis to justify the need to develop an innovative ecosystem.

6.1. The fostering of the innovation and investment activities

The attention is focused on the issues of system-wide determination of managerial innovation. It should be noted that the determination of peculiarities of organizational innovation in business is a relatively poorly researched problem in domestic science. The strategic goal of public policy for improving innovation activity should be the formation of an innovative economy based on the accumulated intellectual capital and involved investment resources. The beginning of an effective process of forming a unified universal approach to the organization of an innovative economy for any country is the study of existing experience in this field, for Ukraine, in particular, it is the experience of EU countries.

It is generally recognized in a market economy, that innovations are mostly implemented at the level of private enterprises. In today's economic realities, business is actually obliged to increase the innovation and efficiency of its own activities, which is of particular

importance in times of economic volatility. The everyday evolution of a society is determined by a set of the most essential trends, which effect inevitably causes large-scale social transformations, in business in particular. At the same time, a complex mechanism of innovation implementation plays the most significant role in their initiation and ensuring successive and large-scale implementation in this system[1].

The volatility of the economic environment requires that domestic companies use adequate management methods, implement innovations and efficiently apply their innovative capabilities. In today's conditions of European integration, we can observe a high level of competition, so that in order to maximize profits Ukrainian enterprises have to create a genuinely original competitive advantage of their products, which involves the application of an effective method of competition, that is the use of innovation. Undoubtedly, the innovative development strategy in modern conditions of economic activities provides for the construction of scientific and technical policy of enterprises of the industry, oriented to promoting the development of advanced technologies, research, scientific and development elaborations of innovative nature. It should be noted that it is the innovation strategy that is the basis for the structural changes that must take place today in the economic activity of any enterprise and ensure their future economic development.

Radical managerial innovations in Ukraine are directly proportionally related to the deterioration tendencies of the situation in the society by a set of indicators and are the response of the management subsystem to the requirements of stabilizing the situation and optimizing the forms of governance of the society experiencing turbulence. It can be also noted, based on the research, that the foundation for the widespread introduction of innovation in the enterprise activity, is assumed by funding. Indisputably, innovation cannot be reached without significant funding.

Hence, an important challenge is the financing of innovation, which is especially relevant in the context of the economic crisis and the high cost of financial resources (credits), which is now observed in Ukraine[2]. Innovation activity development will only take place when all the finance sources are mobilized. Thus, innovative business development requires considerable financial resources, including those regarding

[1] Gugler, P. (2017). Emerging countries' country-specific advantages (CSAs) and competitiveness of emerging market multinational enterprises (EMNEs). *Competitiveness Review*, *27*(3), 194–207. doi: 10.1108/cr-02-2016-0016

[2] Andersen, J. (2010). Resource-based competitiveness: managerial implications of the resource-based view. Strategic Direction, 26(5), 3-5. doi: 10.1108/02580541011035375.

small and medium-sized businesses. As was defined earlier, the implementation of policies to increase funding for development and innovation should become the major task of the state. Financing can be done either at the expense of own funds, or funds of investors, loans and funds from the state budget.

Namely, an important issue at the macroeconomic level is the participation of the state in the process of providing financial support to small and medium-sized enterprises: subsidies, preferential taxation and lending, allocation of funds for targeted lending, compensation of interest on lending. According to the study by Andriushchenko K., Rudyk V., Riabchenko O., Kachynska M., Marynenko N., Shergina L., Kovtun V., Tepliuk M., Zhemba A., Kuchai O.[3], only 17.3% of the total number of operating enterprises in Ukraine can be considered as innovatively active, that is, introducing new technologies and updating the product range. If to compare it with foreign countries, where 60% of operating enterprises are actively engaged in innovative activity, we can assert that the level and pace of development of innovative activity in Ukraine is unsatisfactory.

A moderate improvement of the situation regarding the overall revival of innovation over the last few years does not solve the overall problem. The reasons for such a negative tendency are, among others, the lack of financial resources for the implementation of the innovative projects, as well as the imperfection of the financial and credit policy in the direction of stimulating innovation activity in Ukraine, that, in its turn, makes it impossible to ensure the transition of the domestic economy to an effectively new level, and therefore, to ensure its competitiveness in a globalized world.

Drawing on research by Sagaidak M., Tepliuk M.[4], we analyse the comparison of state innovation policy instruments in both the EU and Ukraine, given in Table 1.[5], noted that most of the developed countries

[3] Andriushchenko, K., Rudyk, V., Riabchenko, O., Kachynska, M., Marynenko, N., Shergina, L., … Kuchai, O. (2019). Processes of managing information infrastructure of a digital enterprise in the framework of the "Industry 4.0" concept. *Eastern-European Journal of Enterprise Technologies*, *1*(3 (97), 60–72. doi: 10.15587/1729-4061.2019.157765

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[5] Tepliuk, M. A., & Budiaiev, M. A. (2016). Investment Attractiveness of Enterprises in the Context of Effective Management of Resource Provision. *BIZNES INFORM*, (7), 114–118.

Terpstra, D. E., & Limpaphayom, W. (2012). Using Evidence-Based Human Resource Practices for Global Competitiveness. *International Journal of Business and Management*, *7*(12). doi: 10.5539/ ijbm.v7n12p107

apply a comprehensive approach in order to stimulate the activities of innovation-oriented companies, by using methods of both direct and indirect regulation.

Namely, the European Union countries use several tools of innovation policy and attracting investment for financing innovation. They incorporate direct public funding, firstly through grants, loans, subsidies, etc.; creation of infrastructure for innovation activity; tax incentives, special support schemes for risk financing, provision of state guarantees. He also justifies that the tools of innovation policy are different mostly in all countries of the world. For example, Portugal and Spain, apply a large set of fiscal incentives to all companies, whatever their size, and the UK only to small and medium-sized businesses. Such countries as Sweden, Germany, Finland, prefer to stimulate direct financial support, that in its turn results in the development of an innovative process.

Table 1

Comparative characteristics of public policy instruments in the EU and Ukraine

EU	Ukraine
Legislative instruments	
1) a favorable institutional environment for innovation activity	1) unfavorable institutional environment for innovation activity
2) possession of an innovative development strategy is an essential prerequisite for obtaining regional funding for innovative EU funds projects	2) lack of innovative development strategies and programs in most regions of Ukraine
Financial instruments	
1) increase in public spending on science and innovation (2% of GDP on average)	1) reduction of government spending on science and innovation – from 0.47 to 0.33% of GDP
2) financial stimulation of supply and demand entities	3) most of the tax incentives for innovation activity have been abolished, in particular based on such Ukrainian laws as “On innovation activity”, “On special regime of investment and innovation activity of technological parks”, “On general principles of establishment and functioning of special (free) economic zones”

Table 1. (Continued)

Financial institutions	
1) venture funds; 2) innovation funds; 3) "seed" funds; 4) innovative stock exchanges; 5) innovative banks; 6) individuals – "business angel"	require development
Production and technological structures	
1) technological business incubators; 2) technoparks 3) science parks; 4) spin-off companies	1) business incubators: mostly lack technological specialization; 2) technoparks and science parks: governed in accordance with the relevant laws, but not widespread due to the benefits abolishment; 3) spin-off and start-up companies require development

Analysing the data in the table, we can say that Ukraine's innovation system is not developed enough and has no connection between its participants, namely: state policy, developers and consumers of innovation. Instead, European experience shows that all elements of the innovation system must be interconnected as between themselves by comprehensive public policy that is a promising fact for research.

At the World Economic Forum in Davos, 2016 the Fourth Industrial Revolution became the major issue for discussions, which can actually affect global changes in all the spheres of human life. It is characterized by the development and merger of automated production, innovative technologies and the exchange of data into a unified system, human intervention in which is reduced to a minimum or is entirely limited. Computer and intellectual service providers are the most interested in the Fourth Industrial Revolution, namely, they are inventors, programmers, investors, and shareholders. According to Gartner marketing company, the additional revenue for IT-related companies will be more than $ 300 billion by 2020.[6]

Nevertheless, the knowledge and experience of people attracting innovation remain key in the fourth era of industrial development. Thus, the intellectual base remains a key factor in ensuring the quality of

[6] Shvidanenko, G., Tepliuk, M., & Budiaiev, M. (2017). Developing An Innovative Model Of Resource Efficiency For Industry. *Scientific Journal of Polonia University*, *25*(6), 19–27. doi: 10.23856/2502

innovation implementation and the process of their adaptation. They continue to be the only drivers of growth in the number of active innovative small businesses, including those at the cost of the emergence of new forms of entrepreneurship (freelancing, pulsating organizations, etc.), oriented on the development of scale of production of intangible products (all types of services and new technologies), which is the foundation of modern technological realities.

6.2. Development of an innovative ecosystem of energy security

It should be noted that, considering the scientific research, the disclosure of the "innovative ecosystem" concept should begin with the determination of the basic analysis element, in this case – "innovation", which is the fundamental basis for the historical development of innovation systems as at the macro (on a scale of the national economy), and regional levels. It must also be noted that the term "innovation" is most vigorously used in the transition economy of Ukraine both independently and in order to designate a number of derivative concepts: "innovation activity", "innovation process", "innovation management".

Most of all, different authors define the category of "innovation" as rather identical concepts, differing mainly in the degree of specification. It should be noted that the "ecosystem" concept combines different views on open innovations, crowdsourcing (search for executors without labour contracts), strategic management, economy, systems theory, as well as the biological analogies, metaphors and comparisons with the natural ecosystems.

The basis for functioning of the innovative ecosystem is not the energy moving, but the movement of capital and other economic resources, the mutual relations between economic entities intended to further technological development. In this context economic resources incorporate both material resources and intellectual capital. The main business entities of the innovation ecosystem are: corporations, universities, business schools, venture investors, research institutes, public authorities and investment funds. An innovative ecosystem is, in its essence, a combination of two different systems, namely, research and commercial. In domestic practice, two above-mentioned sectors ineffectively interact with each other, the task for our country is to increase the share of the commercial sector in the total amount of investment in research and development.[7]

[7] Smyrnov, I., & Smyrnova, O. (2017). Energy Efficiency In The Evaluation Criteria Of Enterprises. *Scientific Journal of Polonia University*, *23*(4), 78–84. doi: 10.23856/2309

An important feature of a properly organized innovation ecosystem is that the resources required for the research sector are complemented by the commercial sector as part of the profits generated from business conduction. Another distinctive feature is the tendency of ecosystem entities to concentrate in one geographical region, their strategic coherence with one another in order to focus on the development of a particular technology. Will also note that Silicon Valley is the most famous example of a geographically localized ecosystem. An innovative ecosystem can be considered as healthy and prosperous when resources invested in research from public, private or corporate sources are subsequently reimbursed by profit maximization due to sale of innovative products. In this case, both sectors of the innovative ecosystem – experimental and commercial – reach equilibrium state[8].

The emergence of innovative ecosystems in the region, which apply the most up-to-date and advanced technologies in their daily activities, resulting in the increase of the social status of the region, which leads to an enchasing of social status. Determining the prerequisites for the development of an innovative ecosystem of the energy sector, primarily aimed at providing consumers with energy resources, improving the energy and environmental productivity of the fuel and energy complex, modernizing generating capacity, as well as creating conditions for ensuring the widespread use of renewable sources of energy (Figure 1).

A characteristic feature of innovative ecosystems is their ability to be the core of business ideas generation. In this regard, the presence of educational and scientific institutions is not simply important, but an essential prerequisite, based on the history of the innovative ecosystems development. Operating in the region of the technoparks, business incubators and other structures of commercialization of development create conditions for the emergence of new jobs and increase the income involved in the development process, and implementation of innovations.

The challenge for the national economy is its low level of energy efficiency and dominance in the economic structure of energy-intensive productions[9]. Ukraine requires to correct the deformations of the real sector in the direction of reducing the share of resource- and

[8] Xiang, G., & Bo, W. (2010). Notice of Retraction: Research on enterprise human resource competitiveness based on BP ANN. *2010 3rd International Conference on Computer Science and Information Technology*. doi: 10.1109/iccsit.2010.5564907

[9] Baran, M., & Kłos, M. (2014). Managing an intergenerational workforce as a factor of company competitiveness. *Journal Of International Studies*, *7*(1), 94–101. doi: 10.14254/2071-8330.2014/7-1/8

energy-intensive activities, decreasing energy and ecological intensity of production by introducing up-to-date technologies, rationalization of resource use, optimization of territorial location of production, etc. The state continues to act on the inertia of stereotypes of existence of energy resources surplus, and economic and public entities expect it to cover energy costs partially and withdraw from actions of increasing energy efficiency, that's why the feasibility of developing strategy for an innovative ecosystem for energy security is being gradually applied, Figure 2.

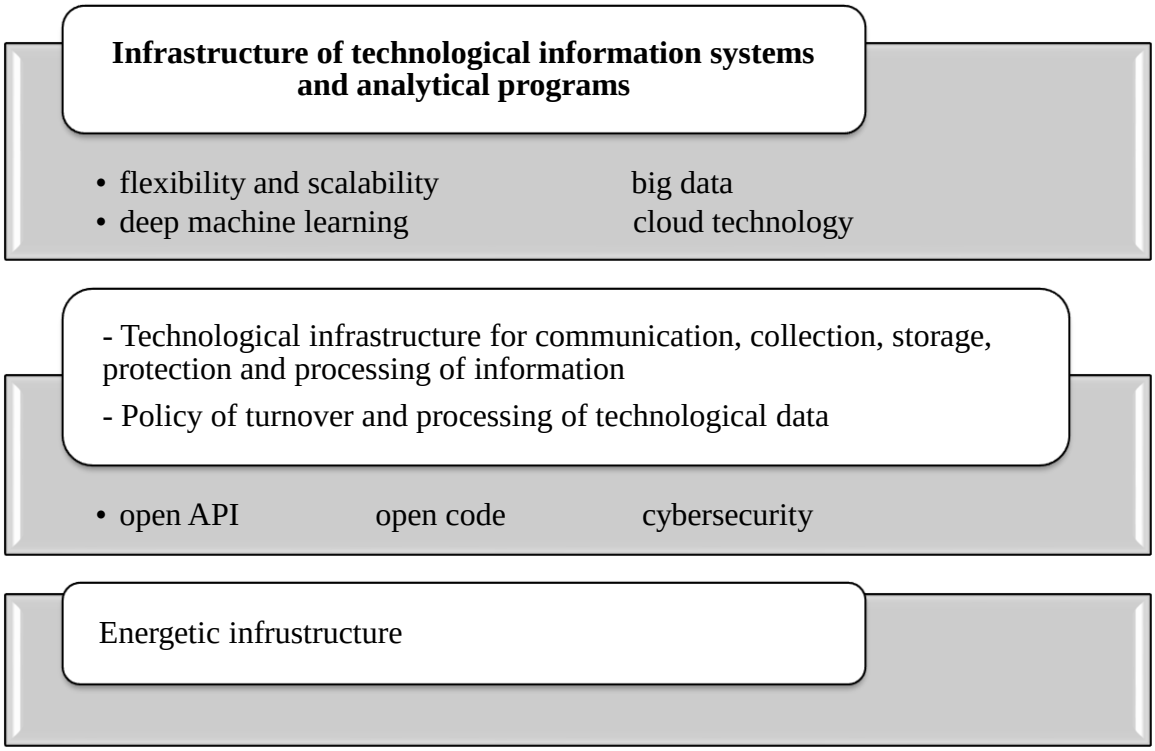

Figure 1. Schematic summary of key aspects of the innovative ecosystem of the energy industry[10]

Considering the strategic vision of the Ukrainian energy sector development, implementation of the relevant strategy will enable to increase the efficiency of production and use of resources, to obtain additional effects due to the emergence of new services and solutions based on a large amount of technological data, the construction of vertical and horizontal intra-sector and inter-sector interactions.

[10] Araftenii, A. M. (2017). Problem of institutional provision of economic development of territorial communities in Ukraine. *Economic Innovations*, *19*(1(63), 18–22. doi: 10.31520/ei.2017.19.1(63)

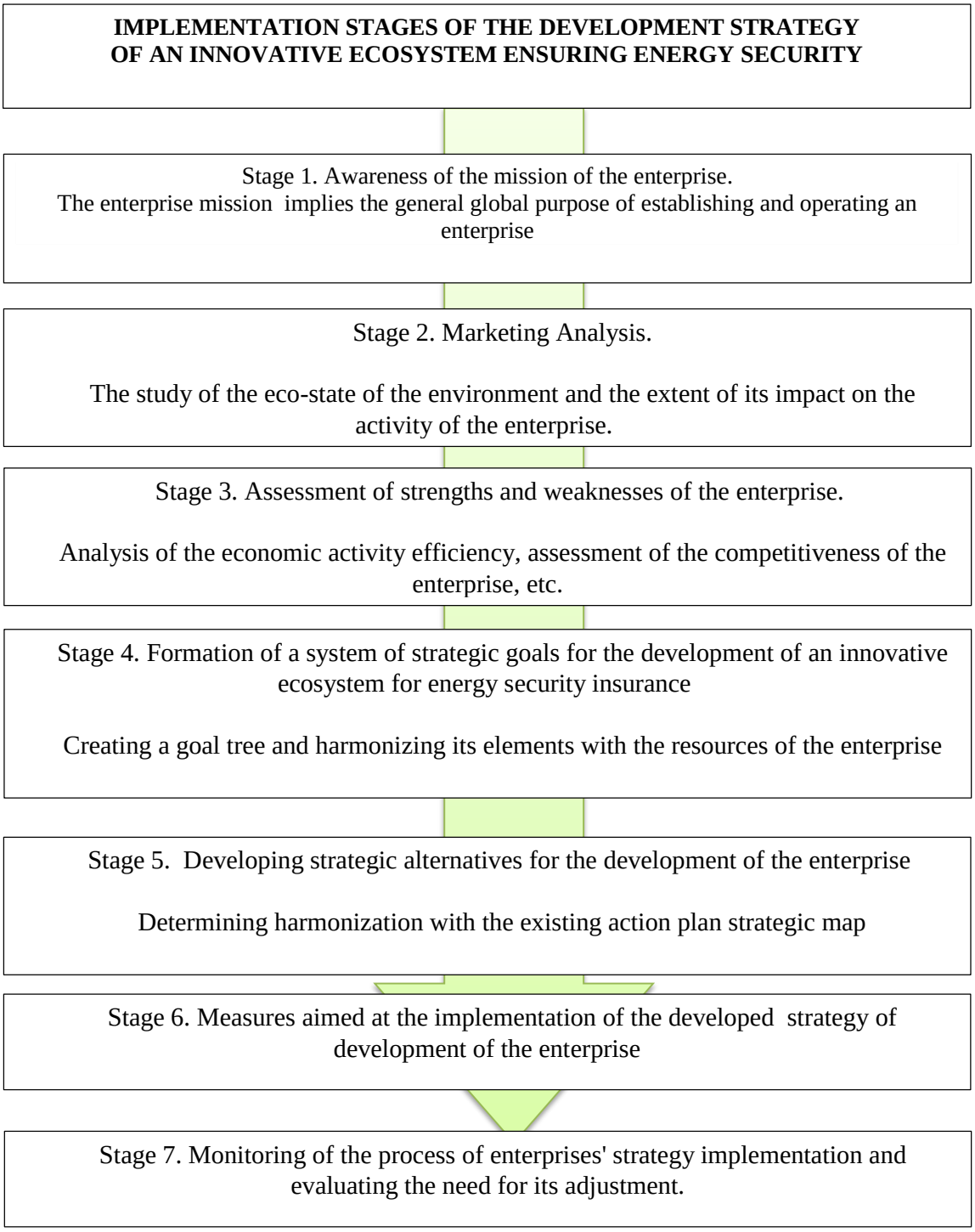

Figure 2. Developing a strategy for an innovative ecosystem for energy security

Source: developed by the author [11]

[11] Andriushchenko, K., Rudyk, V., Riabchenko, O., Kachynska, M., Marynenko, N., Shergina, L., … Kuchai, O. (2019). Processes of managing information infrastructure of a digital enterprise in the framework of the "Industry 4.0» concept. *Eastern-European Journal of Enterprise Technologies, 1*(3 (97), 60–72. doi: 10.15587/1729-4061.2019.157765

Table 2

Estimated target energy balance of Ukraine in 2035, thousand tons of oil equivalent

SUPPLY AND CONSUMPTION	Coal and peat	Crude oil	Oil products	Natural gas	Nuclear energy	Hydroelectric power	Wind, solar and environmental energy	Biofuels and waste	Electric power	Thermal power	**Total**
Production	33916	4500	-	34045	-	1250	5290	13020	-	1000	93021
Import	0	9500	2341	0	31898	-	-	0	0	-	43739
Export	0	0	0	-1716	-	-	-	0	-2582	-	-4298
Total primary energy supply	**33916**	**14000**	**2341**	**32329**	**31898**	**1250**	**5290**	**13020**	**-2582**	**1000**	**132462**
Electricity production	-18786	-	-53	-2907	-31023	-1250	-802	-3253	23810	-	-34263
Thermal energy production	-1213	-	-34	-13157	-875	-	-2963	-5149	-828	23632	-586
Oil refinery enterprises	-	-13969	13969	-	-	-	-	-	-	-	0
Own energy sector consumption	-63		-477	-540	-	-	-	-	-3064	-863	-5006
Transportation and distribution losses	-245	-6	-152	-399	-	-	-	-	-1674	-1803	-4279
Final consumption	**13610**	**25**	**15594**	**15326**	**0**	**0**	**1526**	**4618**	**15662**	**21967**	**88327**
Industry, including:	12175	-	1326	3183	-	-	-	403	7175	5208	29471
Metallurgy	10954	-	191	371	-	-	-	0	3045	894	15455
Chemical industry	15	-	25	387	-	-	-	0	339	1143	1909
Engineering	3	-	33	162	-	-	-	0	1147	203	1549
Food industry	102	-	148	124	-	-	-	378	536	1669	2956
Other production industries	1598	-	930	385	-	-	-	87	2108	1298	6406
Construction	2		181	21	-	-	-	0	90	55	350
Transport	27	-	3508	1567	-	-	-	223	1077	0	6402
Agriculture	16	-	1978	61	-	-	-	459	606	441	3561
Service and other consumers	188	-	1188	589	-	-	-	104	2298	6994	11360
Population	206	-	6310	7951	-	-	1526	3368	4416	9269	33045
Non-energy use	**498**	**25**	1102	**3709**	-	-	-	-	-	-	**5334**

Source: Formed by the authors on the Strategic Development Program of Ukraine http://search.ligazakon.ua/l_doc2.nsf/link1/NT1513.html

In the course of the conducted research, it should be noted that serious challenges to the prospects of energy development arise due to the incompleteness of reforming the energy markets. In particular, precisely the existing models of functioning of the markets in Ukraine do not allow to form reliable sources of financial support, considering even the urgent needs of the energy sector.

