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LJUBLJANA SCHOOL OF BUSINESS

SUSTAINABLE DEVELOPMENT IN A MODERN KNOWLEDGE SOCIETY

Collective monograph

Ljubljana 2021

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THE FUTURE OF E-LEARNING: DESIGNING SUSTAINABLE EDUCATION

***Abstract**. Today's world demands new levels of commitment in educating young generations and e-learning has emerged as an important tool in disseminating information. Providing a suitable means of consolidating and transmitting disparate information in a dynamic, open, and distributed e-learning environment nonetheless remains challenging. While some lingering uncertainty hampers its widespread role in education and professional training, there is growing concern about certain facets e-learning that future educators and students will need to address. E-learning has become a mainstay in this era of rapidly evolving technology, infinitesimally short product development cycles, insufficient amounts of trained workers, the competitive global economy, and the shift from the industrial to the knowledge era. E-learning designers seek to mobilize global educational and cultural communities, as well as the economic and social players, to accelerate the evolution of education and training systems for a move to a knowledge-based society.*

Introduction

Students in the 'Information Age', which demands of them ever-increasing amounts of knowledge, are expected to take a more hands-on approach in developing their learning process. Some universities have progressively opened to the opportunities that e-learning concepts present, working to integrate e-learning in their teaching to cater to diverse learning styles and provide more interactive materials that allow easy access to information. E-learning has the potential to transform modes of teaching and studying across the board, leading to new standards and levels of involvement in learning. This cannot substitute the important role played by teachers or lecturers' role, but is a promising supplement (Mutiara, 2020).

As its adoption spreads, e-learning is becoming indispensable. But just having e-learning with no implementation strategy or quality of programs is no guarantee of success. Without a clear, premeditated strategy and plan, the e-learning efforts will most likely fall far short of the goals, learners' needs, and management expectations (Mircea,2014).

E-learning is becoming a necessity of modern education. It is often defined in terms of technology. Welsh (2003) defines e-learning as the use of computer network technology to provide information and guidance to individuals, primarily online. Rosenberg (in Tucker et al., 2009) similarly defines e-learning as the use of online resources to provide a variety of solutions to students. Holmes et al. (2006), however, simply state that e-learning is whatever provides access to resources that promote learning from any location at any time. According to the OECD (2005), e-learning refers to the use of information and communications technology (ICT) to enhance and/or support learning in tertiary education. E-learning is also believed to help improving students "computer literacy and the skill needed when they start working" (Addah, 2012).

While definitions of e-learning may vary, they all focus on a set of basic concepts that include education, technology, and the internet. The diversity of views on how to define e-learning is also reflected in the professional literature on e-learning. Views on what e-learning is can be

divided into two main groups (Bregar et al., 2010): the first understands e-learning broadly, as any form of education that uses information and communication technology, and the second group understands e-learning more narrowly and presupposes the integration of technology into all the main components of the educational process, in the pedagogical, organizational, technical, and content components. Such a conception, according to Bregar et al. (2010), is based on the foundations of distance learning. Although the definition of e-learning is interesting, Servage (2005) believes that it is better to focus effort on creating a framework in which e-learning can be implemented rather than on its definition. E-learning in general means a different approach to education from the point of view of companies as providers and users of educational services, as well as from the point of view of the individual (Bregar et al., 2010).

The following are stated as the most characteristic advantages of e-learning from the point of view of the participant in education (Bregar et al., 2020) greater flexibility in time, place, pace, and content of education (just-in-time learning, just-in-place learning), greater interactivity and faster access to knowledge from various sources (synchronous and asynchronous forms of communication, online sources), the possibility of adapting the teaching methods to the needs of the individual, the transparency of educational conditions, and the development of new knowledge and competencies.

Kenneth Fee (in Bregar et al., 2010) cites as a particular advantage of e-learning the ability to promote the culture of learning and learning organization. However, the potential advantages of e-learning are not realized in practice to the expected extent. The main obstacles and the cause of many failed attempts are manifested in inadequate staff, inadequate management, and superficial and insufficient knowledge in general. All too often, we come across the belief that e-learning can be introduced by simply transferring existing educational materials online. One forgets, however, that the declared advantages can only be achieved through comprehensive e-learning, which also requires the adaptation of pedagogical concepts, which must be supported by organizations as providers or consumers of educational services through an appropriate organizational, financial, and staffing scheme and that are to be followed by users of educational services with appropriate motivation and lifestyle.

The biggest advantage of e-learning is the free interaction between learners and instructors, and between learners themselves, without time or space constraints, and with asynchronous and synchronous network learning models (Sue et al., 2006). The features of e-learning have met the demands of learning in modern society and have created great demand for e-learning by companies and higher education institutions. E-learning as the implementation of training and education with network-interactive connections using modern information technology (Fry, 2001), refers to alternative methods of teaching and learning using all electronic media, including the internet, audio and video recordings, and CDs (Wangpipatwong & Papasratom 2007). In the last few years, the use of e-learning in educational organizations has grown significantly in line with the development of information technology. The advantages of e-learning lie in allowing students to learn from anywhere, anytime. Also, the creation and the delivery of educational content is fast, efficient, and economical.

E-learning is most often defined as ICT-assisted education. This means that nowadays almost all education is also e-learning, because without the use of computers and electronic slides, communication tools such as forums, chat rooms, blogs or at least the use of various online resources such as dictionaries, encyclopedias, search engines, higher education universities have

long been unthinkable. Elango et. al. (2008) has argued that the internet is the only way education can break down barriers to injustice, provide opportunities for young people to truly become 21st-century learners, and enable them to learn in ways that meet their educational needs and styles. And to accomplish this, teachers are the key in applying technology to give students the opportunity to learn anything, anytime and anywhere.

The internet has long been instrumental in providing students access to more information, further allowing them to use their own initiative to find it. E-learning is broadly considered the only viable solution to the problem of sending the resources needed to facilitate lifelong learning (European Commission, 2010).

Education, including e-learning, consists of teaching and learning. For many years, we understood teaching as the transmission of knowledge, and learning as the acceptance thereof. With the advent of modern forms of e-learning, however, the role of teachers and students is changing. We have moved on from a teacher-centered to a student-centered paradigm. The transmission and receipt of knowledge are no longer necessarily the ends, but focus is on the collaborative process between teacher and a student or about the co-creation of knowledge. In education, new knowledge is sometimes achieved through the process of cooperation and/or co-creation, where individuals and their peers explore a particular concept or knowledge, thoroughly examine it, and redesign it by presenting new knowledge (Charlton et al., 2012).

Kasworm (2011) agreed that e-learning allows flexibly in learning and accessing materials according to students' needs and provides more interactive materials that allow easy access to information and feedback from students. Several universities have integrated e-learning in their teaching to accommodate diverse learning styles (Turney et. al, 2009).

In connection with e-learning, we also talk about synchronous and asynchronous education (teaching or learning). The term synchronous education refers to learning and/or teaching in which the teacher and the student are present at the same time. Modern ICT with communication tools enables simultaneous communication, via teleconferencing or videoconferencing, although potentially all the virtual interlocutors may be located all around the world. All other possibilities of interaction with potential time differences between them are referred to as asynchronous. To implement e-learning, it is therefore necessary to provide:

- technology – a virtual, online learning environment
- interactive, multimedia materials
- qualified pedagogical workers who perform e-subjects and e-mentoring
- support technical assistance, pedagogical advice
- development and organization
- administration and management
- evaluation

If until recently traditional education was the predominant form, modern ICT technology has led to great changes in the field, spurring a growing trend towards e-learning. Modern technology, together with social and political changes and the world's growing degree of globalization, is undoubtedly changing education and thus learning. Knowledge is available to anyone from anywhere today, and collaborative learning is replacing and displacing classical teaching. Modern pedagogical approaches change the traditional role of the teacher as a transmitter of knowledge (teacher centered) and put the learner in the foreground (learner centered) with an active role and participation in the learning and teaching process. The teacher becomes the moderator of the

learning process, which encourages and directs the learner to an excellent way of acquiring knowledge and competencies, and to the use of high-quality resources (Bregar et al., 2020).

The forerunner of modern distance education can be traced in early correspondence courses in the United States as early as 1728. In the following 100 years, advertisements for today's so-called correspondence courses appear. In the second half of the 19th century, these correspondence courses became very popular, and quite a few universities in the United States (University of Chicago, University of West Virginia, University of Wisconsin, etc.) developed such programs. During the same period, correspondence education also appeared in various countries of Western Europe. The University of London became an important player in the development of private educational institutions offering correspondence education. Later, correspondence schools appeared also in Germany and Sweden. In the early 20th century, the first educational radio program appeared and later the first educational television program at the University of Iowa. After World War II, this form became a mainstream addition to modern education (Solomon, 1998).

The development of cable television, computers, interactive video systems and the internet has contributed to a significant increase in distance learning, not only in the United States but all over the world.

The development of e-learning is often manifested according to the stages or generations in the development of the web.

E-learning 1.0 is defined as the state of replacing traditional ways of transferring learning resources with electronic ones. ICT thus changes traditional ways of transferring the teaching materials, whereas the teaching materials do not change significantly in terms of content or form (Hanna, et al., 1995). They are still two-dimensional, and the student can print them out.

From the point of view of technology, e-learning 1.0 means sending or transferring files (FTP, web pages, emails) and static HTML web pages. The student reads the web pages, but cannot interfere with them, co-create them, or transform their content.

New technologies, especially new ways of using them, also help improve e-learning. Apart from technology, its development is also decisively influenced by the development of e-didactics.

Currently, the e-learning that is being established around the world is e-learning 2.0. Some call this stage of development an improvement (Hanna et al., 1995). E-learning 2.0 is characterized by the goals of increasing didactic efficiency (compared to traditional learning forms and e-learning 1.0) and improving the processes of using ICT (Hanna et al., 1995). The impact of Web 2.0 and the technologies we use to implement such websites is evident. Web 2.0 is a term that refers to changes in the design of web pages and how they can be used. Websites are dynamic, the content providers and/or co-creators can also be their users. Access to data is facilitated through RSS and AP technologies, mobile technology, adaptive learning environments (ALE), open access systems, and the development of appropriate tools and standardization (Bregar et al., 2020). The Web 2.0 is characterized by web applications, which we call social software, and concepts such as the exchange of content and information (for example, the exchange of images or videos, blogs, wikis), interoperability, and cooperation between users. However, the Web 2.0 is still merely an environment for individual documents and applications that store centralized data (Bele & Rozman, 2010).

Optimistically seen, we may already be transitioning to the development stage 3.0, which is characterized by transformation. Hanna et al. predicted this as early as 1995, but, according to many, it has still not been reached. Processes and strategies are both changing to maximize the

effectiveness of education (Hanna et al., 1995). Regarding the new stage of development, it is necessary to mention the semantic technologies, as they belong to the key factors in the evolving Web 3.0. The evolving Web 3.0 or the Semantic Web, unlike Web 1.0 and 2.0, which are linked to a multitude of documents, is a vast database that is distributed online. We are talking about a web of data. This is the web for people (which is also typical for Web 1.0 and 2.0) as well as for computers and/or for intelligent agents that can understand, analyze, and offer data to humans (Berners et al., 2001). Web 3.0 is designed to enable better management of online data and accessibility on a variety of devices, encouraging creativity and innovation, as well as participation on social media. Web 3.0 removes the concept of a website, and data ownership is replaced by the concept of shared services, which provide qualitatively (content) different information than the source website (Bregar et al., 2020). The semantic web thus means the next stage of development in the logical evolution of the web, the future online experience.

The current internet is becoming increasingly messy. It contains virtually the sum of humanity's knowledge, but it is poorly accessible. Based on keywords, search engines help us find documents in which the searched data appears. Then we have an abundance of time-consuming investigation of these documents to find what interests us. For example, we have a whole abundance of educational materials online, but it is very difficult to find ones that fit our existing knowledge background or needs.

Knowledge stored online is fragmented and unconnected. There are answers to complex questions hidden online, but unfortunately, we are not able to ask them in such a way that computers would do the work for us. Online content is machine-readable, but not understandable to machines. Of the many records on a particular disease, it might be easier to find a cure for it, or at least get new starting points for research, if computers understood the meaning of the data stored.

The basic purpose of the new generation of the internet, which we call the semantic web, is to present information that can be readable by humans and be interpreted by machines. The authors of the Semantic Web, joined in the organization W3C, and many other researchers around the world are convinced that by implementing syntactic and semantic operability among independent web applications, we will enable machines to perform complex tasks instead of people and for people. This will make the web more transparent and more useful (Bele & Rozman, 2010).

We use various online services and search for various data and information (for example, the meaning of a foreign word in the dictionary, the seller of a certain product with the lowest price, etc.). However, a computer cannot perform these tasks without us directing it. Due to the abundance of data online, searching is becoming more and more time consuming and less efficient. When we do not know exactly what it is, we are looking for, we get a lot of hits, but they do not necessarily live up to our expectations. Reviewing these hits is time consuming. As a result, a new version of the web is emerging, called the Semantic Web. Its purpose is to efficiently present information more understandably for computers so that they can do more work in finding, exchanging, and combining information. Organizations such as W3C, led by Tim Berners Lee, and various other research projects around the world ensure that the web is continuously improving and helps with data management, integration, and analysis.

The web is currently based mostly on documents written in HTML format, a standard that allows a combination of text and multimedia elements, as well as links to other documents. HTML documents have meta-tags by which search engines categorize page content. However, search engines themselves do not really know the true meaning of the data. Today, the web helps us

publish or find documents quite effectively, but it cannot directly treat individual elements of information in these documents as data. The data can be viewed in a browser, but we cannot use other computer programs for analysis, but rather a considerable amount of "manual" effort is required (Bele & Rozman, 2010.

What is the problem? Today's internet is a web of linked documents. For example, we can see our photos and calendar appointments on it. However, we cannot see what we're doing when we take photos, either, only once we have developed them. Data are namely not a part of the web, but part of applications, which keep those data to themselves. As a result, they are not interconnectable. The power of today's web, including the ability to find the websites you are looking for, stems from the fact that documents are put online in a standard format and then linked together.

The evolving semantic web is no longer a web of documents, but rather a web of related data; it is an enormous database. The Semantic Web is a stage in the internet's development that defines the meaning (semantics) of information and services online, enabling them to "understand" and meet the demands of humans and machines (Berners, 2001). The semantic web is about two things, namely standards that allow the integration and combination of data from different sources, and a language for recording connections between data.

The semantic web is therefore not a new web, but an improvement and/or an upgrade of the old one (Feigenbaum et al., 2007). We look at the semantic web as a global database. The goal of the semantic web and/or web-related data is to enable computers and/or intelligent agents to do more useful work in finding information and develop systems for trustworthy web interactions. We use terms that we borrowed from linguistics: syntax (syntax or rules of how words are linked into sentences), semantics, and ontology (dictionaries). The technology that allows us to define syntax is XML. The most important building block of the semantic web is RDF (Resource Description Framework), which enables the implementation of semantics. It is a simple language for presenting information online. Each piece of data and each link between two pieces of data are identified by a unique Universal Resource Identifier (URI), i.e., by the generic website address we use online (URLs are special formats of URIs.) RDF has XML syntax. Two pieces of data and a record of how those data are linked/related form a trinity (W3C, 2010).

We have OWL (Web Ontology Language) available to build dictionaries or ontologies. Ontologies are dictionaries of knowledge about specific areas. They contain definitions of terms, classes to which they belong, properties, relationships between them, etc. They can be created by anyone and published online. Finding connections between different sources is an important step towards revealing the meaning (Feigenbaum, 2007). All of this, however, is made possible by inference rules that tell us how computers should reason.

The internet's development has created countless opportunities to acquire and share knowledge. There are many repositories of educational content available (e.g., Connexions, Mitopencourseware, Merlot), online encyclopedias (e.g., Wikipedia), dictionaries, and much more. And even more knowledge is scattered online in a disorganized way. In formal education, teachers are the ones who design relevant online resources for students and thus help them save time. However, today we spend a lot of time on lifelong learning, i.e., informal education, where we are mostly left to ourselves and our own initiatives. The share of informal education is increasing as knowledge becomes more accessible. ICT also enables the formation and operation of interest groups, where experts or interested laypeople in a particular field can exchange their knowledge, experience, and ideas.

We have significant amounts of data and resources at our disposal, including those that are not trustworthy. In addition, sources of knowledge are not adapted to our existing knowledge background, needs, or abilities. We therefore spend more and more time searching for suitable sources.

The e-learning we know today in many instances still mimics traditional education. We have materials and virtual classrooms in LMS systems. Content is text-based and are most often just occur as books in electronic format (for example, in PDF), although the technology actually allows for interactive, multimedia materials. We do have the 21st century technology. Many professions and fields have undergone great development in recent decades, however, pedagogical methods and teaching materials in schools differ little from those of the past. Education needs innovation, most likely in the direction of fully personalized virtual learning environments.

E-learning changes the face of education through available technologies and new pedagogical approaches, but it is unfortunately gaining ground too slowly. Software drives the creation of social networks and communication among students, thus facilitating collaborative learning. Progress is even more visible in informal and distance learning. Large, globally dispersed companies are reaping the benefits of e-learning because it lets them transfer knowledge among employees more cheaply, easily, and quickly, as well as inform and instruct their customers.

Today, we have content available online whose meaning is often indicated by meta-tags assigned by the authors. Semantic technologies, on the other hand, offer standards and models that enable a better quality of information retrieval results. A typical web ontology contains definitions of classes, objects, and connections between them, as well as inferential rules. Through ontologies, the semantic web provides the basis for enriching information with meaning and in a format understood by computer programs. It thus helps teachers and students find information according to their needs, reuse them, and create new connections between various content with simpler search mechanisms (Bele & Rozman, 2010).

One of the basic paradigms of e-learning is focus on the learner. We want to offer the learner content that is fits their existing knowledge background, abilities, and needs. However, determining the existing knowledge level and automatically preparing educational content on this basis is unfeasible with the tools of the current internet. Semantic technologies could be the key to solving this problem. They use latent semantic analysis to determine the existing knowledge and assess learner's existing knowledge based on student-created documents and their learning activities (Deerwester, 1990).

Semantic technologies offer the possibility of generating and storing data about students, such as analyses of their current and past behavior, progress, and acquired competencies, so that we can offer each student tailor-made content.

The introduction of semantic technologies based on the knowledge basis, created from metadata about the learning e-materials, e-courses, and activities of participants, enables new functionalities, listed below (Bele & Rozman, 2010):

Advanced search through the educational content. The current system searches the search string in the "ordinary" way, i.e., based on the search for the entered string in the database. Searching with semantic technologies, however, considers the meaning of the search term and thus offers a significantly better choice of potential hits. For example, if the e-educational material for using Microsoft Excel also talks about pivot tables, advanced search engines, in addition to the search term "pivot table" or even "analysis", also consider the learning page with pivot tables.

Adapting educational content to the individual. As a rule, e-educational materials include combinations of different multimedia elements. Individual multimedia elements with the same content can also differ from each other, especially in the way such content is presented. For example, an on-screen animation showing the process of using Microsoft Excel can give the learner instructions and explanations with descriptive descriptions (in the form of subtitles or "bubbles" of text) or as recorded speech. When an individual chooses the desired display or presentation of this educational content, the system records the learning styles and habits of that individual in its database (ontology). As a result, the new e-material can automatically offer their preferred format. An additional functionality can be developed from the resulting data, as the system can "learn" based on the activities of a statistically representative group of individuals, and recommended to the new participants, with the help of an upgraded ontology, such pre-choice of the display of multimedia elements, as is preferred by most users.

Tailor-made learning plan for the individual. Based on a modularly built educational e-content, the appropriately set ontology and the demonstrated existing knowledge background of the individual (for example, by testing the individual's knowledge or based on their learning e-portfolio), the system enables an automatic layout of individually tailored educational e-content.

Automatic connectivity with external sources as a supplement to educational contents. The recognition of the importance of the learning objectives of individual e-materials by the system also results in an automatic display of similar external sources. These resources, which describe the same type of topic, are available to the user as additional educational material and are intended to supplement their knowledge. It is expected that this list of external sources will automatically increase in proportion to the formation of descriptive databases of meanings and/or relevant ontologies. Among the larger such databases is DBpedia, the purpose of which is to create a database of semantically related concepts from the encyclopedic collection Wikipedia and make it available to any web user.

Data mining with the purpose of discovering new information. With the introduction of semantic technologies, we plan to carry out numerous analyzes, mainly researching the learning habits of e-learning participants. In building a semantically supported system in which the key attention is still focused on the learner, it is certainly important to study the learning styles and the use of available tools. The purpose of the obtained results is in the set of possible improvements to the system, namely making all e-learning content as accessible as possible to end users.

Finally, it is necessary to consider the pedagogical aspects of the introduction of these functionalities into the e-learning system. Continuous changes to the same material for the same user would probably be undesirable due to conventional learning strategies, so well-meditated use of adapting learning e-material to the individual must be planned. It is also worth mentioning the possible emergence of an adverse sense of control, as semantic technologies are based on the collection of all possible user and activity data.

Pedagogy has long been aware of the individualization and differentiation of learners. The use of semantic technologies, which allow computer systems to support e-learning at a semantic level, certainly helps make each active user's learning experience more intensive. However, we believe that moderation and gradualness in the introduction of changes are essential, as resistance rather than enthusiasm can be expected as a response from users to an oversaturated introduction to automatic systems.

Predictions about the next developmental stage of e-learning are even less defined and are

even rarer in the literature than predictions about the Web 4.0. E-learning trend researchers predict that educational technologies such as mobile learning, micro-learning, gamification, social learning, and interactive videos will continue to be important in coming years. However, the emergence of approaches and techniques specific to Web 4.0, such as the Internet of Things, the new generation of LMS, and robotics, is also expected (Pandey in Bregar et al., 2020). However, we can also expect that technologically supported innovations in teaching will be joined by innovations with a strong social and humanistic component, which will introduce into the learning process predominantly neglected topics and social groups, as well as multiculturalism in education.

E-learning today

As mentioned in the introduction, different definitions of e-learning reveal considerable inconsistency and confusion in the interpretation of this concept. This causes problems not only in professional discussions, but also in putting e-learning into practice, as unclear views on the concept of e-learning cause problems in introducing e-learning and choosing the path and means to implement it (Bregar et al., 2010). However, this study adopts Riahi's (2015) definition, which describes e-learning as an online learning method that boosts educational efficiency.

In general, e-learning today can be understood, in a broader sense, as any education that includes a technological component, although this is merely one of the components of the learning process, intended only to supplement or enrich it, without interfering with the conceptual basis and the fundamental doctrine of a traditionally designed learning process. This type of e-learning Bregar et al. (2010) is termed as partially technology-supported education. Criticism of this type of e-learning relates to the use of old approaches and concepts, albeit with new technology that cannot bring better quality and greater accessibility. In a narrower sense, e-learning is a modern version of distance learning, which enables spatially independent implementation of the learning process, with innovative forms of technologically supported communication and access to new sources of knowledge and enables the implementation of modern pedagogical models in pedagogical practice, aimed at creating new knowledge. In this context, we can today define e-learning as a form of learning and teaching that uses in one part or in its whole educational model electronic media and devices to improve access to education, promote progress and improve the quality of education and training (Sangra et al., in Bregar et al., 2020).

Today's education is characterized by the following trends (Ehlers in Bregar et al., 2010):

• education is present everywhere and takes place at different locations, in different forms, and in different circumstances, not at all just in the classroom;

• learners are increasingly taking on the role of education organizers;

• learning is a lifelong process that takes place at different times of life and is not only linked to educational institutions;

• learning takes place in learning communities, which can be of a formal or informal nature;

• learning is no longer teacher centered or institution centered,

The basic building stones of knowledge are educational contents, which are also called learning objects. For their distribution, we need a platform for e-learning or a virtual learning environment. The basic idea of learning objects is composability and portability (between different platforms). Similar to Lego blocks, they can be assembled and used in various e-courses, which are provided through an educational platform. However, since organized education is mostly conducted through e-courses, according to Downers (2005), the basic organizational unit is the e-course. Within it, however, various educational content is available.

The predominant learning technology that enables the organization and implementation of e-learning is the LMS system HCI, which helps organize and implement courses, including the division into modules and lessons, the administration of knowledge tests, and facilitation of discussions. It is often embedded in a school's information system (Downers, 2005). More recently, some LMS systems also allow the use of open applications and open sources. We find that the LMS system is therefore too narrow a concept and we prefer to talk about a virtual learning environment the years of the development of e-learning cannot be compared to the centuries of the development of the education system.

For this reason, one of the important principles known from the science called human-computer interaction (HCI) is recommended by many practitioners and researchers in e-learning as follows: repeat the cycle, build a model, evaluate, and improve (Notess, 2001).

In recent years, there has been a significant increase in interest in open education resources. As the name suggests, these are educational materials that are freely available online for educators and for learners, which can be used, modified, and supplemented according to predetermined use conditions, which can be used variously to enrich e-learning programs, as videos and other media can be incorporated into the existing e-materials (Siemens and Tittenberger, in Bregar et al., 2010). The most widespread is the use of open education resources published by major educational organizations such as the Massachusetts Institute of Technology, Open University, and OpenYale. Any conversation about open educational resources cannot ignore the Massive Open Online Courses (MOOCs), which are increasingly legitimate in the education market and are the future of e-learning, as more and more reputable universities such as Stanford, the University of Michigan, Harvard, Duke, and Princeton, to name a few, use MOOCs to expand their brand and educate thousands of individuals around the world (Ferriman, 2012). Massive open online courses (MOOCs) are online courses designed for extensive interactive collaboration and are freely available online. In addition to traditional materials, MOOCs provides several interactive user forums to build communities for students, professors, and assistants. MOOCs are essentially a continuation of the development of distance education. MOOCs derive from the period when the so-called open education resources (OER) movement, and is based on the connectivist theories of learning, emphasizing that learning and knowledge come from a network of connections. MOOCs do not offer academic education or credit points, nor do they charge tuition fees. Anyone who wants to learn online can log in to the system. Students are often not "traditional students" but professionals who already have a degree, i.e., teachers, businesspeople, researchers, and other parties interested in the online learning culture. The essence of the establishment and operation of MOOCs is the principle of openness and accessibility. MOOCs, in a way, are becoming competition to existing university models with their business model, which may mean significant and irreversible changes in higher education in the future.

The emergence of MOOCs poses a major challenge to the millennium-old university system. Definitely one must first ask what MOOCs are and what they want to achieve, how massive they are, and what they can become? What impact will MOOCs have on the acquisition of a classical university education in the future? In addition, it is also necessary to ask whether universities can easily adapt their functioning to the MOOCs model and develop and improve the knowledge delivery through blended learning with the help of additional digital technologies, while on the other hand they are maintaining the pedagogical quality and educational ideals envisioned as the essence of the university's existence.

MOOCs, as the name suggests, are extensive online courses developed through the expertise of various universities, distance learning, and open educational resources. Distance learning, as already presented, has been growing internationally as an industry for several decades and has great potential for further expansion, especially due to advanced online technologies. Problems often associated with distance education relate to the limited quality of resources and teaching materials that support online learning, the participation of students and academics, the high fees charged by online course providers, and assessment and accreditation. The success of MOOCs, however, has made it possible to bring together some of the best academics from leading international universities to develop excellent educational materials, and it has done so completely free of charge (Clarke, 2013).

How expansive the MOOCs are is shown by the numbers, as the number of students from the three largest providers, namely Coursera, edX, and Udacity, was already over 7 million in 2012 (Clarke, 2013), and in 2020 this number is estimated to top 60 million (Coursera, 2020). At first glance, these numbers seem staggering. However, Vogel (2012) believes that the data on the number of students are very speculative, as they may also include students who do not complete their courses. In fact, some of these students may be take part more out of sheer curiosity rather than genuine willingness to learn. Nevertheless, we can conclude that e-learning is a trend of modern times and MOOCs are the beginning of the announced globalization of higher education, which is in line with the transformation of the global economy into a knowledge economy. However, classical universities and colleges will have to adapt to this trend (Clarke, 2013). With the rapid development of communication technologies that significantly affect the development of e-learning, Moore (2003) emphasizes that we must not forget that merely having modern technology is not enough for high-quality e-learning, but changes in organizational structure and pedagogical methods are also necessary.