Subsidies to producers, cross-subsidies between the consumer groups, preferential procurement of energy resources, lead to both reduce of motivation for save energy saving and deprive investment incentives to develop Ukrainian energy sector.

That is why, we assume that, overcoming the contradiction between providing social protection and introducing market principles of economic activity in the energy sector requires social policy improving. Maintaining the practice of guaranteeing social protection for particular categories of consumers through the use of resources of the fuel and energy complex actually blocks the possibility of accumulating resources for energy sector modernization[12].

To create sustainable energy in the long term, under the 2030 Innovation Development Strategy, it will be necessary to shift to zero-carbon energy sources, where exactly information technology will play a crucial role in providing an appropriate transition by supporting innovation developed through research activity in energy sector, and through optimal exploitation of increasing number of diverse energy sources connected to the power grids.

One of the problems associated with renewable energy sources is that they are not always available. Information technology can level such fluctuations in electricity production, by creating demand elasticity – switching demand from the time of day when electricity is not sufficient and it is supplied at a high tariff, to the time when electricity is sufficient and it costs less – to a level that will enable to integrate renewable energy into the power line.

Household appliances equipped with information technology, together with smart meters and informed subscribers are able to change the nature of electricity demand – instead of consuming it independently of the time of day, to organize consumption during the periods of the highest level of electricity production from wind or sun[13].

[12] Hamel, G. (2000). *Leading the revolution*. Boston, MA: Harvard Business School Press.

[13] Makarenko, I., & Sirkovska, N. (2017). Transition to sustainability reporting: evidence from EU and Ukraine. *Business Ethics and Leadership*, (1), 16–24. doi: 10.21272/bel.2017.1-02

The increasing potential of electric cars charging from the network makes the question of demand elasticity particularly acute. The software helps scientists to develop and enhance cleaner energy sources. For example, complex large-scale modelling, also called computational hydrodynamics, enabled significant improvement of the construction and deployment of air turbines in order to maximize their efficiency. Scientists apply computer modelling in order to improve the alloys used in solar photovoltaic batteries production.

That is, in order to switch to an economy based on clean energy production, it is necessary to create the capacity to track and regulate emissions of all producers wherever their location, and maybe even to track certain products along the supply chain throughout their useful life. Information technology tools ensuring such a potential will allow the manufacturers to set tasks to reduce carbon emissions and monitor their performance, and consumers to choose the products or services, which production is connected with the smallest carbon imprint[14].

The introduction of innovative ecosystems creates the conditions for achieving the task of the technological breakthrough of the country. Furthermore, a number of problems arises during the process of creating innovative ecosystems. Such ecosystems and technoparks are often established from the ground up in our country. As a consequence, the obstacle to their rapid development is the lack at the initial stage of a sufficient number of areas suitable for the high-grade operation of residents, lack of infrastructure and experience in implementing such projects.

Due to the fact that the staff involvement is often associated with the need to change the place of residence in this case, it may cause difficulties in recruiting staff with the required qualification.

Continuous changes occurring in the process of innovative ecosystems formation directly influence the enterprises operating in them. Dynamic development of economic entities is a complex activity within which numerous challenges must be solved, in order to ensure energy security of Ukraine.

CONCLUSION

Summarizing all of the above-mentioned, it should be noted that the role of the state in the modern economy is very high; development and

[14] Ustymenko, V. (2017). Problems And Prospects For Implementing The Agreement On The Association With The Eu: Economic And Legal Aspects. *Economics and Law*, (3), 54–62. doi: 10.15407/ econlaw.2017.03.054

implementation of innovations require intensive participation of the state (reflected in the allocation of funds from the budget, financing; preferential taxation; the development of legislation aimed at clear regulation of relations; the abolishment of restrictions). In the first place – financing, in different forms: direct financing of development, participation together with private capital in the specific project implementation. Thus, by introducing mechanisms for state support for innovation in Ukraine, or in any other country of the world, own specific conditions (legal framework, state of the scientific and technical sphere, level of economic development, etc.) must be taken into consideration.

Support for innovation should be one of the priorities for public policy, as innovation is a key factor in improving the competitiveness of the economy today. The experience of economically successful and high-tech companies underlines the feasibility of forming an innovative ecosystem that leads to achieving of the technological breakthroughs and energy security. At the same time, the development of innovative ecosystems helps to solve the problem of improving the life quality of the population, which is a consequence of the positive influence of a whole complex of physical, emotional and social factors. The creation of innovative infrastructure in the region plays an important role in this process. Formation of innovative ecosystems promote the increase of governability, facilitates the process of development and implementation by organizations of advanced innovative technologies, promotes their competitiveness, creates conditions for harmonized development in the conditions of active introduction of innovative technologies in everyday life of society. To ensure economically and environmentally sustainable growth in the long term, a fundamental change in our energy ecosystem is needed. We believe that information technology can play a crucial role in making such changes, significantly improving the efficiency of the economy and accelerating the innovation implementation required to create, zero-carbon renewable energy of the next generation. Creating a clean energy ecosystem requires the leveraging of the most powerful supercomputers in the world and widely available technologies.

SUMMARY

The article analyses the prerequisites for ensuring energy security in the ecosystem of the Ukrainian innovative entrepreneurship. The necessity of applying the comprehensive approaches to the management of the companies operating in the conditions of innovative ecosystems is

proved. It is noted that, despite the significant contribution made by scientists to the development of the theoretical provisions and practical recommendations in the field of study, the methodology for estimating the level of development of the innovative ecosystems is absent, resulting in difficulties in a thorough analysis of the regions where they are available, which in its turn makes the necessity for the development of the proposals for the introduction of the innovative ecosystems in energy particularly relevant.

The essence and characteristics of the innovative ecosystem are investigated in the article, which enabled to admit that the basis for functioning of the innovative ecosystem is not the energy moving, but the movement of capital and other economic resources, the mutual relations between economic entities intended to further technological development. It is proved that the development of a model of the innovative ecosystem in the energy industry will enable to ensure the energy independence of the country. The research conducted made it possible to indicate that the conditions created in the innovative ecosystems contribute to technological breakthrough and the increase of energy security. Meanwhile, the development of the innovative ecosystems facilitates solving the task regarding the improving the life quality of the population. It is a consequence of the positive effect of a whole set of physical, emotional and social factors. The creation of innovative infrastructure in the region plays a significant role in this process. Formation of the innovative ecosystems contributes to the increase in driveability, facilitates the process of development and implementation of the advanced innovative technologies by organizations, promotes raise in their competitiveness, creates conditions for harmonized development in the conditions of active introduction of the innovative technologies in everyday life of society.

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Chapter 7
CORPORATE REPUTATION MANAGEMENT: THEORY AND APPLIED RATING APPROACH

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INTRODUCTION

The problem of research of reputation management systems (RMS) of enterprises is raised in scientific works not very frequently, being mainly a field of interest for practicing PR specialists and outsourcing consultants. In addition to the above, the following trends are obvious:

– First, the accents of scientists are shifted towards the research not of reputation management, but of the corporate reputation, towards fixing the results, but not towards determining the features (advantages and disadvantages) of the very processes of reputation building, i.e. reputation management is not considered as a process, namely, as a strategic business process of the Corporate Reputation Management. In this context, the methodological issue of the expediency of institutionalizing certain functions of reputation management in the organizational structure of an enterprise and the sufficiency (or, on the contrary, insufficiency) of a certain level of institutionalization for the fulfillment of the RMS tasks is not raised either.

– Second, a significant amount of research is devoted to the study of individual areas, i.e. tools of the reputation management system, namely PR, whereas it is necessary to take into account all the instrumental areas of RMS (PR, GR, IR, internal PR, etc.) that are parts of one system and synergistically affect the corporate reputation.

– Third, the priority of a short-term assessment is traced, a shift in the interest of scientists and practitioners towards measuring the results of specific activities (e.g. the number of publications in the mass media of necessary tonality), while further changing the attitude of stakeholders, changing their perception and shaping the target corporate reputation is not tracked in the long-term strategic perspective.

Accordingly, this research is aimed at methodological solving of these problems.

From the standpoint of the author of this research, the result of successful reputation management is the sustainable corporate

development in the long-term (strategic) perspective. Thus, this author's position is the development of the ideas of institutional and neo-institutional directions in economic theory. The stakeholder concept and its author's interpretation in RMS imply the need to achieve a balance of strategic objectives (sustainability of the business system as a whole) and operational objectives (financial goals of the performance of the enterprise and its stakeholders). The disclosure of the mechanisms of influence of the RMS areas and tools on business development requires in-depth attention and reasoning.

7.1. Theoretical aspects of research methodology of corporate reputation management systems

The task of paragraph 1 is to determine the basic theoretical aspects of the methodology for the research of corporate RMS, including: research principles, research methods, research tools, models and methods for the research of RMS and the conditions for their priority use.

Let us start with the principles of the RMS research. The basis for understanding the mechanisms of influence of reputation management on business are the Barcelona Principles[1], the seven methodological guidelines for research in the field of media measurement and communication evaluation proposed by the Association for Measurement and Evaluation of Communication (AMEC) in 2010 and refined in 2015. It is recommended for all professionals working in the field of communication analysis, media measurement and PR effectiveness evaluation to consider them. This is a kind of gold standard of the industry, which was crystallized during the discussions of leading international PR associations and analytical experts. The Barcelona Principles are seven laconic guidelines and their detailed explanations, in which for each guideline several criteria for the objectivity of research, examples of metrics and professional guidelines for experts are proposed. The Barcelona Principles are as follows: 1) Goal setting and measurement are fundamental to communication and public relations. 2) Measuring communication outcomes is recommended versus only measuring outputs. 3) The effect on organizational performance can and should be measured where possible. 4) Measurement and evaluation require both qualitative and quantitative methods. 5) AVEs (advertising value equivalent) are not

[1] Blaze. (2019, November 6). Barcelona Declaration of Measurement Principles – AMEC: International Association for the Measurement and Evaluation of Communication. Retrieved from https://amecorg.com/2012/06/barcelona-declaration-of-measurement-principles/.

the value of communication. 6) Social media can and should be measured consistently with other media channels. 7) Measurement and evaluation should be transparent, consistent and valid.

In the context of the European integration priorities of Ukraine, the necessity of bringing the theory and practice of researching the reputation management of domestic enterprises into line with the Barcelona Principles as modern standards of objectivity of research, professional guidelines for reputation managers is substantiated. At the same time, we emphasize that PR tools play an extremely important role in shaping the corporate reputation, but, at the same time, the reputation management process is not identical to public relations, and the principles of the RMS research, respectively, are broader than the principles of PR evaluation.

Attachment of the reputation of an enterprise to its strategic assets, the need for integration of reputation management into the strategic business management system and institutionalization of the reputation management function in the strategic apex of the organizational management system (OMS), proved by the author, determine whether the Balanced Score Card (BSC) method can be used for the RMS research. The main elements of the BSC are as follows:

– First, perspectives are the components with which the strategy is decomposed in order to implement it: 1) Finance (obtaining a steadily growing income – as shareholders of the company see us). 2) Clients (formation of knowledge and preferences of each client – as clients see us). 3) Processes (internal corporate processes – what stands us out among the competitors). 4) Personnel (training and development) and innovation (how we create and increase value for our clients).

– Second, objectives determine in which directions the strategy will be implemented.

– Third, measures are metrics of achievement, which should reflect progress towards a strategic goal. Indicators imply certain actions necessary to achieve the goal, and indicate how the strategy will be implemented at the operational level.

– Fourth, targets are quantitative expressions of the level to which a particular indicator should correspond.

– Fifth, cause and effect linkages should link the strategic goals of the company in a single chain in such a way that the achievement of one of them determines the progress in achieving the other (if…, then…).

– Sixth, strategic initiatives are projects or programs that contribute to the achievement of strategic goals.

The standpoint of the author regarding the consideration of reputation management in the context of the process approach (based on the use of the system of interrelated business processes for management of the activities and resources of the reputation management) suggests the rationale for applying the methodology of this approach to the research of corporate RMS. The main point is that the business process is assessed according to the logic of transforming the "inputs" into "outputs": according to the indicators of the business process flow, indicators of the outputs (products) of the business process, indicators of customer (client) satisfaction. At the same time, the owner of the business process, the official who possesses the resources (personnel, infrastructure, software and hardware, information about the business process, etc.), controls the business process and is responsible for its results and efficiency. It is recommended to use the following standard in the RMS for describing, regulating and auditing the business process: 1) Method for describing the business process. 2) Method for regulating the business process. 3) Audit of the business process. 4) Information about the business process. 5) Regulations for the business process. 6) Report on the state of the business process (including recommendations for improving it).

Considering the above, the methods and tools of the RMS research are quite diverse and cover the areas of business process analysis, financial analysis of corporate development, statistical study of the industry/national economy, analysis of market, competition and competitiveness as well as field social research and methods of live monitoring for the development of enterprises with a particular RMS model.

Since the most widely sought-after tool (instrumental area) of RMS is PR, then, accordingly, a large number of common tools relate specifically to PR research. We emphasize that it is important to understand that the use of PR research tools is crucial, but it is not the only, and not often essential for determining the area of RMS research.

According to the International Association of Business Communicators (IABC), the method of informal observation is most often used, the next is press clipping, and the last is scientific assessment[2]. At the same time, according to a study by the IPR (UK

[2] International Association of Business Communicators: IABC. (2019, October 22). Retrieved November 21, 2019, from https://www.iabc.com/.

Institute of Public Relations) and PRCA (PR Consultants Association), with a budget of a PR project of more than 500 thousand dollars, 3–5% of the total cost of the project should be allocated to conducting PR research, with a budget of 100–500 thousand dollars, 5–7% respectively, with a budget of 50–100 thousand dollars, 7–10% and for PR projects worth up to 50 thousand dollars, 10–12% of total cost should be allocated to research[3]. However, unfortunately, in Ukraine, the decision to conduct research is often made voluntarily, or research is generally neglected.

Let us dwell on the problems of PR research in the context of RMS. It is necessary to use the indicators of PR activity comprehensively: PR quantity and PR quality, which together testify to its effectiveness. In addition, it is necessary to evaluate the effectiveness at two levels, as determined by the Watson model[4], the totals (tactical level) and the results (strategic level).

At the level of outcomes in the course of PR research, there is often an emphasis on quantitative analysis of PR activity in the media: a survey of readers and audiences, content analysis of the media, monitoring of the media (press clipping), the level of inquiries or feedback and coverage audience, analysis of statistics regarding media circulation/distribution. Quantitative indicators are also the following: the rating of goodwill (coefficient of "positive/negative mentions"); the number of self-initiated requests from journalists; appearance at a PR event. At the same time, it is extremely important not to forget about the qualitative indicators of PR and to investigate them: the distinguishability of PR materials (presence of noticeable illustrations, bright headlines, place on a page or web page, in a TV or radio news block, etc.); compliance of advertorials with the editorial policy of publications; compliance of the content of published PR materials with approved key messages. However, the level of outcomes is characterized by changes in the level of brand awareness (corporate, product, personal), loyalty of target categories of stakeholders and in the behavior of stakeholders.

For the analysis of the PR effectiveness, the following common methods of evaluation are used in business practice: 1) Press clipping,

[3] Watson, T., & Noble, P. (2007). Evaluating public relations: a best practice guide to public relations planning, research and evaluation. London: Kogan Page.

[4] Watson, T., & Noble, P. (2007). Evaluating public relations: a best practice guide to public relations planning, research and evaluation. London: Kogan Page.

analysis of mentioning. 2) Content analysis. 3) Attendance and quoting of corporate Internet resources. 4) Calculation of the AVE indicator (AVE = Advertising Value Equivalency / Value of a PR Project). The prevalence of the latter is indicative of a certain inertia of management: note that this indicator is inherently contrary to the Barcelona Principles, but due to the comprehensibility of the calculation for top managers who have not studied the methodology of reputation management, and the inertia of the education system continues to be used because of its convenience to justify the budget parameters of PR project. Audience coverage is measured logically: the number of articles of the publication, the circulation of the publication, the number of readers per copy of the publication. In this case, distinguishability (article location, title evaluation, use of illustrations, etc.), tonality (e.g. on a scale from one to five), audience coverage (weighted result of each article is multiplied by the audience coverage indicator, i.e. the number of readers of each copy) may be taken into account. The net effect may be positive or negative, depending on the impact of the publication on the target audience. In practice, you can also determine the ratio of the desirable and negative articles.

We consider it necessary to add that in our opinion, when assessing the effectiveness of reputation management using PR tools in the media, besides the characteristics of enterprise mentioning, the following should be considered:

– Vectorness of the used PR tools, i.e. the targeting of messages to a specific audience. Any economic model is rooted in the society value system. It is clear that the value characteristics of the target audiences of an enterprise (its stakeholders) can differ significantly from each other and the same message can be perceived differently. However, an enterprise seeking to minimize reputational risks needs to achieve a positive attitude on the part of all significant target audiences. Considering this, a necessary criterion for the success of PR activities is the correspondence between the value characteristics of a message and a specific group of stakeholders, as well as the correct choice and subsequent control of information distribution channels.

– Possible synergistic effect of multi-vector information about a company, the effect of which is to reduce the PR costs in a relative manner and simultaneously increase the effectiveness of the PR service.

– The degree of message originality, as far as they stand out against the background of information produced by the PR services of other

companies about their enterprises. Of course, the indicator of originality/creativity of messages cannot be quantified, but it can be assessed by conducting appropriate surveys, primarily among the target audience of consumers.

– Cost characteristics of PR tools used to form corporate reputation. It is possible to draw conclusions about the effectiveness of reputation management only after a cost analysis, the duration of implementation of specific PR events, economic outcomes achieved by an enterprise.

The procedures for conducting PR research are not standardized. Various author's views can be found in the literature regarding the range of parameters studied, criteria indicators and appropriate depth of evaluation. In Table 1, the author systematized the characteristics of the main models of PR evaluation as a component of the research of corporate RMS.

The relevance of searching for representative indicators of public relations effectiveness is also caused by the need to quantify the results of the company's PR service. Among PR practitioners, it is widely believed that a key criterion for the effectiveness of the company's PR department is the prevalence of its positive references. For example, information about production modernization, restructuring (if it occurs without scandals and conflicts with partners, without violating the rights of staff and non-key beneficiaries), attracted investments, etc. is considered positive. Negative information signals are associated with various manifestations of a crisis situation in an enterprise or overly diligent lobbying of their business interests. In our opinion, this approach to a certain extent one-sidedly characterizes the work of a modern PR department. First, the media space configuration has changed (a consequence of media convergence and emergence of social networks, where each individual account and blog can be a very influential micro media). Second, the importance of event PR, strategic actions, informal communication and monitoring for accumulating useful analytics is underestimated.

A separate category of evaluation practices are contests and ratings for determining effective, in the opinion of media representatives, corporate PR units and the most successful corporate PR experts, but this problem goes beyond the limits of our research. Moreover, in the opinion of the author of this research, such projects are extremely subjective and do not reflect the actual state of things due to the methodological defectiveness and bias of the individuals involved in

evaluation. Media coverage and quality of media relations are significant, but not KPI of corporate PR services.

The PR methodology in terms of the most developed research methods and models suitable for use in the RMS is outlined by the author above and is further detailed and used to substantiate the methodology of corporate reputation management in the next paragraph of this research.

Table 1

Characteristics of the main models of PR evaluation as a component of the research of corporate RMS

Model	Characteristics
1. Cutlip, Center and Broom Research Model	Levels and stages of PR program evaluation: The highest level is impact: social and cultural change; number who repeat behavior; number who behave as desired; number who change attitudes; number who change opinions; number who learn message content. The medium level is implementation: number who attend to messages and activities; number who receive messages and activities; number messages placed and activities implemented; number of messages sent to media and activities designed. The low level is preparation: quality of messages and activity presentation; appropriateness of message and activity content; adequacy of background information base for designing program.
2. McNamara Research Model	Bottom-up assessment through step-by step research: adequacy of background information, ability to understand, research; media relevance; relevance of message content; quality of message presentation (for example, the design of brochure or press release); number of sent messages; number of messages sent to media; number of target messages; number who receive messages; number who consider messages; number who memorize the message content (for example, increased knowledge, awareness, understanding); number who change attitudes; number who behave as desired; goals achieved or problem solving.

Table 1. (Continued)

3. Simplified Lindemann Macromodel	The model has a pyramid shape; Moving upward from the "foundation", we examine: first, introduction of data (for example, storyline and text of advertising message for a newsletter, information for press releases, list of speakers and event program, design and content of a website); second, totals (for example, newsletter, print advertising, event held, website advertising); third, outcomes: (C) changes in awareness, (B) changes in attitude, (A) changes in behavior. Lindemann Yardstick: Final Measurement (Level 1): target audience, impression, media placement; Intermediate Measurement (Level 2): memorization, understanding, knowledge, perception; Basic Measurement (Level 3): behavior measurement, attitude measurement, opinion measurement.
4. Watson's Evaluation Model	It is recommended for evaluating the PR unit activity. It provides for five stages of evaluation: 1) Result Stage (behavior and action); 2) Effect Stage (attitude and motivation); 3) Impact Stage (awareness and information); 4) Output Stage (messages and targets); 5) Input Stage (planning and preparation). Tactical feedback at every stage. Management feedback between the first and last stages. Evaluation of PR activity according to Watson: output level (changes in media presence); result level (changes in awareness, perception and behavior of target audience). Quantitative criteria for evaluating the results: number of published PR materials; structure of published PR materials in terms of media types; AVE taking into account the tonality of PR materials.
5. Attitude/ Perception Chart (Relationship Development)	It describes the change in attitude towards the object of promotion, depending on the level of activity. 1. The negative attitude is changed to susceptible and then to publicly positive only under the condition of constantly and often implemented proactive contact. 2. Proactive contact: from occasional to fairly regular, then, constant and frequent. Attitude to the object or perception of the object of PR promotion: negative, receptive, publicly positive.

Table 1. (Ending)

6. Spatial Model for Evaluating PR Activity in Media	Evaluation by four vectors: 1) Number (number of published PR materials, their volume; mentioning, number of key messages); 2) Time (historical comparison; comparison with competitors; comparison of goals; benchmarking); 3) Central parameters (media source, media sector, all media); 4) Quality (circulation; audience; attribution; perception (+, 0, -); impact; message strength). 256 analysis options.

Source: developed by the author based on [5, 6, 7, 8, 9, 10, 11, 12].

7.2. Methodological bases of the national quality rating of corporate reputation management (reputation of enterprises)

In the context of the European integration priorities of Ukraine, domestic enterprises need to realize the importance of reputation assets as a factor in the global competitiveness not only of their business, but of the whole of our country. In world practice, an effective tool that stimulates a business to systemic management of its own reputation is public rating built on the basis of periodic analysis of the reputation management quality of various enterprises (leaders in their industries) by independent experts.

In 2015, to solve these reputation tasks facing the Ukrainian business, the Reputation ACTIVists (http://repactiv.com.ua) national rating of the corporate reputation management quality was introduced and held on an annual basis. The rating is aimed at identifying effective management models and further highlighting the unique experience of the winning company in order to popularize high-quality reputation management. The long-term goal of the rating is to form the reference

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systems of reputation management in domestic enterprises, certain national standards for high-quality reputation management.

One of the most well-known foreign reputation assessment tools, as already noted, is the Global RepTrak® rating[13] and its modifications developed by the global consulting company Reputation Institute. The world-class authority on reputation management is Charles Fombrun[14], founder and chairman of the Reputation Institute. Leonard J. Ponzi and William Newberry[15], Rita Linjuan Men[16], Thomas Muller[17], etc. also pay great attention to reputation assessment issues. Major consulting companies conduct research on the reputation and factors of its building in different countries: Accenture[18], British Research Company Millward Brown (part of the WPP communication group)[19], the world leader in public relations, Edelman[20], etc. Note that the analysis of the methodology of the aforementioned foreign studies is a necessary but not sufficient condition for substantiating methodological basis of national reputation rating.

In this paragraph, the general purpose of the research is to highlight the results of the author's research on the substantiation of the methodological basis of the National Quality Rating of Corporate Reputation Management in Ukraine.

Reputation management, like any managerial process, implies a focus on achieving goals. The *a priori* strategic goal of such management is to form and maintain the trust of key stakeholders of an enterprise. However, the tasks of the functional level that are subordinate to this goal may significantly vary depending on the development conditions of a particular company, the situation of its markets, and the socio-political context of its home base country. Thus, assessing the

[13] Fombrun, C. J., Ponzi, L. J., & Newburry, W. (2015). Stakeholder Tracking and Analysis: The RepTrak® System for Measuring Corporate Reputation. Corporate Reputation Review, 18(1), 3–24. doi: 10.1057/crr.2014.21

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company's efforts to build its reputation, it is necessary to distinguish two vectors of such an assessment: functional (assessment of management processes) and resultant (direct assessment of established reputation – trust).

At the functional level, taking into account the existing business development trends, the goals of corporate reputation management can be formulated as follows:

– Maintaining the stability of corporate reputation by systematically managing it on the basis of the compliance of the shareholders' ideas about a company with the real economic characteristics of its activities (quality/price of the company's products, introduction of new technologies, business development dynamics, etc.). Let us call this goal "reputational stability".

– Raising the level of awareness of stakeholder audience about the company's activities based on the principles of its openness for communication with journalists, the high quality of information disseminated by/about a company in the media, as well as the promptness of neutralizing information risks by a company. Let us call this goal "media activity".

– Enhancing the distinctiveness of a company from its competitors while increasing its level of awareness by stakeholders based on the development of PR innovations, the company's new media activities, and the effective implementation of innovative PR practices. This goal will be integrated as an innovative approach to reputation management.

– Strengthening the social significance of a company through the introduction of transparent procedures and practices of corporate social responsibility (CSR), the initiation of socially significant projects and the introduction of socially responsible organization of internal business processes. That is, the formation and enhancement of "CSR image capital".

– Avoiding a crisis by forming a balanced crisis response strategy, integrated use of anti-crisis PR tools by a company in order to disengage from projects/events that are doubtful from a reputational point of view. That is, the anti-crisis function of reputation management.

To implement the idea of assessing the relevant reputation management processes, the following functional nominations have been introduced: Reputational Stability, Media Activity, Innovative Approach, CSR Image Capital, and Anti-Crisis Sustainability.

When evaluating reputation management, it is necessary to remember that it consists of certain obligatory elements, i.e. it is a

system. The author's vision of corporate reputation management system is described in more detail in publications[21], [22]. Let us dwell on the main point. The three-dimensional nature of the reputation management system is fundamental: first, the presence of reputation management foundation (PR department, approved reputation building strategy, authority to form corporate information policy for PR managers, etc.); second, the arsenal of reputation building tools used, the breadth of such an arsenal, the regularity and skills of its use (PR, GR, IR, CSR and other reputational activities); third, supporting feedback, monitoring the attitude to a company and taking into account the views of stakeholder audience to improve the corporate reputation management processes.

Note that at the level of each of the five functional nominations, all three dimensions of the reputation management system (Tables 3.5–3.9) are assessed: "foundation" – institutionalized functions (I), "reputational activities" (A) and stakeholder feedback mechanisms (C): the first criterion is I (presence, that is, institutionalization, a key for the nomination function of reputation management); the second and third criteria are A (reputation management tools, the most representative for this nomination); the fourth and fifth criteria are C (communication is the reaction of stakeholders).

Evaluation within the framework of the proposed five nominations is carried out by questioning of experts, which is traditional for researching the quality of reputation management in world practice. According to the proposed method, each criterion is decomposed in the format of a set of estimated indicators and features on a scale from 0 to 10. All indicators have equal weight (see Tables 2–6).

In order to avoid conflicts of interest and ensure objectivity of the rating, experts exclusively external to the nominee companies are involved in the pool of experts: the most authoritative media experts of the country, independent industry experts and representatives of consulting companies, investment analysts, representatives of professional public organizations uniting relevant operators markets. The list of jury members is available to the public (http://repactiv.com.ua/ru/experts). If, however, there is a conflict of interest in relation to any of the nominee companies, the expert shall withdraw its name. In the course of assessing

[21] Derevyanko, O. (2018). Theoretical framework for corporate reputation management within the context of the modern paradigm of management. Strategy of Economic Development of Ukraine, 43, 21–35. doi: 10.33111/sedu.2018.43.021.035

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a nominee company, an expert may consider it incorrect to assess any indicator (due to the lack of judgment on this issue) and leave the cell blank. Note that experts give an assessment cumulatively – not for a specific period, but as the cumulative result of reputational achievements or failures of a company obtained during its entire history at a given time.

Given the hypothesis that high-quality reputation management should leave a noticeable mark in the information space, companies with the highest media coverage rate are selected to participate in the rating. Using the specialized search engines covering thousands of local and foreign sources, statistics of mentioning of each company is investigated (to determine indicators of mentioning in the media in the context of each of the markets). Based on the results, media leaders are determined by each market, and the number of nominee companies may vary depending on the degree of economic concentration in a particular market and the presence/absence of a statistically significant gap in media mentioning indicators. The opinion of industry associations, partners and experts is taken into account during the selection of nominees.

Then a survey is held (assessment of nominee companies by experts on the website http://repactiv.com.ua), the results of which form the rating of odds-on favorites, i.e., mathematically, after determining the amount of expert points of each company in each nomination, they are sorted in descending order within each individual nomination. This mathematical procedure is automated and carried out on the website http://repactiv.com.ua. The result is a rating of winners (companies with different industry affiliations) in each of the nominations: Reputational Stability, Media Activity, Innovative Approach, CSR Image Capital, Anti-Crisis of the Year.

The leadership of an enterprise in a certain nomination of the National Quality Rating of Corporate Reputation Management, highly appreciated by experts in building reputation, indicates the prerequisites for a serious generalizing result – the established reputation of an enterprise. However, in practice, high results not often arise out of tremendous efforts: some enterprises win reputational leadership without exerting great effort, inventing cost-effective and at the same time effective models of reputation management. One of the objectives of the National Quality Rating of Corporate Reputation Management is to identify such effective models and further highlight the unique experience of the winning company in order to popularize high-quality reputation management capable of raising business in Ukraine to high international standards.

Table 2

Innovative approach nomination

Rating indicator	**Reputation Management Evaluation Criteria (expert rating on a scale of 0–10)**				
	creativity of PR team (I)	number of PR innovations implemented in practice (A)	new-media activity of an enterprise (A)	reaction of target audience to the use of PR innovations (C)	effectiveness of the introduction of innovative PR practices (C)
Expanded indicator characteristic	The criterion assesses the degree of ingenuity, originality of PR team in developing their own know-how in the areas of marketing, advertising and PR	Number of innovative PR projects implemented in practice and noticeable to experts is assessed	The criterion assesses the activity of an enterprise in social networks (presence in the main networks + popularity of enterprise's pages), professionalism in the use of new-media resources	It is assessed whether the desired response of the target audience was obtained (in response to the use of PR innovation) and how quickly	The criterion shows the relationship between the result of PR innovation (i.e. the reaction of the target audience) and the expended resources of an enterprise, as well as the efforts of PR team
Expert question wording	Assess the level of creativity of PR team of a company (or its individual professionals)	How many interesting, innovative PR or marketing projects of a company do you know?	Is the presence of an enterprise noticeable in social networks and other new-media communication options?	Would you say that the target audience that the well-known PR innovations of an enterprise are designed for are responding positively to them?	Subjective expert thought: do PR innovations used by an enterprise have a positive effect?

*Hereinafter in Tables 2–6, rating algorithm is an expert questionary. Each criterion is decomposed in the format of a set of estimated indicators and features on a scale of 0–10 (1-point scale spacing). In the event of a conflict of interest declared by a jury member, it is eliminated as a subject of evaluation, and the denominator of dividing the total score is reduced by one. All indicators have equal weight.

Table 3

Media activity nomination

Rating indicator	**Reputation Management Evaluation Criteria (expert rating on a scale of 0–10)**				
	openness of an enterprise for communication with journalists (I)	quality of information disseminated by/about an enterprise in the media (A)	promptness of neutralizing information risks by a company (A)	recognition of company speakers in information space (C)	effectiveness of media activity (C)
Expanded indicator characteristic	Openness for communication with the media (activity of the insourced or outsourced press office of a company) is assessed	The criterion assesses whether the information disseminated in the media is reliable, objective, new (relevant), etc. The information content of press releases, official information of an enterprise in social networks is assessed, the compliance of such messages with the expectations of the stakeholders	The criterion assesses the skills of a PR team for monitoring information about a company in the media, the speed of communication with the media, the rate of defeat of fake attacks and the lack of reputational losses	The citedness/repeatability of the company's speakers, their image in the information space are assessed (speakers are not only authorized speakers, but also any representatives of a company who are associated with it or its brands)	The criterion shows the ratio of the result of media activity (i.e. the reaction of target audience) and the resources of an enterprise spent, as well as the efforts of PR team
Expert question wording	Assess the readiness of the company's PR service for communication (personal readiness is assessed by media experts) in the format of messages regularly addressed to stakeholders (non-media experts)	Assess the information content of press releases, official information of an enterprise in social networks	Assess the efficiency of neutralizing negative information in the media by a company. If an expert is not aware of the risk, the assessment should not be carried out (the table cell remains empty)	Assess the recognition and image of the company's speakers	Subjective expert opinion: does the company's efforts in the media have a positive effect?

Table 4

Reputational stability nomination

Rating indicator	**Reputation Management Evaluation Criteria (expert rating on a scale of 0–10)**				
	institutionalization of reputation management and authority of PR team (I)	system character of PR work (A)	fundamental prerequisites for the corporate reputation sustainability (A)	consistently high support of corporate activities by stakeholders (C)	effectiveness of the reputation management system (C)
Expanded indicator characteristic	The level of institutionalization of reputation management is assessed by the presence of a professional PR team of a company, participation of PR specialists in the strategic management of a company, or the fact of long-term cooperation with a highly professional outsourcing agency	This criterion assesses the regularity of the company's reputation building/maintenance, as well as the magnitude of the information events created by the company and the variety of PR tools used	The criterion assesses the presence of objectively existing prerequisites for the positive reputation sustainability, such as the loyalty of power owners, the quality/price of the company's products, the introduction of new technologies, and intellectual property	The criterion assesses the level of awareness of the target audience about the corporate activities, customer loyalty (growth/preservation of product sales)	The absence of reputational risks during the period under review, an increase in reputational assets despite the crisis, is assessed
Expert question wording	Does the company have a functioning PR service? (professional PR team)	Does the company consistently carry out PR activities that are obvious to experts?	Is there an objective basis for the reputation sustainability (product quality, structured business, qualified employees, unique product offerings, innovative technologies (production and management), intellectual property, etc.)?	Is there consistently high support of the company? (consistently high support means a generally positive perception of a company by its target audience, which does not have significant drops over a long period)	Subjective expert opinion on whether the corporate reputation management efforts have a positive effect

Table 5

CSR image capital nomination

Rating indicator	**Reputation Management Evaluation Criteria (expert rating on a scale of 0–10)**				
	transparency of procedures and practices of CSR (I)	socially significant social projects of an enterprise (A)	socially responsible organization of internal business processes of an enterprise (A)	stakeholder response to CSR activity of an enterprise (C)	effectiveness of CSR practices of an enterprise (C)
Expanded indicator characteristic	The criterion assesses whether the enterprise has approved transparent CSR procedures and practices, as well as CSR reporting	The professionalism of reputation management is assessed through the implementation of social projects that have a positive public response	The criterion assesses the socially responsible behavior of an enterprise, laid down at the level of the main business processes: the level of staff remuneration, investments in personnel (training, treatment, etc.), the level of product quality and responsible interaction of an enterprise with the consumer, etc.	It is assessed whether the desired response of the target audience was received (positive perception of the enterprise's CSR programs) and how quickly	The criterion shows the ratio of the result (increase in the CSR image capital) and the expended resources of an enterprise, as well as the efforts of PR team
Expert question wording	Is the enterprise sufficiently informed by the public about the ongoing projects of corporate social responsibility (CSR)?	Are the projects that the company is positioning as CSR projects really useful for society and/or target categories of stakeholders?	Is the enterprise socially responsible for its employees, consumers, business partners?	Are the implemented CSR projects perceived positively by the target stakeholder categories?	Subjective expert opinion: do you think that CSR projects implemented by the enterprise provide it with an increase in reputation capital?

Table 6

Anti-crisis sustainability nomination

Rating indicator	**Reputation Management Evaluation Criteria (expert rating on a scale of 0–10)**				
	reputational response strategy (AND)	anti-crisis PR tools of an enterprise (A)	efficiency of anti-crisis PR activities (A)	antifragility (C)	effectiveness of anti-crisis reputation management (C)
Expanded indicator characteristic	The presence of a well-thought strategy for responding to reputational crises is assessed (strategic orderliness and subordination of the single-purpose anti-crisis measures implemented by an enterprise may serve as an indicator)	The criterion allows assessing the correctness of the choice of tools (PR, GR, IR, CSR, etc.) involved by an enterprise during reputational crisis	The criterion assesses the speed of the company's reaction to reputational threats	Both the fact of the exit of an enterprise from the situation that threatens its reputation (at the time of assessment) and the professionalism of PR specialists (PR art, elegance) are assessed	The criterion shows the ratio of the result of the anti-crisis PR (i.e. the reaction of the target audience — reputation recovery) and the expended resources of an enterprise, as well as the efforts of PR team
Expert question wording	Do you think (based on information in the media space or other information available) that the company has a coherent and rapidly scalable strategy for responding to reputational crises in a particular situation? If yes, rate this strategy on a scale from 0 to 10.	Do you think that the company can use the anti-crisis PR tools? If yes, rate this skill on a scale from 0 to 10. (If you have not had the opportunity to verify this, leave the cell blank)	Would you say that the company has quickly recovered its reputational losses after the crisis? If yes, rate the efficiency of anti-crisis activity on a scale from 0 to 10.	Do you think that the crisis has strengthened the reputation of the company? If yes, rate this on a scale from 0 to 10.	Do you think that the company has had a positive financial effect due to the use of anti-crisis PR tools? If yes, rate this on a scale from 0 to 10. (If you have not had the opportunity to verify this, leave the cell blank)

Winners of the National Quality Rating of Corporate Reputation Management are awarded at the annual International PR Festival (http://pr-festival.com.ua) and it is positioned as a way to mark the achievements of enterprises (both domestic and Ukrainian business units of international corporations) in reputation management.

Starting from 2015, the annual rating reveals winners in the context of specific sectors of the Ukrainian economy (winners of industry nominations) and intersectoral leaders in one or another area of work with reputation assets of an enterprise (winners of functional nominations).

During the expert voting for three years of research, the most important regularity was revealed: systematic work with corporate reputation allows not only increasing the reputational capital, but also preserving it for a long enough period. For three years (2015–2017), the rating leaders have been the same in such nominations as FMCG, Non-Food (Procter&Gamble), Oil Refining and Retail (OKKO) and Electricity Generation (DTEK). Despite the fact that all the listed companies operate in industries that significantly differ from each other in information activity, competition format and level of consolidation, they have quite a few common characteristics. This, above all, is about the integrity of reputation management and understanding the importance of this area of work.

There were quite a few companies that won the leadership for the second year in a row among the leaders in their industry nomination in April 2017: AXA Insurance (Insurance Companies), Microsoft (IT. Soft), MTI (Fashion), Comfy (Electronics), Epicenter (Homeware). In addition, the enterprises that received recognition of the expert community earlier in 2015 became the leaders of the rating: Alfa-Bank Ukraine, Kyivstar, Kievgorstroy and Neftegazdobycha. Successful models of reputation management of these companies are an example for other participants of the Ukrainian market and are widely popularized by the organizers of the National Quality Rating of Corporate Reputation Management within the framework of the annual International PR Festival.

Functional nomination of the rating allows identifying inter-industry leaders, and in 2017, Carlsberg Ukraine won the Reputational Stability nomination. The fact that the company retains leadership in this category for the second year in a row confirms the stability of its reputation management model. In 2015, when the rating was held for the

first time, Carlsberg Ukraine became the leader in the Innovative Approach nomination.

Leadership in the Innovative Approach nomination is the prerogative of companies actively competing for the recognition of stakeholders and, above all, for the recognition of consumers. In 2017, as the year before, Ukrainian restaurateurs were recognized as the best innovators. This time, GastroFamily by Dima Borisov was the first in the rating. The construction sector is actively struggling for the buyer, and Kievgorstroy has become the leader in the Media Activity nomination for the third year in a row.

The very specificity of the fight against reputational crises, which are always unique, determines that year by year the leaders in the Anti-Crisis Sustainability category are not the same. For a similar reason, you can see new leaders in the CSR Image Capital nomination every year. The dynamics of the National Quality Rating of Corporate Reputation Management testifies that introducing the reputation management system in domestic enterprises is underway, although not at a fast pace.

CONCLUSIONS

The problem of research of reputation management systems (RMS) of enterprises is raised in scientific works fragmentarily: first, the accents of scientists are shifted towards the research not of reputation management, but of the corporate reputation, towards fixing the results, but not towards determining the features (advantages and disadvantages) of the very processes of reputation building, i.e. reputation management is not considered as a process, namely, as a strategic business process of the Corporate Reputation Management; second, a significant amount of research is devoted to the study of individual areas, i.e. tools of the reputation management system, namely PR, whereas it is necessary to take into account that all the instrumental areas of RMS (PR, GR, IR, internal PR, etc.) are parts of one system and synergistically affect the corporate reputation; third, the priority of a short-term assessment is traced, a shift in the interest of scientists and practitioners towards measuring the results of specific activities (e.g. the number of publications in the mass media of necessary tonality), while further changing the attitude of stakeholders, changing their perception and shaping the target corporate reputation is not tracked in the long-term strategic perspective.

The methodological foundations of the National Quality Rating of corporate reputation management (i.e. the reputation of enterprises and their associations) proposed by the author are highlighted. Assessing the efforts of companies to build their reputation, it is necessary to distinguish between two vectors of such an assessment: functional (assessment of management processes) and resultant (direct assessment of established reputation – trust). The following functional nominations are introduced: Reputational Stability, Media Activity, Innovative Approach, CSR Image Capital, and Anti-Crisis Sustainability.

SUMMARY

Based on the analysis of scientific publications and theories, the author of this research proposed and implemented the National Quality Rating of Corporate Reputation Management (i.e. the reputation of companies and their associations) in order to bring the level of reputation management of domestic enterprises in line with high international standards. Assessing the efforts of companies to build their reputation, it is necessary to distinguish between two vectors of such an assessment: functional (assessment of management processes) and resultant (direct assessment of established reputation – trust). At the functional level, the following functional nominations have been introduced: Reputational Stability, Media Activity, Innovative Approach, CSR Image Capital, and Anti-Crisis Sustainability. Given the hypothesis that high-quality reputation management should leave a noticeable mark in the information space, companies with the highest media coverage rate are selected to participate in the rating, and statistics on mentioning of each enterprise is examined. Evaluation within the proposed five nominations is carried out by questioning independent experts. The development of conceptual and methodological foundations of formation of reputation management of enterprises presented in this research significantly improve the quality and effectiveness of management and ensure the sustainability and predictability of corporate development.