The constant development of technology thus enables more efficient and human-friendly solutions. Current students are digitally literate and use new technologies quite naturally. They expect electronically accessible learning resources, instant responsiveness, and feedback, as well as electronically supported communication (Downers, 2005). In education, trends are reflected in the development of “student-centered education”, which is much more than just adapting to different learning styles or students’ existing knowledge backgrounds. The consumer-focused paradigm is a fundamental principle of making useful software (Nielsen, 2001). Also, the change of the social climate, which is becoming more and more consumer-centered, is affecting the success of consumer-centered, i.e. student-centered education. The reasons for planning student-centered education, however, also have a basis in learning theories. More about this and the didactics of e-learning is said below.

The greater role the student's autonomy, emphasis on active learning, creativity, communication, and collaboration play in education, the more the teacher’s role and the student-teacher relationship (Downers, 2005) are affected. E-learning 2.0 is characterized by: the development and promotion of social networks as well as communication and cooperation between all participants in the educational process.

From a technological point of view, trends in education are influenced by Web 2.0. The main tools of Web 2.0 are (Siemens and Tittenberger, in Bregar et al., 2020): • web publishing (blogs, wikis, e-portfolios),

• voice over an IP network (such as Skype)

- mobile learning (MP3, mobile phones)
- virtual interactive worlds (Second Life, Voice Thread)
- integrated classrooms (Elluminate)
- discussion forums using LMS or external applications
- chat rooms (IRC, IM)
- graphically supported links (Flickr)
- software support for groups (Sharepoint Grove)
- social networking tools (Facebook, Tweeter, MySpace)
- social bookmarking tools

The transformation of the World Wide Web is also leading to the transformation of e-learning. E-learning is increasingly becoming the basis for knowledge exchange and less and less a medium for transmitting information. Contenta are created and used, its creators are spatially independent participants in education. Passive acceptance of information, prepared by others, shifts into the background (Bregar et al., 2010).

Knowledge is transmitted in a variety of forms and methods, including through educational materials. More recently, the importance of constructivist approaches in e-learning has been emphasized. The teacher gets new and alters old tasks, mainly by scaffolding and by encouraging active individual or collaborative learning. Due to the necessary different approaches to teaching, namely in relation to traditional full-time or part-time study, in the continuation of this paper, we shall dedicate more attention to teaching and the theoretical foundations of e-teaching and/or distance learning.

Several pedagogical workers are needed for distance learning. Various conceptions appear in literature:

- A teacher or a mentor is a lecturer, instructor, or laboratory assistant at a higher vocational college who teaches a certain study subject or part of the subject, gives professional guidance to students, and directs the implementation of the subject.
- The author is the author of the teaching material on whose basis the student acquires the basic knowledge.
- The tutor is a study advisor and the coordinator between the school and the students, monitors students throughout the year and at all subjects.

E-learning is often defined as learning with the help of ICT. According to the 1993 UNESCO/ISCED definition, learning is any change in behavior, information, knowledge, understanding, attitudes, skills, or abilities that is permanent and cannot be attributed merely to physical growth or the development of inherited behavioral patterns (Marentič Požarnik, 2003).

Depending on the technology used or learning resources, we often add adjectives before the word 'learning'. Online learning is learning that takes place with the support of a computer and the internet in a virtual learning environment. The basic learning resource are interactive and multimedia educational contents (online content).

Linear (sequential) and nonlinear learning are other concepts related to e-learning. Linear learning denotes learning along a defined learning path or along the learning path as recommended by the teacher or author of the educational material. The term nonlinear learning describes the possibility of choosing one's own curriculum.

E-material indicates any electronic material or material provided to the user electronically. This also includes documents written with text editors and submitted in formats such as DOC and

PDF extensions, although we do not build modern e-learning on such materials. Like a number used to describe the technological and pedagogical development of e-learning, we can do the same with e-materials.

E-materials 1.0 are digitized traditional educational materials. They also include static two-dimensional documents written with text editors and transmitted in formats such as DOC or PDF.

E-materials 2.0 are dynamic, interactive, multimedia materials that enable active learning. They do not have a two-dimensional structure. An integral part of the material is real-time and final knowledge testing with automatic feedback. Such materials enable active learning, building knowledge upon an appropriate existing knowledge background and thus leading to better learning outcomes. They are usually in XML format.

Interactive, multimedia e-materials accessible online are also called online materials. The transmission of such materials is made possible by a computer program, often called a virtual learning environment or a learning platform, or an educational portal. Materials are extremely important in distance learning, as students receive basic subject knowledge from them. However, they upgrade this knowledge by using other learning resources and methods. Technology provides necessary but not also sufficient conditions to improve the materials. The use of interactivity and multimedia, for example, enables a clear explanation and active and thus effective learning, while at the same time hiding the pitfalls and perils of possibly inappropriate use. Special attention should therefore be paid to the didactics of online education and educational content, which follows below. However, since the pedagogical aspects are significantly influenced by the development of technology, let us first get to know the technological aspects of e-learning.

Technological and pedagogical aspects of e-learning

For the implementation of modern distance learning, supported by ICT, it is necessary to establish an appropriate virtual learning environment and/or a learning platform consisting of a system of applications, including educational content and data, and providing access to open learning resources.

Students enter a virtual learning environment through an educational portal. They do not need to install additional software on their home computers, just a computer with internet access. The educational institution takes care of the server (in collocation), system, and application software, as well as a sufficiently fast internet connection.

Web 2.0 is no longer just a medium for transmitting and using information, but is becoming a platform where content is created, shared, modified, and transmitted. The users communicate with each other through multimedia. This means that they use verbal communication (written or spoken) and pictures, video. Blogs and software that make this possible are becoming increasingly popular. Many also use blogs in e-learning. The Web 2.0 is not a technological but a social change, more about behavior than technology. The point is to enable and encourage inclusion and collaboration through open applications and services. In e-learning, this movement is reflected in communities of practice. These bring together groups of people with the same interests, where members collaborate and share knowledge with each other and share sources of knowledge (Downers, 2005).

A virtual learning environment is not just one application, but rather a set of applications that are interconnectable. There are many e-learning platforms that facilitate communication and interaction between teachers, students, and educational material, including different learning systems such as instructor-led learning, e-books, tests, video tutorials, etc. These can primarily be served from web browsers, mobile apps, or desktop applications (Calle-Alonso et al., 2017). E-

learning platforms can be additionally fleshed out with administrative resources in systems deemed Learning Management Systems. Some of the most recognized such platforms include Blackboard, WebCT, OSMedia, Saba, eCollege, Fronter, SidWeb, Educativa, and Catedr@. Recently these have been joined by ATutor, Dokeos, Claroline, dotLRN, Moodle, Ganesha, ILIAS or Sakai. Some of these provide even more functionalities than commercial solutions. Massive Open Online Courses (MOOCS) have also experienced a great improvement with platforms as Udacity, Coursera, Udemy, edX, Ecaths, Wiziq, or Edmodo. But this kind of platforms are more limited than the general ones mentioned before. They are focused only on video-based lessons and tests/exercises, whose objective includes obtaining badges that demonstrate knowledge. But the OECD reports that universities use LMS for administrative and communicative purposes, instead of offering new pedagogical ways of teaching (Dalsgaard, 2006). Therefore, still a lot of research is left to be done on improving learning processes, experiences, and student satisfaction. One of the main problems for online education is students' attrition and dropout rate, with several researchers isolating this topic (Monteiro et al., 2016). The issue is namely that student motivation falls after the first two weeks and they leave the course. Completion rates are similarly too low, especially for MOOCs where the completion rate nearly always falls between 2% and 5%, and on few occasions exceeds 10% (Jordan, 2015). Moreover, the information acquired is often forgotten within a short time (Bacon & Stewart, 2006). The issue underneath all the advances in education is that technology has changed a lot but teaching methods have remained the same. Platforms such as Moodle, Blackboard, or even MOOCs have just displaced traditional education from classrooms to websites, but without changing the way of teaching knowledge (Calle-Alonso et al., 2017).

Some neurodidactics, also called brain-based teaching, attempt to counteract the shortcomings of classical education with new tools and new pedagogical approaches "Knowledge cannot be transferred, it must be newly created in the brain of each student" (Roth, in Calle-Alonso et al., 2017). According to this, neurodidactics proposes a learner-centered education. It avoids the mere provision of educational materials, offering in their stead examples, associations, and linked information to build knowledge. The more often associations and links are used and practiced, the better the knowledge will be acquired, as this approach is better at achieving long-term retention. The magic recipe to learn with the long-term memory is motivation, which gives students the incentive to learn and the ability to concentrate. There are several ways to achieve this goal, for example, using inter alia gamification, learning by doing, flipped classrooms, cooperative learning, small group learning, peer tutoring, and real-life challenges. Most current e-learning platforms fail to implement any of these tools to manage motivation as a keystone of education, nor do they follow the neurodidactics perspective (Calle-Alonso et al., 2017).

The student acquires basic knowledge with practical educational content designed by the teacher or school and available in a virtual learning environment. However, students can find additional knowledge on their own, using an RSS reader or other types of online sources.

The establishment of a virtual learning environment is undoubtedly a necessary pre-condition for conducting distance learning. Einstein once stated, "I never teach my pupils, I only attempt to provide the conditions in which they can learn." However, in modern didactics, we are no longer satisfied with just the learning environment. It is necessary to establish a pedagogical model of education.

The rapid development of ICT and research in the field of learning are also bringing changes to the education system. We are talking about learner-centered learning (learner centered design,

learner centered education). Teaching methods are changing. Students have access to modern learning resources that enable new and more effective learning methods.

We must therefore be aware that the abundance of information and modern technologies alone do not yet guarantee high-quality education. Due to this fact, the mere use of ICT for data transfer and "imitation" of classical education is not enough, and it can even lower the quality of education. To achieve learning goals, e-learning participants need pedagogical support (teaching materials and teaching aids and tutoring support) whose main purpose is to alleviate problems due to the spatial and mostly temporal separation of education participants and teachers in the process of such education, as well as non-pedagogical support (technical, advisory, and organizational services). In practice, tutor support is blended with forms of non-pedagogical support. Modern technology provides many new opportunities for pedagogical support in e-learning, especially in terms of using media and technology to produce teaching aids and materials, as well as in terms of communication in tutoring support. When deciding on the form of pedagogical support in e-learning, we must consider the characteristics of the participant, the educational material, the characteristics of the learning environment and, of course, the resources available (Bregar et al., 2010). E-learning's introduction into the traditional classroom inevitably leads to interactional changes, because not only does technology affect the learning environment, teachers' attitude, and all parties' relation to the e-learning space, but it also frames students' opportunities to actively participate in the digital and physical environment. Technological artefacts facilitate people's involvement with reality, but also co-shape people's perceptions, actions, experience, and existence (Verbeek, 2011), and the institutional demands of changing traditional teaching approaches to a new e-learning approach can mean a change in professional teachers' identities as well (Hanson, 2009). The use of e-learning in the educational process teaches students how to combine learning environments, design integrated media, and harness the potential of technology in education. This, of course, only holds true if the lecturers are skilled in applying research-based strategies, using educational practices to promote the equity and access of students, and analyzing the impact of technology and globalization in education. One of the pitfalls of using e-learning in higher education is that lecturers themselves are not proficient in ICT-based technologies and do not possess an overview of novel tools and solutions; it often happens that the students are far more skilled than their lecturer. In that case, the learning process can become a disaster from a pedagogical point of view. In addition, many technological terms and concepts in e-learning have been poorly defined and studied, for example, the issues of personal learning environment and the acceptance of e-learning by different students. While some individuals seem to be fine with e-leaning, others demand the physical presence of their tutor, or at least eye contact. The emergence of the new technologies, especially things like VR and AR, was so quick that it left researchers and the educators with no time to simulate their impacts and determine how they could be best used in the educational process. However, despite all issues, various virtual training and simulated learning opportunities, such as games or distributed games, clearly provide students the opportunity to connect the content of the classroom with real situations. I

From the lecturer's point of view, in addition to mastering modern ICT, it is also necessary to understand the learning process, as it should be the starting point for the formation of pedagogical and didactic approaches in the e-environment. Therefore, we follow with the theories of learning on whose basis we could build modern distance learning.

Learning theories and learning environment

A look at how people learn, and/or a look at the understanding the learning process should be the starting point for teaching methods and for the use of teaching technology. Various theories about learning can be our starting point. Constructivist and connectivist theories are most often mentioned in connection with e-learning.

Constructivist theory of learning has become an important approach to teaching in the last decade. In a constructivist learning environment, students achieve significantly better results than in a traditional learning environment.

What all definitions of constructivist learning theories have in common is that they focus more on the activities and the learning environment rather than on learning aids. In such an environment, knowledge is created by the learners themselves and is not received from the instructor (Wangpipatwong & Papasratom, 2007). This could be described as an essential element of quality in education. The planning and provision of e-learning should be based on the theoretical foundations of learning theory and not on existing practices (Dalsgaard, 2002). Many researchers recommend considering constructivist and socio-constructivist theories of learning (Squires & Preeces, 1999; Ardito et al., 2006; Dabbagh & Kitsantas, 2005).

Constructivist theories of learning and teaching methods are based on assumptions about the mode of human learning. They are based on the basic principle that individuals do not accept knowledge externally but construct it through their own activity and through the process of making sense of their own experiences (Marentič Požarnik, 2003). In constructivist theory, the most important thing is that learning is understood as a social process that requires communication not only between the participant and the teacher, but also among other participants, colleagues, etc. While this social process cannot be replaced by technology, it can be greatly facilitated by technology (Bates & Poole, 2003 in Bregar et al., 2010). From the point of view of constructivism, students actively seek the meaning of everything and shape (structures) their own knowledge. They produce and test (tries out) mental structures in the order in which they arise. Learning can be understood as the process of conquering and adapting these thought structures.

Within constructivism, there are several directions, and many have a common emphasis on interacting with each other as an essential part of the learning process. We consider learning as a social process in which an individual forms an opinion in interaction with others and with the environment. Knowledge is therefore socially and culturally based. Of great importance are the collaborative approach as well as the approaches that include the principle of learning by doing, active learning, and problem-based learning.

The foundations of the theory of pedagogic constructivism were laid by psychologists Jean Piaget (1896-1980) and Lev Vygotsky (1896-1934). The difference between their two approaches is that Piaget derives more from the processes by which people construct knowledge of the world based on their own experience, whereas Vygotsky is the founder of the so-called social constructivism, as he emphasizes the role and importance of social interaction, i.e. the dialog and understanding (Marentič Požarnik, 2000). Vygotsky focuses more on learning activities, while Piaget believes that students are more active and constructive as regards the environment and that learning is achieved through well-defined phases with the learner's active participation (Wangpipatwong & Papasratom, 2007).

Developmental psychologist Jean Piaget is one of the most important theorists of cognitive development. Piaget argues that people construct new knowledge from their own experience

through interrelated processes of organization, accommodation, and assimilation (Piaget, 1971). Learning is therefore the active construction of knowledge. Individuals build new knowledge on their previously acquired knowledge and experience. From this we can conclude that for successful distance learning it is important to consider the individual's existing knowledge background, to encourage active learning, and to continuously check and consolidate knowledge.

Vygotsky and Piaget emphasize the student's active role in the learning process. While Piaget emphasizes independent learning, Vygotsky states that learning takes place through social interaction. According to Vygotsky, students develop cognitive abilities by being part of the social environment in which they operate. Students' cognitive development is influenced by teachers and by their competent peers. With the help of the teacher and peers, students achieve more than they would were they solving problems independently (Vigotski, 1978). These basic principles have led to the development of several learning methods. Collaborative learning is particularly prominent in e-learning and distance learning. An important factor in a student's development is certainly the teacher, whose task is to create scaffolding, which is a metaphor denoting various aids supporting students' learning.

Constructivist learning is a pedagogical approach that effectively motivates the learner through an active, exploratory, and interactive learning process. In other words, in the learning process, students build knowledge in a constructivist learning environment (Wangpipatwong & Papasratom, 2007).

Constructivist learning is considered ideal pedagogy in e-learning. Constructivist learning focuses more on the student's experience than on the instructor's teaching methods. In an e-learning environment, the instructor's role is to help the student develop knowledge and give them the opportunity to choose when, where, and how much to learn. The learning process is thus centered on the student. Constructivist learning sees the student more as an active participant in the learning process rather than as a passive one. Content is also an important part of the e-learning process. E-learning forces students to seek information, make connections, and build knowledge. Finally, constructivist learning is also a social experience for participants in education, as it easily facilitates communication between them, without any temporal or spatial barriers; cooperation in such an environment is essential (Wangpipatwong & Papasratom, 2007).

Research is one of the main approaches of the constructivist learning theory, to be understood as the search for sources of information for understanding and acquiring knowledge. Research activities include finding, experimenting, changing, innovating, etc. Research is also a popular approach for students to encourage the search for knowledge and the achievement of their set goals. Knowledge generated through research is often new knowledge.

Collaboration is also a key feature of constructivist learning theory. It is a characteristic of a stable learning environment, the result of which is the active construction of knowledge. By participating, students play an active and constructive role in the learning environment. Interactions between individuals and collaborative learning activities are part of knowledge building and contribute to a greater learning success in the learning environment.

The constructivist theory of learning derives from the idea that knowledge is a goal or a certain state that can be achieved through thinking and experience. The theory addresses the learning process and less so the value of what has been learned. In modern society, however, rapid evaluations of knowledge are gaining importance, as we have to act on the basis of this information, due to the growing volume of knowledge and information that is outside our primary knowledge.

Due to the changed circumstances, the need occurs for the modification of theories. Thus, a new theory of learning has been gaining ground recently, i.e. connectivism or the connectivist theory of learning (Bregar et al., 2010). The basic premise of connectivism is that knowledge is distributed across human, social, and technological networks, and that learning is a process of connecting, growing, and managing these networks. Connectivism is thus a newer theory of learning that nests knowledge in systems that are accessible through active participation; it has a very special role in e-learning, as it emphasizes the importance and impact of technology on how we live, communicate, and learn. The basic principles of connectivism are (Siemens, 2004):

- Learning and knowledge are manifested through diversity of views and opinions.
- Learning is a process of connecting specialized information sources.
- Knowledge can be located outside a person.
- The ability to know more is essential.
- Maintaining connections is key to updating knowledge.
- The fundamental ability is that of recognizing connections between various fields, ideas, and concepts.
- The basic goal of learning is to acquire the most up-to-date knowledge.

Learning can be described as networked learning on three separate levels, namely (Bregar et al., 2010):

- **Nervous system level:** the formation of synaptic pathways, such as new stimuli and experiences that shape the brain's physical development; research shows that connections and networks are central to memory formation and activation; knowledge and learning are not located at a particular point in the brain but are distributed in many areas in the brain.
- **Conceptual level:** within a particular discipline or field, networked concepts are key to knowledge of a discipline or a field.
- **External level:** the development of participatory web technologies has significantly contributed to the creation of networks; blogs and wikis increase people's ability to connect with others, with professionals, and with content; the RSS as a means of gathering information and a hybrid service as a means of combining information in different contexts also contributes to this; very high participation in social networks, especially of young learners, leads to new ways of thinking about the role of education.

Characteristic features of networks are the different nodes at each level; at the level of neural connections this is a neuron, at the conceptual level an idea or a collection of ideas, and at the external level a person or an information source (Siemens & Tittenberg, 2009, pp. 11–12 in Bregar et al., 2010).

The theory of connectivism is based on chaos theory and the importance of networks or interconnections in modern society. Chaos theory assumes the connection of everything to everything else, identifying patterns that seem hidden is a challenge for the learner. Learning is a process that takes place in changing environments over which individuals generally have no influence. Knowledge is present in various networks (computer, social), and in modern society the most important thing is to be able to connect different sources of information. This connecting allows us to learn more and is more important than our current state of knowledge (Siemens, 2007 in Bregar et al., 2010). A particularly important role in connectivism is played by the teacher, who leads, directs, and improves the quality of the networks formed by the learners.

At first glance, the abovementioned theories seem to be competing. But in reality, we can agree with Ileris (2007, p.23), who says that different theories of learning are complementary explanations of processes within a common conceptual framework. According to him, adult learning has two dimensions. The first process takes place in an interpersonal space, where the cultural background and social conditions of operation are important. Much of modern, technologically supported teaching could not have been implemented a few hundred or a thousand years ago. Modern learning is highly dependent on technological and cultural conditions. The second process takes place within the individual. Factors influencing individual learning are the result of long-term evolutionary adaptations, and we ourselves today are the heirs of an extremely adapted and flexible cognitive system that allows us to learn new information, compare that information with past experiences, and effectively use acquired knowledge in everyday life. Different levels of the learning process nestle within one another, derived from biological and psychological-evolutionary bases, and upgraded with new, socially established factors that promote or disable effective learning in the modern world. Any pedagogic theory that does not consider both aspects is in its fundaments reductionist, inconsistent, and ultimately useless: “Learning is understood as a complex and complicated subject of study. It must be based on psychological findings based on research and many years of experience, biological foundations, especially the understanding of brain function, and at the same time we must consider the social context and the modern structure of functioning, both in everyday practice and in the general organization of educational opportunities "(Illeris, 2007, p. 21).

E-learning, especially in connection with the development and implementation of e-materials and e-subjects, is about student-centered education and the use of methods by which we direct and guide the student to knowledge and/or to competencies.

The appropriate graphic design of the e-materials as well as the individual pages, along with the appropriate use of multimedia elements, improve learning, increase motivation, and provide a good learning experience (Ardito et al., 2006). Educational materials should be student-centered and encourage active learning. Mental activity can be stimulated through various forms of interactivity use, such as instant feedback questions, interactive tasks, learning tests, and simulations, as well as various active learning methods that can be implemented through forums, blogs (publicly available blogs), or chat rooms. When developing online educational materials, it is necessary to consider the research results on how we read from websites. The way websites are read depends on the individual and is related to the medium, in this case the computer. Research shows that readers of websites do not like to read long texts. They also do not like long paragraphs or long narratives. Nielsen (2001) argues that only 16% of consumers read precisely from websites, word for word. 79% of readers merely skim the page and read only certain words or sentences on it (Nielsen, 2001). Findings like this certainly pose a major challenge of how to design texts on a website to increase readers’ attention. The research (Lapuh Bele & Rugelj, 2006) finds that students who learn from online educational materials are more accurate readers, but as the length of the page increases, the number of those who read the entire text decreases. For this reason, the study page should be one screen long and only exceptionally two, and the paragraphs should not exceed 5 lines. Students also point out that they are attracted by specially designed emphases, such as interesting points, notes, tips and warnings (Lapuh Bele & Rugelj, 2006).

Students' attention, motivation, and cognitive activity are also bolstered by interactive questions added on individual learning pages. Interactive questions should provide immediate

feedback on the answer's correctness and, if necessary, student guidance on further learning. When designing educational websites, the appropriate font size, clear contrasts, appropriate background (they recommend a light or a white background), and appropriate colors must all be considered. Apart from the form, the means of presenting content is extremely important. First, it should be emphasized that the texts should be clear and understandable. To increase motivation and learning efficiency, it is also important to express oneself clearly and rationally and to give unambiguous instructions. Short sentences are recommended. Pronouns shall be used only when it is unambiguous what they refer to. Let us be aware that in a lecture hall we observe the students' response to the explanation, and if understanding is found lacking, we supplement the explanation. This option is not available online. A student may ask the mentor a question, but in our experience and according to research, students ask very few questions (Lapuh Bele & Rugelj, 2006).

These guidelines apply to the way content is presented and not to the content itself. Its professional level must be in line with the level and year of study, as well as the existing knowledge background of the students. We shall constantly follow the principle that the student is at the center of the learning process and shall encourage students' activity. It is recommended to follow Kolb's learning cycle (Marentič Požarnik, 2003) and/or the explanation from the concrete to the abstract. We start the explanation with a concrete and a student-familiar example, which attracts attention and we so indicate the meaning and/or the usefulness of the learning topic.

In designing and implementing online educational materials, we provide students with scaffolding to help them build knowledge (Ardito et al., 2006; Dabbagh & Kitsantas, 2005), and we encourage their self-regulatory processes, such as goal setting, self-observation, self-reflection, self-evaluation, seeking help, planning and time management, and learning strategies (Dabbagh & Kitsatnas, 2005)

McKenzie (2000) makes the following recommendations for framing in e-learning:

• providing clear step-by-step instructions

• encouraging activities (students should be always busy with tasks and activities)

• expressing clear expectations and testing knowledge to assess compliance with the learning objectives

• highlighting the essence of: "why are we doing this?", as framing also means motivating

• focusing on the big picture: "what are we doing?", but let's not forget the details: "how are we doing it?"

• providing students with access to trusted online resources

Based on their research (Lapuh Bele & Rugelj, 2006), they ascertain that students are in favor of interactive questions with feedback for the formative evaluation of knowledge (interactive questions on learning pages/websites) and tests for summative evaluation of knowledge, as they provide immediate feedback, improve knowledge, and according to students, also increase motivation.

Mayer (2003) confirms that students learn more if the educational content is written in a conventional and not a formal style. The author of the learning e-material should communicate with the students through the material. In online learning, the rule less is more also applies, which can be understood both in terms of content and design.

In accordance with these findings, the importance of social software, as well as the importance of cooperation and communication between the teacher and the participants in the learning process, is being asserted in modern online distance education. Collaborative distance

learning is provided in technological terms with the help of tools to host forums, chat rooms, teleconferences, videoconferences, messaging systems, etc. Communication is also made possible by blogs and various forms of social software.

The task of the educational organization is therefore to establish a computer-assisted environment for collaborative learning (forums, blogs, teleconferences, etc.), which it provides with tools that are part of the virtual learning environment. The task of a teacher in distance education is, among other things, to provide counseling and promote communication among students and collaborative learning.

Conclusion

The adoption of e-learning systems has skyrocketed recently, though a lack of awareness and understanding still pervades about the multitudinous features of e-learning and its positive impact on professional and personal career development.

As a result of this widespread adoption, e-learning is also growing in maturity and in terms of its significance to institutions. The progress online learning has made has yielded notable media attention and coverage, which, in turn, has increased its visibility to university executives, consequently molding and bolstering perceptions about online learning's strategic importance to collegiate innovation.

One of the main problems remaining in widespread adoption is the complexity of integrating these systems with existing content and other business systems. If e-learning is to be successful, it is crucial to provide greater access to education and support educational programs that reflect broader strategic business goals; the e-learning industry should learn key lessons from e-business.

E-learning as a tool can be considered to deliver three key outcomes: improved and consistent rates of lifelong learning, improved productivity, and improved innovation and competitiveness, with increased equity another important result. Education is rapidly globalizing, as students attend courses from all over the world and employees work and study globally in multinational companies. Education around the world is becoming strongly networked, and we are beginning to see fundamental changes in educational organization. The long-term implications are a global network and a thriving marketplace for university and college level education, especially as universities are pressured into finding "new strategies and business models" to produce and deliver educational products, as well as to retain students.

The challenge for businesses is to realize the full potential of e-learning as a driver of productivity and performance by grounding it as an integral part of organizational strategy and operations. For governments, the challenge lies in creating a nurturing policy environment for e-learning – first, by removing whatever barriers restrict access to e-learning's benefits and, second, by promoting industry self-regulation while balancing citizens' interests and needs.

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INTERNATIONALISED HOME CURRICULUM SUPPORTING THE SUSTAINABLE DEVELOPMENT CONCEPT

Abstract: *Internationalisation of the home curriculum has been given more and more attention in recent decades, exposing several of its benefits derived from purposeful international and intercultural learning and teaching activities in domestic learning environments for large groups of students studying at home. Internationalisation at home is exceeding elitists' views connected with physical mobility, and it further supports the development of intercultural competences and soft skills needed for the successful work, life, and collaboration of future graduates in the modern knowledge society. Avoiding physical mobility and emphasizing equality and justice of all students, internationalisation at home supports several aspects of the sustainable development concept as presented in this paper. Initially, the basic characteristics of internationalisation at home and the related concept internationalisation of the curriculum are presented and further on placed within the context of the sustainable development concept. In the methodological part, the short overview of the internationalisation of Slovenian higher education (at home) practices are presented in light of sustainable development goals.*

Introduction.