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Chapter 8
RETAIL INNOVATIONS: THE ESSENCE OF CONCEPT AND FEATURES

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INTRODUCTION

According to the State Statistics Service of Ukraine, retail turnover in our country reached almost UAH 1 billion in 2018 while at the same time as of June 2019 retail trade turnover increased by 10.3% compared to the same period last year[1]. The statistical data only concompanys the global trend of overconsumption and, consequently, considerable growth rate is retail and some analysts argue[2], that at the moment there is no reason to believe that the dynamics will change on the downward trend in future.

There is a high level of competition, especially in the niches that sell consumer products due to the dramatically positive dynamics of retail development. Retailers resort to a variety of marketing strategies and tools to gain customer attention and increase customer loyalty. Moreover, in a competitive environment, companies are trying to reduce customer service costs while improving service quality. The priority task of retailers in the retail market is to attract as many target consumers as possible while effectively using the budget for customer service and business retention.

Thus, with the aim to attract as many customers and differ from competitors, retailers consider innovation as one of the leading tools for improving their own competitiveness and the management process of the implementation of innovation and results analysis are consequences of developing for the innovation.

Nowadays, in the economic literature on innovation, retail as a separate type of economic activity is not under sufficient attention. Retail is identified with either the general concept of “trade” or the concept of “entrepreneurship”[3]. However, retail activity has several

[1] Derzhavna sluzhba statystyky Ukrayiny. [State Statistics Service of Ukraine]. (n.d.). Retrieved November 23, 2019, from http://www.ukrstat.gov.ua/. [in Ukrainian]

[2] Rodríguez, M., Paredes, F., & Yi, G. (2016). Towards Future Customer Experience: Trends and Innovation in Retail. Foresight and STI Governance, 10(3), 18–28. doi: 10.17323/1995-459x.2016.3.18.28

[3] Vaschenko, N. (2014) Sutnist innovatsiy torgovelnogo pidpriemstva. [The essence of innovation of a trading company]. Teoretychni ta prikladni pitannya ekonomiki, 1(28), 369-381. [in Ukrainian]

significant differences from these types of activities. Firstly, this activity is intrinsically linked and depends on the ultimate consumer's preferences; secondly, the ultimate consumer uses the purchased products personally, therefore, has a high degree of criticality for the good and the brand as it is. Given that the good also has its way to the moment it hits the retailer's shelf, the important issue about innovations in the retail industry are as follows:

What innovations are most applicable to this industry and how to classify them?

What are the steps of innovation and/or impact that products have in their way?

What are some examples of innovations according to the following classification from the practice of modern retail?

The purpose of the study is to highlight the nature, types of innovations and methodological approaches to their assessment in the field of retail based on existing developments and research on innovation and innovation activity.

8.1. Essential aspects of retail innovation

Firstly, we will outline the concepts, features and types of retail as a separate area of the global market for more comprehensive consideration of the innovation of the retail sector. The concept of retail can be defined as an activity aimed at selling products directly to end consumers, who will use these products for their personal non-commercial needs regardless of the form of payment, to the retail trade, including beverages for bottling and ready-made food in restaurants, cafes, bars and other places of public catering[4]. The trading process can take place virtually anywhere e.g. on the market, inside a fixed outlet or directly outside the counter, that is, wherever the buyer is free to go and buy the products they need. This definition can be used to describe the whole process of retail organization.

Retail trade is carried out in a variety of ways, such as personal sales or sales at retail outlets (without reference to size, both in small kiosks and hypermarkets) and sales via the Internet, of course. The main difference between retail and wholesale is that the products are sold in small quantities for direct use by the ultimate consumer and such

[4] Śmigielska, Gr., & Orzeł, K. (2015). Innovations in the Retail Sector and Their Influence on the Market. Handel Wewnętrzny, 5, 338-346.

products are not intended for subsequent sale or use in manufacturing as semi-finished goods.

One of the tools for improving the competitiveness of retail enterprises is innovation, and the result of developing a particular innovation is the process of managing its implementation and analysis of results.

Innovation in the general sense is the result of a set of actions aimed at developing a new idea that has been tested in the form of a new or improved good for sale on the market or a new or improved technological/business process used in practice.

Different people can buy the same goods, their main reason for 7buying is their desire. Accordingly, in order to fulfill the desire of buyers, a trading organization shall offer them a solution in the form of goods. In the practice of developing a marketing strategy for retail businesses, much attention is paid to the concept of a unique sales proposal which reflecting the consumer strategic differences of the company's products from those of competitors in the following areas: price, quality, satisfaction from the process of purchase, service speed, assortment, making purchases without staff assistance[5], social responsibility, support for environmental initiatives, etc.

However, the scientific literature does not pay sufficient attention to innovation in the retail sector and most of the work is devoted to trade in general and not to retail in particular. Therefore, let us consider the main approaches to understanding the notion of innovation in the trade sector.

In foreign business literature innovation in trade is defined as a complex of the proposed characteristics of the products having a certain value for the buyer, thereby attesting to the social orientation of any changes occurring in the economy as a whole or at a particular enterprise[6].

Domestic sources provide examples of surveys on understanding the concept of "innovation" in trade. Survey results suggest that part of the audience defines innovation in trading activities as incremental changes while others talk about radical changes. T. Lvova and I. Semenova give examples of the following definitions: "My favorite definition of innovation is very simple. It is a change that adds value. We are trying to keep everything in the form that is familiar to us… it

[5] Śmigielska, Gr., & Orzeł, K. (2015). Innovations in the Retail Sector and Their Influence on the Market. Handel Wewnętrzny, 5, 338-346.

[6] Rodríguez, M., Paredes, F., & Yi, G. (2016). Towards Future Customer Experience: Trends and Innovation in Retail. Foresight and STI Governance, 10(3), 18–28. doi: 10.17323/1995-459x.2016.3.18.28

must be something new, but it shall also matter. You have many things that are new, but if they do not add value to the organization or the individual then I do not think it is really an innovation"[7]. "… I would say that innovation for me is what helps the customer to live their life much better than it is today"[8].

Having analyzed the scientific opinions concerning the notion of trade innovation, it should be noted that there is a lack of uniqueness and applicability to the current realities of trade practice among the existing interpretations in some cases. Here are some examples (Figure 1).

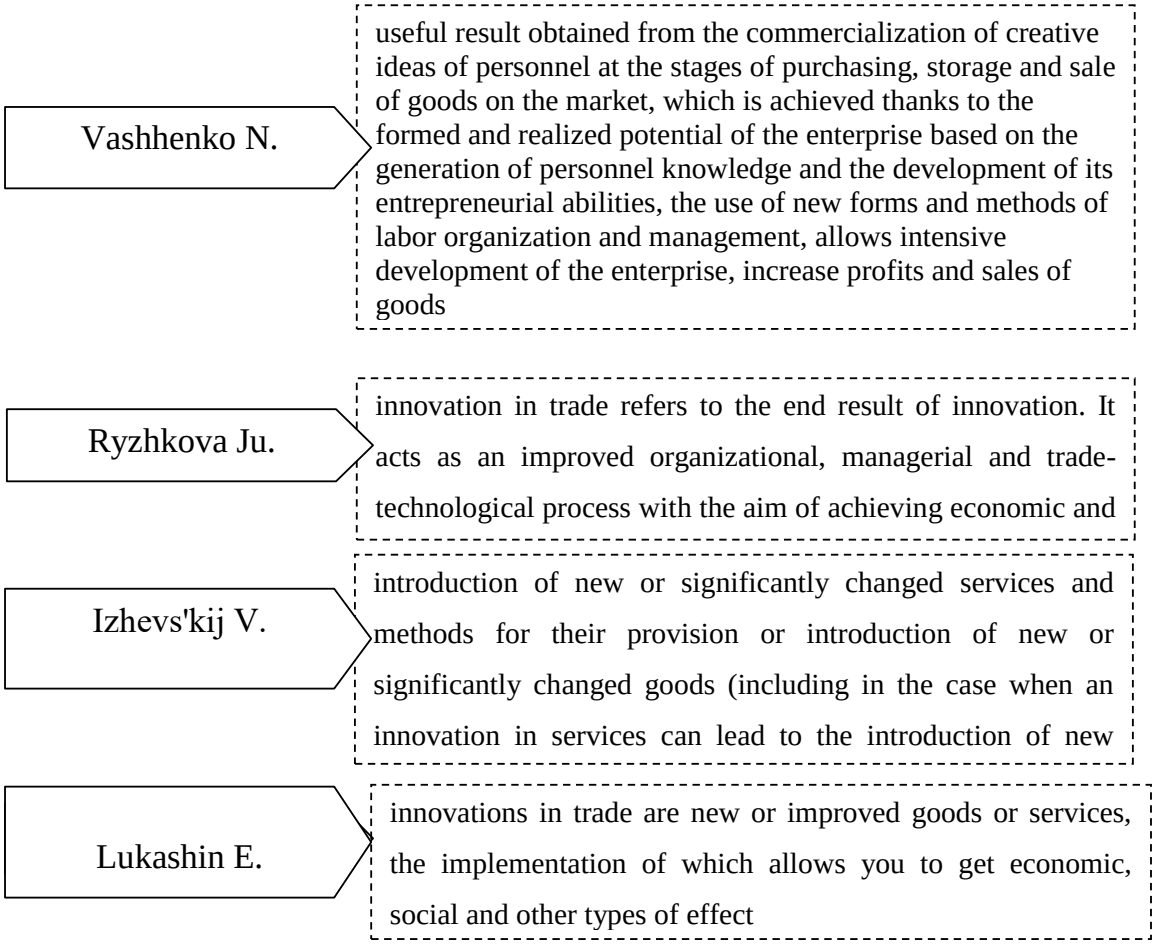

Figure 1. Scientific perspectives on the definition of "innovation in trade"

Source: author's study based on [9, 10, 11, 12]

[7] Lvova, T. N., & Semenova, I. A. (2015). Innovatsiyi v torgovomu protsesi riteylu. [Innovations in the retail trade process]. Vysnik udmurtskogo universitetu. Ekonomika ta pravo, 25, 27-32. [in Ukrainian]

[8] Lvova, T. N., & Semenova, I. A. (2015). Innovatsiyi v torgovomu protsesi riteylu. [Innovations in the retail trade process]. Vysnik udmurtskogo universitetu. Ekonomika ta pravo, 25, 27-32. [in Ukrainian]

[9] Vaschenko, N. (2014). Sutnist innovatsiy torgovelnogo pidpriemstva. [The essence of innovation of a trading company]. Teoretychni ta prikladni pitannya ekonomiki, 1(28), 369-381. [in Ukrainian]

Thus, N. Vashchenko has provided a broad definition of the category "innovation in trade", however, we can't help but notice that the author's statement refers to purely successful innovations that give "… a useful result from the commercialization of creative ideas of staff", in practice, of course, not all innovations are successful. First and foremost, innovation is an idea that may be economically feasible but may also lead to losses[13]. For example, Google's innovative Google Glass was recognized as one of the biggest failures in the company's history, but the problem was not the technology itself, but its implementation and market presentation.

V. Izhevskyi[14] pays more attention to organizational-managerial and trade-technological processes, which are improved by the means of innovations, however, in his definition he goes beyond the process of developing an innovative good, unlike E. Lukashenka, who sees innovation only in new products or services.

Summarizing the definitions above, it can be noted that innovation in trade is more viewed from the point of view of the object of trade and the generation of money circulation (profit, economic impact of change), but does not focus specifically on the ultimate consumer (social orientation). At the same time, in retail trade the consumer is the central object of the entrepreneur's attention and providing positive impression of purchase and WOW effect are important directions of innovative activity of the company. That is, the definition of innovation in retail needs clarification.

Therefore, from our point of view, retail innovation can be defined as a set of interconnected actions to generate new ideas at different stages of the company's activity from purchasing to selling the good on the market, which create additional value for the customer and/or enable intensive development of the company or to achieve economic, social or other effect. The listed types of effects are achieved through the latest

[10] Kavtaradze, L. (2014). Innovatsii v sovremennoy roznichnoy torgovle. [nnovations in modern retail trade]. Resursyi, Informatsiya, Snabzhenie, Konkurentsiya, 3, 170. [in Russian]

[11] Izhevskyi, V. V. (2011). Innovatsiinyi rozvytok rozdribnoi torhivli ta restorannoho hospodarstva u rynkovomu seredovyshchi: dys. Kandydata ekonomichnykh nauk: 08.00.04 [Innovative development of retail and restaurant industry in a market environment: dis. Candidate of Economic Sciences: 08.00.04]. Lviv. [in Ukrainian]

[12] Ryzhkova, Y. O. (2008). Mizhnarodnyi dosvid obstezhennia innovatsii u sferi posluh [International experience in the survey of innovations in the service sector]. Problemy Nauky, 11, 43-47. [in Ukrainian]

[13] Vaschenko, N. (2014). Sutnist innovatsiy torgovelnogo pidpriemstva. [The essence of innovation of a trading company]. Teoretychni ta prikladni pitannya ekonomiki, 1(28), 369-381. [in Ukrainian]

[14] Izhevskyi, V. V. (2011). Innovatsiinyi rozvytok rozdribnoi torhivli ta restorannoho hospodarstva u rynkovomu seredovyshchi: dys. Kandydata ekonomichnykh nauk: 08.00.04 [Innovative development of retail and restaurant industry in a market environment: dis. Candidate of Economic Sciences: 08.00.04]. Lviv. [in Ukrainian]

developments in the field of retail, formed and realized innovative potential of the enterprise, the use of new business processes, forms and methods of organization of work and management.

If we consider the essence of innovation from the point of view of their main functions, the introduction of innovative technologies in retail trade allows commercial enterprises:

– to ensure the efficiency and quality of the process of bringing the products to the consumer;

– to minimize costs and reduce the level of losses when using retail space, warehouses, commercial equipment;

– to introduce various information technologies in order to reduce the workflow and to minimize mistakes as a result of human influence;

– create the necessary working conditions for staff in order to increase their productivity;

– create safety and energy-saving systems;

– finally, to increase the margin of the products and increase the net profit of the enterprise.

8.2. Types of innovation in the field of retail

The term “innovation” is widely interpreted by retailers. However, most people agree that innovation is a new solution to an old problem and every new solution is designed to improve the efficiency of the enterprise.

It is reasonable to consider retail innovations from the point of view of scientific developments regarding their classification and the possibility of implementation in the sphere of retail trade. It is important that the attributes used to classify innovation would correspond to current trends and market conditions.

Therefore, analyzing the existing approaches to the classification of innovations, we will outline those that are relevant to the sphere of retail and can also be adapted and used in it (Table 1).

Thus, the classification of innovations in general applied to the sphere of retail can be as follows:

1. Innovations the processes (introduction of new technologies in production of goods, logistics, service).

2. Innovation in products and/or services (implementation of ideas and developments regarding innovative products or services).

3. Innovation in business (new ways and methods of business operation as a system).

Table 1

Scientific approaches to classification of innovations

Author	Signs	Types
A. Pryhozhyn	1. Under prevalence	Single, diffusional
	2. Under place in the production cycle	Materials; supporting; grocery
	3. Under succession	Replacing; canceling; turning; opening; retroduction
	4. Under reaching	Local; systemic; strategic
	5. Under innovative potential and degree of novelty	Radical; combinatorial; improving
O. Bovin	1. Changes in the goods	Technological
	2. Changes in the way of sale of the goods	Commercial
V. Horshkov, E. Kretova	1. Structural characteristics of innovation	Innovation at the "entrance" to the enterprise; "exit" of innovations from the enterprise; innovations of the enterprise's structure
	2. Target changes	Technological, industrial, economic, trade, social, managerial
I. Balabanov	1. Target characteristic	Crisis innovation; development innovation
	2. External characteristic	Innovations in the form of the goods; innovation in the form of operation
	3. Structural feature	Production and trade; social and economic; financial; managerial

Source: adapted by the authors based on [15, 16, 17]

[15] Chernyavska, M. Z. (2017). Sutnist Innovatsiy torgovelnogo pidpriemstva. [The essence of trade enterprise innovation]. Naukoviy visnik Mukachivskogo derzhavnogo universitetu, 1(7), 102-107. [in Ukrainian]

[16] Kavtaradze, L. (2014). Innovatsii v sovremennoy roznichnoy torgovle. [nnovations in modern retail trade]. Resursyi, Informatsiya, Snabzhenie, Konkurentsiya, 3, 170. [in Russian]

[17] Vaschenko, N. (2014). Sutnist innovatsiy torgovelnogo pidpriemstva. [The essence of innovation of a trading company]. Teoretychni ta prikladni pitannya ekonomiki, 1(28), 369-381. [in Ukrainian]

Among the proposed classifications of retail innovations, the most generalized is the development of economist A. Bovin[18], who distinguishes technological and commercial innovations. According to his position, technological innovations are related to the transformation of the physical properties of products in the production process: for example, the introduction of new ingredients, the use of new production process to obtain new goods. Commercial innovations include changes in the ways of organization, marketing and communication in the process of selling a product. For the retail sector, this trend will be reflected in a new product packaging design, a new way of advertising and delivering products to the consumer. Such innovations arise on the way of products from the manufacturer to the consumer.

On the other hand, classification of E. Blondo[19], who has experience as a top manager in retail, distinguishes seven types of innovation:

– radical innovations (for example, delivery of products by drones);

– architectural innovations (technologies of warehousing and packaging of products on shelves, merchandising, commercial relations);

– step-by-step innovations (phasing out plastic packaging and moving to eco-friendly packaging);

– technical innovations (possibility of trying on clothes and accessories using augmented reality technologies);

– social innovations (24/7 stores; purchase by installments or credit; chatbots)

– local innovations (creation of own brands in a specific trading house brand network);

– revolutionary innovations (electronic document flow, sophisticated software for managing sales and operating activities of an enterprise – ERP).

Analyzing E. Blondo's approach, it should be noted that his classification of innovations in the field of retail trade does not contain any classification traits by which innovations could be divided into groups. Therefore, in our opinion, E. Blondo's classification is more properly called simply a list of types of innovation.

[18] Chernyavska, M. Z. (2017). Sutnist Innovatsiy torgovelnogo pidpriemstva. [The essence of trade enterprise innovation]. Naukoviy visnik Mukachivskogo derzhavnogo universitetu, 1(7), 102-107. [in Ukrainian]

[19] Blondo, E. (2005). Innovatsii v roznichnoy torgovle. [Innovations in Retailing]. Bysnes-journal, 5, 48–51. [in Russian]

V. Apopij, J. Dajnovs'kij and S. Skibins'kij[20], researchers of innovation in trade, developed a classifier of innovation in trading on the following areas of change:

– the depth of change (radical, improving, combinatorial);

– by scope (sectoral, retail, wholesale);

– by content (commercial, technological, managerial, combined);

– according to the development strategy (transferred, borrowed, increased);

– for reasons of occurrence (reactive, strategic).

According to I. Sevruk's[21] statement which we agree with, the most important types of innovations in retail can be considered social, revolutionary, radical, architectural, as well as local.

In addition to the products being marketed by the company, in order to understand the steps and the area of influence, it is necessary to focus on the retail chain, as well as at the moment of ownership of the trademark (Figure 2). It is reasonable to consider the types of retail innovations inseparably from the sales chain because it is in this chain that you can separate the spheres of influence at each stage of the product life cycle.

Therefore, analyzing the main approaches to the classification of both innovation in general and trade innovation, we propose an additional option of classification of innovation in the retail trade (Table 2).

The proposed classification is a combination of the main activities that can be applied by retailers at all stages from the moment of product development (service) and ending with the delivery/sale of the product to the ultimate consumer.

In this classification developed by the retail sector, we deliberately included wholesale sales channels for consideration. After all, innovations that have been implemented by enterprises at "wholesale" stages A1-A4, in the final case may affect the result of the retailer's work, which has a connection with the consumer. For example, changes in the distribution chain towards reducing the delivery time of products

[20] Apopij, V. V., Dajnovs'kij, J. A., & Skibins'kij, S. V. (Eds.). (2011). Torhivlia, komertsiia, pidpryiemnytstvo: zbirnyk naukovykh prats [Trade, commerce, entrepreneurship: collection of scientific papers] (Vol. 12). L'viv: L'vivs'ka komercijna akademija.

[21] Sevruk, I. M. (2013). Marketynhovi innovatsii v diialnosti mizhnarodnykh rozdribnykh merezh [Marketing innovations in the activity of international retail chains]. Visnyk ONU Imeni I.I. Mechnykova, 18(1), 180–188. [in Ukrainian]

to wholesale retailers of online retailers reduce the time of delivery of products to the customer and, as a consequence, increase customer satisfaction with the work of the retailer, forming loyalty to the store. This is typical for Ukrainian business: retailers, online shopping predominantly, do not hold stocks of products in warehouses of their own, reducing thus their risks, and prefer delivery of products "made to order" of a specific buyer from the wholesaler (distributor, dealer or manufacturer). Or, in the case of relationships between wholesalers and retailers under a franchise agreement, when creating a new or improved existing products by a franchisor (wholesaler), the franchisee (retailer) will undoubtedly benefit.

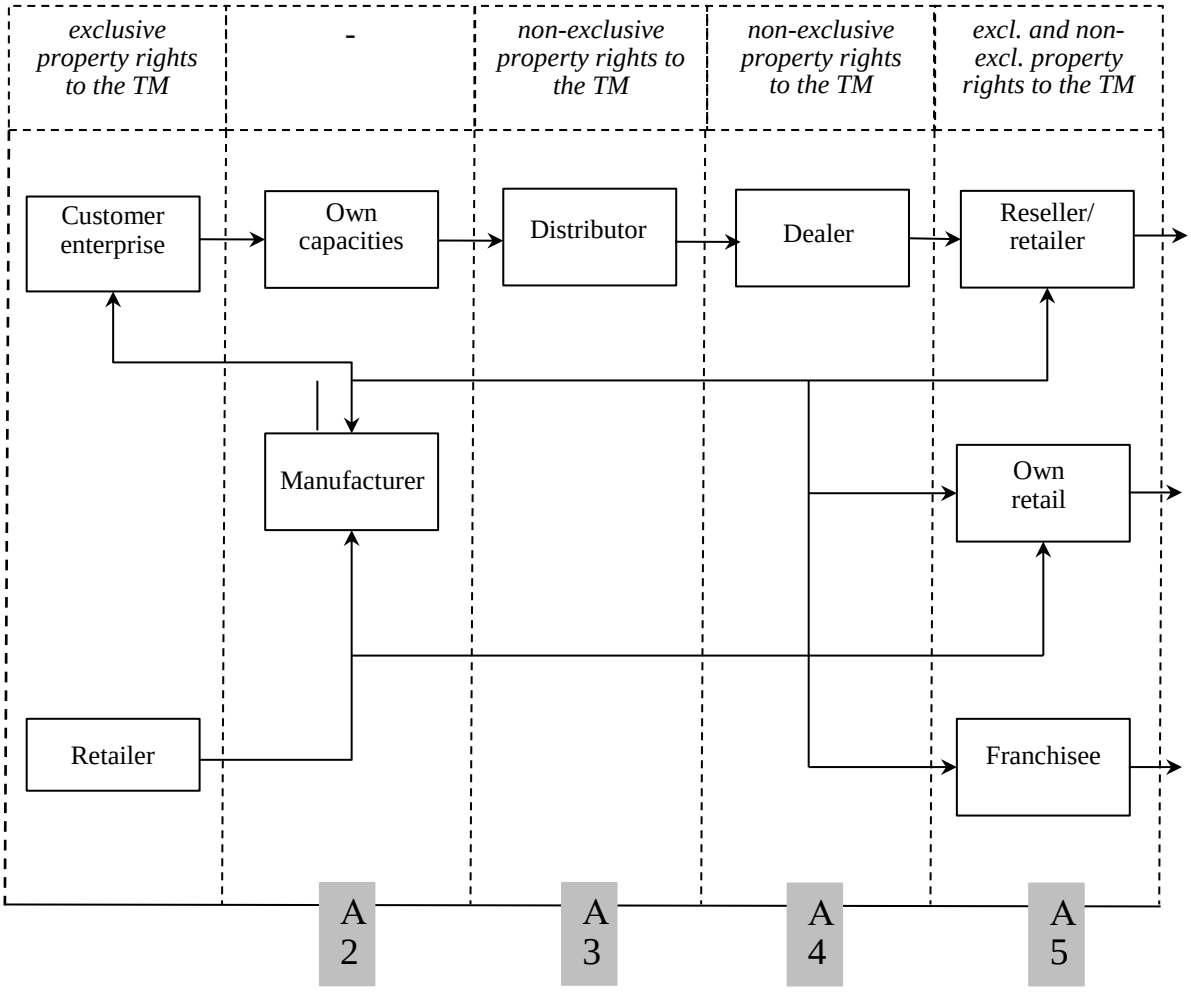

Figure 2. Retail value chain

Source: authors' study

Table 2

Classification of innovations in the field of retail trade

Sign	Types		Stage of exposure
1. Under the object of innovative development *	new goods		A1
	new pattern of services		A5
	new business process on the enterprise		all stages
	new consumer experience		A5
2. Under the direction of development of trade activity	Wholesale innovations		A3, A4
	Retail innovation		A5
	Industry innovations		all stages
3. Under the area of origin and content	External	Innovations in the external market	A3, A4, A5
		Innovations in the internal market	A3, A4, A5
		Innovation in a specific trading pattern	A5
		Socially oriented	all stages
	Internal	Trade and technological innovations	A3, A4, A5
		Marketing innovations	A1, A3, A4, A5
		Organizational and managerial innovations	A2, A5
		Combined	all stages
4. Under the depth of change	Radical		all stages
	Improving (step by step)		all stages
	Combinatorial		all stages
5. System characterictic	Single crisis		all stages
	Strategic crisis		all stages
	Innovations for development		all stages

*Source: author's study based on [22, 23, 24, 25], * author's contribution*

[22] Rodríguez, M., Paredes, F., & Yi, G. (2016). Towards Future Customer Experience: Trends and Innovation in Retail. Foresight and STI Governance, 10(3), 18–28. doi: 10.17323/1995-459x.2016.3.18.28

[23] Vaschenko, N. (2014). Sutnist innovatsiy torgovelnogo pidpriemstva. [The essence of innovation of a trading company]. Teoretychni ta prikladni pitannya ekonomiki, 1(28), 369-381. [in Ukrainian]

[24] Śmigielska, Gr., & Orzeł, K. (2015). Innovations in the Retail Sector and Their Influence on the Market. Handel Wewnętrzny, 5, 338-346.

[25] Chernyavska, M. Z. (2017). Sutnist Innovatsiy torgovelnogo pidpriemstva. [The essence of trade enterprise innovation]. Naukoviy visnik Mukachivskogo derzhavnogo universitetu, 1(7), 102-107. [in Ukrainian]

It should be noted that the retailer is not always the final element of the supply chain. Now, the system is increasingly developing when the retailer becomes the developer and customer of the products under its own trademarks in the production areas of certain factories. In the case of Ukrainian business, this situation is more observed in the big marketeers of FMCG and DIY market (Epicenter, Auchan, Silpo, Novus, ATB, etc.). On the one hand, it is often the retailers who communicate with consumers and understand their needs; on the other hand, for example, a retailer's decision to enter into an assortment of house brand is in many cases based on sales data from counterparty vendor shelves. Thus, the counterparty supplier is not protected from fraudulent actions by the retailer network and the innovative product developed by the supplier and tested on the shelf can be copied and ordered by the retailer under the house brand and the supplier may be expelled from the shelf in the future. This situation in the Ukrainian market significantly reduces the innovation activity in the development of new products among manufacturers and suppliers working with large retail chains[26].

Classification of innovations given in Table 2 is somewhat general, so we will present a more extensive scheme of own classification of innovations in retail by object of development. Suggested classification developed based on a five-year experience of one of the authors of this study as director of marketing in the structure of Ukrainian enterprises in the retail as Diskoni, BUTLERS, Homax and considering cases such global companies like Apple, Samsung, Uniqlo, Amazon, IKEA, ZARA. The scientific novelty of this approach is that the activity of the retailer in terms of the major "points of growth" of the enterprise which are responsible for changing the volume of the positive effect (for example, revenue), focusing on the main appraiser of success or failure of the proposed changes – the consumer, is considered. Thus, we suggest to highlight a separate object of impact of innovation in the field of retail – consumer experience.

Innovation on developing new products of may be different: from global innovations leading to the creation of entirely new markets to improved versions of existing goods. The main efforts of the companies are still aimed at improving the existing successful goods, their design,

[26] Semyonova, T. (2019). Prodaet frukty i ovoschi po vsemu miru, no v Ukraine ne rabotaet printsipialno: istoriya Maksima Kulika. [Sells fruits and vegetables around the world, but in Ukraine does not work in principle: the story of Maxim Kulik]. MC Today: onlayn-zhurnal o biznese. Retrieved November 23, 2019, from https://mc.today/prodaet-frukty-i-ovoshhi-po-vsemu-miru-no-v-ukraine-ne-rabotaet-printsipialno-istoriya-maksima-kulika/ [in Russian]

new characteristics or packaging, which is understandable, since in this way the company minimizes its risks (Figure 3). Among the examples of recent "improvements" of existing products we can highlight Iphone11 from Apple, Qled TV from Samsung and drones from Skydio. For example, F. Kotler[27] estimates that less than 10% of all new products are now truly unique and world-class. Although radical innovations can cause great losses and are truly risky, they offer significant competitive advantages in the strategic perspective if successful.

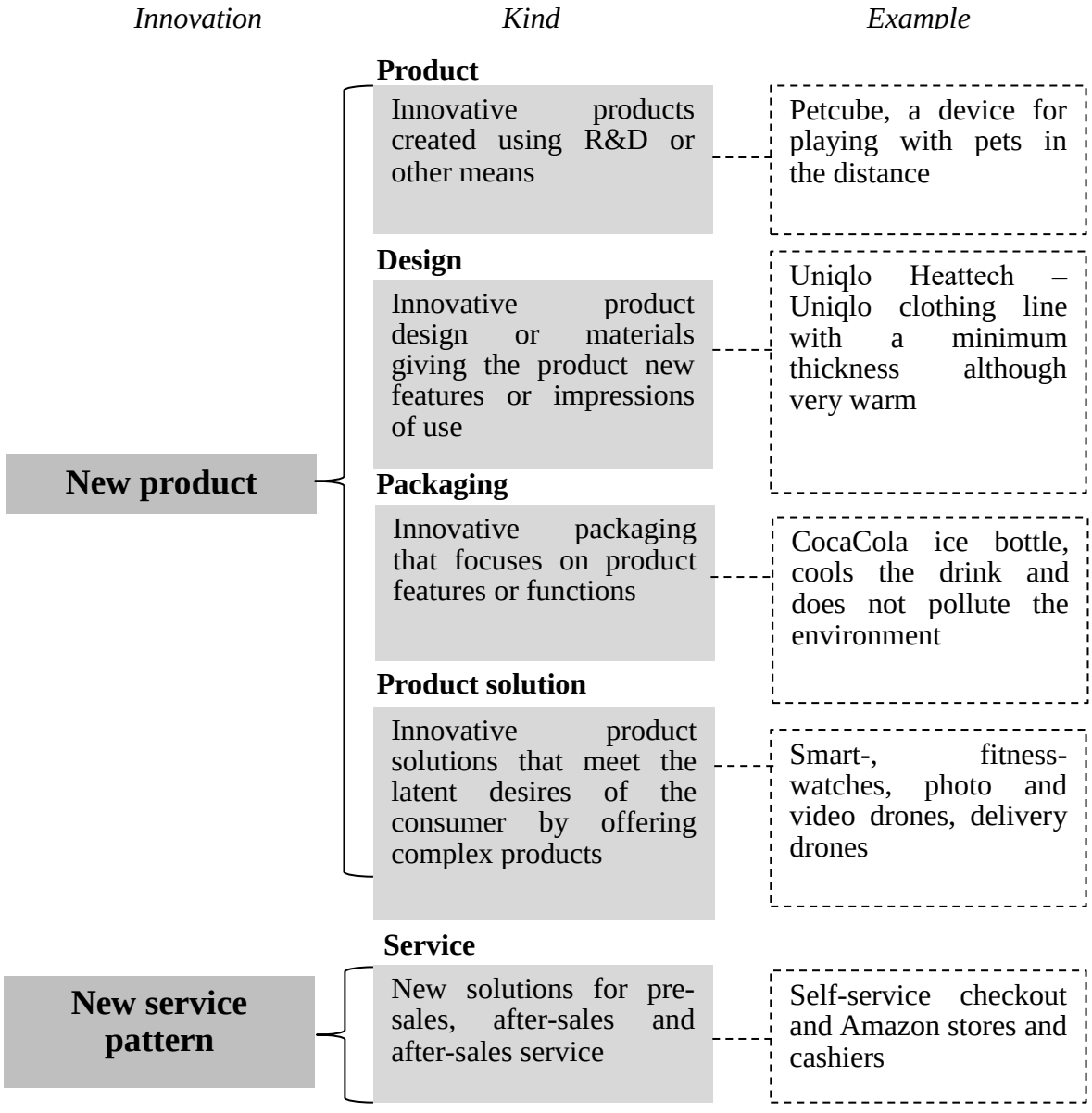

Figure 3. Retail innovations (new product and new service pattern)

Source: authors' study

[27] Kotler, P., & Keller, K. L. (2019). Marketing management. Boston: Pearson.

Business Process Innovation (Figure 4) is another important area of innovation for any enterprise and especially those working in retail, as they do not require significant R&D expences, prototyping, and other pre-implementation researches for new product, its "packaging" and service. In addition, innovation in business models, business approach and business processes, we highlight innovations in business collaborations such as setting up processes and investing resources in expanding external relations firms to expand the scope and range of target consumers.

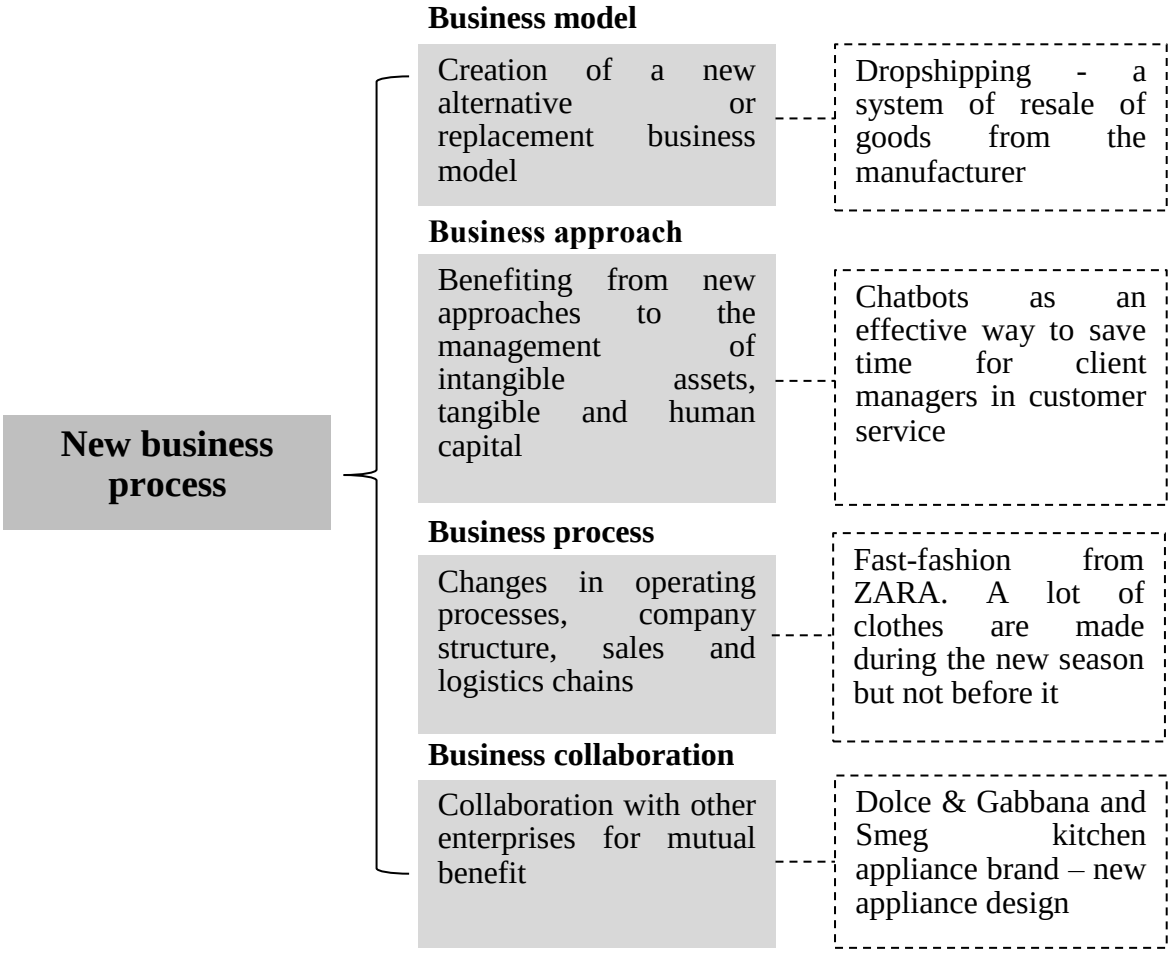

Figure 4. Innovations in business processes in retail businesses

Source: authors' study

The consumer experience is a significant benchmark for innovative development of retailers in modern conditions, as we have noted (Figure 5), but this concept is not given enough attention in the scientific literature.

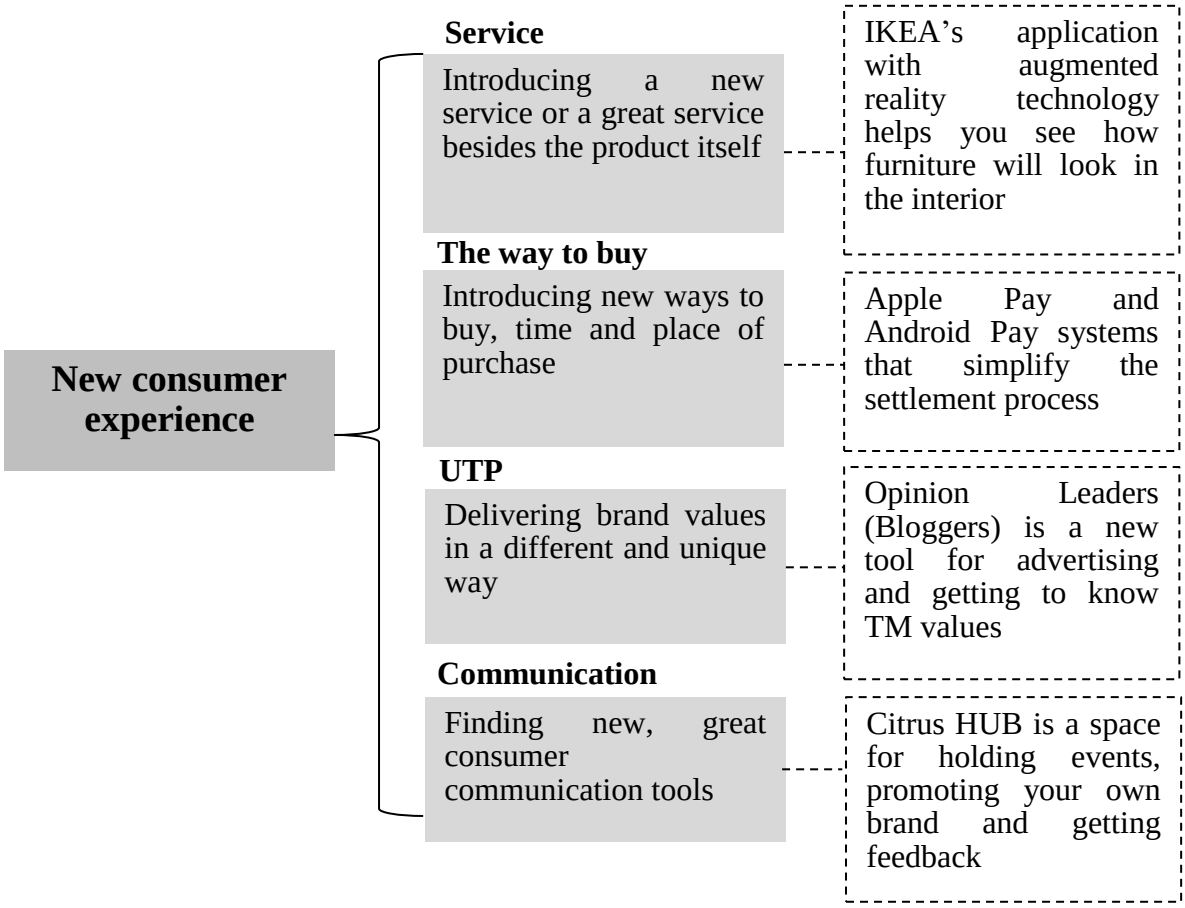

Figure 5. Retail innovation according to the concept of "consumer experience"

Source: authors' study

So, firstly, let us define what constitutes a consumer experience. Consumer experience is the perception and related feelings/emotions of a customer caused by one-time or cumulative effect on its interaction with the company. Consumer experience is the sum of all customer experiences related to the company over time of their relationship (not only the key shared fields but also the personal perception of the customer is taken into account).

The goal of consumer experience management is to optimize "customer-company" interaction and therefore increase customer loyalty. Consumer experience is not a static unit, its production and storage are constant processes during which the company and the customer interact. The work of the company is to understand where the shared fields are, that is, where the customer has high expectations and emotional involvement and to identify where the company is not meeting those expectations. Consumer experience research is an integral

part of customer relationship management, as well as an important driver of innovation activity[28].

CONCLUSIONS

Thus, based on our research on approaches to defining the concepts of "innovation" and "innovation in trade" and considering the basic shortcomings of analyzed definitions, we have formed our own vision of the concept of "innovation in retail". Taking into account the fact that all the activities of the retailer aim to meet the needs of only one object – the ultimate consumer, it is extremely important to focus on the values and effects consumers receive from certain innovations, and this depends on the positive or negative decision of the client to buy the product from a particular retailer.

Considering the consumer orientation of the above definition of innovation in retail, we suggested our own approach to the classification of innovations by object of development. According to the suggested approach, we distinguish four areas of innovation creation: innovation into a new product, in a new business process, in a new service pattern and in the consumer experience. The scientific novelty of this approach is that we highlight the "consumer experience" as a separate area of influence of the retailer in the innovation process. After all, the leading companies of the world pay great attention to the consumer experience allocating huge budgets for the study of customer behavior for the further development of the innovative ones.

The results of the study add to the theory of innovation in the field of retail and can be used to develop a systematic approach to innovation management in enterprises in the field. In the following researches the author will detail the essence and components of consumer experience taking into account the peculiarities of the sphere of retail.

SUMMARY

The study focuses on defining the nature and types of retail innovations based on existing developments and research on innovation and innovation activity, as well as adapting the results of these studies to classify retail innovations. Understanding the classification and particular types of innovation, especially those related to consumer experience is

[28] Dabija, D.-C., Pop, N. A., & Săniuță, A. (2017). Innovation in Do-It-Yourself Retail: an Empirical Study on Generation X among Professional Craftsmen and Consumers. Economics & Sociology, 10(2), 296–311. doi: 10.14254/2071-789x.2017/10-2/22

important as consumer experience is currently one of the most important areas for enhancing retailer innovation. The classification of innovations is correlated with the levels of innovation management at each stage of the value chain in retail. Research findings can form the basis for strategic and operational decisions to innovate at each link in the chain.