Over the past twenty years, there has been a noticeable trend of changing the internationalisation of higher education both in conceptual terms and in its implementation. Among other things, the changes refer to the emergence of such forms of internationalisation, which refer not only to the mobile but also to the majority non-mobile population of students, among whom we are supposed to systematically develop intercultural competences, mainly by implementing the concepts *internationalisation at home* and *internationalisation of the curriculum*. They both emphasize the teaching and learning activities in connection with internationalisation, or, more precisely, the purposeful integration of international and intercultural dimensions in the study process via internationalised learning outcomes.

These concepts emerged as a response to the instrumental approach towards internationalisation in higher education – in other words, internationalisation has gradually become excessively focused mainly on the quantitative elements of internationalisation (wherein many still wrongly consider internationalisation at home as an alternative to student mobility), as pointed out by various authors (Brandenburg in De Wit 2011; Jones 2008; Beelen 2016b, etc.). On the contrary, an *internationalised home curriculum* (as a product of previously mentioned processes), or *internationalisation of the home curriculum* (as both concepts can be merged) refers to the purposeful integration of international and intercultural dimensions in study programmes, leading to the development of intercultural competences and so-called soft skills, which are emphasized among future. Furthermore, the inclusion of global, international, and intercultural dimensions in the study process is also connected with various sustainable development aspects, which has been

receiving more and more attention in the internationalisation of higher education in recent years. Before discussing it further, some basic theoretical aspects of internationalisation at home and internationalisation of the curriculum must be presented, inter alia supporting the sustainable development issues.

Internationalisation of the Home Curriculum – the Theoretical Background.

As previously mentioned, internationalisation at home and the internationalisation of the curriculum are not in a sub-semantic or synonymous relation, differing mainly in their practical implementation. While internationalisation at home by definition does not include physical mobility, but emphasizes the implementation of internationalised curriculum in domestic learning environments, including informal curriculum activities, curriculum internationalisation refers more to the various dimensions of the (formal) curriculum, regardless of where they are implemented. The internationalisation of the curriculum can therefore also include student mobility, especially when mobility is a component or compulsory part of the study programme, e.g. when students are required to study for one or more semesters at a partner geographically distant higher education institution – like a *mobility window*. The distinction in physical mobility is important in the light of the sustainable development goals.

The concept *internationalisation at home* introduced a new way of thinking about the internationalisation of education with an emphasis on its broader benefits for the entire student population (Beelen and Leask 2011), wherein systematic and purposeful incorporation of the international and intercultural dimensions into the learning and teaching process through internationalised learning outcomes represent the core issue of the discussed concept (Leask 2012). Internationalisation at home is not a goal or a didactic concept per se, but it is a tool or a set of instruments and 'home' activities aiming at developing international and intercultural competences among all students for their successful work and lives as future professionals and citizens (Beelen and Leask 2011). Jane Knight (2008), who introduced two components of internationalisation, e.g. internationalisation abroad and internationalisation at home, defines internationalisation at home as a series of activities through which students develop international understanding and intercultural skills as part of a curriculum, thus preparing them for active participation in the modern globalized world. It should be emphasized that the 'physical presence' of international students or staff is considered only as an added value to internationalisation at home; having a foreign language of instruction, e.g. English, is similarly not a key factor for the implementation of this concept, since the internationalised curriculum with internationalised learning outcomes plays the core role (Beelen 2016a).

Especially due to the gap between theoretical definitions and the implementation of internationalisation at home in practice, the concept was the subject of frequent introductions to new definitions, after the original one was introduced (de Wit 2011). This has been criticized and discussed from various perspectives on the internationalisation of higher education (Beelen and Jones 2015) due to confusion caused both in terms of terminology as well as in the role of the concept and its implementation in practice – namely, also the internationalisation at home concept was too often "focusing on means rather than aims and shifting into 'instrumental mode'" (Brandenburg and De Wit 2010, p. 16). Nevertheless, in 2015, Beelen and Jones proposed a new, currently the most widely accepted definition of internationalisation at home, making it clear that they are aware of the delicate discussions at the expense of introducing new definitions, and at the

same time exposed the need for a clear definition of the concept: “Internationalisation at home is the purposeful integration of international and intercultural dimensions into the formal and informal curriculum for all students within domestic learning environments” (Beelen in Jones 2015, 69).

The new definition clearly links the internationalisation at home to the internationalised curriculum. It is characterized by a clear focus on all students within the compulsory and/or formal curriculum that reaches all students. In addition to the formal one, the new definition also highlights the informal curriculum, which includes unassessed elements of the student experience provided in an institutional context (Beelen 2016a). The definition emphasizes the deliberate inclusion of international and intercultural dimensions in the curriculum, which means that adding random international elements or study subjects to an existing study program is not enough to internationalize a program.

Despite the many positive impacts of the alternative shift to internationalisation at home, criticism of the concept has emerged (cf. e.g. Brandenburg and de Wit 2011, De Wit and Beelen 2014, Whitsed and Green 2013, Brewer and Leask 2012, Jones 2013), inter alia highlighting which elements will need more attention in the future. However, the critiques (mainly) relate to ‘wrong’ implementations of the concept in practice, and to a lesser extent to the concept itself.

As the previously mentioned issues overlap in many respects with the concept internationalisation of the curriculum, this is more precisely defined in the following paragraphs. The concept includes all three domains of higher education internationalisation defined by Knight (2004): international, intercultural, and global. Crosling, Edwards, and Schroder (2008) propose a typology of internationalised curricula consisting of three levels: international awareness, international competence, and international expertise, which are closely related to the needs of the modern knowledge society. Haigh (2009), however, points out that, with the aim of achieving an internationalised curriculum, study programmes need to be based on multicultural foundations.

The internationalisation of the curriculum strongly depends on the context and consequently varies according to academic discipline, institution, nationality and region or country, partly due to the influence of political, economic, and socio-cultural elements in the local context (Leask and Bridge 2013). At the same time, Leask (2014) states that the internationalisation of the curriculum too often focuses on *input* instead of *outcomes*, especially when the institutional motive for internationalisation is to attract students to study programmes. The systematic and purposeful designing and planning of international learning environments, with an emphasis on learning and teaching, as well as the assessment process, is the key to the implementation of the internationalised curriculum (ibid.). In updating her original definition from 2009, Leask highlighted these elements even more directly and formulated the following, currently most widely accepted definition of internationalisation of the curriculum, which is “the incorporation of international, intercultural and/or global dimensions into the content of the curriculum as well as the learning outcomes, assessment tasks, teaching methods and support services of a program of study” (Leask 2015, 9).

In this context, the difference between the internationalisation of the curriculum as a *process* and the internationalised curriculum as a *product* of this process should be emphasized, as this difference enables a distinction to be made between means and goals (ibid., 10). The implementation of an internationalised curriculum is not only based on the formal or assessed curriculum, but also on the informal curriculum, e.g. as part of support activities to the learning process, which means that the concept has many points in common with internationalisation at home. Consequently, in recent times the use of the phrases *internationalisation of the home*

curriculum or *internationalised home curriculum* have become increasingly common. However, an important distinction between both concepts has to be pointed out in the light of sustainable development goals, which is the physical mobility that is feasible as part of internationalisation of the curriculum, but not as part of internationalisation at home, which by definition highlights intercultural and international learning and teaching activities *within domestic learning environments*.

To sum up, internationalisation at home emphasizes the development of intercultural competence among all students without physical international mobility or any kind of travel abroad. The implementation of the internationalised home curriculum thus enables students' (co)operation and work in the international, global world and labour market, as well as being interculturally aware in their everyday lives. In this light, the internationalisation of the home curriculum – in the broader context of internationalisation of higher education or diverse modern international mobility and exchange processes – directly supports the concept of sustainable development. Namely, according to the Brundtland Report (1987, p. 41), written by the United Nations' World Commission on Environment and Development, the sustainable development concept is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Sustainable Development Aspects of Internationalised Home Curriculum.

In modern circumstances, in which different sustainable development aspects are emphasized, the importance of internationalising the home curriculum is growing. Innovative and radical initiatives and approaches to internationalisation, following inclusion, sustainability, global citizenship, and overcoming diversity and stereotypes, form a set of key tools that can help our students cope with the challenges of increasing globalisation in a modern knowledge society. In this context, sustainability and sustainable development are receiving more and more attention, and they have been accepted throughout the world in various sectors, including education. While sustainability is often thought of as a long-term goal on the path to a more sustainable world, sustainable development on the contrary refers to the many processes and pathways to achieve this long-term goal (Marshall and Toffel 2005). The importance of both concepts has been increasingly emphasized by higher education institutions in recent decades, including their internationalisation strategies, goals, and activities.

Many definitions of the concepts sustainability and sustainable development have been created in recent decades, which has led to confusion in understanding and to a lack of consensus about the concept (e.g. Marshall and Toffel 2005; Becker, 2012; White, 2013). In general, the sustainable development concept is connected to social, environmental, and economic aspects (Weisser 2017). In this context, the Sustainable Development Goals (United Nations 2015) as the Agenda 2030, include 17 goals addressing various global challenges, including inequality, poverty, justice, climate change, and environmental degradation with the aim of a better and more sustainable future for all. The Agenda's goal 4 relates to Education, wherein target 4.7 highlights that by 2030 all learners are to:

acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence,

global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development (ibid.).

Higher education institutions can contribute to the further development and fulfilment of sustainable development goals and consequently to the long-term sustainability, inter alia, within internationalisation processes with the inclusion of international and intercultural concepts in learning and teaching activities for all students *at home*. The main aspects of the sustainable development concept – social, economic, and environmental – comprise the main three points to be discussed in this paper in light of internationalisation of the home curriculum.

According to social and economic view (see: Weisser 2017), the main focus of internationalisation at home from the very beginning remains on all students, especially the vast majority of students who stay at home due to various circumstances connected with their personal, financial, family, disability, or similar private reasons, which could mainly be categorised within sustainable development's aspects of inequality or justice. Namely, mobile students often represent the mobile elite, especially in financial terms, as well as student parents, disabled, or employed students are less mobile due to several limitations they are faced with, etc. Since such students have no or less international exchange experiences, they are not directly physically exposed to intercultural learning (Teekens 2013), unless they have the opportunity to be purposefully and systematically included in intercultural and international teaching and learning at their home institution.

The internationalisation of the home curriculum thus refers to the development of international and intercultural competences among all students and not only among the mobile elite, wherein 'elite' should be understood in the broadest sense of the word, not only in financial term: including people who are capable of international mobility and unlike those who for various reasons are incapable. Internationalisation at home encourages equal opportunities with the comprehensive development of all students and their successful preparation for professional and social aspects of life in a modern knowledge society, intertwined with intercultural, international, and global aspects. The internationalised home curriculum positively contributes to the social policies and ethos, where intercultural and global capabilities and perspectives are valued and all graduates "purposefully develop their international and intercultural perspectives as global professionals and citizens" (Leask 2009, 209). De Wit (2011a) therefore points out that the internationalisation of the learning and teaching process (at home) has become as important as the traditional emphasis on physical mobility, wherein virtual mobility and/or virtual exchange (as one of the tools for systematic and comprehensive implementation of the internationalisation of the home curriculum) encourage the development of intercultural competence among all students, not only among mobility-privileged ones. In this light, internationalisation at home also contributes to the benefits of the society as a whole, supports the development of a knowledge society and acts inclusively, unifying, and upholds justice.

Internationalisation at home can make an important contribution to environmental regulation policies by not encouraging physically international mobility – consequently, the reduced carbon footprint as one of its positive aspects is pointed out by different authors and surveys (e.g. Rumbley 2020, de Wit and Altbach 2020, Journal of Cleaner Production – UNESCO Institute for Statistics). Rumbley (2020) states that international mobility is the hallmark activity of higher education internationalisation, relying mainly to air travel, which is negatively contributing to the global climate crisis. She refers to UNESCO study, which has pointed out, that global greenhouse gas

emissions "associated with international student mobility were between 14.01 and 38.54 megatons of CO_2 equivalent per year in 2014" (ibid., 33). The latter is at a similar level to the greenhouse gas emissions outputs of countries, such as Croatia and Tunisia. Besides, these figures mostly double the estimates for 1999 and are in 2021 for sure, even greater. Consequently, she encourages the international higher education community to commit to immediate and creative solutions to offset these detrimental environmental effects (ibid.).

Despite the negative aspects of international mobility, various forms of (physical) mobility should not be completely stopped, since they are still an important activity in the internationalisation of higher education, but various solutions can be found to reduce the negative ecological footprint of internationalisation. With technological support, virtual forms of mobility and exchange, research and cooperation meetings, webinars, online presentations and keynotes, instead of flying abroad, etc., can be implemented to reduce air travel and contribute to lower greenhouse gas emissions. In this context, different types of international learning and teaching approaches should be emphasised, like Collaborative Online International Learning (COIL) and comparable pedagogy approaches. Besides, several international and intercultural elements can also be found in the local environment in light of migration processes, the organisation of minority communities, the activities of international organisations in local environments, etc. Namely, "[f]ocusing on ways to reduce mobility, yet still ensure transformational international and intercultural learning – through local community resources, technological innovations, and other creative strategies – offers a vitally important way forward" (Rumbley 2020, 34).

Purposefully including international, intercultural, and global dimensions in learning and teaching activities within home curricula serve as an important alternative to international mobility, wherein the benefits of internationalisation that we have at home in our local community must also be seen, recognized, and used. Following these aspects, internationalised home curriculum benefit larger groups of students and support the environmental aspects of sustainable development, thus providing several reasons and arguments for their comprehensive and systematic implementation at subject/module, programme, institutional, as well as national levels.

Slovenian Higher Education Perspective.

Slovenia has been placing increasing attention on the concepts of internationalisation at home and internationalisation of the curriculum in recent years. Both terms are reasonably discussed in the Strategy for the Internationalisation of Slovenian Higher Education (The Ministry of the Republic of Slovenia for Education 2016a) and in strategic documents of Slovenian higher education universities/institutions – however, in practice, both concepts are often used inappropriately or vaguely in comparison to their definitions. The 3rd strategic goal of the Strategy for the Internationalisation (ibid.) directly emphasizes promoting the development of intercultural competences among all students while stressing the fact that only a small percentage of Slovenian students have experience with international mobility. Consequently, higher education institutions are those responsible for the development of a multi- or intercultural higher education community in the domestic learning environment. In the context of internationalisation at home, the strategy pays due attention to "the process of learning and teaching, and the learning outcomes of students, which include an international, intercultural, and global dimension" (ibid., 16).

The ability to function successfully in an intercultural, multilingual and international environment, and to understand cultural specifics, is of crucial importance to every individual

in modern society" (ibid., 16). Besides, the Strategy stressed that *"the increasing pace of globalization requires /.../ the promotion of sustainable development in Slovenia* (ibid., 7).

However, the Strategy does not classify the concept of internationalisation at home or internationalisation of the curriculum in the context of various sustainable development aspects.

In this chapter some basic findings from the survey on internationalisation of the home curriculum among Slovenian academics will be presented, pointing out a few aspects connected with sustainable development.

Method.

Data collection instrument and data collection methods.

A quantitative empirical survey, completed in 2020, was based on an online questionnaire mainly using a 5-point Likert scale and covering basic steps within internationalised curriculum.[1] The last part of the questionnaire was related to institutional aspects of internationalisation at home implementation, the results of which are mainly presented in this chapter. The initial questionnaire was tested on a sample of 29 Slovenian academics, familiar with the concept of internationalisation at home. The questionnaire results were mapped using univariate statistics.

Population and sample.

1.367 Slovenian academics of various academic titles and various ISCED groups of work completed the questionnaire, which is a representative sample of slightly less than 20% of the entire study population in Slovenia[2] (AAPOR RR3; AAPOR 2016). This is a solid result for an online questionnaire in a period of declining response rates. In accordance with some researchers, data acquired with a lower response rate can still provide accurate measurements (Horta 2013).

Results.

The academics inter alia expressed their opinions regarding some aspects of internationalisation at home – the following research questions were exposed:

- Do academics include different types of online collaboration with institutions from abroad (geographically distant locations) in the study process, wherein students are also actively involved?
- What types of online collaboration with institutions from abroad (geographically distant locations) do they engage in?
- What is their opinion about appropriate support as provided by their home higher education institution for the implementation of internationalised home curriculum?

Although the above questions do not directly address sustainable development and sustainability, they indirectly support both concepts, wherein internationalised home curriculum represent a way to achieve sustainability goals as it is presented in the theoretical part of this paper.

Table 1. Percentage of academics including online collaboration with geographically distant locations in the study process with active inclusion of students (N: 1.694).

Inclusion of online collaboration with institutions from abroad (active involvement of students)	Valid Percent
Yes	31.9%
No	68.1%
Total	100.0%

[1] The survey was conducted as author's Ph.D. research.

[2] According to the latest data from the Statistical Office of the Republic of Slovenia (2019), in 2018 4.409 higher education teachers and associates were employed at higher education institutions in Slovenia.

According to Table 1, almost one-third of Slovenian academics use different online types of collaboration with institutions from abroad, in which students are also actively included via pedagogical or research process. The respondents that use that kind of online collaboration (N: 541) were further asked to respond to an open question by identifying the concerned types of online collaboration. Each respondent could list different types of online collaboration, wherefore the final SUM represents the list of all the different types of online collaboration listed, and not the percentage of respondents identifying the individual type of collaboration. All the answers were statistically analysed using a qualitative approach.

As shown in Table 2, the most common types of students' online academic collaborations with students or staff from geographically distant areas are video conferences and lectures, wherein Skype, Zoom, MS Teams, webinars, and various other platforms were mentioned as a tool for their successful cooperation (more than 28%). As much as 16.4% of the mentioned types of online collaboration referred to e-correspondence and 9.5% were earmarked for e-learning or online classroom (e.g. Moodle). More than 20.0% of the answers were irrelevant and were not in the context of online collaboration with institutions from abroad by inclusion of home students in pedagogical or research work, which most likely indicates respondents' unfamiliarity about the considered concepts.

Table 2. Percentage of different types of online collaborations with institutions from abroad with active engagement of students.

Types of online collaborations with institutions from abroad with active engagement of students	Valid Percent
(Interactive) video lectures and conferences (Skype, Zoom, MS Teams, different platforms etc.)	28.4%
E-correspondence (e-mails, exchanging materials etc.)	16.4%
International projects and research actively involving students	13.8%
Online classroom (Moodle, etc.)	9.5%
Online mentorship	2.3%
MOOCs	1.8%
Blended learning	1.3%
Other	6.1%
Irrelevant answers	20.5%
Total	100.0%

For successful implementation of online collaboration with staff and students from abroad (instead of physical international mobility), an appropriate institutional management, as well as technological support is needed at different levels of institutional operation. The academics were asked to rank on a 5-point Likert scale what support is provided by their home institution for the successful implementation of internationalised home curriculum (Figure 1). 74% academics (out of 1.553 respondents) agree or strongly agree that the internationalisation of the study process is important for their institutions. In the opinion of more than 63% of academics (N: 1.257) their home institutions support them in the use of learning activities that promote the development of intercultural and international perspectives of students (they agree or strongly agree with the latter statement). But on the contrary, just over half of respondents (51.4% out of 1.270 academics) believe that teaching staff are provided with appropriate technology to integrate international and intercultural dimensions into the learning and teaching process.

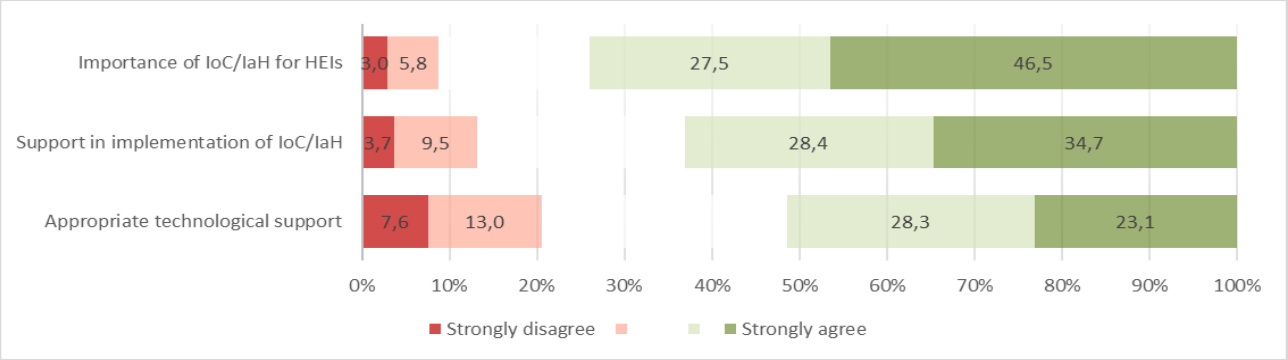

Figure 1. Academics' opinion about appropriate levels of support as provided by their institution (HEI) for the implementation of internationalised home curriculum (5-point Likert scale).

At this point, it has to be pointed out that the survey was conducted before the Covid-19 epidemic situation, when various forms of distance teaching and learning had not yet been so widely spread and implemented. The development and advanced approcahes to using assisstive technological tools undoubtedly serve as an important (but not the only!) driving force for internationalisation at home and consequently for achieving various aspects of sustainable development and susatinability concepts corresponding thereto.

Although the above presented results provide only a very basic overview of the (online) teaching practices in Slovenian higher education internationalisation at home scene according to academics' perceptions, they still represent prevailing trend at the national level. At the same time, presented practices of different types of online collaborations, as well as institutional trends in implementing international and intercultural pedagogical activities at home, at least indirectly show some aspects supporting sustainable development and sustainability aspects in Slovenian higher education practice. Nevertheless, further empirical surveys are needed for identifying concrete correlations between various sustainable development and sustainability aspects on one hand and the internationalisation of the home curriculum on the other.

Conclusions.

According to several positive aspects of internationalising the home curriculum in the context of sustainability and sustainable development goals, substantial resources should be devoted to the purposeful inclusion of international and intercultural dimensions in higher educational learning and teaching activities in domestic learning environments. Radical initiatives that will contribute to reduction of international education's negative impact on the climate and equal comprehensive development of students in the field of intercultural competence represent an important path to sustainability and sustainable development of the modern knowledge society. As highlighted several times, the "/…/ student mobility – the signature manifestation of internationalisation around the world – is highly damaging to the planet" (Rumbley 2020, 33), wherefore "internationalisation has to make the shift from being mobility driven and elitist to targeting all students through curriculum development and an intensive use of technology" (de Wit and Altbach 2020). Besides, meeting the needs of the present and at the same time not preventing future generations from meeting their own needs (Brundtland Report 1987) is one of the key aspects of sustainable development.

Although activities aimed at internationalisation at home within the context of Slovenian international higher education are not directly highlighted in the context of sustainability or sustainable development trends in national or institutional strategic document(s), there are

recognized practices that (although unsystematically or spontaneously) support both mentioned contexts – few of them are presented in this paper. Inclusion of at least some elements of internationalised home curriculum in learning and teaching activities of Slovenian study programmes instead of promoting mainly physical mobility activities means basic steps towards sustainability in internationalising Slovenian higher education practices. These trends are inter alia the outcome of the strategic goals and objectives defined in Strategy for the Internationalisation of Slovenian Higher Education, adopted in 2016 (The Ministry of the Republic of Slovenia for Education 2016a). However, further and more detailed analysis of the questionnaire launched in 2020 (some of the results of which are briefly presented in this article), as well as further surveys focused on concrete practices of higher education institutions, academics, and students, including their perceptions, are needed for a more in-depth insight into the trends of internationalisation at home in Slovenian higher education in relation to sustainability and sustainable development.

Since the Strategy for the Internationalisation (ibid.) is in its expiry phase by 2020, further strategic goals at the national internationalisation higher education level should be planned also in the light of current trends to sustainable development of modern knowledge society. Supporting global challenges, like climate change, environmental degradation, sustainable lifestyles, inequality, human rights, justice, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development, is the right way to blaze the trail to a better and more sustainable future for all, wherein higher education institutions play an important strategic and implementation role.

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ARE UNIVERSITY STUDENTS' CONSCIOUS ABOUT SUSTAINABILITY?

***Abstract**. This academic article aims to contribute to further development of education for sustainable development in higher education through measuring students' sustainability consciousness. Objective of the present study was to investigate differences in sustainability consciousness among undergraduate and graduate students of Pompeu Fabra University in Spain. Academic institutions ought to contribute to sustainable development and sustainability due to their important role in leading social, cultural, environmental and economic transformation of the world. This piece of writing explores the concept of sustainable development and sustainability in higher education through the concept of sustainability consciousness combining environmental, social and economic dimension of sustainable development joint by psychological dimensions of knowingness, attitude and behavior. For this research, a survey tool developed by Gericke et al. (2019) Sustainability Consciousness Questionnaire Short was adapted. Simple mean values and standard deviations across the items for each scale were calculated. Study data came from 305 students from eight faculties that participated in a survey among which there were 239 (78 %) undergraduate students and 66 (22 %) graduate students. The grand total mean of answers for undergraduates is 4,334 and for graduate students is 4,328. This demonstrates that there is no significant difference between undergraduate and graduate students of Pompeu Fabra University as an overall result of this research. Social and environmental dimensions ranked higher than the economic dimension. In psychological dimensions, attitude and knowingness prevailed before the behavior dimension.*

Introduction.

Sustainable development (hereinafter: SD) is a concept that connects environmental, economic, and social dimensions. This concept is gaining more and more importance in a globalized world as connections between environmental and socio-economic problems can be observed globally on a daily basis, such as for example the most recent one in the 2020 Covid-19 outbreak and the resulting lockdown that rose many challenges around the globe related to health, social and economic concerns. In the recent years, this concept has gained importance in the academic world and has been incorporated into many universities and higher education institutions globally. The UN declared the years 2005-2014 as the Decade of Education for Sustainable Development (hereinafter: DESD) (UNESCO 2006), which is further developed with the Agenda 2030 and 17 Sustainable Development Goals (hereinafter: SDG) (sustainabledevelopment.un.org).

The goal for the educational institutions is to implement SD at all levels in educational systems around the world as well as a teaching approach that better prepares its students for active citizenship and active decision making regarding complex issues. This approach in teaching is named Education for Sustainable Development (hereinafter: ESD) (Olsson, 2014). Academic institutions need to contribute to SD and Sustainability (hereinafter: S) because they have an

important role in leading social, cultural, and economic changes in the world. Higher education has the power to educate and expand the mind of humans. It can look for answers to the current challenges in the world, as well as support, encourage and promote them. Universities and institutions of higher education are one of the key players in the future development of humanity and of our planet to the direction of SD and S.

For the purposes of this research Pompeu Fabra University (hereinafter: UPF) and its students were selected as the object of observation. UPF is a Spanish university that is trying to implement SD at all its institutional levels. They are striving to contribute as much as possible to the goal of SD by re-educating its community not only to become more aware and change their behaviors but also to start acting upon them. UPF has a holistic approach to their educational mission and a vision of ESD that is in accordance with the latest objectives of Agenda 2030 and its 17 SDG (sustainabledevelopment.un.org). This great effort has also not been missed by the Times Higher Education University Impact Ranking in 2019 as the SDG-based ranking, ranking the UPF in the 29th place in the world and the first among Spanish universities. UPF is an advocate of Talloires Declaration, United Nations Global Impact (seuelectronica.upf.edu/sostenibilitat) and Agenda 21, which was approved in the academic year of 2007- 08. In their strategy to move as much as possible towards SD we can find many projects. To name just a few important ones are Planetary Wellbeing, Edvolution, Eutopia, Center for Sustainable Studies and Ciutadella del Coneixement (ww.upf.edu).

One of the most important stakeholders of the higher education institutions are its students. Since UPF is integrating SD concepts into their university model already for more than a decade, its students might be very savvy about the concept, suggesting that a difference between younger undergraduate students and senior graduate students could be observed. Students need to realize the importance of SD and S and act accordingly. If not, the future that awaits us does not look promising. They are our hope for a better sustainable future of the planet.