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15. Vaschenko, N. (2014). Sutnist innovatsiy torgovelnogo pidpriemstva. [The essence of innovation of a trading company]. *Teoretychni ta prikladni pitannya ekonomiki*, *1*(28), 369-381. [in Ukrainian]

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Chapter 9
POTENTIAL OF EDUCATIONAL INNOVATIONS IN FORMING DIGITAL COMPETENCE OF ENTREPRENEURS IN UKRAINE

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INTRODUCTION

The expansion of the post-industrial economy exacerbates the problem of the formation of digital competence as an integral characteristic of a modern specialist in any field of activity. This problem acquires particular relevance in the context of the development of the business environment as a driver of economic development with its inherent innovative type of thinking, an increased level of riskiness, and high dynamics of organizational and business processes.

Digitalization is a global trend in the society development in the 21st century. T. Mesenburg formulated three main components of the digital economy concept in 2001[1]:

1) supportive infrastructure (hardware, software, telecommunications, networks, etc.);

2) electronic business (business through computer networks);

3) e-commerce (transfer of goods online).

According to PWC experts who conducted digital economy development studies in 150 countries, Ukraine was in the group of 28 transformational countries – the penultimate on the way to the highest level [2].

In order to accelerate the spread of information and communication technologies in Ukraine, in January 2018, the Concept of Development of the Digital Economy and Society of Ukraine for 2018-2020 was approved[3].

The defining directions for the development of a digital society are:

[1] Mesenbourg, T. L. (2001). *Measuring the Digital Economy*. U.S. Bureau of the Census.

[2] Maximizing the impact of digitization. PWC. Retrieved Nov. 10, 2019, from https://www.strategyand.pwc.com/media/file/Strategyand_Maximizing-the-Impact-of-Digitization.pdf

[3] Kontseptsiia rozvytku tsyfrovoi ekonomiky ta suspilstva Ukrainy na 2018–2020 roky. [Concept of development of digital economy and society of Ukraine for 2018-2020.]. Retrieved Nov. 10, 2019, from http://me.gov.ua/Documents/Download?id=f9605f2f-c4a8-46f3-aee9-4a7f40dc9b9b [in Ukrainian]

1) bridging the digital divide (unevenness) due to the development of digital infrastructures;

2) training in general and professional digital competences;

3) introduction of the concept of "digital" jobs;

4) digitalisation in the real sector of economy (transition to Industry 4.0);

5) implementation of digital transformation projects, including in the fields of public security, education, health care, tourism, e-democracy, environmental protection, urban life, etc[4].

It is obvious that a successful solution of the tasks set is impossible without the preparation of appropriate specialists who: are able to think creatively; tuned to the introduction of innovative solutions; willing to take risks in conditions of high unpredictability; mobile in their behavior. They are the characteristics that distinguish entrepreneurs – the creative class of the post-industrial economy.

9.1. Innovation in education as a necessary prerequisite for the training of new generation specialists

According to the Global Entrepreneurship Index, as of 2017, the leaders are the United States, Switzerland and Canada. Ukraine ranks 66th out of 137 countries in the world and 33rd out of 41 in Europe [5]. Ukraine's neighbors in this ranking are Thailand and Peru. The leaders are the USA, Switzerland and Canada. According to the experts of this report, entrepreneurship is a dynamic, institutionally implemented system of entrepreneurial relations, entrepreneurial abilities and entrepreneurial aspirations of individuals who manage the distribution of resources by creating and operating new businesses. Accordingly, to improve the entrepreneurial profile of the country, it is necessary to increase the potential of "entrepreneurial relations, entrepreneurial abilities and entrepreneurial aspirations", which, we believe, is due to the qualitative transformation of the education system.

According to vivid expression Jack Ma, Alibaba Group heads, what we teach our children today may tomorrow cause them to lose their jobs. Everything that we learn according to the old scheme of education, remembering knowledge, learning computing – all this machines can do

[4] Kontseptsiia rozvytku tsyfrovoi ekonomiky ta suspilstva Ukrainy na 2018–2020 roky. [Concept of development of digital economy and society of Ukraine for 2018-2020.]. Retrieved Nov. 10, 2019, from http://me.gov.ua/Documents/Download?id=f9605f2f-c4a8-46f3-aee9-4a7f40dc9b9b [in Ukrainian]

[5] Global Entrepreneurship Index. Retrieved Nov. 21, 2019, from http://thegedi.org/countries

better. We must restructure the education system. We must teach our children to be innovative and creative.[6]

Ukraine ranks the 45th place in quality of education. Less than 15% of Ukrainian citizens consider our education really of high quality. 58% believe that a diploma in higher education does not provide an opportunity to get a good job. 22.8% is the youth unemployment rate in Ukraine[7].

The leaders of the education quality rating are the USA, UK, Germany and Australia. What causes the success of education in these countries? The answer to this question can be found in the words of Burton Lee, a professor of Stanford University: "Every year, around 500 startup teams and 40% of participants in these teams are students, 10% are associate professors and professors, 50% are graduate students. 60% of these teams focus on research while developing their startups, and 40% promote university development and their own ideas that were born on campus. In the United States, students are the most important component of building innovative businesses. In many European and post-Soviet universities, students play a passive role in innovative developments. At Stanford University, students are taught to be leaders, entrepreneurs, founders of companies. They learn to be creative developers because the share of student work in the development of new progressive products is very large. The best way to educate students about innovative entrepreneurship is to engage professionals who are not aware of it. At Stanford, we don't teach entrepreneurship theory. We teach students to create real companies. We focus students' attention on developing real products and testing them in the real market. One of the most important approaches to student learning is the transfer of knowledge, not from professors, but from other students. Student clubs are a very important component of Stanford University's ecosystem. Entrepreneur clubs are an important place where students, team leaders and founders of stratagemes meet and discuss problems. This is where leadership skills are taught. Each club deals with its financing, independently attracting investors and implementing developments. We

[6] Karpenko, O. (2017) Hlava Alibaba Dzhek Ma – ob ekonomyke budushcheho: "Perestante nadeiatsia na proyzvodstvo v sozdanyy rabochykh mest". [Alibaba CEO Jack Ma, on the economy of the future: "Stop hoping for manufacturing in job creation."]. Retrieved Oct. 23, 2019, from https://ain.ua/2017/09/21/dzhek-ma-ob-ekonomike-budushhego/ [in Russian]

[7] Ukrayna na 42-m meste v reitynhe ynnovatsyonnыkh ekonomyk myra. Kak tak vyshlo? [Ukraine is at 42nd place in the ranking of innovative economies in the world. How did it happen?]. Retrieved Nov. 9, 2019, from https://businessviews.com.ua/ru/economy/id/ukraina-na-42-m-meste-v-rejtinge-innovacionnyh-ekonomik-mira-kak-tak-vyshlo-1460/ [in Russian]

have learned to blend university culture with the culture of innovation in one place. Ukraine has a very good scientific and engineering culture and one of its main tasks is to combine this culture with the culture of innovation. This should be the main task of economic development of the country"[8].

One of the most promising ways of educating entrepreneurs in Ukraine is to implement educational programs of different levels of training for the general population. Such programs should be developed on a comprehensive basis, which provides:

1) implementation of the principle of "life-long learning" – implementation of educational programs for different age categories of citizens, including the use of models of cross-age groups;

2) the transition to problem-based learning (PBL) – learning in which real complex problems are used as an educational tool. Task-based learning encourages critical thinking and problem-solving skills[9] and provides genuine experience that fosters an active learning process, helps systematize knowledge, and naturally integrates learning in school and real life[10]. Common formats of PBL are case studies, role-playing games and simulations (modeling of certain processes and facts);

3) extension of the competence approach in education, which is manifested in the orientation of the educational process to the achievement of learning results due to the formation of general and professional competencies in its applicants. The basic requirements for the competences of vocational education are as follows: a) the competences should be clearly understood by all stakeholders (students, teachers, employers, employees of management and supervisory bodies); b) competences are diagnosed with the use of qualimetric tools (a set of measuring instruments), which allows to rank the degree of their achievement in the form of a point evaluation; c) the set of competences should be minimized on the grounds of adequacy of achievement of the integral purpose of education and tasks of professional activity, defined by the standard;

[8] 5 hlavnykh urokov Kremnyevoi Dolyny. [5 main lessons of Silicon Valley]. Retrieved Nov. 1, 2019, from http://www.startup.org.ua/2016/04/5.html?m=1 [in Russian]

[9] Savery, J. R. (2006). Overview of Problem-based Learning: Definitions and Distinctions. *Interdisciplinary Journal of Problem-Based Learning*, 1(1).

[10] Taşoğlu, A. K. & Bakaç, M. (2014). The Effect of Problem Based Learning Approach on Conceptual Understanding in Teaching of Magnetism Topics. *Eurasian Journal Physics & Chemistry Education* 6(2): 110-122.

4) saturation of traditional educational programs with the information and communication component due to the introduction of appropriate tools not only in the teaching process (for example, in the form of distance or e-learning), but also in the "content" of the educational process – through the acquisition of special information products (such as ERM-systems);

5) development and implementation of special educational products (long-term and short-term programs, trainings, seminars, etc., including in the latest electronic formats), directly aimed at studying the laws of the digital economy and mastering the skills of working with digital infrastructure (SMART-city, etc.).

Researching the digital competence of a modern man, it should be borne in mind that in the perspective of 2020, three generations stand out in the evolution of e-learning.

E-learning 1.0 focuses on creating effective teaching content through a predominantly static website and Learning Management System (LMS) (for example, MOODLE).

E-learning 2.0 builds on the capabilities of social services (blogs, messengers, networks) and focuses on providing the facilitator with group communication (including collaboration tools such as Microsoft OneNote Class Notebook and Microsoft Teams).

E-learning 3.0 is a generation of virtual reality in the learning process with the involvement of artificial intelligence (for example, Microsoft Kinect, Second Life) focused on personal learning. The trend of individualization and "networking" of learning is being observed, with a fundamental change in the role of the teacher in the educational process. Are domestic university teachers ready for these challenges?

Study of e-learning practice in Ukrainian universities[11] certifies that today we are quite confident in the acquisition of first generation training systems (distance and blended learning on the MOODLE platform). However, the transition to second- and third-generation systems remains a promising task.

The powerful potential of the transition to the second generation of e-learning lies in the model of social computing (social computing) – system integration of social sciences and computer Internet

[11] Pasichnyk, O. (Ed.) (2017). Praktyky zastosuvannia zmishanoho navchannia u vyshchii shkoli: analitychnyi zvit za rezultatamy opytuvannia [The practice of capturing the meaning of food in high school: an analytical call for the results of the study]. Tsentr navchalnykh ta innovatsiinykh tekhnolohii Ukrainskoho katolytskoho universytetu Retrieved Aug. 16, 2018, from http://er.ucu.edu.ua/handle/1/1124 [in Ukrainian]

technologies, implemented by appropriate tools – blogs, social networks, wiki, virtual reality, etc. that provide e-social interaction and collaboration on the Internet[12].

Social computing is recognized as the basis for the creation of various kinds of global communities, networks focused on achieving common goals and satisfying the individual interests of their participants, can provide "glocal" (from "global" + "local") behavior of all (and at the same time each separately) educational participants of the process.

Analyzing the challenges facing social computing researchers [13], we can say that the introduction of the model of the same name in the educational process of the university involves the search for answers to the following questions[14]:

– how does the educational process change the Internet space and on what new methodological foundations does it build?

– how are the roles of teacher and student transformed in the creation and functioning of a virtual social space?

– how does the behavior of people in the educational virtual space (online) change and what is the impact of such behavior on the real (offline) educational space (the process of the so-called "devirtualization")?

9.2. The practice of implantation educational innovations in Ukrainian universities

Educational innovation remains a priority at all levels of education management. The reform of general higher education continues, the key provisions of which are manifested in:

– updating the content of educational programs, including as a result of focusing on the formation of competencies of the

[12] Yskandarova, D. M., Hulova, Z. A., Davlatmyrova, M. B., Karymova, N. Y., Mukhtorov, Z. M. & Fomyn, A. Yu. (2016). *Yssledovanye tolerantnosty v molodezhnoi srede Tadzhykystana (lynhvystycheskye aspekty)*. [The study of tolerance in the youth environment of Tajikistan (linguistic aspects)]. Moskow: Yzdatelskyi dom Akademyy Estestvoznanyia. [in Russian]

[13] Brodovskaia, E. V., Azarov, A. A., Dombrovskaia, A. Yu. & Dmytryeva, O. V. (2014). Sotsyalnyi kompiutynh: istoryia, metodolohyia, yssledovatelskye proekty. [Social computing: history, methodology, research projects.] Doklad na 18-m zasedanyy semynara "Metodolohycheskye problemy nauk ob ynformatsyy". Moskva, YPHYT MHHU ym. M.A. Sholokhova. Retrieved Sep. 1, 2018, from https://docplayer.ru/33551421-Socialnyykompyuting-istoriya-metodologiya-issledovatelskie-proekty.htmt [in Russian]

[14] Yskandarova, D. M., Hulova, Z. A., Davlatmyrova, M. B., Karymova, N. Y., Mukhtorov, Z. M. & Fomyn, A. Yu. (2016). *Yssledovanye tolerantnosty v molodezhnoi srede Tadzhykystana (lynhvystycheskye aspekty)*. [The study of tolerance in the youth environment of Tajikistan (linguistic aspects)]. Moskow: Yzdatelskyi dom Akademyy Estestvoznanyia [in Russian]

entrepreneurial type – critical and strategic thinking, leadership and partnership, digital competence, and the like;

– the introduction of distance learning as a self-sufficient and autonomous form of learning at all levels of education;

– the spread of e-learning practices in the educational process – communication with students through social networks, support for traditional offline courses on MOODLE (as well as on the basis of Google Class and Class Notebook Microsoft Office 365);

– organization of the university's internal communication system (in particular, based on Microsoft Ofice 365);

– expanding the presence of universities in the digital space – sites, social networks on the Internet, open online courses.

It is no longer an innovation to enroll in student learning outcomes for taking open online courses on the platforms Prometheus, Coursera, Udemy and others. Ukrainian teachers are actively involved in creating their own online courses (the authors have personal experience creating such courses on Udemy[15] or YouTube[16]). Quite common in the organization of the educational process is the use of electronic communication tools such as email, social networks (Facebook, LinkedIn), instant messengers (Viber, Telegram). For the effectiveness of the educational process, teachers use the opportunities that provide such electronic services as Skype, YouTube, Padlet, Trello, Kahoot. However, it should be recognized that the results of the modernization of the education sector in Ukraine remain contradictory. We illustrate this with the data obtained by us during the relevant studies.

In November 2018, an online survey of teachers of the Faculty of Economics and Management of Vadim Getman Kiev National University of Economics was conducted in order to identify practices and assess the willingness of teachers to spread the Blended Learning model in the faculty[17].

[15] Hrebeshkova, O. M. (2017). Mikroekonomika: pochatkovyi riven. [Microeconomics: entry-level]. Retrieved Nov. 10, 2019, from https://www.udemy.com/microeconomics_ua. [in Ukrainian]

[16] Kyzenko, O. O. (2017). Kurs video-lektsii "Korporatyvne pidpryiemnytstvo". [Course of video lectures "Corporate entrepreneurship".]. Retrieved Nov. 10, 2019, from https://www.youtube.com/watch?v=Leal95BNOBQ&list=PLgBzM3YOp1EGBcMs8xrNaedoTEcUJgkzh [in Ukrainian]

[17] Hrebeshkova, O. M. (2018). Praktyka zmishanoho navchannia v navchalnomu protsesi na fakulteti ekonomiky ta upravlinnia DVNZ "KNEU imeni Vadyma Hetmana". [The practice of blended learning in the educational process at the Faculty of Economics and Management of the KNEU named after Vadym Hetman]. Dopovid na zasidanni vchenoi rady fakultetu (22.11.2018 r.). Retrieved Nov. 2, 2019, from https://drive.google.com/file/d/1Hkl783HCvhLfMRUgU8hWaHvANCbPpqLv/view?usp=sharing [in Ukrainain]

The questionnaire included 30 questions on four blocks: general sample characteristics (6 questions); blended learning tools (10 questions); blended learning technology (7 questions); willingness to implement online training (7 questions). 59 teachers took part in the survey (35% from salaried scientific and pedagogical personnel of the Faculty), of these, 8.6% are professors, 69% are associate professors.

Based on a generalization of the answers received, it was found that 25% of the participants surveyed have distance learning courses (which are delivered on online platforms), the vast majority of which are prepared for undergraduate students. Only 14% of the faculty interviewed (or 56% of those with distance learning) use the MOODLE platform to support the learning process for full-time and part-time students, while 61% of the respondents do not use MOODLE at all – one of the most common Learning Management System class platforms (LMS). It was revealed that in the practice of blended learning "passive" online tools (e-mail, cloud storage, instant messengers, social networks) dominate, with the help of which educational content is only heard by students. Even those tools (messengers and social networks) that can be used for active collaboration are not implemented for their intended purpose – to provide bi-directional interaction.

Interesting was the unpopularity of online testing as a form of knowledge control: only 7% of faculty (or 29% of those with distance courses) use online testing, with the vast majority of them only sporadically (systematically).

The most common form of creating educational online content is slide lecture notes, which 76% of the interviewed professors have reported using. Video content is systematically used by only 12% of those surveyed, and only original units create their original video content.

Teachers rarely recommend that students take Massive Open Online Courses (MOOC): only 15% of those surveyed admit that they use it to teach their subjects. According to the students, the online courses they have completed have proved to be useful for mastering the curriculum of the discipline. The average mark on the current academic performance of these students is higher (an average of 14.6 points on a 100-point scale) than those who did not take online courses. It must be acknowledged that its results are generally positive.

It turned out that the vast majority of respondents (71%) do not have the practice of holding online conferences (webinars, consultations)

with synchronous communication (in real time). And even those teachers (20% of respondents) who noted the presence of such experience admit that this practice is solitary and is used occasionally.

Assessing their readiness to implement online training, the survey participants stated that they had passed or are undergoing (at the time of the survey) special training (42% of respondents), of which 81% of respondents are ready to work on the model of distance education. Of those who did not undergo special training, the vast majority of teachers (73%) expressed their interest in further building up their digital competence.

A separate block of research requests is formed by questions of motivation and work efficiency of e-learning participants, primarily teachers and students. Our experience in organizing the teaching of a discipline on the model of social computing comes down to the implementation of two educational projects – a joint Ukrainian-Canadian educational and research project of collaborative learning "Cultural Dimensions and Professional Strategies" (2015-2016)[18] and creating online courses on the Microsoft OneNote Class Notebook platform (2017)[19].

The results of a study of the digital competence of the participants in the educational process at the Vadim Getman Kiev National University of Economics, whose purpose was to identify and assess readiness for fully online collaborative learning. The study involved 244 participants, for whom, based on their online questionnaire, measure digital experience and confidence across four categories of human–computer activity. To assess readiness, reported levels of competencies were related to the three dimensions of successful collaborative learning described by the Community of Inquiry model. Despite some key differences between students and teachers, general findings include moderate-to-low levels of self-reported technical, social and informational competency, accompanied by consistently low levels of epistemological competency. These findings suggest that neither students nor teachers are adequately prepared for achieving high levels of social, cognitive and teaching presence in a fully online learning

[18] Blayone, T. J. B., Mykhailenko, O., vanOostveen, R., Grebeshkov, O., Hrebeshkova, O., & Vostryakov, O. (2018). Surveying digital competencies of university students and professors in Ukraine for fully online collaborative learning. *Technology, Pedagogy and Education*, 27(3): 279-296. http://dx.doi.org/10.1080/1475939X.2017.1391871

[19] Hrebeshkova, O. M. Yak stvoryty onlain-kurs v Microsoft OneNote Class Notebook. [How to Create an Online Course in Microsoft OneNote Class Notebook |]. Retrieved Oct. 24, 2019, from https://www.udemy.com/onenote-classroom/learn/v4/ overview. [in Ukrainian]

environment. It is recommended that digital-competency development become an educational priority. [20]

Drawing on this experience of implementing e-learning and blended learning [21], we consider it possible to assert that the most promising areas of work to introduce a model of social computing in the educational activities of a domestic university are:

– Deployment of a full-fledged communication and knowledge platform at the university (for example, on the Microsoft Office 365 platform), which opens up new horizons for the formation of digital competence of all participants in the educational process and promotes the spread of a culture of electronic communication;

– creation and use of online courses (in the future, clusters of educational online projects) with integrated online communication tools (video blogs, collaboration spaces, social networks), which allows you to generate new knowledge jointly by all participants in the educational process and in synchronous mode (and not just asynchronous) communication;

– expanding the membership of the educational process by attracting external experts and specialists (potential employers, foreign researchers, government and public figures, etc.) using the Internet. In the future, the implementation of this direction may turn into the introduction of a full-fledged dual online education.

9.3. Problems and prospects of entrepreneurial education in Ukraine in the digital economy

What challenges do entrepreneurship face in a digital economy? Without claiming to be a comprehensive classification, we note only the most obvious of them.

1. The lack of deep entrepreneurial culture in Ukrainian society due to objective historical processes of formation of the statehood of Ukraine. The seventy-year domination of a planned economy still affects the thinking patterns of domestic businessmen and restrains entrepreneurial thinking with a "traditional" framework. The values of

[20] Blayone, T. J. B., Mykhailenko, O., vanOostveen, R., Grebeshkov, O., Hrebeshkova, O., & Vostryakov, O. (2018). Surveying digital competencies of university students and professors in Ukraine for fully online collaborative learning. *Technology, Pedagogy and Education*, 27(3): 279-296. http://dx.doi.org/10.1080/1475939X.2017.1391871

[21] Hrebeshkova, O. M., Grebeshkov, O. M. & Kyzenko O. O. Onlain-kurs "Zmishane navchannia: retsepty – prosto ta smachno! Znaiomstvo z "kukhneiu" zmishanoho navchannia". [Blended Learning: Recipes – Easy and Delicious Online Course! Getting to know the blended learning kitchen."]. Retrieved Nov. 4, 2019, from https://blendedlearning.teachable.com/ p/blendedlearningrecepies. [in Ukrainian]

open competition and innovative thinking are only being formed in Ukrainian society, as evidenced by the evaluative profile of cultural measurement model meters G. Hofstede for Ukraine (Figure 1).