We should be fully alerted as the Native American proverb is wisely pointing out: *"Only when the last tree is cut down, the last fish eaten, and the last stream poisoned only then we will realize that we cannot eat money"*. Time to reflect on our actions towards the planet is now. Tomorrow might be too late. Higher Education has a power to promote changes already today for a greater sustainable future of humanity and our planet for tomorrow.

Sustainable Development and Sustainability.

Defying sustainable development and sustainability is no easy task. Even great leaders such as Kofi Annan in the past confirmed it: "Our biggest challenge in this new century is to take an idea that sounds abstract - SD - and turn it into reality for all the world's people" (Kofi Annan). But despite being such versatile concepts let us start with defining what is NOT sustainable. This might result useful in further understanding of both concepts.

Global Footprint Network invented metric that measures how much nature we have and how much nature we use. They are warning that humanity is surpassing its budgetary limit. Their data indicates that carbon emissions combined with all other human demands on the biosphere consume more than 170% of what the Earth replenishes. This means that humanity's ecological footprint corresponds to 1,7 planet Earths. The Earth has been in an ecological overshoot for at least the beginning of measuring it from 1961. Humanity in the last seven decades used more resources and

generating waste at a faster pace than the ecosystem could renew (www.footprintnetwork.org). This overexploitation of Earth's natural resources clearly demonstrates unsustainable actions towards our planet, suggesting we should reconsider ways to minimize these effects as much as possible and as soon as possible.

The most used definition of S is from the 1987 Brundtland report written by United Nations World Commission on Environment and Development titled Our Common Future, defining SD as: *"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs".* Richard M. Clugston in the foreword of Higher Education and the Challenge of Sustainability described S as: *"a new approach to social and economic development and global security which integrates concerns for short term economic gain with concerns for future generations, cultural and biological diversity, and social well-being"* (in Blaze, Corcoran, Walls, 2004).

SD is normally represented by three main integrated dimensions: environmental, economic, and social. Giddings, Hopwood & O'Brien (2002) presented these perspectives in a simple three-ring model. This way of describing SD by the three equal dimensions of the environmental, economic and social dimensions is often referred to as the three pillars of SD. This model has been criticized to give less importance to environmental dimension in relation to economic and social dimensions (Kopnina, 2014). Other ways of understanding the relationships between the dimensions have also been suggested (Giddings et al., 2002; Walshe, 2013). Yet they are less prominent. During the last decades after the Earth Summit in Rio this three-ring model has been widely accepted in international environment and international organizations such as the United Nations. The three dimensions, environmental, economic and social, are further described in the framework for the UN DESD (UNESCO, 2006).

S is often thought of as a long-term goal to a more sustainable world, while SD refers to the many processes and pathways to achieve this long-term goal. Throughout the last decades many definitions have been created and this has led to confusion in understanding and lack of consensus about the concept among scholars (Marshall, Toffel, 2005; Becker, 2012; White, 2013; Filho, 2000)). Yet most contemporary definitions of S share at least three core elements, despite their diverse emphasis and perspective:

- *First, most definitions are in line with the three pillars of S*: the economic, social, and environmental.
- *Second, many definitions of S emphasize that innovation should extend beyond the existing standards*. S efforts are depicted as exceeding the basic environmental, societal, and economic laws and regulations.
- *Third, S often focuses on intergenerational equity and fairness*. This is the idea that our present actions must account for what impact they will have on others and especially for the generations that will follow. (Weisser, 2017).

Despite its broad use in many areas up to today, SD and S are still difficult to define. There are still many challenges to overcome as these concepts represent different things to different people and are still inviting further exploration of definitions. In a fast-paced changing world, this is not a disadvantage, but an advantage, as new developments and research are occurring almost daily and can contribute to a further understanding and development of these concepts. But one thing is

for sure: the existing definitions offer a starting point for a conversation among many disciplines to join their forces and guide them to a common vision of the future. A future where higher education institutions are organizations that can substantially influence further development of the concept of SD and contribute to the long-term S.

Education for Sustainable Development.

Just as with the concept of SD, the concept of ESD also does not entail a single correct definition or interpretation. Wals (2009) defended this richness with the following words: "*The fact that there is no 'one size fits all' when it comes to SD and the road that will take us there, does not necessarily make SD and ESD weak concepts. On the contrary, it can be argued that this characteristic allows for the key challenge of our time to be addressed in multiple ways from different vantage points in locally grounded but globally connected ways. Perhaps ESD can be seen as the total sum of diverse ways to arrive at a 'learning society' in which people learn from and with one another collectively become more capable of withstanding setbacks and dealing with S induced insecurity, complexity and risks".*

Despite many different opinions and definitions there is one constant to all of them: *the ESD is the approach to facilitate implementing and dealing with SD in the educational systems (*Olsson, 2014). ESD can be followed back in history into the early 1970s, but one of the first important milestones appeared in 1992 with United Nations Conference on Environment and Development (UNCED) and with Agenda 21 which provides a plan of action to be taken globally, nationally and locally. Chapter 36 of Agenda 21 on education, training and public awareness for which UNESCO was assigned to be the manager of, identified four goals of ESD as follows:

- *To promote and improve the quality of education*: refocusing lifelong education on the acquisition of knowledge, skills and values needed by the citizens to improve their quality of life.
- *To reorient education towards SD*. At all educational levels from pre-school to university education, must be redesigned to the values of promoting sustainable world.
- *To increase public awareness of SD.* Enlightened citizens are good ambassadors for S at a local, national, and international level.
- *To promote training*. If citizens are in a long-life learning process they can contribute with new innovative and sustainable ideas to a more SD in all sorts of sectors also in education (Wals, 2009).

There are two main approaches in ESD research that can be observed. The first one is the pursue of a relationship between attitudes and behaviors to find approaches in teaching that would result in a behavioral change. The second one is more focused on building capacities than changing behaviors. Vare and Scott (2007) describe these two approaches as ESD 1 and ESD 2.

ESD 1 is a synonym to learning for SD, meaning that learning should encourage attitudes and behaviors among people to lead them in a certain direction. This is promotion of informed, skilled behaviors and a way of thinking. People learn what others tell them is important (Vare and Scott, 2007).

ESD 2 differs in this aspect and goes deeper. It is synonymous with learning as SD. It is considered as a building capacity to think critically about what experts say. ESD 2 is characterized by conflicting perspectives and by exploring various contradictions inherent in S issues. Its most

important added feature is the development of critical thinking and developing capacities for dealing with issues and dilemmas concerning SD. SD does not just depend on learning. It is a learning process. We cannot measure success in terms of environmental impacts as this is an open-ended process. Outcomes will depend on people's unforeseen decisions in the future under unforeseeable circumstances. But we can research the extent to which people have been informed and motivated and been enabled to think critically and felt empowered to take responsibility (Vare and Scott, 2007).

But what is then the right and the best understanding of ESD? Vare and Scott argue that the ESD 1 and ESD 2 are working together hand in hand. They are intertwined and work in their interdependent nature. The authors compare it to the Chinese concept of Yin and Yang and add: *"ESD 2 not only complements ESD 1. It makes it meaningful, because our long-term future will depend less on our compliance in being trained to do the 'right' thing now, and more on our capability to analyze, to question alternatives and negotiate our decisions"* (Vare and Scott, 2007).

Through ESD we can generate new solutions to SD challenges. Educational institutions should be one of the leading driving mechanisms of this change, promoting it at all levels. This should be done at the management level, among different stakeholders, around the campus and in academic curriculums. What is critical is not just the focus on the materials lectured but also teaching about how to be critical and to look for new solutions that have yet to be thought of. We as humans need to develop a capacity to manage change and through it become more sustainable. Universities and its students are one of the key players around the globe to do that and are becoming more and more proactive in becoming sustainable and promoting S.

Sustainability Consciousness.

With the evolution of the concepts of SD and ESD, another concept has emerged: the concept of SC. This term has been developed recently and does not appear in many research papers yet (Berglund et al., 2014; Berglund and Gericke, 2016; Boeve-de-Pauw et al., 2015; Olsson et al., 2016; Olsson and Gericke, 2016; Kalsoom, Q, 2017; Berglund et al., 2019).

The authors themselves (Gericke et al., 2018) stressed out that this is the first time that the concept of SC has been developed. However environmental consciousness has been used as a term with scholars before (Kollmuss & Agyeman, 2002; Schlegelmilch, Bohlen, & Diamantopoulos, 1996; Sharma & Bansal, 2013). Yet the environmental problems cannot be solved if we solely pay attention to the environmental issues due to their interconnection with societal and economic dimension. Therefore, sustainability consciousness concept has been developed which goes broader and covers social, environmental and economic perspectives.

For this matter Swedish research group has developed two different questionnaires to investigate SC, named the SCQ-L (sustainability consciousness questionnaire – long) and the SCQ-S (sustainability consciousness questionnaire – short) (Gericke et al., 2018). In continuation of this thesis SCQ-S questionnaire will be further explored and used as an instrument for research development. In the beginning, the concept of SC was used to study the effect of ESD implementation in Swedish schools at a student level. SC is operationalized into a survey instrument in which knowingness, attitudes, behaviors in relations to environmental, social, or economic dimension of SD can be measured (Berglund et al., 2019). SC is therefore defined as: *"SC refers to the experience or awareness of S phenomena, these includes experience and*

perceptions that we commonly associate with ourselves such as beliefs, feelings and actions" (Gericke et al., 2018). Gericke's academic colleague Olsson added that sustainability consciousness concept combines all dimensions of sustainable development: *"SC is the concept that integrates the environmental, social and economic dimensions of SD. Furthermore, there are aspects that elucidate S knowingness, attitudes and behaviors in each of these three dimensions"* (Olsson, 2014).

The concept of SC was developed to reflect students action competence according to the subthemes connected to SD dimensions as described by UNESCO (2006), 17 Sustainable Development Goals and consequently as the instrument through which we can observe effect of an ESD in student's SC (Olsson, 2014). With the creation of this concept and the research instrument, researchers' aim was to develop an operational concept of SC that can be used to measure the impact of different stakeholders in different types of studies, such as comparing different stakeholders, longitudinal and cross-sectional studies (Gericke et al., 2018).

Knowingness, Attitude and Behavior.

Before the Swedish investigation group invented their concept of SC and the corresponding questionnaires, Michalos et al. (2012) set an example for them in their research. They considered this research as a suitable starting point from a holistic point of view (Gericke et al. 2018). Michalos and others have developed a scale for measuring knowledge, attitudes, and behavior regarding SD. In their work they have used the UNESCO framework as a theoretical foundation for formulating the items. This research appeared suitable for two main reasons:

- The instrument included the three psychometric constructs knowledge, attitude, and behavior as implied by the consciousness literature.
- The instrument covered all the three dimensions of SD as identified in the literature describing SD (Gericke et al. 2018).

S knowingness in relation to SC reflects an awareness on the theoretical components of SD. The items that create knowingness are not factual knowledge about environmental, economic, and social issues. Knowingness is regarded as a suitable denotation of the construct. The knowingness part is not as much about factual knowledge than it is about recognizing issues of importance for SD (Berglund et al. 2014).

S *attitude* has cognitive, emotional, and behavioral components. However, the knowledge component is in many situations limited when people make attitudinal judgments. Attitudes express individual values and beliefs and determine one's reaction to a situation, an object, or other people. But attitudes alone do not predict behavior. Many factors interact in complex ways to form individual behaviors (Gericke et al. 2018). S attitude means awareness and concern about S leading to sustainable behavior (Kalssom, Quaraishi, Khanam, 2017).

S Behavior denotes action favouring SD and it is both a product and a cause of SC. Taken this into consideration, it is important to measure people's knowingness, attitude, and behavior separately as indicators of consciousness. However, individual scores on any indicator do not fully depict individual's SC but it is a good measurement to get an idea (Kalssom, Quaraishi, Khanam, 2017).

Methodology.

This research study is based on a quantitative approach to investigate whether there are differences in the SC between undergraduate and graduate students of UPF. An online survey was based on three sub-constructs measuring the S knowingness, attitude and behavior of students and we can also observe the three sub-dimensions of SD through the questionnaire: environmental, social, and economic.

The data gathering lasted from 23rd March to 3rd May 2020 online among current students of UPF. Total number of respondents was 307, but for the purpose of this research 305 valid answers were used for its final analysis, representing 2,34 % of the whole student body of 13.035 students at UPF. The analysis included two main groups of students from eight faculties: undergraduate (all bachelor's degrees) and graduate (all master's and doctoral degrees). In total 305 students among which there were 239 (78 %) undergraduate students and 66 (22 %) graduate students.

The SCQ-S questionnaire has been used (Gericke et al., 2019). Each item in the questionnaire relates to a specific sub-theme within the UNESCO (2006) definition of environmental, social, and economic dimension of SD. By relating SC to the tree pillar dimension of SD, it does not just closely relate to UNESCO framework but also to the 17 SDG proclaimed in the UN's Global Action Program (UN, 2015).

Constructs of knowingness, attitude and behavior each include nine items. Each of them relates to the *environmental* (three items), *social* (three items) and *economic* (three items) dimension. The *knowingness* dimension focuses on what students perceive as necessary constituents for SD and not factual knowledge. Therefore, the word knowingness is used and not knowledge. The *attitude* items are formed in "I think that" which reveals positive or negative feelings expressed towards the object of research. The *behavior* section refers to students' experiences. What they really do or how they act accordingly. It tries to detect their self-reported behavior.

Data was gathered among students of UPF through an online questionnaire of twenty-seven questions in Google Forms and then transferred to Microsoft Excel for the final data analysis where means and standard deviations were calculated. Responses were collected with Likert scale from 1 to 5. 1 meaning "strongly disagree", 3 "don't know" and 5 "strongly agree". The means were later arranged from the highest mean score to the lowest to better differentiate the highest and the lowest scored answers.

Results.

This research was exploring the importance of the concept of SD and S in higher education through effects of the implementation of ESD at a Spanish university UPF. The main question of the research was: *Are there any differences in SC among undergraduate and graduate students at UPF?* Questionnaire was based on twenty-seven questions through which different subconstructs of SC can be observed: environmental, social, economic and knowingness, attitude, behavior. S here refers to environmental, economic, and social dimensions of SD, while consciousness is being detected by knowingness, attitude, and behavior. All these six dimensions together form a concept of SC.

The aim of the SC questionnaire was to detect any differences between undergraduate and graduate students. Since UPF is fully supporting ESD with several initiatives throughout the

university and for quite some years its students should be highly educated in sustainable matters and this should be reflected in the results. Since graduate students are integrated for a longer time in the ESD process than their younger undergraduate colleagues, SC for graduates should be higher than for undergraduates.

The main research question was *Q1. Are there any differences in SC among undergraduate and graduate students?* The grand total mean of answers for undergraduates is 4,334 and for graduate students of 4,328. From these means we can observe that there is no significant difference at all among undergraduate and graduate students in SC. Therefore, the answer to the first question is: there are no significant differences in an overall SC between undergraduates and graduates. Since graduate students are at a university for a longer time than undergraduate students it was expected that overall mean would be higher, but surprisingly it resulted that this is not the case.

Hypothesis H1 stated that SC is higher among graduate than undergraduate students. This hypothesis is rejected as the mean for both group of students is almost the same. If we explore further the small differences in means, we can see that for undergraduates (4,334) it is even slightly higher than for graduates (4,328) but with such a small difference that this is not relevant.

If we continue the observation with separate dimensions of SC: environmental, economic, social and knowingness, attitude, behavior some small differences can be detected. Figure 1: Differences between SC dimensions represents these differences for both dimensions.

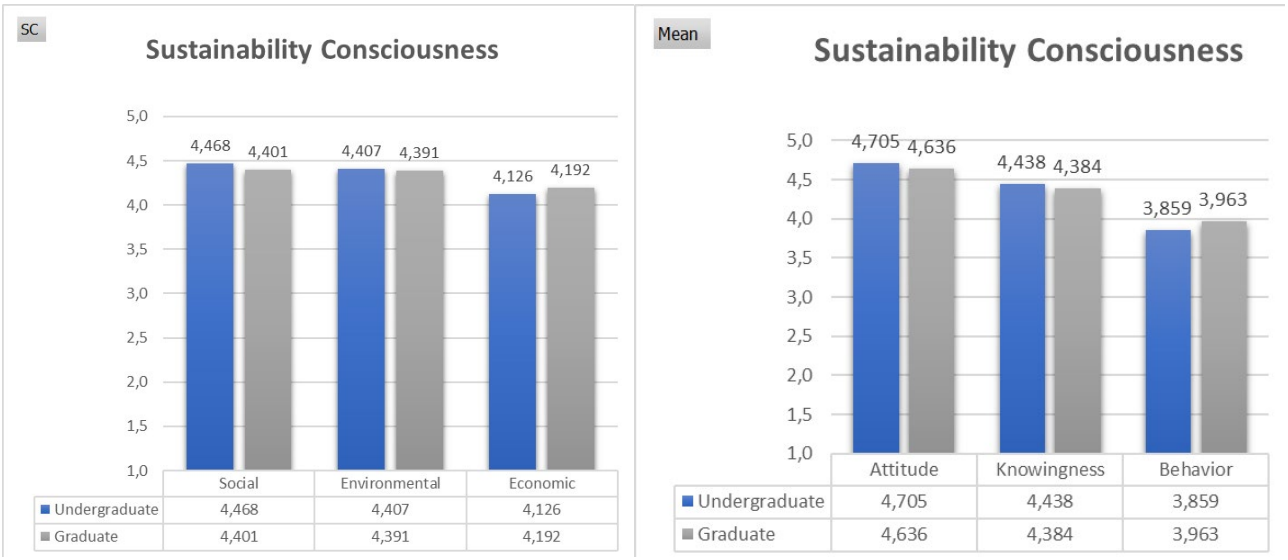

Figure 1. Differences between SC dimensions.

If we investigate the Figure 1: Differences between SC dimensions above for social, environmental, and economic dimensions, we can see that among both group of student's social dimension was the one which scored the maximum. This is also confirmed by Daniel Olsson (2014) where in his research he observed sixth, ninth and twelfth grade students in Sweden. They have also scored the highest on social dimension. Berglund and Gericke (2016) argued that this might relates to that the "value of social aspects might be particularly easy to agree with when no additional aspects have to be considered that could incur costs of conflict with objectives related to the other dimensions". It looks like that agreeing with social dimension is easier than to agree with any other.

Another study from Pakistan (Kalssom et al., 2017) that was developed between pre-service teachers and students from humanities group reports a different result. They both scored maximum in economic dimension. But authors also wrote that this might be because in Pakistan economic dimension may be attributed to their perception of SD because the word "development" in their media and political discourse refers to economic growth.

These comparisons of studies with the current study might not be appropriate even though the questionnaire is similar, and comparison is interesting to do, but there are many variables such as the study sample, cultural and political context, geographical location etc. that might influence the comparison to not be done correctly. But it is still curious to see that through the same questionnaire we can observe similar or different results around the globe. But even though we are globally trying for SD around the world to resemble or to be defined the same as much as possible (for example with 17 SDG) this does not necessary mean that it will be and that it has the same meaning for all people and nations involved in this SD transformation. SD dilemma exists: SD means different things to different people around the world. But then again SD might need to be adapted to specific local and global standards. But this may be a topic for another study.

Q2 of this research asked: If so, in what aspects in terms of social, environmental, and economic? No, there are no significant differences between the social, environmental, and economic dimensions in the gran total score. But the main differences that can be observed on each dimension is that both students can relate more to social and environmental statement whereas economic ones scored the least (undergraduates 4,126 and graduates 4,192). There are again small differences but maybe valid to further explore why one-dimension scores higher and another one lower.

Hypothesis H2 stated: Students are more conscious about the environmental than the economic and social dimension. This hypothesis is also not accepted as the score ranking demonstrated that among both, undergraduates and graduates the first ranked dimension is social, second comes environmental and on the third place economic. To summarize we can say that the most important dimensions are social, environmental and after that comes the economic dimension.

For the knowingness, attitude and behavior dimension we can see that attitude dimension scored first place (undergraduates 4,705 and graduates 4,636) and the second knowingness (undergraduates 4,438 and graduates 4,384) and behavior followed as third (undergraduates 3,859 and graduates 3,963). The results are in line with the Swedish study (Berglund et al., 2019) where in a cross-cultural comparative study of SC between students of Taiwan and Sweden was reported that both had the highest score in attitudes (Taiwan 4,128 and Swedish students of 4,491). Knowingness followed second (Taiwan 3,936 and Sweden 4,177) and third behavior (Taiwan 3,892 and Sweden 3,232). Michalos et al. (2012) came to the similar conclusion among grade ten students in Manitoba, Canada where on a scale from 1 to 5, with 1 being the highest (the opposite of this study where 5 is the highest score) the following results were obtained: on knowledge 2,12, attitude 2,14 and behavior 2,38. Another study in Pakistan between pre-service teachers and undergraduate students in humanities discipline confirmed the same (Kalssom et al., 2017). Also, here the highest score for both groups was first knowledge (3,48 pre-service teachers, students in humanities 3,6), second attitude (3,4 pre-service teachers, 3,4 students in humanities) and third behavior (3,258 for pre-service teachers and 3,24 for students in humanities).

With these studies we can observe that among many different studies done internationally so far knowledge and attitude come as most important and highest scored whereas in behavior dimension there is still plenty of space for new challenges and improvements. But no matter how interesting these comparisons might be it is difficult to generalize individual actions to any context because of situation specificity to S dilemmas. Both knowledge and attitude may contribute to shaping individual behaviors, however many additional factors such as demographic, economic, political, geographical that are not included in this study can play an important role (Berglund et al., 2019).

Q3 of this research addressed the question: If so, in what aspects in terms of knowingness, attitude and behavior? There are no drastic changes in knowingness, attitude and behavior among undergraduates and graduates but again slight differences. In both the most important dimensions that scored the highest are attitude and knowingness, but the behavior dimension was the one scoring the least. This might be expected because it is easier to just agree and mentally adapt with ideas of SD than truly act upon them.

Hypothesis H3 stated: Students have stronger perception of knowingness and attitude but are lacking in behavior dimension. This hypothesis resulted to be true. Students indeed have a higher score in knowingness and attitude but are lacking in behavior dimension. This might be due to knowingness and attitude being easier to interiorize whereas for behavioural changes you need to not just change your inner you but go deeper and have an action plan.

To summarize, there were no significant differences between the undergraduate and graduate students as an overall result of this research and analysis. What is interesting to observe is that social and environmental dimensions ranked higher than economic dimension. This might be because of the current agenda setting in media or in a political discourse that might put more importance to social and environmental dimensions, and these are the topics with which it is also easier to agree. As well students prioritize more attitude and knowledge which are more cognitive interior incentives and easier to adapt and to interiorize than behavior that calls to further action.

Conclusions.

This research contributes and encourages further development of ESD in HE in Spain and around the world. This study analyzes the concepts of S, SD and ESD and applies them to a practical study case of UPF where research was done among undergraduate and graduate students evaluating their SC. The main research question was: *Are there any differences in SC among undergraduate and graduate students at UPF?* From this study the researcher can conclude that in general understanding of SD as ESD1 still prevails at a university level which is defined as "promotion of informed, skilled behaviors and ways of thinking" (Vare and Scott, 2007). But it lacks in shifting from ESD1 towards ESD2 which is defined as: "Building capacity to think critically about what experts say and to test ideas, exploring the dilemma and contradictions inherent in sustainable living" (Vare and Scott, 2007).

Further lines of research that might be interesting to continue to study are: Comparing more stakeholders; Comparing students by gender; Comparing students by the field of study; Comparing study of several universities in Spain (in one autonomous community or at a national level); Expanding the study to other educational institutions in Spain; International comparative between different countries and educational institutions; Longitudinal study for example to follow students from the beginning until the end of their studies. There are plenty of options to go deeper into this matter.

Higher education institutions are trying to change and be advocates of this sustainable development shift but there are still lots of possibilities for improvement to change from knowingess and attitude to behavior. Besides SD shift is not just about changing from identified and agreed thinking to critical thinking but for the whole higher education institution to become transformative. To go from teaching and learning to action. Sterling has put it nicely into words with the following statement: *"S does not simply require an 'add-on' to existing structures and curricula but implies a change of fundamental epistemology in our culture and hence also in our educational thinking and practice. S is not just another issue to be added to an overcrowded curriculum, but a gateway to a different view of curriculum, of pedagogy, of organizational change, of policy and particularly of ethos. At the same time, the effect of patterns of unsustainability on our current and prospects is so pressing that the response of higher education should not be predicated only on the 'integration of S' into higher education, because this invites a limited, adaptive, response. Rather we need to see the relationship the other way around - that is, the necessary transformation of higher education towards the integrative and more whole state implied by a systemic view of S in education and society, however difficult this may be to realize" (Sterling, 2014).*

Therefore, time to reflect on our social, environmental and economical actions towards the planet and its wellbeing starts today. Tomorrow might be too late. It is important to stress that higher education institutions play a crucial transformative role in further sustainable development and that sustainable development should not be just an "add on" in higher education management but a pathway to preserve planet Earth for future generations to come. A pathway for which universities should vehemently advocate among all its stakeholders from which its students, young minds usually have a strong will and the power to contribute to changes in the world, are one of the most important ones.

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CORRELATION BETWEEN SPIRITUAL INTELLIGENCE AND INDIVIDUAL BURNOUT IN BUSINESS ENVIRONMENTS

Abstract*. This article links together three basic concepts: spiritual intelligence, burnout and the business environment. The purpose of the research was to determine whether factors of spiritual intelligence are related to the burnout of an individual. The correlation was measured in work environments. Data collection was carried out using a prepared digital survey sent to randomly selected addressees in different work environments. 601 employees participated in the survey. The results show that there are certain correlations between individual factors of spiritual intelligence and burnout factors which are linked to the business (work) environment.*
Key words: *spiritual intelligence, burnout, business environment*

JEL Classification: C43, C51

Introduction

Workplace burnout is nowadays often described and addressed in a variety of contexts, scientific research, and articles. The experience of burnout in business environments is also related to the characteristics of the individual, as well as to his/her psychological state. In addition to the established personality of an individual and his/her attitude to the business environment, the specifics of work environments can, in relation to spiritual intelligence, contribute to a lower burnout rate. Individuals with a higher level of intelligence are expected to find it easier to manage the factors associated with workplace burnout. Individuals who are aware of their abilities and who know what they want are more satisfied with their work environment and find it easier to take the necessary measures to prevent burnout. Workplace burnout, spiritual intelligence, and the work environment in which an individual is active can provide relevant information to prevent workplace burnout or even to make changes to the work structure.

1. Definition of burnout

There are a number of psychological, physiological or other behavioural reactions that affect an individual's well-being and are the result of a mismatch between an individual's expectations in relation to the business environment and his/her abilities; they are called a state of stress. Just as we can assess the performance of individual organizations with regard to internal and external factors, we can also look for sources of an individual's stress among internal and external causes. For an individual, internal sources are unrealistically set goals, the need for constant and complete control

over a situation, excessive attachment to work, expression of egoism – rejection of support and excessive perseverance and rigidity in achieving goals. External sources are related to the organization itself and to the working conditions, as well as relationships with other stakeholders in the organization. Workplace burnout is conditioned by the above-mentioned characteristics and professional and emotional competences.

Burnout is defined by three primary symptoms, namely a combination of emotional exhaustion, depersonalization, and reduced feelings of personal accomplishment (Maslach 1982, Halbesleben, and Buckley 2004). Emotional exhaustion refers to the depletion of an individual's emotional resources. Employees who are emotionally exhausted normally feel lacking adaptive resources and are no longer capable of adding value to their work. The energy which they use for work is depleted, making it impossible to do their work. Depersonalization, also known in the literature as cynicism or disengagement, often arises as a reaction to emotional exhaustion. It refers to the process in which employees become alienated from work and begin to develop a callous attitude towards work, the effect of work and all things related to work, e.g. clients, co-workers, etc. Reduced feelings of personal accomplishment refer to a reduced perception of work capability – it is the perception of employees that they cannot perform as well as they once could (Halbesleben and Buckley 2004).