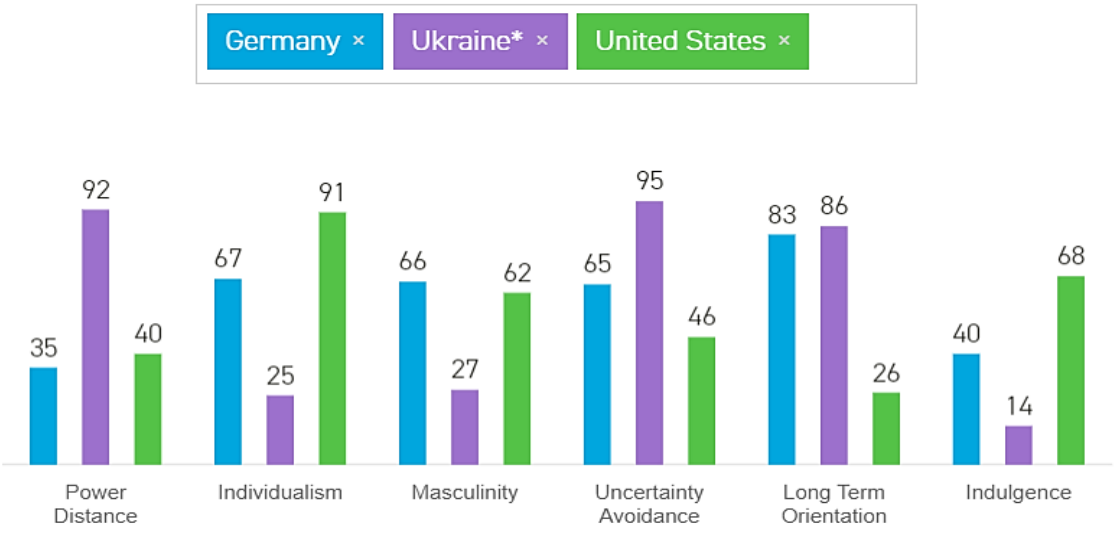

Figure 1. Profile of cultural dimensions for Ukraine by model G. Hofstede[22]

2. The dominance of traditional (mainly inherent in the industrial economy) technologies and training models based on the storage and accumulation of knowledge, rather than the formation of competencies and the development of various abilities. Outdated standards of Ukrainian higher education do not keep pace with technological progress, innovation and the growing demand for relevant specialists in the industry. The educational system continues to focus on lectures and exams, not paying enough attention to the realities of practical professional life. Therefore, it is hardly possible to count on graduates as future successful and efficient workers if their training is based on outdated methods and anachronistic educational models. The failure of Ukrainian higher education institutions to provide graduates with a level of knowledge and skills that is in demand in the modern economy is evidenced by the fact that, given the almost 76 percent coverage of the population with higher education (14th place from 140 countries, after Greece, the USA, Finland, Germany, etc.), its quality remains low (54th place), and according to the Global

[22] Compare Countries. Hofstede Insights. Retrieved Nov. 16, 2019, from https://www.hofstede-insights.com/product/compare-countries/

Competitiveness Index (GCI) of the World Economic Forum Ukraine for 2015-2016. ranked only the seventy-ninth among 140 countries.[23]

3. There is still limited use of online learning tools due to the imperfection of the digital infrastructure. The low quality of the Internet and the insufficient provision of educational institutions with appropriate tools preclude the effective development of e-learning and hinder the initiative of innovative teachers.

4. Low motivation of applicants to education in entrepreneurship education and lack of awareness by teachers of the value and content of such education.

The solution to these problems is seen by us in the following areas.

1. The development of an entrepreneurial culture is possible as a result of the popularization of an entrepreneurial way of thinking, starting from childhood. As our experience of career guidance with schoolchildren shows, modern children (even the elementary grades) are open to entrepreneurship, set up for creative thinking, are interested in studying entrepreneurship models. The fact that the age structure of participants in career guidance events such as the All-Ukrainian Business Tournament "Company Strategy"[24] every year it becomes "younger" only confirms our conclusions. In addition to career guidance work with children, it is appropriate to strengthen the "entrepreneurial" component of the training of high school graduates. We believe that the requirement to develop and implement at least one entrepreneurial project by each university student (of course, taking into account the specifics of professional training) is absolutely acceptable. Such projects allow not only to ensure the formation of the so-called "soft skills", which have become an integral professional characteristic of a graduate of a modern university, but can also solve various social, environmental, cultural and other problems of individual communities.

2. The formation of entrepreneurial competencies should be based on the comprehensive development of the personality, it involves not only the acquisition of knowledge about the laws and laws of the economy, the development of techniques and methods of work in the field of creating public goods, but also the decomposition of the so-called "soft skills" – teamwork abilities, intercultural competence,

[23] Galvan, C. Global Competitiveness Report (2015-2016). Retrieved Oct. 14, 2019, from http://lpk.lt/wp-content/uploads/2015/12/20151201_Global-Competitiveness-Report-2015-2016_Caroline-Galvan.pdf

[24] Biznes-turnir "Stratehiia firmy". [Business tournament "Firm strategy"]. Retrieved Nov. 20, 2019, from http://kint.com.ua/ua/biznes-tour-stratehiiafirmy-20 [in Ukrainian]

"Lifelong learning" and others. The formation of such characteristics is successfully achieved including using digital technologies (various business simulators, social networks, online communities, etc.) and the expansion of the forms of collaboration (Table 1). Extremely interesting in this context is the experience of implementing the model of co-educational learning, which was acquired by its participants according to the results of the Ukrainian-Canadian educational and research project implemented at the Kyiv National University of Economics named after Vadim Hetman in 2016[25].

Table 1

The most common forms of collaboration in education [26]

Types of collaboration	Types and content of interaction
Academic mobility	Involvement of university professors and researchers in working in the business environment, and employees of companies – in the educational process
Student mobility	Establishment of conditions for training and internships in business and / or other educational establishments for professional development and development soft skills
R&D collaboration	Carrying out joint research involving a wide range of stakeholders (researchers from different institutions, business representatives, students, etc.)
Commercialization of results R&D	Patenting, licensing, spin-offs, deployment of intermediary platforms between research centers and business
Development of educational programs and curricula	Collaboration of universities with the labor market (business) in the formation of educational products for different levels of training of future professionals
Entrepreneurial initiatives	Universities' activities aimed at creating new ventures and cooperating with business to develop innovative entrepreneurship culture
Long Life Learning Projects	Adult education

[25] Blayone, T. J. B., Mykhailenko, O., vanOostveen, R., Grebeshkov, O., Hrebeshkova, O., & Vostryakov, O. (2018). Surveying digital competencies of university students and professors in Ukraine for fully online collaborative learning. *Technology, Pedagogy and Education*, 27(3): 279-296. http://dx.doi.org/10.1080/1475939X.2017.1391871

[26] Pokidina, V. (2016) Universytety ta biznes: mizhnarodnyi dosvid spivpratsi ta perspektyvy dlia Ukrainy [Universities and Business: International Collaboration Experience and Prospects for Ukraine]. Retrieved Nov. 18, 2019, from: http://www.cost.ua/news/421-college-business-cooperation [in Ukrainian]

3. Entrepreneurial education is a fertile field for the dissemination of electronic learning technologies (distance education, online courses, professional online communities, etc.), since the latter allow for the maximum optimization of the applicant's time resources and simultaneously implement their business projects. The use of online learning technologies allows not only to change the model of professional training of future entrepreneurs, but also to create in them the digital competences necessary for successful activity in the conditions of post-industrial economy. By the way, the software industry is the only sphere of economy of Ukraine which steadily increases volumes of export of the services[27]. For example, implementing online courses based on business platforms similar to Microsoft Office 365 (for example, the basics Class Notebook[28]), allows you to achieve educational goals while developing a culture of business communication and mastering professional business applications of the highest level.

4. The creation of proper motivation for the development of entrepreneurship as a professional sphere for all participants in the educational process is one of the most difficult problems of our time. As our experience shows, students easily lose their incentives to study if educational materials become available to them in an online format. In turn, teachers do not see the advisability of using online tools, as they "lose a live connection" with the student. The only way out is to improve and search for radically new (compared with the industrial world) models of the educational process and technologies for implementing the competency-based approach in education. It is necessary to take into account the co-educational model of training, which is very adapted to the challenges of the digital economy and can be highly effective specifically for the needs of business education.

Examples of successful implementation of these initiatives are the Kyiv National Economic University named after Vadim Hetman. In particular, in order to popularize the work of an economist and career guidance work with schoolchildren, the Ukrainian Business Tourney "Company Strategy" has been held since 2013, which is implemented on the basis of a virtual business simulation VIAL+[29]. For more than ten

[27] Ohliad ekonomiky Ukrainy – 2018. [Review of the Ukrainian Economy – 2018.]. Retrieved Nov. 2, 2019, from http://www.chamber.ua/Content/Documents/-1635684409Country_Profile_2018_UA.pdf [in Ukrainian]

[28] Hrebeshkova, O. M. (2017). Onlain-kurs na platformi OneNote Class Notebook. [Online course on the OneNote Class Notebook platform.]. Retrieved Sep. 21, 2019, from https://blendedlearning.teachable.com/p/onenote [in Ukrainian]

[29] Biznes-turnir "Stratehiia firmy". [Business tournament "Firm strategy"]. Retrieved Nov. 4, 2019, from http://kint.com.ua/ua/biznes-tour-stratehiiafirmy-20 [in Ukrainian]

years, on the basis of the educational and training center of economics and enterprise management, professional training programs have been implemented for economist students based on virtual business simulations (Sigam Market, "Clash of the Titans"[30]) and special professional software products (1S, Diamond FMS, Power BI etc.). In order to educate entrepreneurs of the new generation, the opening of the master's program "Entrepreneurship in Educational Activities" was initiated, one of the key tasks of which is to create competencies among entrepreneurs to create digital educational products.

Regarding the development of the digital competence of university teachers, the significant contribution of special continuing education programs, the introduction of online training based on MOODLE, the dissemination of the experience-sharing experience based on projects such as the Laboratory for Innovative Educational Technologies[31] should be noted and information platform "Innovation in business education"[32]. Therefore, a complete chain of coverage of all levels of educational activity – from schoolchildren to qualified professionals – has been built almost.

CONCLUSION

The formation of the digital competence of an entrepreneur in Ukraine is a task that can be solved only from the perspective of a systematic approach and on the basis of strategic partnership of a wide range of stakeholders – government agencies, educational institutions and business. The success of this task depends on many exogenous and endogenous factors, among which the most influential are:

a) institutional support for educational reforms;

b) further development of the digital infrastructure in the country;

c) the formation and dissemination in society of an entrepreneurial paradigm of thinking, involving proactive behavior of economic entities, a creative approach to solving problems, readiness for change and learning throughout life;

[30] Biznes-symuliatsiia "Bytva tytaniv". [Business simulation "Battle of the Titans".]. Retrieved Nov. 4, 2019, from https://meim.kneu.edu.ua/ua/depts6/mijnar_obliku_auditu/news_of_department_moba/buz_simul/ [in Ukrainian]

[31] Laboratoriia innovatsiinykh osvitnikh tekhnolohii. [Laboratory of innovative educational technologies.]. Retrieved Nov. 6, 2019, from https://www.facebook.com/profile.php?id=869017436494282&ref=br_rs [in Ukrainian]

[32] Informatsiina platforma "Innovatsii v biznes-osviti". [Business Education Innovation Information Platform]. Retrieved Nov. 10, 2019, from https://www.facebook.com/ibecon/ [in Ukrainian]

d) increasing the digital competence of entrepreneurs as a result of the active introduction of modern models of education (including e-learning) at all its levels;

e) the transformation of the content of education towards the deployment of a competency-based approach and problem-oriented learning.

SUMMARY

The study of the formation of digital competence of entrepreneurs was carried out on the basis of studying the practice of implementing educational innovations by Ukrainian universities. The experience of transformational changes in the educational process of one of the leading economic universities of Ukraine, Kyiv National Economic University named after Vadim Hetman, is summarized. The results of the introduction of the blended learning model are presented and the effectiveness of using e-learning tools in the educational process of the university is analyzed. The proposals on building the capacity of educational innovations in the formation of digital competence of future entrepreneurs are formulated.

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Chapter 10
PATENT SEARCH IN STRATEGIC DECISIONS MAKING OF COMPANY

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INTRODUCTION

Modern companies act in specific conditions that create new requirements for their efficient function. Powerful manufacturing facilities or raw material advantages have long been insufficient to provide competitive advantages. Intangible assets of the company, such as trademarks, patents, goodwill, and know-how become more and more important. Character of intangible assets differs significantly in different industries such as their influence on business models of companies. But share of intangible assets in forming of companies' income achieves 30-40 %. For example, in area of food, beverages and tobacco product income share of intangible assets is 31 %, in petroleum products – 42.1 %, pharmaceutical products – 34.7 %, printing products – 27.1 %.[1]

Intangible assets not only affect company's income, its value, level of its competitiveness and stability, but they are objects of analysis for making strategic decisions. Objects of intellectual property are key factors of acceptation or rejection of decision about expediency of investment in research and development, feasibility of developing a new product and its launch, entering the new geographic market, merger and acquisition, forming strategic partnership, etc. Issues of intellectual property are especially important and cannot be ignored by company when it is entering the international market. The role of the intellectual property has been recognized as important part of institutional infrastructure for stimulation of investment in research and development, in particular in the industrial and scientific areas.

Patents have a special place in the list of objects of intellectual property; accordingly, patent search should become one of the tools for analysis of activity's directions and development of strategic decisions of the company. Patents are exhaustive source of technical and business information. It is essential to analyze level of technological development

[1] Chen, W., R. Gouma, B. Los and M. Timmer (2017). Measuring the Income to Intangibles in Goods Production: A Global Value Chain Approach. WIPO Economic Research Working Paper No. 36. Geneva: WIPO.

in specific area for avoiding wasting time and money on something that already exist.

According to WIPO information European industry loses 20 billion dollars every year due lack of patent information's use. Companies make efforts and try re-solve problems that have already been solved, spent money and time to launch products, that are on the market[2]. Instead of this patent information should be used in context of developing and marketing of new products, monitoring of market trends, analysis of competitors' activity and making strategic decisions.

10.1. Essence of invention's patenting

The role of patents in global economy, economies of countries and companies' economy has significantly increased over last years. Globalization of economy, convergence of industries, distribution and active use of digital technologies play great role in the process of intellectual property's development. More and more countries are involved in the global process of intellectual products' creation. It determines issues of management and protection of intellectual property.

It's confirmed by positive dynamics of patent application all over the world (Figure 1).

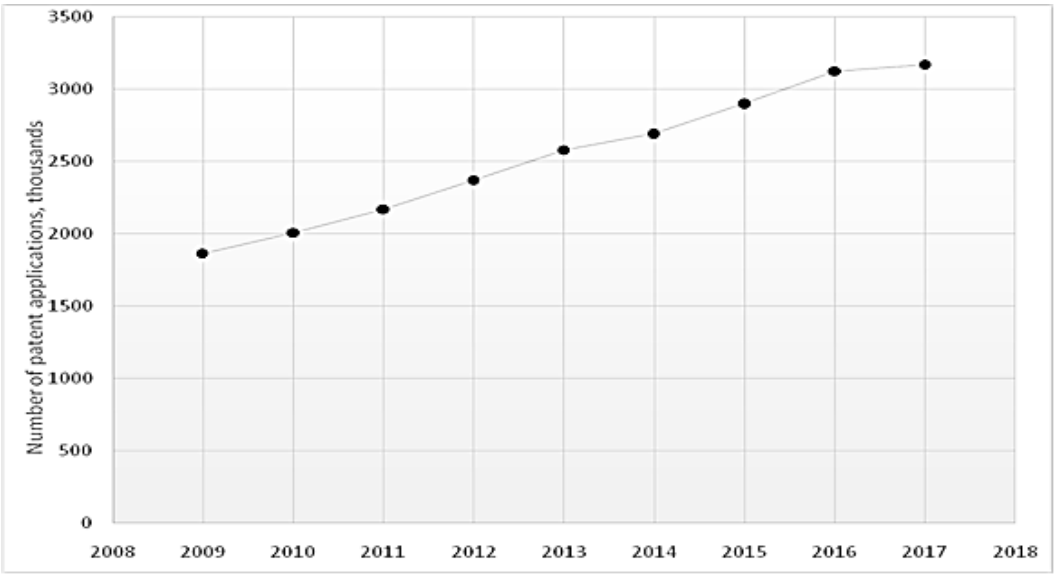

Figure 1. Dynamics of patent applicationin the world, 2009-2017, applications[3]

[2] WIPO (2017). World Intellectual Property Report 2017 – Intangible Capital in Global Value Chains. Retrieved from: https://www.wipo.int/publications/en/details.jsp?id=4225&plang=en

[3] WIPO (2019)*WorldIntellectualPropertyIndicators 2018*.Retrieved from:https://www.wipo.int/edocs/pubdocs/en/wipo_pub_941_2018.pdf.

In structure of intellectual property filing activity patents had share 15,8% in 2018 (Figure 2).

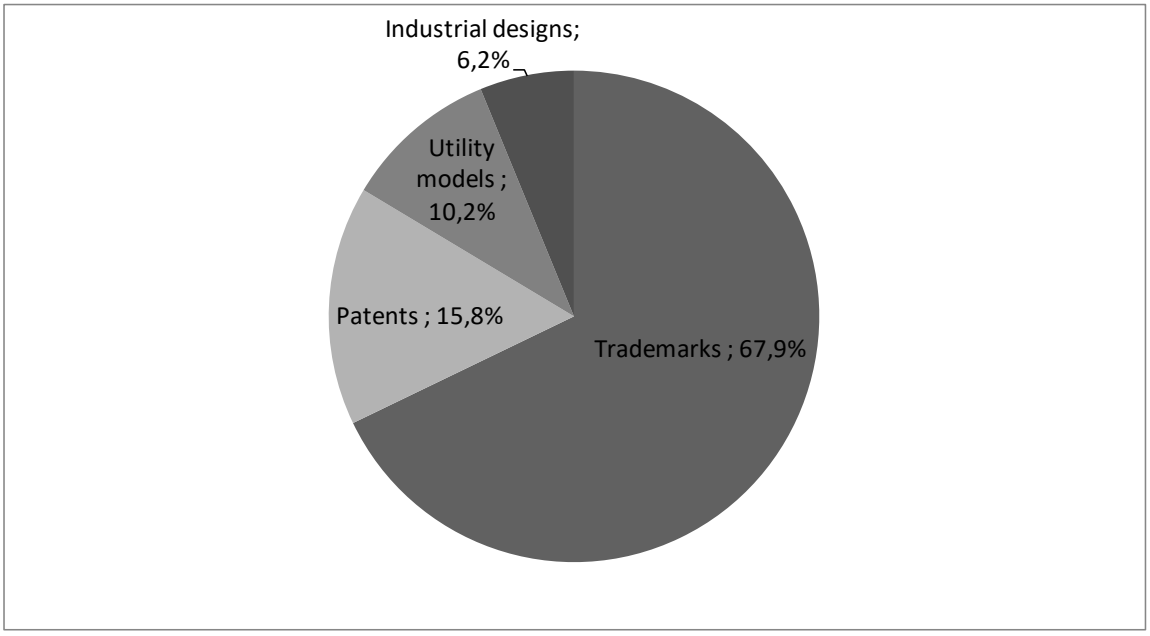

Figure 2. Structure of IP filing activity[4]

Structure of patent filing by region is shown in Figure 3.

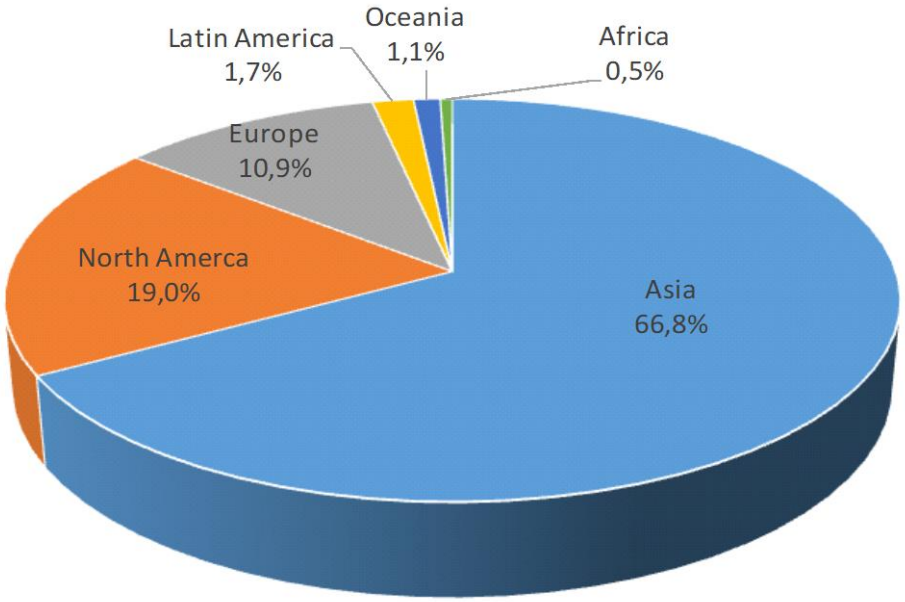

Figure 3. Structure of patent filing by region[4]

[4] WIPO (2019) *Facts and Figures*. Retrieved from:https://www.wipo.int/edocs/infogdocs/en/ipfactsandfigures2018/

Table 1 shows structure of published patents applications by fields of technology in 2017.