In the literature, burnout is often associated with stress, which basically means external pressure or load upon a particular object (Newhouse 2000).

Burnout is a syndrome of emotional exhaustion, depersonalization, and reduced personal characteristics (Maslach 1998).

According to Stevens (1995, 25), burnout is mental exhaustion which occurs in individuals who are constantly exposed to pressure and negative stress in the workplace. Burnout is not just a feeling of exhaustion at the end of a work day, but a progressive cycle of exhaustion and loss of vitality which affects an individual's emotions, as well as their body and spirit.

Brajša (2005, 28) defines burnout as physical, emotional, and mental exhaustion in emotionally burdensome close relationships in an individual's private and professional life.

Pšeničny and Findeisen (2005) state that the cumulative response to long-term inappropriate psychological work circumstances is a loss of mental and physical strength, a drop in work motivation, and exhaustion. Burnout is also an illness which occurs as a result of inappropriate psychological work circumstances and manifests itself as a changed attitude towards work (Pšeničny and Juračič Šribar 2007).

Bilban and Pšeničny (2007, 22) state that burnout is a syndrome of physical and mental exhaustion which includes the occurrence of a negative self-image, negative attitude towards work, loss of feelings of concern and lack of positive attitude towards clients, while Tepina (2008) believes that it is a chronic state of extreme psychophysical and emotional exhaustion caused by long-term non-reciprocal relationships at work or in private life (Tepina 2008).

In the context of the above, Golombiewski, Boudreau, Goto, and Murai (1993, 25) conclude that the core of the problem is not in the exhaustion due to old age or exhaustion due to weariness, but in the emptiness due to loss of spiritual strength, which has hitherto represented to the employee the meaning of his/her professional mission and given him/her the necessary impetus.

Individual burnout, in addition to the above, is related to or distinguished from various other concepts, illnesses, conditions. One of these conditions is depression or a state of sadness, depression, the blues, irritability, hopelessness. It is a syndrome of an illness which affects the individual as a whole, while burnout is a condition that, if left untreated, can lead into depression (Petrič 2006). Burnout is associated with involvement in a task, with a feeling of helplessness and dissatisfaction with work, as well as with tension and general health (Golembiewski, Boudreau, Goto and Murai 1993).

Most authors agree that burnout is a chronic process and that the cause of burnout originates in the work environment. The level of sophistication of the work environment and the individual's ability to respond properly to changes in the environment, as well as proper organization and emotional stability can help eliminate the causes of burnout.

2. Spiritual intelligence and the interpretation thereof

Spirituality has long been researched by scientists. William James already recognized that human spiritual experiences can deepen and broaden our lives (James, 1902). Spirituality plays an important role in the development and growth in people, both as individuals and as society (Del Rio and White, 2011).

Spiritual intelligence is defined as the highest level of intelligence and is the foundation for the effective functioning of rational and emotional intelligence. Spiritual intelligence helps perceive the meaning, significance and value of life, as well as work virtues which bring happiness and satisfaction.

Zohar and Marshall (2000) consider spiritual intelligence to be the third type of intelligence. It consists of principles, namely:

- self-awareness,
- spontaneity,
- living by vision and virtue,
- integrity,
- compassion,
- diversity,
- independence, and
- humility.

Spiritual intelligence is also characterized by the urge to ask why-questions, the ability to reframe, the positive use of adversity, and a sense of vocation (Zohar and Marshall, 2000).

Nasel (2004), on the other hand, believes that spiritual intelligence is the ability to differentiate, search for meaning, and address issues of mentality.

Amram and Dryer (2008) believe that spiritual intelligence is about the ability to use spiritual functions and abilities which increase our success in life and our mental well-being.

King (2008), however, states that spiritual intelligence is a host of mental abilities based on adaptation, principles of immateriality, and aspects that are far from reality.

And what are individuals with a higher level of spiritual intelligence supposed to be like? MacHovec (2002) believes that such individuals exhibit more flexibility and self-awareness.

Flexibility is about the ability to look at the world realistically and perceive it as a place of diversity and variety. Flexibility also refers to the ability to interact, understand and adapt to development and innovation. Self-awareness, conversely, is about exploring the inner self that helps an individual understand his/her true identity. (ibid.) It is King (2008) though who believes that individuals with a high level of spiritual intelligence are more capable of critical existential thinking, working out and taking on meanings based on in-depth understanding of the existence of related issues and of using different levels of emotions. Such individuals are able to achieve personal meaning by combining and connecting mental and physical experiences with the meaning about themselves.

Spiritual intelligence is a relatively new concept, derived from the Theory of Multiple Intelligences (Gardner, 1995). It is the central factor of success and health in an individual's life (Emmons, 2000) and a major intelligence that adds value and meaning to an individual's life (Zohar and Marshall, 2000).

While for Wolman (2001, p. 1) spirituality is determined by an idiosyncratic, self-reflective, and self-revealing subjective world (p. 15), for the same author, spiritual intelligence is the capacity of a human being to ask ultimate questions about the meaning of life and to simultaneously experience the infinite connections between each of us and the world in which we live.

Emmons (2000-b, p. 59) believes that spiritual intelligence is a flexible use of spiritual information which makes it easier to solve everyday problems and achieve goals.

According to King (2008) and King and DeCicco (2009), spiritual intelligence is a host of mental capacities which help in the awareness, integration and adaptation of the immaterial and transcendent aspects of an individual's existence, and which lead to deep reflection on existence, emphasis on meaning, recognition of transcendent selves and secrets of spiritual states.

It consists of four elements, two capabilities and two capacities, which are: critical existential thinking, self-creation, transcendent awareness, and the expansion of states of consciousness.

According to William James, our spiritual experiences have the potential to expand and deepen our lives in a detailed manner (James, 1902).

Each of the intelligences is connected to one of the three basic neural systems in the brain, and all the intelligences are variants of the basic intelligences: rational, emotional, and spiritual. Spiritual intelligence is also regarded as people's conscience, and chaos theory characterizes it as a creative space between order and chaos, between the comfortable knowledge of our actions and complete disorientation. Spirituality transcends the human ego, which focuses only on itself, is selfish and materially ambitious, and embarks on a deeper path of questions of good and evil, life and death, and the search for the unconditional love of humanity. (Zohar and Marshall, 2000, p. 14)

Vaughan (2002) defines spiritual intelligence as the inner life of mind and spirit and their connections to the wider world, as the ability to deeply understand existential questions on multiple levels of consciousness, and as soul awareness, which is the creative life force of evolution.

Trojnar (2002, 27) believes that spiritual intelligence is the highest and most developed form of spontaneous response to the deepest core of a person's self and being. Spiritual intelligence is that part of an individual's consciousness that awakens his/her deep power of intuitive action, thereby interfering with unimaginable creative possibilities, reminding him/her of the habitat issues of the entrapment of past habits, illnesses, and bitterness, and training him/her to resolve them.

In 2008, Amram and Dryer developed a new scale for measuring spiritual intelligence based on the model for measuring emotional intelligence. They called it the Integrated Spiritual Intelligence Scale (ISIS). They defined spiritual intelligence as the ability to use, manifest, and embody spiritual resources, values, and qualities to improve daily functioning and well-being.

Spiritual intelligence does not equal religion. Religion is a set of dogmas, habits, and customs which create control over the believer and his/her behaviour, while observing only its own vision of the world, thus holding a monopoly over the spiritual. Borysenko (1997, 17) explains that religions try to control people with frightening claims, e.g., the evil in humans, possibly leading to losing one's soul, and such. Such and similar claims create a spiritual pessimism that breeds fear, a sick soul, feelings of worthlessness and guilt. Conversely, spiritual intelligence is directed towards a greater connection and deeper contact with a person's inner thoughts and, through them, all around the world. Its highest form is pure unconditional love in the absence of the human conscious mind, which obtains information for life from the limited external world.

3. Business environments

The globalization of business and the latest global challenges – battling the COVID-19 epidemic have shown that business environments are nested in a dynamic environment that requires rapid change. Business systems need to develop their own business environments and influence performance through change. A business system is a living organism which requires commitment and coordination from stakeholders at all levels of the system. Through strategic thinking and recognition of the goals of the system, companies can successfully manage change throughout their environments. No part of a business system environment should be neglected and kept in a vacuum. It was Darwin already who wrote that survival is only for the species which responds most to change. Stemming from the belief that business systems are living organisms, we can say that they are also social systems. Business systems are systems in which we operate, in which we run our businesses. Structurally, they are different – they can be hierarchical (e.g., police, military, firefighters, etc.) or more even (e.g., Google, etc.), yet different if compared to personal, family, or leisure social systems. The people we socialize with there are different, the way we think and act and behave is different. The goals we pursue in the context of business systems are also different. (Mušinović, 2019)

Business systems are life forms that have their own development dynamics, history, present and future, they are independent organisms with emotions, fears and dreams, they have their mission, their goals and lifespan. They are different from one another, but at the same time they are connected, because each new phase [stage] urgently needs the vital forces of its predecessors to be able to exist. (Bulc, 2006, p. 20)

Business systems evolve through four phases: work environment, learning environment, thinking environment, and conscious environment. (Bulc, 2006, p. 20). The phases follow one another in sequence according to business rules with specific resources and leverage. There is a transformational period of operation at the point of transition from one phase to another, where contradiction may arise between the old and the new.

In the work environment, added value is created through diligent (physical) work, the result of which is a product as a consequence of using work equipment. This is mostly performed in manufacturing industries. The result of competitive advantage is productivity.

In the learning environment, employees are expected to have additional knowledge to create added value. Knowledge is the creator of added value. Diligence is still crucial, but due to the complexity of the environment, it must be upgraded with knowledge. Knowledge is manifested in the quality of the product. In this period of development, the key object of observation is the customer who finds the product interesting enough to buy. Compared to the work environment, a shift in the work process occurs here. Work processes are based on knowledge, which must be constantly upgraded in the course of continuous improvement. Leadership processes, interpersonal relationships, organization of work, values, and other aspects are developed.

Knowledge gained in the learning environment is upgraded in the thinking environment by means of creativity, the key subject of which is innovation. Quality improves when compared to the learning environment, and improvements are based on creative innovations, which are unknown, different. Relaxed and dynamic environments require the growing importance of human and cross-functional teams which generate creative ideas. Creativity of ideas requires collaboration with the environment. Cooperation with the environment on the basis of activity, knowledge and thinking gives rise to new ideas and innovative processes needed by the environment or the market.

The last development phase is the conscious environment. It represents an increasing level of humanization of work, while added value is intuition. The key factor is the life energy of an individual, a team or a company, their values and informal forms of cooperation with the environment.

4. Analysis of the research on the correlation of spiritual intelligence and burnout in business (work) environments

Through the research, we tried to define the correlation between spiritual intelligence and burnout in business environments. In the first part of the research process, a review of past research and literature was performed, as well as the formation of theoretical bases following the concepts already known. In the second part of the research, results of the survey were analysed. In the survey, we used a questionnaire entitled Spiritual Intelligence (SQ) and Individual Burnout (IB) in Business Environments (BE). It was compiled from three different sources. In the part related to individual burnout, we used items of the Maslach burnout inventory (Maslach and Jackson, 1986), in the part related to spiritual intelligence, we used the Spiritual intelligence self-report inventory (King, 2008; King and DeCicco, 2009), in the part related to business environments, we used four of our own items, which were created on the basis of records in Bulc (2006). Apart from demographic data, the questionnaire consisted of a total of 50 items. Cronbach's alpha for the 50 listed items was 0.908.

The survey was designed to be used in a web browser. A link to the survey was sent by email. 615 individuals participated in the survey, and 601 questionnaires were included in the research. Divided by gender, 227 men (37.8%) and 372 women (61.9%) participated. Two

participants omitted the indication of their gender. This accounted for 0.3 percent of all questionnaires included in the analysis.

Participants' age ranged from 18 to 70 years. The average age was 40 years. Five individuals omitted the indication of their age. The data on age was divided into categories in 10-years intervals, as follows: up to 20 years, up to 30 years, up to 40 years, up to 50 years, up to 60 years, and the last category was up to 70 years. Given that there were only 4 individuals in the first category, we merged it with the next category, up to 30 years. The shares were as follows – see Table 1.

Table 1: Frequency distribution of participants by the categories of age (own source)

	f(x)	%	cum. %
up to 30 years	132	22.0	22.1
up to 40 years	207	34.4	56.9
up to 50 years	163	27.1	84.2
up to 60 years	76	12.6	97.0
up to 70 years	18	3.0	100.0
Total	596	99.2	
Missing	5	0.8	
	601	100.0	

The participant with the most work experience had 47 years of work experience. The indication of work experience was omitted by 13 individuals. Data was divided into categories in 10-years intervals.

Table 2: Frequency distribution of participants according to work experience (own source)

	f(x)	%	cum. %
0 to 10 years	192	31.9	32.7
11 to 20 years	184	30.6	63.9
21 to 30 years	134	22.3	86.7
31 to 40 years	70	11.6	98.6
41 to 50 years	8	1.3	100.0
Total	588	97.8	
Missing	13	2.2	
	601	100.0	

The majority of participants, 523 (87%) were employed, 40 (6.7%) were students, 20 (3.3%) were retired, 16 (2.7%) were unemployed. Two participants, 0.3% of all, omitted the indication of their employment status.

4.1 Research hypotheses

Within the research, the following hypotheses were formulated:

H1: *There is a negative correlation between spiritual intelligence and individual burnout.*

H2: The more developed the business environment, the higher the average product of interaction of spiritual intelligence and individual burnout.

4.2 Results of hypothesis testing

This chapter presents statistically processed data obtained from the questionnaire and related to the formulated hypotheses.

H1: *There is a negative correlation between spiritual intelligence and individual burnout.*

Table 3: Correlations between spiritual intelligence and individual burnout (own source)

	SQ	CET	PMP	TA	CSE
IB	0.149**	0.220**	0.067	0,106*	0.127**
EE	0.056	0.163**	–0.052	0.025	0.036
DEP	–0.007	0,085*	–0.110**	–0.047	0.014
PA	0.301**	0.208**	0.369**	0.296**	0.263**

N=601. The derived variables shown are: SQ – spiritual intelligence, CET – critical existential thinking, PMP – personal meaning production, TA – transcendent awareness, CSE – conscious state expansion, EE – emotional exhaustion, DEP – depersonalization, PA – personal accomplishment, IB – individual burnout. *p<0.05, **p<0.01.

The first hypothesis, *»H1: There is a negative correlation between spiritual intelligence and individual burnout."* Table 3 shows a statistically significant positive correlation between the total result of the variable spiritual intelligence – SQ and the total result of the variable individual burnout – IB, r = 0.149, p = 0.001. Given the positivity of the correlation, hypothesis H1 is rejected, despite the fact that the only negative correlation between the burnout factor of an individual is depersonalization – DEP, and the factor of spiritual intelligence of critical existential thinking – CET.

H2: *The more developed the business environment, the higher the average product of interaction of spiritual intelligence and individual burnout.*

Table 4: Non-standardized and standardized coefficients of a linear regression analysis (own source)

		Non-standardized coefficients		Standardized coefficients		
	Model	B	Standard error	Beta	t	p
1	(Constant)	2.507	0.268		9.370	0.000
	IB	–0.013	0.003	–0.171	–3.853	0.000
	SQ	0.008	0.002	0.154	3.467	0.001
2	(Constant)	2.301	1.005		2.289	0.023
	IB	–0.010	0.016	–0.128	–0.623	0.534
	SQ	0.010	0.012	0.202	0.877	0.381
	SQxIB	–3.926E-5	0.000	–0.070	–0.214	0.831

Dependent variable: business environments – BE. The independent variables in the models are IB – individual burnout and SQ – spiritual intelligence. SQxIB – interaction between the independent variables IB – individual burnout and SQ – spiritual intelligence.

Table 4 shows the coefficients of the linear regression analysis, which was performed using the dependent variable business environment – BE and independent variables individual burnout – IB and spiritual intelligence – SQ and their interactions. The table shows a statistically significant negative correlation between individual burnout – IB and the dependent variable business environment – BE. There is a statistically significant positive correlation between the independent variable spiritual intelligence – SQ and the dependent variable business environment – BE. The results did not show any correlation of the interaction (SQxIB) between the independent variables individual burnout – IB and spiritual intelligence – SQ with the dependent variable business environment – BE.

Table 5: Non-standardized and standardized coefficients of the linear regression analysis (own source)

Model	R	R2	Customized R2	Standard error of the estimate
1a	0.212a	0.045	0.041	0.936
2b	0.212b	0.045	0.039	0.937

a. Predictors: (Constant), SQ, IB, b. Predictors: (Constant), SQ, IB, SQxIB

Table 5 shows the summary of the linear regression analysis, which was performed using the dependent variable business environment – BE and independent variables individual burnout – IB and spiritual intelligence – SQ and their interactions. The table shows that by means of independent variables, 4.5 percent of the variance of the dependent variable can be explained, while with the added interaction between the independent variables individual burnout and spiritual intelligence (SQxIB) there is no additional share of explanation.

Taking into account the analysed data, there is no statistically significant interaction between spiritual intelligence – SQ and individual burnout – IB that may be evident in terms of the development of business environments. Therefore, hypothesis H2 is rejected.

Conclusion

The article deals with the correlation between spiritual intelligence and burnout in business environments. Spiritual intelligence is found in every human being. People are the only living beings whose existence and purpose demand creation. The very existence of humans allows us to discuss different types of intelligence. An individual's intelligence and creation, if exceeding his/her abilities, can cause burnout in achieving the set goals. However, business environment is what provide for an individual to be able to satisfy his/her needs and facilitate his/her business intelligence evolution. In the preparation of the research, we tried to determine whether an individual's spiritual intelligence and burnout are related to each other based on the business environment in which the individual operates. The analysis of the statistics showed that there is no negative correlation between spiritual intelligence and individual burnout, nor is there a statistically significant interaction between spiritual intelligence and individual burnout. Such research linking spiritual intelligence, burnout, and the business environment has not been conducted before, so our results cannot be compared to other findings. All three concepts are important in their own right for human beings and their functioning. There is room for improvement in the research though and it could therefore be expanded to include the current global situation related to the prevention of the COVID-19 epidemic.

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ANALYSIS OF E-INVOICING AS A DRIVER FOR DIGITAL TRANSFORMATION

Abstract. *The mass adoption and use of e-invoicing in Slovenia and in European Union leads to significant economic benefits and an increase in European business competitiveness. The already established European legislation in this field plays an important role. However, the legislation for the use of e-invoices refers mostly on the public sector, so it is crucial for the expansion of the e-invoicing that the private sector recognizes the clear benefits of its implementation. The benefits can generally be linked to a more efficient and faster operation and a reduction in costs. The article covers an overview of the current state of e-invoicing, the main advantages of using e-invoices and various models and concepts for the exchange of e-invoices will be presented. The article also contains an analysis of research on e-invoicing in Slovenia.*

Introduction.

The exchange of e-invoices in Europe has been established for several decades, especially in the supply chains. Large commercial chains were the first to introduce e-invoicing as they soon realized the advantages it brings to the transactions between the suppliers and the customers.

In EU Member States, the accelerated introduction of e-invoices for business-to-business transactions and for transactions with public sector organizations has begun in the last 10 years at the initiative of companies and the initiatives of the European Commission. The Digital Agenda for Europe, which is one of the fundamental elements of the Europe 2020 strategy, sets e-government and the digital single market as key aspects of a modern and competitive EU economy [1]. In 2010, the European Commission published a communication "Reaping the Benefits of Electronic Invoicing for Europe", in which it called on the Member States to introduce e-invoicing and eliminate the problems arising from the lack of interoperability of existing e-invoicing systems [2]. The goal the Commission wanted to achieve was e-invoicing to become the predominant method of invoicing by 2020.

There have been major challenges in cross-border business due to the heterogeneity of e-invoice processing. Individual countries have their own policy framework, platform and approach for processing e-invoices. However, each country, and often also a single industry, has introduced its own standards for e-invoicing, and therefore more than 350 different formats of e-invoices with national and branch specifications are used in Europe. In some countries, scanned PDF invoices are still used, which do not enable business automation and thus do not reap the benefits enabled by structured e-invoicing. The prevalence of different standards in the Member States has led to greater complexity of e-invoicing in the field of domestic and cross-border interoperability.

Therefore, the European Commission has given the European Committee for Standardization (CEN) [3] the task to develop a European standard for e-invoicing for the harmonization of practices across Europe and to respond to the EU Directive 2014/55/EU on electronic invoicing in public procurement [4].

The Semantic Standard EN 16931-1 specifies the standard structure and set of supported syntaxes for e-invoices and the various options for their delivery [5]. In order to monitor the introduction of the standard, the representatives of the Member States must submit each year to the European Commission their report and the achievements which it publishes in the EU country fact sheets [6]. Both Directive 2014/55/EU and legislation in most individual countries oblige the use of e-invoices only by the public administration, and the obligations do not apply to the economy. The exception is Italy, which was the first country in the EU to introduce on 1 January 2019 mandatory e-invoicing for all taxpayers with an annual turnover of over EUR 65,000 in the field of B2B and B2C [7]. Several other countries are preparing such an introduction in the coming years.

1. Analysis of the benefits of using e-invoices.

The quantitative estimated benefits of the European Initiative for Electronic Invoicing in the use of e-invoices are [2]:

- Economic – potential savings of €240 billion per year, bearing in mind that 30 billion invoices a year are issued and exchanged in the area of the EU.
- Environmental – by reducing paper consumption and energy costs for transport, the EU can reduce CO2 emissions by one tonne per year.

According to the European Commission, the key advantage of e-invoicing is full process automation and fully integrated processing [4]. It is very important for the efficient implementation of processes that the entire process from the issue, transmission, distribution, receipt, processing, payment and storage of the e-invoice is entirely electronic. In practice, this means reducing the required manual work, preventing errors and speeding up procedures. Additional advantages and positive effects are accessibility, as we can access e-invoices practically anywhere and anytime, greater transparency and the possibility of real-time reporting, a positive impact on the company's reputation and consequently easier recruitment, tracking and recording of events, better decision support and increased geographical independence.

The Billentis report [8] estimates the potential savings in the issued e-invoice 59% compared to the paper invoice, while the savings in the received e-invoice are as much as 64% (or EUR 6.60 for the sender and EUR 11.20 for the recipient for each e-invoice). Estimates consider only the financial benefits of the e-invoice but taking into account the non-financial benefit means even more significant savings, which are further multiplied by the number of received and issued e-invoices.

The widespread use of e-invoices in the EU is leading to significant economic benefits and increasing the competitiveness of European business. The European Commission's Connecting Europe Facility (CEF) sets out two steps through which organizations can benefit from replacing paper invoices with e-invoices [9]:

- Replacing a paper document with an electronic document, which can be in various formats (PDF, JPG and HTML or structured formats). This replacement enables faster and easier exchange between the issuer and the recipient, more efficient handling and storage of invoices, which brings significant savings in printing, postage, routing within the organization and archiving.
- Additional benefits can be gained by organizations using structured e-invoice formats (e.g., XML), where the use of machine-readable data eliminates the need to manually view and read the visual form of the invoice. There is also no need to manually enter invoices into

the accounting program. This provides significant savings in human resources and significantly reduces data entry errors. These benefits cannot be achieved by an organization using visual electronic invoices, such as PDF.

The European Commission's Directorate for Informatics (DG DIGIT) states that the use of e-invoices in the public sector can make a significant contribution to economic prosperity [10]. It supports public policy priorities, such as reducing the public sector deficit, financial transparency and promoting sustainable development. In addition, it makes an important contribution to reducing costs and efficiency in the public sector. It also benefits private sector providers and creates opportunities for the public sector to act as a catalyst for the wider acceptance of digital processes common to the private sector.

2. The importance of interoperability and the role of the semantic standard

To eliminate market and trade barriers created by different national rules and technical standards, European Directive 2014/55EU on electronic invoicing in public procurement [4] has been adopted. The Directive defines an e-invoice as an invoice issued, sent and received in a structured electronic form that allows automatic and electronic processing. The Directive clearly distances itself from the use of image and other unstructured forms of invoices and encourages the complete automation of the preparation, sending, transfer, receipt and processing of the invoice.

The main advantage of using structured e-invoices is the possibility of automated issuance, delivery, receipt and processing. Structured electronic format (usually XML) is intended for automated processing in computer systems and is difficult for humans to read. Therefore, in addition to the e-invoice in a structured form, its visualization in PDF or another form that has a similar appearance to a paper invoice is usually prepared. In this case, some elements that are not essential for the review and confirmation of the invoice may be omitted from the visualization. The original invoice is always an e-invoice in a structured form and not its visualization.

Great importance is attached to interoperability, the goal of which is to allow information to be presented and processed in a consistent manner between all business systems, regardless of their technology, application or platform. Full interoperability includes the ability to interoperate at three different levels: in terms of content (semantic), format or language (syntax), and method of transmission.

Semantic interoperability implies that the e-invoice contains a certain amount of required information and that the precise meaning of the exchanged information is preserved and well understood in an unambiguous manner, independently of the way in which it is physically represented or transmitted.

Syntactic interoperability implies that the data elements of an electronic invoice are presented in a format that can be exchanged directly between the sender and recipient and processed automatically.

The structured electronic form of the invoice is determined by different standards used in individual countries, industries or value chains. In addition to reducing paperwork, speeding up, streamlining, automating and simplifying e-commerce, the main objective of the directive is to introduce a European standard for e-invoices, which ensures interoperability between different Member States.

A major step towards the harmonization of standards and interoperability between different Member States was taken by the European Commission in 2017 with the publication of the Semantic Standard for the e-invoice EN 16931 [5], developed by the European Committee for

Standardization (CEN) [3]. The introduction of a single European standard enables the smooth exchange of e-invoices within the EU, which in turn contribute to a wider use of e-invoices and consolidate the functioning of the EU's digital single market. The European Commission highlights the possibility of automating procedures from order to payment as one of the key advantages of applying a single European e-invoicing standard.

The basic principle of the standard is that it should be easier and more efficient to prepare, send, receive and process electronic invoices in comparison to paper invoices. The EN 16931 standard is a semantic standard, which means it contains a set of data that is present in the invoice. The compatibility of the invoice with the semantic standard means that business partners can understand the electronic invoice at the semantic level without prior consultation or agreements. The data in the invoice is submitted in a structured format which allows for its automatic processing. This way, the invoice processing software can display all information elements of the invoice and automatically processes all structured data.

The European standard EN 16931 guaranteed semantic interoperability of the invoice. As there are many syntaxes in use in the Member states, syntactic interoperability is increasingly ensured by means of mapping. In addition, the Commission laid down a list with a limited number of syntaxes that comply with the European standard on electronic invoicing. OASIS UBL 2.1 and UN/CEFACT Cross Industry Invoice D16B [11] are currently on the syntax list. However, the list of supported syntaxes may be supplemented or changed in the future.

To increase the volume of e-invoicing and achieve a critical mass, the Directive 2014/55/EU stipulates that the public authorities and public entities must accept an e-invoice if it is issued in electronic form in a European standard. Under the directive, however, there are certain exceptions for which the Directive does not apply, such as contracts for services of a confidential nature, etc.

3. Transmission models.

There are several ways in which the sender sends the e-invoice to the recipient [12]. According to a European Commission report [13] summarizing the current situation, the basic ways are:

- Bilateral method, in which the sender and the recipient exchange an e-invoice through a common communication channel agreed upon. At the same time, they also agree on a standard document that defines semantics and syntax.
- The 3-corner model in which the sender and recipient connect through a network service provider. The advantage of this concept is that the recipient and the sender do not need to coordinate with each other on the method of transmission or on the standard of the document, but each of them uses the method that corresponds to it. If the sender and recipient use a different document standard, the provider can perform a real-time transformation between the two standards. The 3-corner model assumes that the sender and recipient are connected through the same service provider, which is difficult to do in a global (and often local) space.
- The 4-corner model in which the recipient and the sender each connect with their own service provider, and the providers are interconnected. The advantages of this concept are the same as for the 3-corner model. The use of this model is encouraged both by the European Commission [14] and by various European associations and organizations [15, 16].

A comparison of the volume of exchanged invoices between direct exchange between sender and recipient and exchange through the service provider is shown in the Figure 1 [17]. There has been a significant increase in exchanges using service providers in the last few years.

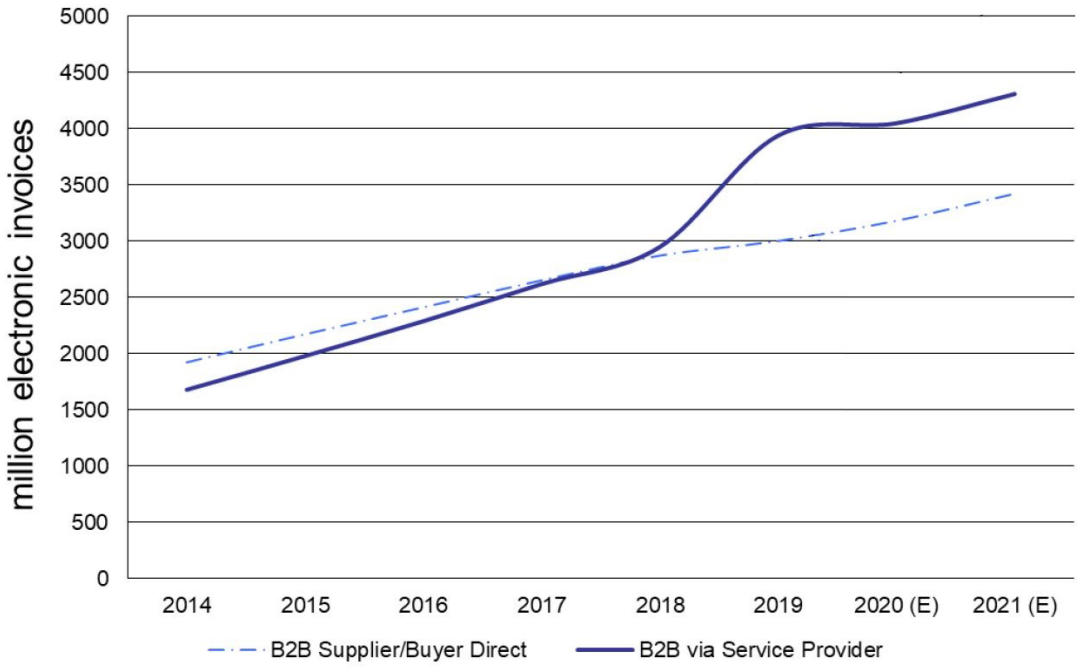

Figure 1. Total volume of e-invoices exchanges in Europe. The solid line shows the exchange through the service providers, and the dashed line shows the direct exchange between the issuer and the recipient [17].

4. The state of e-invoicing in Slovenia.

The start of eBusiness in Slovenia dates back to 2001, when at the initiative of companies, the Chamber of Commerce and Industry of Slovenia started implementing the eSLOG project "Electronic business of the Slovenian economy". The project involved experts from over 90 companies with the aim of preparing and enforcing eBusiness standards for companies, which include a purchase order, despatch advice and invoice in .XML format. As part of the eSLOG project, the eSLOG 1.3 standards were published, which after the year 2003 began to be used for business-to-business transactions [18].

Among the eSLOG documents, e-invoices are the ones most established. They were first used by companies that issue many invoices: communication operators, energy companies and companies within retail chains. After 2005, eSLOG 1.5 e-invoices began to be widely used in Slovenia by other companies as well.

Based on the past experience and practices of e-invoicing in Slovenia, the eSLOG e-invoice standard was supplemented and parameters for fiscal verification of invoices were added to the eSLOG 1.6 standard, which was developed in 2015. The newest version of eSLOG 2.0 [19] is harmonized with the European semantic standard EN 16931 [5].

In 2012, the Chamber of Commerce and Industry of Slovenia and the Public Payments Administration of the Republic of Slovenia established the National e-invoicing Forum at the initiative of the European Commission, with the aim of taking on active leadership and the coordinating role in popularizing and introducing the positive effects of e-invoices. The main two goals of the National e-invoicing Forum are to promote the use of e-invoicing and to reach a critical

mass of users in the process of exchanging e-invoices, which will be adapted to a more modern and simplified way of doing business. The participation of all stakeholders in the National Forum for e-invoices in recent years and the coordinated approach of regulators has led to the first case of widespread use of e-invoices, as from 1 January 2015 all budget users only accept e-invoices [20].

Mandatory sending of e-invoices to budget users is defined by the Payment Services for Budget Users Act (ZOPSPU-1A) [20]. For the issuance and receipt of e-invoices between economic operators, the legislation does not require the use of e-invoices. Most companies issue e-invoices, but not all recipients.

The law prescribes the use of the eSLOG 2.0 standard [19], whereby the sender can also attach a visualization of the invoice in PDF format and other optional attachments. Such use of the combined form has also been extended to e-commerce between companies, or B2B (business to business).

In recent years, Slovenia has taken a major step forward and is one of the most advanced countries in Europe regarding e-invoicing. According to the DESI 2018 index (Digital Economy and Society Index) measured by the European Commission, Slovenia comes first, together with Finland and Denmark, in the Business digitalization – e-invoicing category. DESI is an index that summarizes relevant indicators on Europe's digital performance and tracks the evolution of EU member states in digital competitiveness. The index, which amounted to only 2.33% for Slovenia in 2015, jumped to 22.7% in 2017 and maintained this value in 2018 (Figure 2) [21]. In later years, the e-invoicing category was not included any more in DESI index.

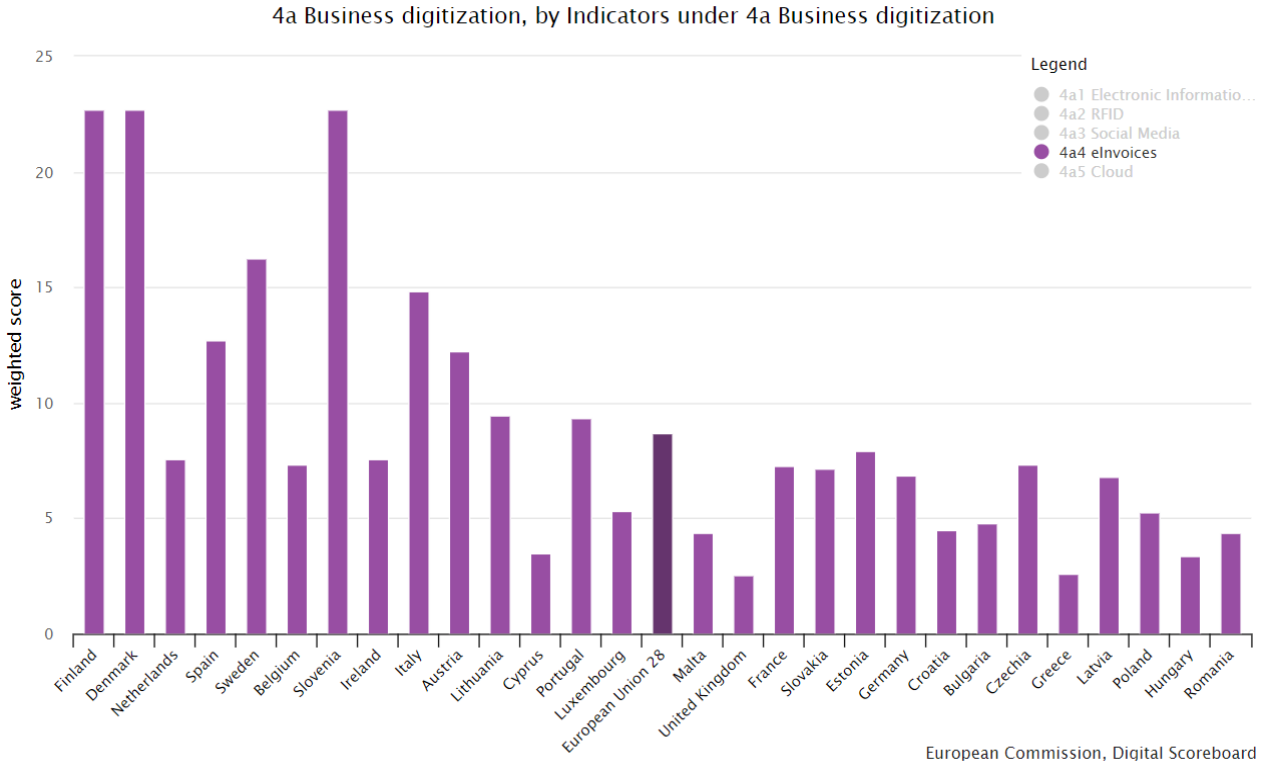

Figure 2. Ranking of EU Member States in the Digital Economy and Society Index (DESI) 2018 in the e-invoicing category [21].

The progress of e-invoicing in Slovenia is also noticed in the Billentis report [17], where Slovenia is ranked in the highest class in the field of B2B and B2G, where more than 40% of invoices are exchanged in electronic format (Figure 3).

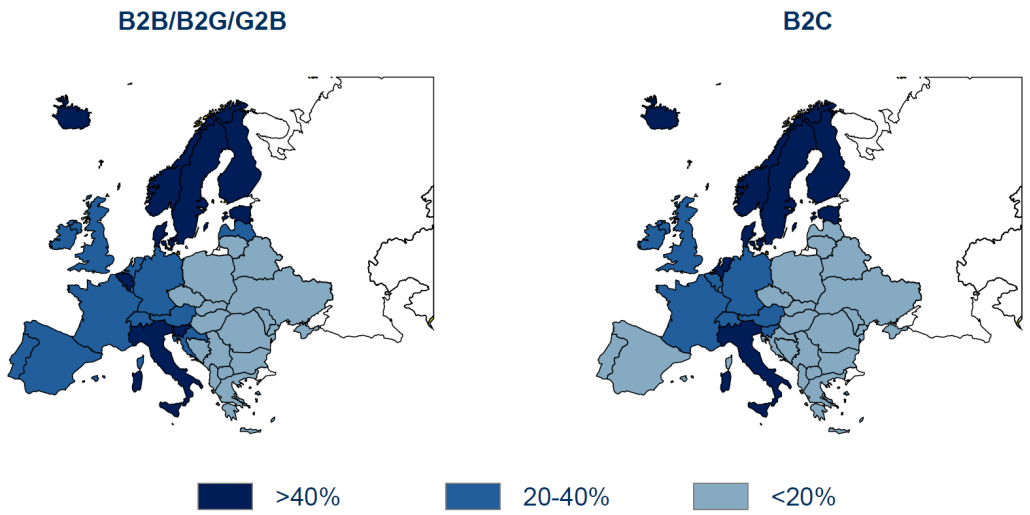

Figure 3. Overview of countries according to the level of use of e-invoices in B2B / B2G and B2C categories [17].

5. The analyse of the survey.

According to the Statistical Office of the Republic of Slovenia the use of e-invoices in Slovenia is constantly growing [22, 23]. Figure 4 shows the share of companies using e-invoices, with a big increase between 2015 and 2016 as a result of the legal requirement to receive e-invoices for all budget users.

Figure 4. Proportion of companies using invoices in a standardized structured electronic format suitable for automatic processing [22, 23].

In 2020, a survey was conducted on the prevalence of the use of e-invoices in Slovenia [24]. In the survey, the participating respondents indicated which method they use when receiving and sending an invoice (Figure 5). The largest number of received invoices were in paper format or PDF format. Both formats are used by 98% of the participating companies. None of these formats, however, support business automation. Invoices in the structured electronic form eSLOG are received by 81% of participating companies.

When sending e-invoices, the results are quite different, as most invoices are sent in paper form and structured electronic form eSLOG (90% and 89%). Invoices in PDF format are sent by a smaller share of companies (85%).

A comparison of the data in Figure 5 with the results of the Statistical Office of the Republic of Slovenia (Figure 4) indicates that the actual level of use of e-invoices in the wider population of companies is lower than shown in the sample of participating companies in the survey. It is estimated that the difference is due to the specific profile of the companies that participated in the survey.

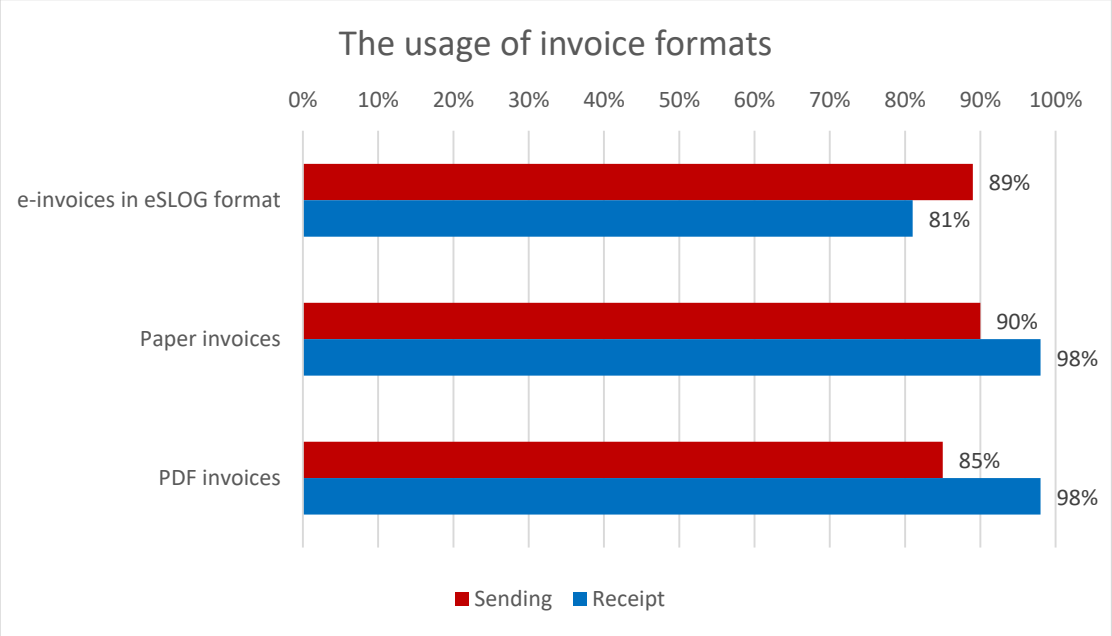

Figure 5. The use of different formats for sending and receiving invoices.

The results in Figure 5 show only the prevalence of the different formats of sending and receiving invoices used by companies. The important aspect is the ratios between the shares between the different formats of sent and received invoices (Figure 6). The largest share in both sending (43%) and receiving (49%) are paper invoices, PDF and eSLOG invoices have a similar share, about a quarter of all invoices each. Invoices in PDF format with electronic signature have the smallest share, while the share of invoices in other structured formats is negligible.

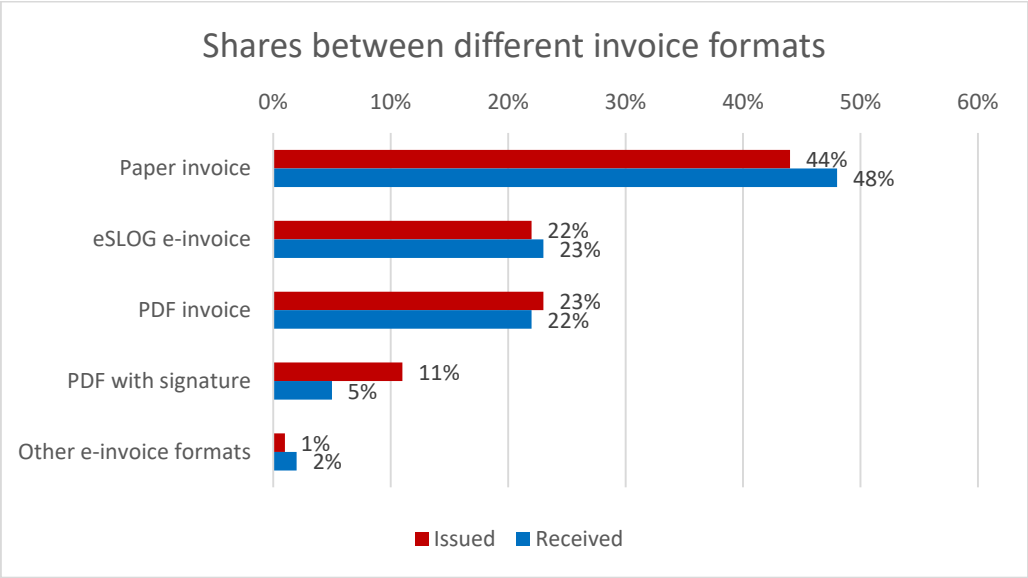

Figure 6. Proportion of invoices received and sent by format.

It is particularly positive for Slovenia to have supported the exchange of e-invoices based on 4-corner model in which e-invoices and other e-documents are exchanged through network service providers. This way, both the sender and the recipient can each use their own network service provider, as the providers connect with each other. The concept of this type of connection is as we are used to with connections of telecommunications operators.

According to the Public Payments Administration of the Republic of Slovenia, most e-invoices are exchanged through network service providers, followed by exchanges through banks. Figures 7 and 8 show the relationship between the exchanged e-invoices according to the way in which the recipient receives or the issuer sends the e-invoice [25].

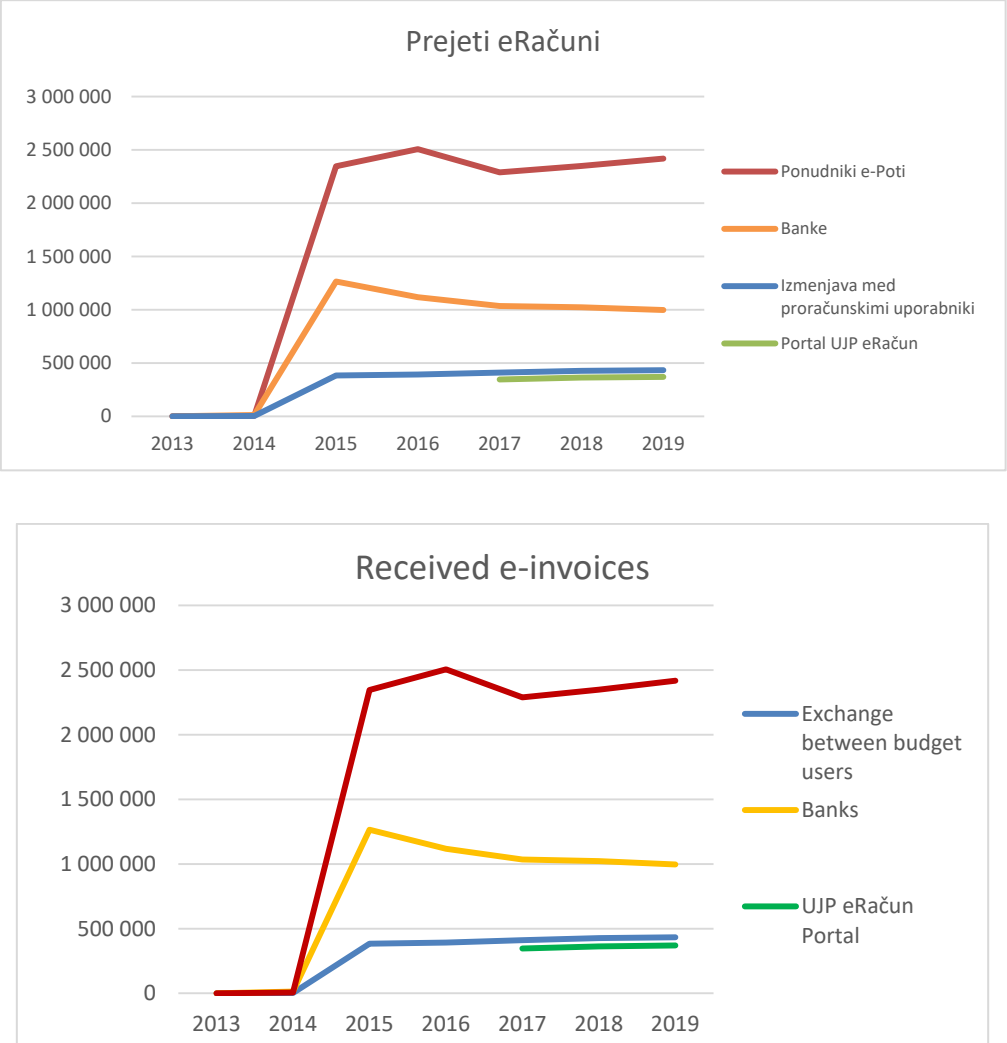

Figure 7. The data on received e-invoices for budget users [25].

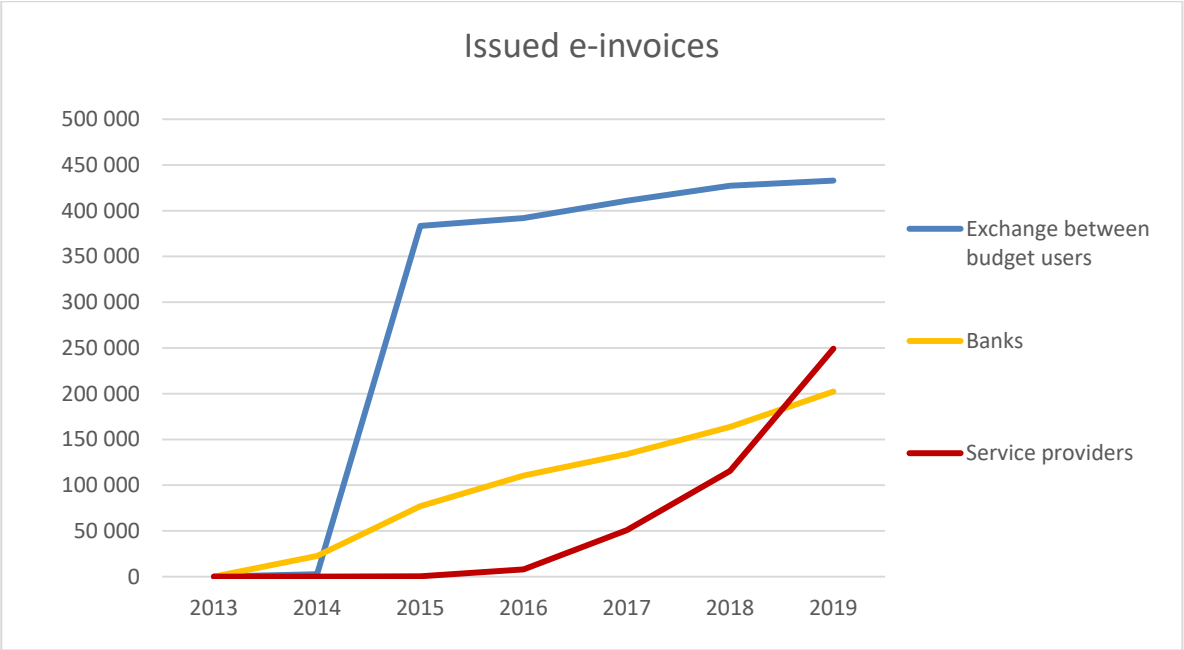

Figure 8. The data on issued e-invoices for budget users [25].

Software solution providers have massively supported the eSLOG standard in their solutions, so that business with eSLOG e-invoices is possible in the majority of the accounting programs. An increasing number of software solutions already support other eSLOG documents, such as electronic purchase order and electronic despatch advice documents.

In addition, all major Slovenian software solution providers have enabled their solutions to automate the sending and receiving of e-invoices through the integration with network service providers. In this way, they enable their end users to fully automate the processes of sending and receiving e-invoices and other business documents, as they do not need to use additional software solutions to manually copy, import or export documents, but perform all procedures through existing software solutions they already using in the company.

For smaller issuers who issue invoices only occasionally, various web portals are available for the preparation of e-invoices. For the issuance of e-invoices, budget users are provided by the Public Payments Administration of the Republic of Slovenia with the free PPA eRačun portal [26], whereby the total number of allowed issued e-invoices is limited.

Conclusions.

The efficient implementation of e-invoicing requires that the entire process from the issue, transmission, distribution, receipt, processing, payment and storage of the e-invoice is entirely electronic. As a result, e-commerce is currently being transferred from generally adopted e-invoices to other business documents that are used in supply and other business processes (e.g., purchase order, despatch advice, etc.). Possible savings for companies and organizations when using e-invoices are lower direct costs, faster and more efficient issuance and receipt processes at the expense of automation, reduction of errors in manual work, greater payment discipline in the automated process of other benefits. In the near future, we can expect an additional increase in the exchange of electronic business documents in Slovenia and the European Union.

It is important to support the new EU rules on digitalization, standardization and interoperability in the provision of public services, as they will bring a series of benefits to citizens,

economic operators and EU Member States, among which higher quality and cheaper public services, new jobs, sustainable development, a more integrated, stronger Europe and several others. The e-invoices are a clear example of how digital innovation brings measurable benefits to the efficiency and economy of public administrations, citizens and businesses across Europe. Digital technologies are changing our world. It is time to adapt the European single market to the digital age.

Slovenia have established a successful and advanced e-invoicing ecosystem using structured e-invoices, a high level of integration of e-invoices into ERP systems and into other programs and with the support of network solution providers. Business entities can start using e-invoices immediately and mostly without any additional costs. Almost all the dedicated accounting software solutions (e.g., ERP solutions) used by the business entities already support e-invoicing and most solutions also integrate with network solution providers, which enables the exchange of e-invoices without the intervention of the user.

In the future, in addition to increasing the use of e-invoices, we can also expect new ways of doing this kind of business. Following the entry into force of Directive 2014/55/EU on electronic invoicing, many companies and government institutions are now considering how to use e-invoicing data. New technological solutions in the future will enable the use of e-invoice data and e-commerce processes, so that companies improve their processes and solve some interoperability issues. Such a new way of doing business with e-invoices and other e-documents will be able to represent a paradigm shift compared to the traditional way of sending and receiving.

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QUALITATIVE RESEARCH IN MARKETING

Abstract. *Marketing research can be approached from many different perspectives, traditionally it can be quantitative or qualitative. The paper discusses the differences between both, but deeper explore qualitative research in marketing. The positivist and interpretivist paradigm in marketing research are compared through a series of issues. While the interpretivist view of the world is subjective, positivist seeks to set aside his or her values. To find better ways to understand consumers different qualitative research approaches to inquiry the collection of data have been developed such as case study, ethnographic and narrative research and grounded theory. Qualitative methods such as in-depth interviews, focus groups, projective techniques and ethnographic techniques are due to the provision of content-rich information perfectly suited to the problems addressed in marketing. The position of qualitative marketing research remains strong as there are topics that cannot be investigated in any other way.*

Introduction.

The marketing research is going through a huge period of change. Much of this change derives from technological developments, the growth of the internet, the shift to mobile computing and the emergence of 'big data'. However, technology is not the only source of change. Researches have noted that it is getting more and more difficult to persuade people to take part in the research. On the other hand, to protect consumers governments are introducing new forms of data protection legislation that could place legal restrictions on the kinds of research that can be undertaken.

There are a variety of methods and techniques used to conduct marketing research, which may range from highly structured surveys with large samples to in-depth interviews with small samples. In this paper, we discuss the differences between qualitative and quantitative research, compare and contrast positivism and interpretivism in marketing research, explore research approaches in qualitative research and compare the methods used in qualitative research.

1. Qualitative versus quantitative marketing research

Marketing research can be approached from many different perspectives. Traditionally, a dividing line has been placed between qualitative and quantitative research methods, according to Bhati, Hoyt, & Huffman (2014). Different methods serve different purposes, use different types of data, different methods of analysis, and allow different types of conclusions (fig. 1). The differences between quantitative and qualitative methods concern many different areas, starting from the research tools employed and ending on the manner of interpretation and results-based inferences that are made (Maison, 2019).

Researchers believe that there are several differences between qualitative and quantitative methods (figure 1).