Table 1

Published patents applications by fields of technology, 2017[5]

Field of technology	Number of published applications	Share of total, %
Electrical engineering	866 903	29.4
Instruments	439 984	14.9
Chemistry	723 945	24.5
Mechanical engineering	655 144	22.2
Other fields	264 629	9.0
Total	2 950 605	100

The most successful businesses in the world are based on the innovative ideas, which are non-physical resources. There are different motives to create new ideas, products, process and technologies, such as recognition and acknowledgment, satisfaction from results of intellectual activity and research and so on. But often it is not enough to encourage researchers to invest their resources in new inventions. In these aspects, intellectual property is part of innovation system and allows inventors to restrict the use of their knowledge, obtain a return on their investment[6,7]

Patent system is aimed at innovations' enforcement and stimulation of economic growth by:

– protecting of creativity's results and insolvent of investment in development of new invention;

– publication and disclosure of technical information about new inventions.

There are two main functions of patent system:

– legal protection of intellectual property, which has territorial character, i.e. protection is limited by country or region;

– disclosure of patent information that is carried out globally, so any person can get this information.

[5] WIPO (2019) *World Intellectual Property Indicators 2019.* Retrieved from: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_941_2019.pdf?fbclid=IwAR1YRRP_TRTt4FHoOy2e2Z5zrewvobV0eBGlP8n-birZIezQK7shrlN4-vk

[6] Maximiliano Santa Cruz S., PilarTrivelli (January 2016). Interaction between Intellectual Property and Competition Laws. E15Initiative. Retrieved from: http://e15initiative.org/publications/interaction-between-intellectual-property-and-competition-laws/

[7] Stiglitz, Joseph E. (2008). Economic Foundations of Intellectual Property Rights. Duke Law Journal, Vol. 57. Retrieved from: https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1362&context=dlj

There are a lot of data bases that provide free access to patent information. Each of them covers specific compilation of patent documents. None of them covers all patent documentation published in the world. But they all provide follows:

– Title – depicts the essence of the invention;

– Abstract – gives a brief summary of the invention, forms main idea of the document's content;

– Description, drawings, claims – facilitate the extraction of information. Claims define the scope of novelty, description gives background of the invention (the "prior art") and describes difference between existing technology and given invention. Drawings illustrate the invention. Technological information describe the invention according to requirements of patent law;

– Patent/ Publication/ Application/ Priority number(s) – documents have various identification number and codes on different resources, but these numbers give opportunity to make search fast and easy;

– Dates – date of application, priority date, date of grant;

– Classifications -"classification symbols" facilitate the finding and extracting of relevant information. There are several classification system, but International Patent Classification (IPC) is widely applied.

– Inventor, Applicant, Owner – sometimes the inventor is the applicant. Information contains legal address of owner or applicant;

– Citations – can be patent or non-patent documents.

– Examiner/ Attorney;

– Country Information – information about country of filing helps to identify the jurisdiction of patent;

– Patent Family – shows patents filed in more than one country.

The reason to use different data bases is to find patent documentation and get access to needed patent documents. Electronic data bases, software help to analyze patent information quit fast and full.

Patent provides exclusive rights to its owner, in particular to limit commercial and other exploitation of invention by thirds persons. Due to these exclusive rights patent's owner can get temporary monopoly of invention's use. It provides enhancement of company's market positions, redounds increasing of revenue through royalty and contributes positive image of the company. Patents are those tools that help to turn innovative idea or invention into competitive product which provides increasing of profit, so patents help to commercialize inventions.

Main reasons of inventions' patenting are following:

– Exclusive rights to prevent others from commercial using of the invention, so called negative rights, that are valid for twenty years from the patent application;

– Opportunity of invention's commercialization provides to patent's owner higher returns on investment;

– Exclusive rights provide stronger market positions for patent's owner;

– Opportunity to license or sell the invention if company doesn't want to exploit the patented invention by itself. Selling of invention is a source of company's revenue;

– Positive image of company – set of patents illustrates level of company's technological development and expertise and can increase attractiveness of company for potential investors and partners.

W. M. Cohen, R. R. Nelson, and J. P. Walsh researched main reasons to patent innovations by responded more than 600 manufacturers. According to this research principal motive is to prevent copying (Table 2).

Table 2

Reasons to patent innovations[8]

Reasons	Type of innovation	
	Product Innovation, %	Process Innovation, %
To prevent copying	95	77
For licensing revenue	28	23
To prevent law suits	59	47
To block others	82	64
For use in negotiations	47	43
To enhance reputation	48	34
To measure performance	6	5

As mentioned above patents help to commercialize invention. According to GrantR.M. there are several ways to achieve this and maximize returns to innovation[9]:

[8] Cohen W. M., Nelson R. R., Walsh J. P. (February 2000) Protecting their Intellectual Assets: Appropriability Conditions and Why us Manufacturing Firms Patent (Or Not). NBER Working Paper No. W7552. Retrieved from: https://www.nber.org/papers/w7552.pdf

– Licensing;
– Outsourcing certain functions;
– Strategic alliance;
– Joint venture;
– Internal commercialization (Table 3).

Table 3

Alternative strategies for exploiting innovation

	Licensing	Outsourcing certain functions	Strategic alliance	Joint venture	Internal commercia-lization
Risk and return	Little investment risk but returns also limited. Risk that the licensee either lacks motivation or steals the innovation	Limits capital investment, but may create dependence on suppliers/ partner	Benefits of flexibility. Risks of informal structure	Shares investment and risk. Risk of partner disagreement and culture clash	Biggest investment requirement and corresponding risks. Benefits of control
Resource requirements	Few	Permits external resources and capabilities to be accessed	Permits pooling of the resources and capabilities of more than one firm		Substantial requirements in terms of finance, production capability, marketing capability, distribution, etc.

Making decision about strategic partnership or joint venture, company should thoroughly analyze potential partners, their activity and capabilities. And patent search can provide wide range of appropriate information.

10.2. Directions of patent search

Patents provide corporations and individuals both technical and strategic information. This strategic information may be even more effective than technical content. Such information can be used to making decisions about start of R&D, launch new products, enter new

[9] Grant R.M. (2016) Contemporary Strategy Analysis: Text and Cases Edition 9th ed. Wiley.

geographical market, merger and acquisition, forming strategic partnerships. Information that can be used for a particular decision is discussed below.

To make decision about expediency of R&D conducting, one should provide state-of-the art search that is carried out to review the level of development in a particular technical area. Main goal of this search is to avoid spending of money, efforts and time for some inventions that are already existed. Also it may be found out what solutions exist in some technical sphere, specificity of their development and their patent protection – are patents valid? What is patent family? How can be novelty reached? What are technology trends on the market and what are main directions of R&D of competitors?

For these goals, such patent information may be used:

– Invention's description – clear and concise explanation of existing technologies, that are relevant to new invention, and how this invention may be used to solve technical issues, which are not solved by existing technologies;

– Claims – the legal definition of the technical essence of the invention for which application is filed; claims describe invention and its technical characteristics;

– Name of inventor and applicant;

– Date of application;

– Legal status of patent;

– Patent family.

Patent information can be described as:

– Technical information – from description and drawings of the invention;

– Legal information – from the patent claims;

– Business-relevant information – from reference data about inventors, date of filing, owner, country of origin, etc;

– Public policy-relevant information – from analysis of filing trends to be used by policymakers (national industrial policy strategy)[10].

There is opportunity to analyze technical and market activity of competitors by observing their filed applications and granted patents. Market technology trends and companies' directions of R&D can be

[10] WIPO (2015) WIPO Guide to Using patent information. Retrieved from: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_l434_3.pdf

gleaned. Also one can analyze life cycle of technology and find out timing of research and development process.

Knowing which companies or individuals are technological leaders in your area of business can play an important role in planning commercial, research and development activities of company. Patenting activity and patent ownership can be important in identifying principal innovators in different areas of technology[10].

Analysis of patent applications, their dynamics and spheres can be used by politicians for designing of national strategy of industry's development. Patent documentation gives statistic data about level of patent activity in different countries and regions.

Patent search can demonstrate inventors who are most important for the company and its research activity. It may be key information for decision about merger and acquisition. Analysis of inventors of competitive companies can be useful for headhunting. Name of inventors is important information for company that wants to hire talent employee to enforce competitive position on the market. Name searches give information about technological areas, where competitors act.

Also it can be found out in which countries competitors apply for patent and according to this information it can be assumed where they would like sell their products.

It is important to know in which countries patents are granted, especially making decision about entering new international market. As patent provide to its owner right to prevent other persons making, using offering to sell, selling or importing inventions, valid patents should be analyzed to avoid infringements.

Firstly, company should check patents of competitors in those countries where it wants to carry out activity. Next step is to check validity of these patents, i.e. analyze legal status of relevant patents or patent application in specific countries or regions. There is annual renewal fee which are required by some authorities and provides validity of granted patent. In case of pay's failure patent will be lapsed. Patent may be amended after grant by owner or it may be annulled by the court.

If patent is in force, it should be check is invention new and not obvious. If invention does not appear to be new, company may get the court decision about withdrawing or get better terms for licensing.

Patent search should cover patent information about applications filed on PCT system, national and regional applications.

As patent is valid in country company wants to enter and plans market its product, it should analyze and evaluate existing applications and petitions about this invention. Company can avoid infringement through modifications of its product according to patent information. It should be taken into account that application is published in 18 months after filing date. So, it is important to monitor patent information in technological spheres of company's product. Different searching services combine notifications' tools, in particular RSS channels that make this process easier. RSS-channel provides newest information about international applications that are relevant to particular business-interests. Content of channel updates constantly with publication of new applications.

Analyze of legal status of patents or patent applications and other equivalent documents helps find out legal standing of invention in country or region.

When company is negotiating a patent license or planning to form partnership or merge other company analysis of patents' validity helps to evaluate asset base and analyze strength and value of patents. References in patent documents – to other patents, applications and cited information in national and international reports – could be useful in evaluation of particular patents. For example, frequent references to patent in later patent documents indicate technical relevance and its value.

Ignoring of patent search to discover if there are any valid patents in country or region can lead to infringement and as result to expensive court actions or even award of damages. Also it influences negative at company's reputation and value.

So, legal status information assists to make decision about market entering in particular country or region, assessing the validity of patents and their value, in the license agreement's negotiations and avoid infringement and court action.

Monitoring of patent information is useful not only in case of entering new market, but for protection of company's own market and identification of potentially dangerous competitors. Patent provides to its owner temporary monopoly and in this way gives to him some competitive advantages. But patent's owner cannot ignore developments of other companies, modifications of products and scientific and technological progress. Companies, on the one hand, can prevent illegal use of their inventions, and on the other hand can explore directions of development of technologies/products, possibility

of appearance of new competitors and on this basis make decisions about own research, investment and other actions, which will provide competitive positions. So, patent search gives information about new potential market and define trends and perspectives of existing market. Main actions for protection of competitive positions by using patents are shown in Figure 4.

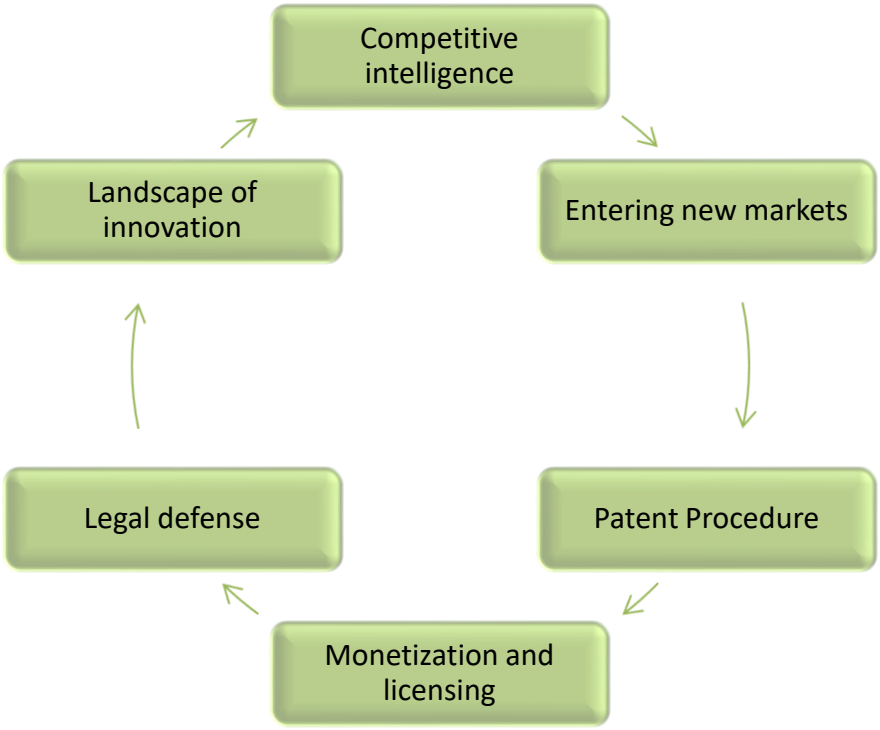

Figure 4. Actions for protection of company's market positions by using patents[11]

A patent's most direct use is the ability to obtain an injunction against infringement by a competitor who makes, uses, sells, offers to sell or imports a product or service covered by the patent's claims. Under certain circumstances, this "blocking patent" gives its owner control of the industry or product line related to that patent[11].

Moreover, patent is a powerful marketing tool. Patented product is more credible for consumers than similar product without patent

[11] Derwent Innovation (2017) *Poiskianalitika svedeniy o relevantnykh patentakh dlya prinyatiya obosnovannykh resheniy v otnoshenii intellektual'noy sobstvennosti I biznesa* [Search and analytics of relevant patent information for making informed decisions regarding intellectual property and business] Retrieved from: https://clarivate.ru/wp-content/uploads/2018/07/clarivate_analytics_derwent_innovations_brochure.pdf(in Russian)

protection. Clients, in particular, retailers and state customers, prefer suppliers who have protected rights of intellectual property[12].

Companies routinely refer to their "patented technology" in press releases and advertising materials. Some companies even provide information about their patent portfolios in their investment materials[13].

Next important way to use patent information is prospecting for potential strategic partnerships or licensing opportunities. Important issues of forming strategic partnership are to find appropriate partners with particular assets, technologies and strategic goals. Problem of search and analysis of potential partner is key problem of effective functioning of partnership. Wrong choice of partner leads to conflicts and non-efficient activity of all partners. Patent search gives opportunity to analyze patent families of potential partners, their research directions, granted patents and their values and find companies that are complementary to company's business. Also it can be useful for investors who are looking for objects of investment, so they can analyze level of technological development of the companies, research activity, their respect of intellectual property rights and their perspectives in technological and marketing activity.

Patent search is a good way of identifying other businesses engaged in a particular field – if the searching company is looking to "license in" or "license out". For "licensing in" (a technology belonging to someone else that the searching company wishes to distribute or improve) or "licensing out" (a technology the searching company has developed but perhaps does not have the resources to commercialize) or "cross-licensing" (between two patent owners) it is needed to have relevant information about technology – target or key – to make right decision. Analysis of patent information can give valuable and exhaustive technical and business information about companies and technologies, their strengths and weaknesses.

Before "license in" a technology such questions should be examined:

– is technology protected by patent or in public domain? If it is in public domain, what are the reasons? Because a patent was not applied for or was applied for but not granted; or patent was lapsed or invalidated;

[12] Patent Service "Start Patent" (2019) *5 prichinpatentovat' svoirazrabotkipryamoseychas* [5 reasons to patent your designs right now] Retrieved from: https://www.start-patent.ru/5reasons-patenting (in Russian)

[13] WIPO (2007)*WIPO Patent Drafting Manual*. Retrievedfrom:https://www.wipo.int/edocs/pubdocs/en/patents/867/wipo_pub_867.pdf

– is there possibility of someone sues and company will recover damages?

– isn't technology undervalued or overvalued in comparison with others?

Patent search helps license in technology. For example, company can locate dormant technology that has not found a licensee or manufacturer to commercialize it. But important question is to found out why technology is not being used. Sometimes, license to a technology that is not being used can be great chance for business. Technology can be exploited in a different geographical markets, it could be modified or used for other goals.

To "license out" company should explore follows:

– who could be licensees?
– what is value of technology?
– is technology core in company's business?
– what obstacles can appear when "licensing out"?

Patent information as result of patent search provides great basis for making different strategic decisions of company. But other types of information – such called "non-patent" information cannot be ignored. Non-patent information or literature includes printed and non-printed matter that may be technical relevant for the patent-granting procedure[14]. Non-patent literature includes:

– articles published in scientific journals;
– public conferences;
– research announcements (companies, forums, blogs, universities);
– public disclosure platform (social media, YouTube, Pinterest, books, magazines, datasheets, blueprints);
– withdrawn patents;
– sales and marketing materials;
– news sites;
– user guides;
– technical manuals;
– standards publications;
– corporate social pages, press releases, etc.[15,16]

[14] Espacenet. Patent search (2019).*Non-patent literature (NPL)*. Retrieved from: https://worldwide.espacenet.com/help?locale=en_EP&method=handleHelpTopic&topic=npl&fbclid=IwAR2kd6j6c9ufBMH-7mYTYlvmVpPmk-F-vQdB5W2vNAsvHD8HRGsJIaKkCI0

[15] Legal Advantage LLC (2019).*Importance of Non-Patent Literature in IP Search.* Retrieved from: https://www.legaladvantage.net/blog/importance-of-non-patent-literature-in-ip-search/?fbclid=IwAR0L5CmErXtMP4L9t9h-0TWAUa1NFjcD8Ew1eqURzqFPHtK1-lC695fXOGk

Use of non-patent information gives such opportunities to company:

– improvement search of "prior art";
– identification of new strategic possibilities for company;
– analysis of key competitors;
– efficient strategy of patent search.

In many fields of technology, non-patent literature plays a central role in defining the prior art and is, therefore, indispensable for determining the patentability of any innovation. WIPO has established a list of periodicals that intellectual property offices must consult when carrying out international searches as part of the patenting process under the PCT system. This list, known commonly as the PCT Minimum Documentation.

To provide efficient patent search some factors should be taken into account. First of all, aim of search has to be identified. Aim defines directions of search, depth, width and complexity of research. Depending on the criteria according to which patent data can be broken down, it can, for instance, be used to track the growth and changes in patent activity over time, examine the distribution of patent applications in a country by residents compared to non-residents, or identify the technical areas in which a country is predominantly active in terms of patenting activity[10].

Patent search can take long time to be performed, especially state-of –art search. Sometimes researcher should search information in different databases, internet search engines and other source of patent and non-patent information. Patent bases use different system of search, different approaches for search queries' formulation, field codes, cover different countries. Issue of different languages creates additional difficulties for searchers. Provision of efficient search requires not only long time, but some specific skills and experience, knowledge in particular technological spheres. This is reason of appeal to professionals in patent search. Moreover, such professionals have access not only to free, but to paid aggregated databases. Use of paid aggregator and/or attraction of professional searchers for qualitative expertise require some costs. So, one should make decision about balanced use of money and time to get appropriate result.

[16] IP. Com (2019).*Why Non-Patent Literature is Important to Your IP Strategy*. Retrieved from: https://ip.com/blog/non-patent-literature-important-ip-strategy/?fbclid=IwAR0XgOPi-0Tgexw4oESn4cqIUREyKkgYOSoA0uNUCvlJhia1oQUN9cldL7Y

CONCLUSION

Making strategic decisions of company requires deep and rigorous analysis of its internal and external environment. Analysis of internal environment needs identification of appropriate methods, methodical tools and so on. Diagnostics of external environment is more complicated due limited and diverse information. For justification of any strategic decision company should analyse great massive of information of different types related to market, competitors, legislative base, technological aspects, social, political and economic factors. One of the main problems is to get information about competitors, their activity, intentions and plans. In this case patent search can be useful and can provide needed information. Proper use of patent information provides extensive information about competitors, market and technological trends, directions of technologies' development, etc. A search carried out in patent documents makes it possible to find information on recent developments in a range of technical areas. Patent search today is not only way of analysis of technological information; it provides economical, marketing, legal data for strategic use and justification of company's decisions. Results of patent search illustrate trend of technological development of some industries or level of development of particular technologies, directions of technological vectors of different companies. Patent search gives information about "prior art", i.e. existing level of development of technologies is some specific area. It is possible to define vitality important inventors for the company, portfolio of company's patents and their value. Using patent search company can find partners for forming of strategic partnership or appropriate company for merger or acquisition according to characteristics of their technologies described in patents and patents applications. Also patent search gives information for company that wants to "license in" or "license out".

We can use patent information for analysis of potential international markets, companies, which have patents in these jurisdictions, their validity, expiration date, owners, and patent family and so on. Company should monitors patent information to provide protection of its own market and avoid competitive rivalry.

Patent search, especially for strategic use, cannot be full without use of non-patent literature, which includes different types of printed and non-printed information, for example, public conferences, publications, information from social medias and so on.

It is critical to keep in mind the limitations of the data in which the search is being carried out. Performing of patent search needs to solve problem of balanced use of money, time, and skills for efficient results.

Importance of intangible assets, globalization of economy, shortening of technologies' life cycle and other factors lead to increasing meaning of intellectual property and its protection. It can be assumed that in future more and significant will be issues of effective management of intellectual property in general and, in particular, patents and patents family. So, the further direction of research can be defined as efficient patent strategy and management of patent families.

SUMMARY

Importance of inventions' patenting is defined based on the world's statistics in sphere of intellectual property. Main functions of patent systems and advantages of patent protection for its owner are described. The issues of possibility of patent search's use for making strategic decisions of the company are examined, in particular, entering new market, launch of new product, forming strategic partnership, conducting R&D and so on. Attention is paid to use of patent information for analysis of competitors and their activity, protection of own market. Main types of information that company can get as results of patent search are identified. Moreover sources of non-patent information are explored. Problems related to patent search are described; in particular, time and money limitations, skills and experience of searcher, access to paid databases.

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