Indicator	Qualitative researches	Quantitative researches
Ontology	Multiple realities are mental emerging as contributors' daily experiences natural, logical	A single objective reality
Epistemology	Researchers interact with participants or studied phenomena Researchers and participants have values and they are bias	Researchers are apart and independent from studied variables Researchers and participants are value and bias free
Verbal style (literature)	Personal ideas are stated in present tense	Speeches from others are stated in the past tense
Analysis process	They are mostly deductive (specific to general)	They are mostly comparative (general to specific
Concluding basics	The evidences resulted from events are real and experiences are tangible	The relationships are taken from repeated and countable data
Describing cause-effect link	They are bound to an individual (individualism), an objectivity from integrated events	They are universal (rule-based), relationship among statistical variables
Research proposal	Including new concepts, innovative, and open ended (without boundaries)	Statistical design (a set), concepts are closed (limited) before the research
Research questions	A marginalized set and group, and a study problem, ambiguous issues, open ended questions	Specifiable and measurable variables and relationships
Sampling purpose	(increasing) determining ability, variety, and enrichment	(increasing) generalize ability and indicative factors

Figure 1. The differences between qualitative and quantitative researches.
(McNab, 2002; Robin and Robin, 2005; Braser et al, 2000 in Toloie-Eshlaghy et al. 2011)

Qualitative research is inductive in nature and allows the researcher to explore meanings and insights in a given situation (Strauss & Corbin, 2008; Levitt et al., 2017). While quantitative research deals with determinative research questions quantitatively describing the problem ('who', 'how many', 'how often' etc.), qualitative research sets exploratory research questions qualitatively describing the problem ('why', 'what', 'how' etc.). Methods used in quantitative research, due to the quantification of data, the use of larger samples, the comparability of answers and the support of statistical methods with computer technology, give the impression of superiority but also has disadvantages. In structured methods, Kolar (2003) points out, it is always a question of whether the narrow-minded questions and possible answers correspond to the understanding of the constructs of the participants. The interaction with the respondents is less intensive in quantitative methods, and the answer may be biased. In contrast, research methods used in qualitative research are due to the nature of data collecting methods with open-ended questions freely in gaining information and give researcher many interpretative possibilities with a diverse range of conclusions also involving the risk of overinterpretation or erroneous interpretation. The analysis in qualitative research is thus often more challenging than in quantitative research (Maison, 2019).

Qualitative research is by its nature investigative and depth-oriented. It is primarily used to obtain in-depth information about a particular phenomenon since the phenomenon must first be understood, but then it can be measured. In this sense, emphasizes Kolar (2003, p.140), each research is qualitative and then quantitative. The first, the investigative part of the research, is qualitative research. Qualitative research is primarily aimed at gaining insight into a problem, understanding problems, finding ideas, explaining, developing theories. They are most commonly used to formulate hypotheses and identify variables that are included in the quantitative part of the research (Malhotra and Birks 2005).

Dogmatic positions are often taken in favour of either qualitative research or quantitative research by researchers and decision-makers alike (Malhotra et al. 2017). Many quantitative researchers are apt to dismiss qualitative studies as giving no valid findings. They claim that qualitative researchers ignore representative sampling with their findings based on only a few cases or even on a single case. On the other hand, qualitative researchers believe that understanding cultural values and consumer behaviour requires interviewing or intensive field observation. They believe qualitative techniques are the only methods of data collection sensitive enough to capture the nuances of consumer attitudes, motives and behaviour (Ford, Carlson, and Kover, 2008, Alioto, and Gillespie, 2006). The nature of market decision making covers a wide range of problems and types of decision-makers. *"This means that seeking a singular and uniform approach to supporting decision-makers by focusing on one approach is futile"* claim Malhotra et al. (2017). Defending qualitative research approaches for a particular marketing research problem with the positive benefits and explaining the negative alternatives of a quantitative research approach is healthy, and vice versa. Business and marketing decision-makers have always used both approaches (Cooper, 2007 in Malhotra et al. 2017). Qualitative and quantitative research are not competitive but complementary, according to Malhotra et al. (2005), and McDaniel and Sates (1998) emphasize that using qualitative research to provide more insight into the problem of research, increases the effectiveness of quantitative research.

2. Positivism versus interpretivism in marketing research

Marketing research relies on theory to determine which variables should be investigated, how variables should be operationalised and measured, and how the research design and sample should be selected. The theory which plays a vital role in marketing research also serves as a foundation on which the researcher can organise and interpret findings. Not only is good marketing research based on theory but also contributes to the development of theory to improve the powers of explanation, prediction and understanding in marketing decision-makers (Hunt, 1991). *"Research paradigms differ with regards to their ontologic assumptions (the nature of reality), epistemology (how to understand reality) and axiology (methodical access to what can be known about that reality)"* claim Petrescu and Lauer (2017).

	Positivist	**Interpretivist**
Reality	Objective	Subjective
Researcher, participant	Independent	Interacting
Values	Unbiased	Biased
Researcher language	Impersonal	Personal
Theory and research design	• Deduction • Determinist • Cause/efect • Static • Context free • Laboratory • Prediction/control Reliability/validity Representative experimentation	• Induction • Freedom of will • Multiple influences • Organic/evolving • Context bound • Ethnographic • Understanding • Preceptive decision making • Theoretical sample • Case studies

Figure 2: Comparison of positivist and interpretivist perspectives.
(Malhotra et al., 2017)

The dominant perspective of developing new theory in marketing research has been positivism. 'For a positivist researcher, the purpose of research is to understand, *'how the world works so that the events can be controlled or predicted'* (Neuman, 1991 in Khan, 2014).

A fundamental belief shared by positivists is the view that the social and natural worlds *'conform to certain fixed and unalterable laws in an endless chain of causation'* (Tasgal 2005 in Malhotra et al., 2017). To establish these laws, a scientific approach must have reliable information or facts. The emphasis on information or facts leads to a focus upon objectivity, rigour and measurement. Qualitative research, as an overall research approach, does not rely upon the measurement of facts and so does not fit with a positivist perspective. The dominance of positivist philosophy in marketing research has been and is being challenged by other philosophical perspectives, that have helped researchers to develop richer explanations and predictions and especially an understanding and a meaning, as seen through the eyes of consumers (Malhotra et al., 2017).

An interpretivist view of the world is subjective, where individuals form their own reality of the world in different contexts through interactions with others (Khan, 2014). Interpretivism developed through a critique of positivism is more concerned with in-depth variables and factors related to a context. It is based on assumption that human beings cannot be explored in a similar way to physical phenomena. Interpretivism considers differences such as cultures, circumstances, as well as times leading to the development of different social realities. Interpretivism is different from positivism as it aims to include richness in the insights gathered rather than attempting to provide definite and universal laws that can be generalised and applicable to everyone regardless of some key variables and factors (Myers, 2008; Saunders et al., 2012; Bhattacherjee, 2012 in Alharahsheh and Pius, 2020).

Both perspectives are summarized in figure 3. While the positivist supposes that *reality* is 'out there' to be captured, the interpretivist stresses the dynamic, participant-constructed and evolving nature of reality, recognising that there may be a wide array of interpretations of realities or social acts. The positivist sees the *participant* as an 'object' to be measured but the interpretivist may see participants as 'companions', seeking the right context and means of observing and questioning to suit individual participants. While the positivist seeks to set aside his or her *values* the interpretivist recognises that their personal values affect how they observe, question and interpret. The positivist uses a *language* in questioning that is uniformly recognised. On the other hand, the interpretivist seeks to draw out the language and logic of target participants and may differ between participants. In the *development of theory*, the positivist seeks to establish causality through experimental methods to explain phenomena and predict the recurrence of what has been observed in other contexts. Positivist will try to control extraneous variables that may confound the outcome of experiments. The positivist will diagnose the nature of a research problem and establish an explicit and set research design to investigate the problem in the desire to generalise findings to a target population. They use theory to develop consistent and unbiased measurements thus have established rules and tests of the reliability and validity of their measurements. On the other hand in the development of theory, the interpretivist seeks to understand the nature of multiple influences of marketing phenomena through case studies. This helps them to describe phenomena and gain new insights to understand the nature of consumer behaviour (Malhotra et al., 2017).

The positivist seeks to establish the legitimacy of his approach through **deduction:**	The interpretivist seeks to establish the legitimacy of his approach through **induction:**
• An area of enquiry is identified, set in the context of well-developed theory, which is seen as vital to guide researchers, ensuring that they are not naïve in their approach and do not 'reinvent the wheel'. • The issues upon which to focus an enquiry emerge from the established theoretical frame work. • Specific variables are identified that the researchers deem should be measured, i.e. hypotheses are set. • An 'instrument' to measure specific variables is developed • 'Participants' give answers to set and specific questions with a consistent language and logic. • The responses to the set questions are analysed in terms of a prior established theoretical framework. • The researchers test theory according to whether their hypotheses are accepted or rejected. From testing theory in a new context, they seek to develop existing theory incrementally	• An area of enquiry is identified, but with limited or no theoretical framework. Theoretical frameworks are seen as restrictive, narrowing the researcher's perspective and an inhibitor to creativity. • The issues upon which to focus an enquiry are either observed or elicited from participants in particular contexts. • Participants are aided to explain the nature of issues in a particular context. • Broad themes are identified for discussion, with observation, probing and in-depth questioning to elaborate the nature of these themes. • The researchers develop their theory by searching for the occurrence and interconnection of phenomena. They seek to develop a model based upon their observed combination of events. Such a process means that interpretivists reach conclusions without 'complete evidence'.

Figure 3: Summarising the broad perspectives of positivism and interpretivism.
(adapted from Malhotra et al., 2017)

3. Qualitative marketing research approaches

In qualitative research, researchers are continually looking to find better ways to understand consumers' thought processes and motivations. This has led to a wealth of qualitative research approaches to inquiry the collection of data in a natural setting sensitive to consumers and a data analysis that is both inductive and deductive and establishes patterns or themes. The final written report includes the voice of consumers, the reflexivity of the researcher, a complex description and interpretation of the problem, and its contribution to the literature or a call to a change (Creswell 2003 in Creswell and Poth, 2018).

Contrasting characteristics of five qualitative approaches, including techniques borrowed from anthropology, ethnography, sociology and psychology but widely used in marketing research, are presented in figure 4.

Characteristics	Case study	Ethnographic research	Narrative research	Grounded theory
Focus	Developing an in-depth description and analysis of a case or multiple cases	Describing and interpreting a culture-sharing group	Exploring the life of an individual	Developing a theory grounded in data from the field
Type of problem best suited for design	Needing to tell stories of individual experiences	Describing and interpreting the shared patterns of culture of a group	Providing an in-depth understanding of a case or cases	Grounding a theory in the views of participans
Discipline background	Drawing from the humanities	Drawing from anthropology and sociology	Drawing from psychology, law, political science, medicin	Drawing from sociology
Unit of analysis	Studying one or more individuals	Studying a group that shares the same culture	Studying an event, a program, an activity, more than one individual	Studying a process, action, or interaction involving many individuals
Data collection forms	Using primarily interviews and documents	Using primarily observations and interviews, perhaps collecting other sources during extended time in field	Using multiple sources, such as interviews, observations, documents, artifact	Using primarily interviews with 20 – 60 individuals
Data analysis strategies	Analysing data for stories, "restoring" stories, developing themes, often using a chronology	Analysing data through description of culture-sharing group; themes about groups	Analysing data through description of the case and themes of the case as well as cross-case themes	Analysing data through open coding, axial coding, selective coding
Written report	Developing a narrative about the stories of an individual's life	Describing how a culture-sharing group works	Developing a detailed analysis of one or more cases	Generating a theory illustrated in a figure

Figure 4. Contrasting characteristics of five qualitative approaches.
(adopted from Khan, 2014, Malhotra et al. 2017, Creswell, 2018)

In the development of theory, researchers seek to understand the nature of multiple influences of marketing phenomena through case studies. *Case study* research that involves the study of a case (or cases) within a real-life, contemporary context or setting (Yin, 2014), is a qualitative approach in which the investigator explores a real-life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed collection involving multiple sources of information and reports a case description and case themes. The unit of analysis in the case study might be multiple cases or a single case (Creswell, Poth, 2018). In case study research one or several cases are used to arrive at specific or general conclusions about certain phenomena, recognising the multitude of variables and complex interrelations (Gummesson, 2004). Case study results are generalized to the theory not to the population (Tellis 1997, Silverman 1995 in Kodrin 2010) notes that the mode of generalization is analytic generalization when previously developed theory is used as a template with which to compare the empirical results of the case study.

Ethnographic research includes observation, interviewing and is sometimes referred to as participant observation. It is used in the more specific case of a method that requires a researcher to spend a large amount of time observing a particular group of people, by sharing their way of life (Angrosino 2007, Travers 2001 in Malhotra et al. 2017). Moreover, ethnographers today do not always directly observe, researchers may also work with written texts or study recordings of interactions they did not observe at first hand (Silverman 2014). Whether called on-site, observational, naturalistic or contextual research, ethnographic research allows marketers to delve into actual situations in which products are used, services are received. The researcher observes people experiencing and reacting to communications, product, services or retail experiences. Consequently, clients and practitioners benefit from a more holistic and better-nuanced view of consumer satisfaction, frustrations and limitations than in any other research method (Mariampolski 1999 in Malhotra et al. 2017). *"In anthropology/ethnography data are generated through direct or participant observation, supplemented by interviews and conversations"* notes Gummesson (2014), the in-depth research is systematic, documented. An adaptation of ethnography that analyses the free behaviour of individuals in online environments is netnography (Kosinetz 2006 in Malhotra et al. 2017) which can be much faster simpler and less expensive.

Narrative research is concerned with the ways *"... in which social actors produce, represent and contextualise experiences through narratives"* (Coffey and Atkinson, 1996 in Gummesson 2004). It begins with the experiences as expressed in lived and told stories of individuals or groups and may take many forms such as interviews, observations, documents, pictures, and other sources of qualitative data (Cresswell and Poth, 2018). *»In narrative inquiry, researchers must stay wary of the temptation to treat the stories people tell as "maps," "mirrors," or "reflections" of the experiences they depict«*, note Bochner and Riggs (2014) and continue *»...stories should be recognized as fluid, co-constructed, meaning-centred reproductions and performances of experience achieved in the context of relationships and subject to negotiable frames of intelligibility and the desire for continuity and coherence over time«*. Narratives can be chronological but they can also weave a web of events around various themes or concepts. *»If marketing anthropology could be documentary that intimately reveals decisions, conflicts and actions – we even find this as entertainment in soap operas these days – narrative research is more of an epic film«* notes Gummesson (2004). While it might seem like a waste of time to focus on such an individual level understanding people's narratives for an event can help to inform researchers about the circumstances and influences that helped shape that narrative (Teny et al. 2020).

While narrative research focuses on individual stories told by participants the intent of a *grounded theory study* is to move beyond description and to generate or discover a theory, for a process or action. Grounded theory is a qualitative research approach in which the researcher generates a general explanation (a theory) of a process, an action, or an interaction shaped by the views of a large number of participants (Creswell, Poth, 2018). In contrast to the perhaps casual manner in which some ethnographic or narrative researchers may be criticised, the grounded theorist follows a set of systematic procedures for collecting and analysing data. The commitment of grounded theory is to 'discovery' through direct contact with the social phenomena under study, coupled with a rejection of a priori theorising. This does not mean that researchers should embark on their studies without any general guidance provided by some sort of theoretical understanding (Malhotra et al., 2017). The researches goal following the grounded theory approach is to explain for example how and why an event occurs or how and why consumers might behave a certain way. Through observing the population, a researcher can then develop a theory to explain the consumers' behaviour.

Action research is an approach to research that aims to both act and create knowledge or theory about action (Coughlan and Coghlan, 2002). The researcher tries to understand problems (research) and give them a justification through practice (action), that is, it has a practical nature. Both the research and the action itself are part of the results of this process. Moreover, the participation of the organization in the study increases both the authenticity and the trustworthiness of the results because the analysis is conducted in a collaborative manner (Argyris and Schön, 1991 in Erro-Garcés and Alfaro-Tanco, 2020). Action research is a team research process, facilitated by professional researchers linking with decision-makers and other stakeholders, such as customers, who together wish to improve or change particular situations. Together they define the problems to be examined, generate relevant knowledge about the problems, learn and execute research techniques, take actions and interpret the results of actions based on what they have learned (Malhotra et al. 2017). Classical action research involves change and learning, organised into the iterative phase of action and reflection. Reflection leads to understanding, and understanding shared by participants is fed back into action. This cycle continues as long as the aims of the project are fulfilled or abandoned (Ballantyne 2004). The process aims to create a learning community in a team (Malhotra et al. 2017).

The classical action research cycle involves change and learning, organised into iterative phases of action and reflection. Reflection leads to understanding, and understanding shared by participants is fed back into action. This cycle continues as long as the participants wish, or until the aims of the project are fulfilled or abandoned.

4. Qualitative marketing research methods

Qualitative research methods have become endemic in many disciplines including marketing. At the backdrop to the increasing popularity of qualitative methods stands what may be called a qualitative stance. From this stance, the processes and phenomena are described before theorized, understood before explained and seen as concrete qualities before abstract quantities (Kvale and Brinkmann 2009).

Interest in qualitative research is increasing, mainly because of lower costs, the possibility of in-depth insight into customer' motives and feelings, and thus the effectiveness of qualitative research. Through qualitative research methods, it is possible to obtain a large amount of content-rich information, the analysis of the data thus obtained is more creative, personal and interpretative.

Due to the above characteristics, the qualitative methods are perfectly suited to the problems addressed in marketing.

Qualitative methods, according to Johns and Lee-Ross (1998 in Kodrin 2007), allow more flexibility as questions adapt to the data already obtained. Descriptions and explanations are used instead of statistical methods. Since the inductive approach is used, assumptions are made only on the basis of the data obtained. The samples are smaller, based on a smaller number of unrepresentative units, since they cover only a small part of the population, but allow a deeper display of the individual's feelings, attitudes and behaviour. The methods used in qualitative research are less structured than in quantitative research, which does not mean that they are less effective or require less preparation. The authors point out that qualitative research is particularly effective in service organizations, as they are usually labour intensive. Because employees spend a lot of time working with service customer, it is important to evaluate the views of employees, customer, and management. This is why it is important for the researcher to know and understand the techniques available (ibidem).

There are more qualitative research methods (figure 5), and according to many authors (Malhotra et al. 2017, Churchill and Iacobacci 2005, Malhotra and Birks 2005, Flick 2002, McDaniel and Sates 1998), focus groups and in-depth interviews are the two most common methods in marketing research.

In-depth interviews represent a direct and unstructured (questions not standardized) way of obtaining information (Malhotra and Birks 2005), whereby the interviewer makes sure that he/she is conducted in a relaxed atmosphere, remains objective and receptive, encourages and motivates the interviewee, raises questions of an informative nature, is not satisfied with the short answers (yes and no) and tries to penetrate into the depth of the problem under study. Researchers make mistakes, they sometimes upset participants in some way. Going deep into the minds of consumers is a learning process. Researchers learn that their race, age, gender, social class, appearance or voice makes one kind of difference with some participants and another kind of difference with other informants (Schwalbe and Wolkomir, 2002 in Malhotra and al. 2017).

Interviews can take anywhere from half an hour to more than an hour. The order and formulation of questions vary from interview to interview, meaning that the content of each interview also varies (Churchill and Iacobucci 2005). The in-depth interview can be driven by a topic guide, made up of just a few topics covering a very broad range of issues or semi-structured, where parts of the interview use consistent and highly structured questions, with set response categories, interspersed with open-ended questions. Widely used techniques that apply structure to qualitative in-depth interviewing are laddering, the repertory grid technique and the Zaltman metaphor elicitation technique that is used by many companies (Malhotra and al. 2017).

Laddering requires interviewers to be trained in order to develop a ‘mental map’ of the consumer’s view towards a particular product. The goal is to combine mental maps of consumers who are similar, which lead to the reasons why they purchase particular products. The laddering technique is made up of a linking, or ladder, of elements that represent the link between products and the consumer’s perception process. It enables an understanding of how consumers translate product attributes, through personal meanings associated with them (Bakken and Breglio 2005, De Andrade Marseilles Reis 1997 in Malhotra and al. 2017). The repertory grid technique was developed to explore the meanings that people attach to the world around them, which they find particularly hard to articulate. It helps to reduce the problem of interviewer bias in in-depth interviews. A particular

strength of the repertory grid technique is that it can help to access the underlying realities in situations where the culture or people issues are particularly strong, and where participants might otherwise feel constrained to try to answer in the way they think they should, as opposed to how they really think (Rogers and Ryals in Malhotra et al 2017). The Zaltman metaphor elicitation technique is another technique that creates a 'mental map' of the consumer's view towards a particular product. In a Zaltman metaphor elicitation technique study, before coming in for an in-depth interview, participants are asked to gather pictures that reflect their thoughts and feelings about an advertisement and brand (Micu, Plummer 2010 in Malhotra et al 2017).

Recording the interview is reasonable and advisable as the interviewer can focus more on the content while ensuring accurate recording of the content of the interview. In any case, it is necessary to obtain the consent of the interviewee before recording, in accordance with CC/ESOMAR International Code on Market, Opinion and Social Research and Data Analytics that promote high standards of ethical behaviour and reinforce public confidence in research thus sets out global standards for self-regulation for researchers and data analysts (ESOMAR, 2016). Ethics is based on an interview inquiry. It goes beyond ethical rules to encompass the broader fields of ethical and socio-political uncertainties in qualitative research. In situations of conflict, decisions about which rules to follow will to a large extent depend upon the researcher's experience and personal judgment (Kvale and Brinkmann 2009). Thus, an in-depth interview requires a more experienced researcher than other questioning techniques. Researchers learn from their experiences, discovering strengths and playing to them, realising weaknesses and understanding how to compensate (Malhotra et al. 2017). Experiences are crucial consider Churchill and Iacobucci (2005) since a defective structure allows a strong impact on the outcome. The results of an in-depth interview can be interpreted by several researchers, which makes the research more expensive. The researcher influences the interpretation of the results, and the problem of subjectivity questions the reliability and validity of the results. The question also arises as to which interpretation of the results is correct, which poses a problem in the analysis of the answers.

There are many marketing decisions that can be made with support from researchers using in-depth interviews (fig. 5).

Application	**Example**
Interviews with professional people	Finance directors using banking services
Interviews with children	Attitudes towards a theme park
Interviews with elite individuals	Wealthy individuals involved in large philanthropic ventures
Detailed probing of the participant	New-product development for cars
Discussion of confidential, sensitive or embarrassing topics	Personal hygiene issues
Situations where strong social norms exist and where the participant may be easily swayed by group response	Attitudes of university students towards sports
Detailed understanding of habitual or tacit behaviour	The 'rituals' an individual may go through when preparing to get ready for an evening out
Detailed understanding of complicated behaviour	The purchase of fashion or 'high-status' goods
Interviews with competitors who are unlikely to reveal the information in a group setting	Travel agents' perceptions of airline travel packages
Situations where the product consumption experience is sensory in nature, affecting mood states and emotions	Perfumes, bath soap

Figure 5. Applications of in-depth interviews in marketing.

(Sharma and Pugh, 2007, Sokolow, 1985 in Malhotra et al. 2017)

Another method by which we gain ideas and insight into a research problem is the *focus group method*. Focus group interviews, also called focus group discussions, are the most commonly commissioned type of qualitative research in marketing (Belk, Fischer, & Kozinets, 2013; ESOMAR, 2016; Greenbaum, 1993 in Maison 2019). A focus group interview is a discussion between several participants, usually about six to eight, led by an interviewer, called a moderator. Conversation is in-depth, and it is in the form of a discussion The moderator's task is to guide (focus) the interview appropriately to find out as much as possible about the research subject (Cowley, 2000 in Maison 2019).

According to Churchill and Brown (2003 in Kodrin 2020), focus groups have proven to be an extremely productive technique for market research, especially when providing background information, gaining customers' impressions, obtaining the information needed to formulate questionnaires and hypothesizing, which is later tested through quantitative research. The methodology of focus group implementation dictated the choice of focus group format in the first step. Calder (in McDaniel and Sates 1998) classifies focus groups into investigative focus groups used to define research problems, hypothesize, explore ideas, and as preparation for quantitative research, clinical focus groups used to find the subconscious emotions and motives and experiential focus groups that allow subscribers to observe and listen to customer discussing products or services.

In guiding the discussion, the leader must follow some additional principles. To reduce bias the leader has to involve all participants, allowing different opinions, avoiding the dominance of dominant participants. He has to avoid direct questions, especially those that allow yes and no answers as they inhibit discussion but must ask questions to encourage conversation among participants, overcome congestion and solve problems (Kolar 2003).

Malhotra and Birks (2005) consider that the key strengths of focus groups over other methods are, in particular, greater breadth of information, greater involvement of members, relaxation, spontaneity, specialization, flexibility, ability to monitor discussions by the client, these are relatively fast. The key weaknesses of the focus groups are focus group leadership problems and biased interpretation of results (Churchill and Brown 2003 in Kodrin 2020; Malhotra and Birks 2005), data confusion resulting from unstructured responses (Malhotra and Birks 2005) and limited impact on the flow of discussion (Flick 2002) and the dominance of individual group members that influence the course of the conversation (Flick 2002) or the closeness of others (McDaniel and Sates 1998 in Kodrin 2010).

Greenbaum (1991 in Churchill and Brown 2003 in Kodrin 2020) cites the key strength of in-depth interviews over focus groups is that it allows researcher to penetrate deeper into the topic under discussion, provide more honest answers as there is no pressure from other members of the group, which is especially important in sensitive topics, eliminate the negative effects of focus groups (passive participants, dominance of individuals, immediate readiness of individuals to agree with the opinion of others, etc.) and enable competing and opposing groups to be interviewed. The main disadvantages of in-depth interviews to the focus groups are, according to the author higher costs. The dynamics of focus groups provide disclosure of reactions that cannot be obtained in individual interviews.

Projective technique is unstructured and indirect form of questioning that encourages participants to project their underlying motivations, beliefs, attitudes or feelings regarding the issues of concern (Malhotra et al. 2017). Projective techniques are subject-oriented, non-verbal and

indirect self-reporting techniques that can capture responses from participants in a less structured and more imaginative way than direct questioning. They encourage participants to project their underlying motivations, beliefs, attitudes or feelings regarding the issues of concern (Branthwaite 2002, Chandler and Owen 2002, Best 1995 in Malhotra et al. 2017). This can be achieved by word associations, unfinished sentences and stories, tests with drawings, photographs.

Projective techniques are increasingly applied in marketing research. Many fields related to consumer choices are unconscious, leaving the consumer oblivious to the forces driving him, incapable of expressing them in words. Learning about consumer needs, buying motives, as well as the barriers to reaching for certain categories or brands, are typical marketing research areas where projective techniques help understand the real answer to these questions (Maison 2019). Consumers tend to have limited understanding of their behaviour, and have difficulty articulating their motivations and desires. When market researchers want to investigate consumers' deeper values and beliefs., projective techniques are used in conjunction with direct questioning in qualitative research.

Criteria	**Focus groups**	**In-depth interviews**	**Projective techniques**	**Ethnographic techniques**
Degree of structure	Can vary from highly to loosely structured	Can vary from highly to loosely structured	Tends to be loosely structured	Loosely structured though can have a framework to guide observation
Probing of individual participants	Low	High	Medium	None when used in insolation and in a covert manner
Moderator bias	Medium	Relatively high	Low to high	None when used in insolation and in a covert manner
Uncovering subconscious information	Low	Medium to high	High	High
Discovering innovative information	High	Medium	Low	Medium
Obtaining sensitive information	Low	Medium	High	High
Involving unusual behaviour or questioning	No	To a limited extent	Yes	Perhaps on the part of the observer

Figure 6. A comparison of focus groups, in-depth interviews and projective techniques. (Malhotra et al. 2017).

Projective techniques are typically used in depth interviews or traditional focus, and are according to authors (Byron 2007, Walsh 2002 in Malhotra et al. 2017) classified as association, completion, construction and expressive. While in association technique participants are presented with a stimulus and are asked to respond with the first thing that comes to mind, are in completion techniques participants asked to complete an incomplete stimulus situation. Common completion techniques in marketing research are sentence completion and story completion. Closely related to completion techniques are construction technique which require the participants to construct a response in the form of a story, dialogue or description. Two main construction techniques are

picture response techniques in which participants are shown a picture and are asked to tell a story describing it, and cartoon tests, in which cartoon characters are shown in a specific situation related to the problem. Participants are asked to indicate the dialogue that one cartoon character might make in response to the comment(s) of another character. In expressive techniques, participants are presented with a visual or verbal situation and are asked to relate the feelings and attitudes of other people to the situation. The participants express not their own feelings or attitudes, but those of others. The main expressive techniques are role playing technique, where participants are asked to play the role or to assume the behaviour of someone else, the third-person technique, where they are presented with a verbal or visual situation and are asked to relate the beliefs and attitudes of a third person, rather than directly expressing their own beliefs and attitude, and personification technique, where participants imagine that the brand is a person and then describe characteristics of that person, e.g. their lifestyle, status, demographics (Malhotra et al. 2017).

Ethnographic technique offers key advantages over more traditional approaches to qualitative research like focus groups or in-depth interviews that take place at a research facility. When a participant is removed from the environment in which they normally interact with the subject of the research, they are forced to base their statements on prior experiences, exposing their insights to the fallibility of human memory and the influences of other opinions in the group (SIS International Research 2021). To summarise qualitative techniques, figure 6 gives a relative comparison of focus groups, in-depth interviews, projective and ethnographic techniques.

To strengthen the quality of the research researchers may use combination of various qualitative methods that is, multimethod research (Silverman, 2020). Multimethod research can contribute to a better understanding of a research problem compared to research that is based on only one methodological approach (Creswell, 2015) as different methods allow for different angles and nuances to be visible.

Conclusions.

The paper represents differences between qualitative and quantitative research in marketing research. Reasons developed by examining the basic philosophical stances such as positivism and interpretivism that underpin qualitative research for adopting a qualitative approach to marketing research are presented. Different research approaches in qualitative research are discussed and techniques widely used in qualitative research in marketing are compared and contrasted. Qualitative research, as shown in the paper, is subject to various changes, modifications, evolutions and trends. It seems that the position of qualitative marketing research is still strong as there are topics that cannot be investigated in any other way.

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HISTORICAL BACKGROUND AND MODERN MASS MEDIA IN THE PR SYSTEM OF INTERNATIONAL RELATIONS

Abstract. *The chapter attempts to highlight the role of mass communications in the modern international context of public relations. It is argued that the urgency of the problem of virtual diplomacy is due to the objective requirements of the functioning of state institutions in the era of Internet dominance. In particular, at the present stage of state development, instrumental mechanisms for forming a foreign policy image and protecting national public policy from anti-state propaganda are actively used. The formation of the country's political image in the information space and, in particular, in the Internet space is not limited to the use of electronic media such as platforms for advertising and PR events. It is emphasized that the Internet actively influences the formation of unusual norms of behavior both on the international stage and within the borders of a certain country. Advances in information technology, the accelerated growth of the role of cyberspace and social networks are creating a new reality not only for organizations and citizens, but also for states. Such a quasi-reality, constructed by gray propaganda, sometimes has absolutely nothing to do with the real state of affairs. Compared to traditional means of communication, the Internet provides the state with a large-scale channel of not a monologue or intermittent communication (television or print media), but a constant dialogue with citizens, foreign audiences and the scientific and expert community. It is noted that social dialogue is the basis of democratic governance, the basis of interaction between the state and the citizen, the state with civil society.*

Introduction

The media is an important social institution that initiates political processes in society. Freedom of speech is enshrined in the constitution, and the abolition of censorship enables journalists to cover important events and phenomena in a comprehensive manner. But freedom of speech in the media does not mean permissiveness and irresponsibility, which always have negative social consequences, distort the political, social, economic, cultural orientation of both society and the individual citizen.

The specifics of the purpose and features of the media may have the effect of manipulating the mass consciousness. It should also be noted the phenomenon of probable deviance of journalistic morality: the fact that the media constructs reality by controlling the order of coverage of events in the form of gatekeeping.

Thus, the relevance of the topic is determined by the fact that there are contradictions between freedom of speech and the need to determine the level of social responsibility of the media in the globalization of the information space.

Coverage of works by famous authors. The concept of "hybrid war" has firmly taken its place in today's political lexicon. The name of Edward Bernays is well known in the professional community. He is a recognized world authority in the development of a scientific method of forming and managing public opinion, the actual father not only of modern PR, but also of the entire propaganda structure of the White House. In a 1991 interview with the BBC, E. Bernays said:

"When I returned to America, I realized that if you can use propaganda for war, then of course you can use it for peace. But propaganda became a bad word because the Germans (during the Nazi regime) often used it. And I tried to find other words, so we came up with the term - public relations adviser [2] ".

In 1965, the American diplomat E. Julion, then a professor at Tufts University, proposed a new term - "public diplomacy". This concept defines interstate relations, which do not include traditional government relations and provide for an open dialogue between individuals and non-governmental organizations, up to the direct influence of public opinion in foreign countries in order to influence the foreign policy of these states.

In fact, the notion of "public diplomacy" is still used in the United States as a synonym for "public relations" (PR) in the context of foreign policy and as part of the American public propaganda campaign. The Democracy and Public Diplomacy program has so far involved virtually all US agencies involved in international affairs, including the White House, the State Department, the Pentagon, and the CIA. This program is designed for decades, regardless of which party wins the next presidential election.

In 1990, Joseph Nye, a former assistant secretary of state and later Secretary of Defense and chairman of the National Intelligence Committee, published a book, Forced Leadership, in which he first introduced the concept of "soft power." According to J. Nay, politics should be based not only on the economic and military power of the country, but also should have a third component, which he defined as the ability to get what you need, by gaining sympathy, not by coercion. The historiography of the problem is considered in more detail in a separate part - HISTORIOGRAPHY OF THE PROBLEM. Based on the historiographical review of N. Snow [14], we have the opportunity to get acquainted with the leading researchers of this problem.

The aim is to study the features of the use of mass communications at the present stage of their development in the field of PR in international relations.

As research tasks we define:

identify the main scientific ideas and trends that explore the nature and features of international public relations and public diplomacy, their conceptual and practical links, the level of effectiveness of financial and humanitarian investments in international public relations;

to analyze the role of mass communications in the process of public relations in international relations;

to carry out primary diagnostics of the state of the education system in the training of public relations specialists in international relations of different countries.

The object of study is mass communications at the present stage of their development.

The subject of the research is public relations and their implementation in international relations.

The following research methods were used: analysis, synthesis, generalization; scientific methods - sociological, heuristic, comparative, etc.

I would also like to note that an important feature of modern PR in the foreign policy sphere is their comprehensive nature. PR, implemented by public authorities in the international sphere in the interests of domestic (for example, attracting foreign investment) and foreign policy - is an integral part of the modern state in the field of international political and economic relations.

PR support of state bodies in the field of foreign policy is not identical to foreign policy propaganda or counter-propaganda, although in some cases, as evidenced primarily by the example

of the United States, there is a fairly wide involvement of propaganda and counter-propaganda tools in organizing and implementing individual PR companies. There is a practice of involving in the sphere of international relations methods of manipulating public opinion, inherent in the so-called "Black PR".

Methods

1.1.International public relations and public diplomacy. Historiography of the problem.

Today, countries are so interconnected that an event in one part of the world affects events in other parts of the world like a domino effect. For example, the current coronavirus pandemic in the world, or the economic crisis in Greece, which had profound consequences for Russia, Europe and the United States. It is known that international events (such as rising oil prices) affect domestic politics and the local economy. Golan, Johnson and Vanta (2010) describe this phenomenon as a "drop in barriers", which is mainly related to advances in communication technology [14]. Today, even in conditions of quarantine restrictions, people, goods and information easily cross national borders, influencing national policy and its priorities. Governments through diplomatic initiatives tend to exert influence outside the target country). Thus, public relations research is increasingly looking at the foreign community, including governments, as a target audience. This approach requires PR practitioners who can understand multicultural and global perspectives, the subtleties of globalization and economic interdependence.

There are now two approaches in the study of international communications, which are differentiated on the basis of basic theoretical principles: public diplomacy and international public relations. According to Singitzer and Coombs, in the post-Soviet space, public diplomacy is largely based on theories of political science and international relations, while international public relations uses theories of social relations and communication. The study of the theoretical foundations of both approaches reveals similarities.

Some political scientists admit that they somehow did not notice the impact of domestic policy on international relations. One of the dominant theories of international relations, neorealism, assumes that the goal of the state is self-preservation. States seek to do so through internal efforts (often leading to increased economic and military power) and external efforts (by strengthening their alliances or weakening the influence of those who oppose them). Neorealists equate economic surplus with a resource to increase military capability.

Institutionalism, also called neoliberalism, is the dominant theory that states that states, as rational subjects, can cooperate through institutions. Such a strategy reduces the cost of uncertainty, allowing states to gain "absolute benefits."

In short, neoliberals evaluate the behavior of the state on the basis of economic returns, while neorealists do so on the basis of security concerns. Thus, both schools focus on the so-called "hard power", the main interest in which is financial gain.

Recently, international relations experts have begun to study the role of non-governmental (often transnational) actors and domestic political coalitions in deploying what is now known as a "soft power." Nye defines “soft power” as the ability to make “others want” the results you want, co-opting target countries, not forcing them ”[14, p. 5]. This suggests that the behavior or policies of states can be changed not by force but by persuasion.

According to Nye , "soft power" depends primarily on three resources:

- culture,

- political values
- international politics.

Public diplomacy and international public relations try to create a positive image of the native country or other clients among foreign publics. Zhang and Schwartz consider public diplomacy as the following activity:

- cultivating a positive image,
- promoting mutual understanding,
- defending national interests,
- promotion of the world public good, for example, upholding common norms and ethics.

Singitzer, Coombs, and Vamser divide public diplomacy strategies into two areas [14]:

1) political information related to political advocacy,

2) cultural communication, which aims to develop mutual understanding between the native country and its foreign community, including the purpose of the government.

The essence of diplomatic activity has always been to develop and cultivate a favorable perception and attitude between the participating countries. Based on this, public diplomacy can be defined as communication between countries mediated not only by diplomats but also by image, reputation, culture, the notion of public good and media images, among others.

Like public diplomacy, there is also a study of the relationship between investment in public relations and national reputation. Lippmann [14] was perhaps one of the first to argue that the media are among the most powerful sources of information that can shape people's perceptions of issues, objects, and events. Relationship experts analyzed changes in news coverage resulting from PR efforts. These studies show that PR attempts also have a positive effect on the country's visibility in the media of the target nation. The authors found that the signing or rejection of the contract affected both the visibility of the client country and the number of publications about that client country.

Thus, public diplomacy and public relations try to develop through image management. These two approaches thus complement each other. According to Singitzer and Coombs, nation-states that push foreign policy are not the same as multinational corporations that trade in image. Therefore, international public relations involves the management of "soft power" in relation to a foreign country and it is a function of governments and corporations. Although investment in international public relations has been shown to have a positive effect on news coverage of a foreign client, "it is doubtful whether members of the strategic community perceive information or simply suffer from it" [1]. Therefore, it is appropriate to ask: what exactly are the tangible results of international public relations?

The problem of national image is taken care of by specialists in various fields, such as sociology, political science, philosophy, etc., namely: E. Bernays, S. Black, G. Broome, F. Boari, M. Groh, N. Elias, S. Katlipa, M. Castells, G. Kissinger, O. Zabuzhko, I. Kyselov, V. Krysachenko, K.Pleshakov, Yu.Romanenko, Z. Bzhezynskyi, I. Vallerstain, K. Valts, E. Hiddens, H. Lasswell, Kh. Morhentau, O. Panarina, A. Starostina, A. Lychova, V. Petrovskyi, V. Bebyk, Ye. Makarenko, O. Zernetska, L. Nahorna, V. Krysachenko, M. Stepyko, S. Mitriaiev, Ye. Tykhomyrova A significant contribution to the development of research was also made by the works of D. Kislov, O. Malis, V. Tereshchuk, E. Kachmarsky, O. Kuznetsova, S. Kryvoruchko, G. Sashchuk, G. Khlystun.

However, the study of e-PR in international relations, its use in information wars to maintain the country's own image or discredit the image of another country in the scientific community has significant gaps. According to O. Parkhomchuk, the formation and transformation of the international image of the state is influenced by exogenous factors. "Among the external factors in constructing the international image of states at the present stage are important world standards, formed by the international community and are conventional in origin, declared in international law, documents of international organizations, fixed by annual ratings of international organizations and rating agencies" [2]. These indicators illustrate the attractiveness (or vice versa) of the community to an international audience and relate to economic indicators (level and life expectancy, economic well-being, level of corruption, business opportunities, etc.) and political (development of democracy, civil society, human rights and protection).).

If we systematize and generalize the scientific research of Ukrainian scientists and their views on the activities of the media in this area, they can be divided into the following problems:

• research of ethical values that should be inherent in journalists responsible for shaping the culture of the media audience (O. Kuznetsova [12], S. Kryvoruchko [11] and others);

• security imperatives of the television space of Ukraine (G. Sashchuk [15]);

ethics of mass media in modern political processes (G. Khlistun [19]).

It should be noted that in the works of political scientists and public administration specialists there is no special consideration of issues of activity (including in the value-cultural aspect) of the media as a completely independent subject (or pseudo-subject) of politics, able to influence political processes and systems.

1.2. Evaluation of the effectiveness of investments in international public relations

Researchers such as Grunig and Gon[14] note that the impact of PR efforts often manifests itself on intangible factors such as attitude, reputation, brand image, corporate or government. Dozier and Elling [14] argue that the effectiveness of public relations can be measured in terms of reducing disparities between organizations and their public.

Reducing disagreements and a favorable public attitude can make a difference, but they are not enough to show tangible PR results. To help solve this problem, identify related fields of advertising and marketing, review of return on investment. Advertising and marketing experts evaluate the return on investment in terms of sales, profits and share value, as corporations always want to confirm that marketing actions have led to financial benefits. Marketing research also measures the return on investment in terms of marketing budget effectiveness, noting the importance of being able to distinguish between short-term and long-term efficiency. The rationale is that short-term efficiencies can harm long-term returns.

Thus, researchers have proposed a more rigorous examination of the causality between public relations and their economic impact at the national level. They measured the relationship between data series, not the relationship between two variables, as was done in previous studies. Given the long-term relationship between economic input and output, especially the relationship between PR efforts and the expected return on them, time series analysis is critical as a rigorous examination of causation. This study is a step in this direction. The results of this study suggest that preliminary information about one variable may predict current and future values for other variables. The results of this study cannot be statistically generalized for the population of countries.

1.3.Public relations and public diplomacy: conceptual and practical relations

Researchers (Katie Fitzpatrick, Jamie Fullerton, Alice Kendrick) [1] explore the conceptual and practical links between public relations and public diplomacy, or the process by which governments communicate and build relationships with foreign nations to achieve political goals. But there is little empirical evidence to suggest similarities and / or differences between these disciplines.

This study filled the relevant gap through a comparative analysis of knowledge and skills that are considered important for success in every profession and effective practice. Although some discrepancies have been identified, the data confirm the conceptual and practical links between public relations and public diplomacy.

"Public diplomacy is not public relations," urged Matthew Armstrong , who has served as congressional executive director for some time. The Advisory Commission on Public Diplomacy stated: "... the audience is an imperative of national security and should not be a simple tool of public relations."

The view of public relations as an advertising tool is not uncommon for practitioners of public diplomacy. U.S. diplomats reject "the sometimes fascinating but superficial notion that [the agency's] goal should be simply to gain friends and influence. We believe there is a significant difference between representative public diplomacy (which we advocate) and public relations (which we rejected) ".

Those who are more familiar with public relations argue that such views are ignorant and inconsistent with current opinion and practice in this area.

The purpose of the study of these scholars was to identify conceptual and practical similarities and differences in public relations and public diplomacy. The study used a comparative analysis of knowledge and skills that are considered important for success in each field and effective practice in each field. Although conceptual and practical connections - as well as some differences - have been observed by scientists in both fields and have empirical evidence to support such observations.

Like public relations, public diplomacy lacks a clear, coherent definition. One of the most popular, according to Thach, is "the process of communicating with the government of a foreign community in an attempt to explain the ideas and ideals of one's nation, its institutions and culture, and its national goals and policies." Another, according to Valery, is "the art of communicating with the foreign public in order to influence international perception, attitudes and policies." [14] Another, according to Sharpe, is “the process by which direct relations with people in the country are carried out to advance the interests and expand the value of those represented.

Despite the seemingly obvious parallels with public relations, few scholars have previously noticed the conceptual and practical links between public relations and public diplomacy. Singitzer and Coombs noted in 1992 that although governments were recognized as subjects of international relations "theoretically and practically, the literature was markedly silent on the subject." Scholars note that "public relations and public diplomacy often pursue the same goal - to influence public opinion for the benefit of their client / organization" [14, p. 130]. This "natural process of convergence," they asserted, "must be cultivated and not ignored."

L’Etange also identified a "clear intersection" of three common functions of public relations and public diplomacy: "representative (rhetoric, public speaking, advocacy), dialogical (negotiation, peacekeeping), and advisory (consulting)" [14, p. 15].

In an effort to assess the status and scope of public diplomacy research through public relations, Vance and Fitzpatrick reviewed published papers between 1990 and 2010. The results revealed ways in which “public relations concepts can be more than just communicated to the public. diplomacy, but applied, tested and recommended in the academic and practical spheres of public diplomacy. "

Political science scholars also point to the need for such research and to the recognition of the role of public relations in international political endeavors and to bridge the gap between public relations and public diplomacy.

A study of "indirect public diplomacy" (Entman, 2008) - or organized government attempts to influence government policy-making in foreign media - revealed additional insights into the possible cross-fertilization of public relations and public diplomacy.

In 2012, a report on higher education was published. Four categories of knowledge and skills were emphasized as necessary and crucial components of educational programs for students and graduate students:

1) Communication / Building relationships

2) Management

3) Multicultural / global

4) Research / History.

So, practical perspectives. The dominant paradigm in social relations is based on relational concepts based on bilateral symmetrical practice. Both theories - perfection (Dozier, Grunig & Grunig, 1995) and the theory of relationship management (Ledingham, 2003) - use a common creative approach. As described by Botan and Taylor (2004): “The perspective of co-authored work views the audience as co-creators of meaning and communication, as well as what enables them to agree on common meanings, interpretations and goals. This perspective is long-term and focuses on the relationship between the public and organizations ”[14, p. 652].

The models defined by Grunig and Hunt are:

1) Press / publicity agency - one-sided advertising activity, which seeks, first of all, through mass media channels the maximum influence on the public;

2) Public information - one-sided distribution of information;

3) Bilateral asymmetry - bilateral "scientific conviction"

4) Bilateral symmetric - bilateral dialogue and interaction that seeks to achieve mutual understanding and benefits for both organizations and the public.

The two-sided symmetric model is considered by Parkinson and Ekagai to be the "best," and by Signitzer and Wamser to be the most ethical.

1) advocacy / influence - to influence the attitudes, opinions and behavior of foreign audiences;

2) communication / communication - communication with citizens of other nations, informing and educating them about their nation and its policies;

3) relational - to establish and maintain beneficial relationships with people in other countries;

4) advertising - to promote or "sell" certain aspects of the nation to the foreign public;

5) political - to engage in international politics; and

6) war / propaganda - to support and / or supplement military efforts.

1.4. Virtual diplomacy and information and communication technologies as ways to influence it

Modern international relations, political and economic spheres are based on the latest technologies of establishing and maintaining information connections. International information policy requires an increasing number of channels of influence on target audiences. As the researcher of PR-technologies of international image formation of the state O. Shevchenko notes: “Globalization of international development has significantly actualized some modern communications, especially international electronic public relations, which means communications with the world community that take place in a multicultural environment and aimed at harmonizing relations, subjects of international relations ”[32].

The unique opportunity that modern media have is the construction of reality through control over the order of coverage of events. The editor-in-chief determines what should be covered and what should not. Moreover, society is faced with the real possibility of global manipulation when the media "create" an event that did not exist. In the minds of people, it becomes real, so it can be an exciting motive for further action. The French philosopher Jean Baudrillard remarked in this connection: "What does the media dream of, if not to cause an event by its presence alone?" [21]. If any message is repeated enough times, it will be perceived as true. "There is only one figure of rhetoric that deserves attention - repetition. Through repetition, the idea is fixed in the minds so firmly that in the end it is already perceived as truth ”[12]. This technology is the basis, in particular, for the formation of not only the images of political parties and leaders, but also entire states. Now it is not necessary to be a developed country - it is enough to convince everyone that it is.

A. Mol writes about the media [6]: “They actually control our entire culture, passing it through their filters, highlighting individual elements from the general mass of cultural phenomena and giving them special weight, increasing the value of one idea, devaluing another, polarizing in this way. the whole field of culture. What does not get into the channels of mass communication, in our time, almost does not affect the development of society. Thus, modern man cannot avoid the influence of the media.

Moreover, considering the model of political communication J.M. Cotre
as a basic, we can conclude that there are two main independent entities - the manager (the entire apparatus of public administration with its political leaders) and managed (citizens of the country), with the active subject is the apparatus of public administration.

In the global information environment, virtual diplomacy with its methods of influence is the basis for the formation of political ideology of the country. Currently, in the international scientific community, several terms are used in parallel to denote the way to influence the international community through information and communication technologies: "digital diplomacy", "Internet diplomacy", "electronic diplomacy" , “Digital media diplomacy”, “social media diplomacy”, “Twitter diplomacy”, or “Twiplomacy”, “Web 2.0 public diplomacy.” (Public diplomacy Web 2.0.), Cyber paradiplomacy, etc. The concept of "innovative diplomacy" is promising for use in terms of its comparison with traditional, classical diplomacy, and little studied.

Accordingly, it can be argued that the urgency of the problem of virtual diplomacy is caused by the objective requirements of the functioning of state institutions in the era of Internet dominance.

According to O. Parkhomchuk, the formation and transformation of the international image of the state is influenced by external (exogenous) factors. "Among the external factors in constructing the international image of states at the present stage are important world standards, formed by the international community and are conventional in origin, declared in international law, documents of international organizations, fixed by annual ratings of international organizations and rating agencies" [29]. These indicators illustrate the attractiveness (or vice versa) of the community to an international audience and relate to economic indicators (level and life expectancy, economic well-being, level of corruption, business opportunities, etc.) and political (development of democracy, civil society, human rights and protection).).

At the present stage of state development, instrumental mechanisms of foreign policy image formation and protection of national state policy from anti-state propaganda are actively used - political technologies, integral elements of which are marketing, imageology and electronic public relations. The formation of the country's political image in the information space and, in particular, in the Internet space is not limited to the use of electronic media such as platforms for advertising and PR events. The Internet actively influences the formation of unusual norms of behavior both on the international stage and within the borders of a certain country.

Advances in information technology, the accelerated growth of the role of cyberspace and social networks are creating a new reality not only for organizations and citizens, but also for states. Such a quasi-reality, constructed by gray propaganda, sometimes has absolutely nothing to do with the real state of affairs. Compared to traditional means of communication, the Internet provides the state with a large-scale channel not of monologue or fragmentary communication (television or print media), but of constant dialogue with citizens, foreign audiences and the scientific and expert community. Such social dialogue is the basis of democratic governance, the basis of the interaction of the state with the citizen, the state with civil society.

A totalitarian state tries to limit society's discussion on political issues or to give it a specific pro-government direction. The practice of Ukraine's propaganda war with the Russian Federation has shown that the latter's political monologue with society with the help of television (edited video series) yields a projected totalitarian product - a programmed personality.

Consumers of Internet sources of information in terms of political thinking are qualitatively different. Political dialogue and the ability to obtain information from anywhere in the world online greatly expand the political worldview of the recipient.

Among the reasons for the growing importance and importance of international public relations T. Lebedeva calls the following trends: "Internationalization of economic, political and cultural life, which contributed to the globalization of international relations and increasing interdependence of all actors in international relations; growing importance of public opinion in international relations; increasing the importance of international support in solving global problems and resolving conflicts; formation of a positive attitude of the subjects of international relations as a necessary aspect of cooperation and economic relations ”[27].

Presence on the Internet, control over information flows determine the image of the state in the global information space. Based on the analysis of the existing types of political communication in the Internet space, it can be concluded that the information and communication components of the political image of state power are: Internet representations of political actors; Internet pages in social networks of famous politicians and government officials, publications about political actors in electronic media (domestic and foreign); discussions on forums and other Internet sites.

According to G. Pocheptsov [5], the areas of image communications of the Ukrainian state on the Internet should be: - “Use of domain names and control over one's own image on the Internet; use of websites of foreign ministries and diplomatic missions abroad with appropriate information content and language accessibility; publishing image materials both on their own web resources and in world online publications and news feeds ”.

To this list should be added: creation and support of web projects; creation of thematic newsletters on these web portals and websites; publication of own information materials; participation in special forums, discussion groups; coverage of one's own position of a certain official or politician on one's own page on social networks.

The global information environment requires the structures of the Ministry of Foreign Affairs of Ukraine to analyze and understand new information and propaganda channels and technologies. Even military experts note changes in the system of formation of international information. The Ministry of Foreign Affairs of Ukraine has ceased to be a monopoly on the provision of information about the country, and this role has been shared by the websites of public organizations; there is an uncontrolled flow of information on social networks. Therefore, the Ministry of Foreign Affairs of Ukraine should qualitatively increase its presence on the Internet through publications in news services, blogs, video blogs, social networks, because it is the most modern and practical way to present information to the audience. As G. Pocheptsov rightly insists: "Senior government and diplomatic officials should take steps in the field of e-diplomacy in order to integrate it into existing diplomatic practices in order to take full advantage of Twitter diplomacy" [30]. Prospects for further research in this direction may include a detailed study of the official websites of public authorities, the Ministry of Foreign Affairs of Ukraine and diplomatic missions, identifying opportunities to optimize dialogue between the state and civil society, between the state and the international community via the Internet.

At the same time, it should be emphasized that society must be properly informed about the threats to the modern world. And on such issues as terrorism, it is necessary to develop qualitatively new legal and democratic approaches to the interaction of the state with the media [13]. One such form could be permanent roundtables with representatives of the media, the authorities, media and security experts, during which common approaches to covering terrorist activities would be developed.

1.5. Analysis of data evaluated by veterans of American public diplomacy relational approaches in the implementation of international PR

After 9/11 there has been a significant move towards more relational approaches, which are perceived as more effective in a global environment in which there are non-state actors. Based on Fitzpatrick's research, data from USIA graduates were analyzed, which documented the views of high-ranking veterans of American public diplomacy on a number of issues [1, 14]. For reference, the US news agency (USIA) has been one of the largest and most effective public diplomatic agencies in the world for almost half a century (1953-1999).

A 15-page questionnaire was sent to all 441 members of the US Alumni Association to collect data. Almost half (48 percent or 213) of the members of the USIA Alumni Association participated in the study. Of these - 169 (79%) were men, 43 (21%) women, and one did not answer. Respondents worked in American public diplomacy for an average of 25 years from 1953 to 2007, with a range of less than one year to 66 years. The average age was 73. The majority (73 years) percent) of USIA graduates came from the top three ranks of the US State Department.

Diplomats reported service in many regions of the world (including Europe (53 percent)), the Western Hemisphere (38 percent), East Asia (34 percent) and Africa (33 percent). Fewer reports are reported in South Asia (25 percent) and the Middle East (17 percent). The vast majority (76 percent) also reported service in Washington, DC. Most participants left the civil service after the end of the Cold War. Analyzing in the context of public relations, the results of the USIA alumni survey indicate a significant similarity in both knowledge and skills, which are considered important and most effective for public diplomacy and public relations.

The study also provides empirical support for the idea that public diplomacy is a multidimensional enterprise (Fitzpatrick, 2010). Practitioners in both areas share the view that interactive approaches to engaging with the public are the most effective. In the USIA study, practices based on psychological warfare and / or misinformation were found to be ineffective.

Of particular importance in the context of our study is the observation that indirect public diplomacy requires skilled practices that are understood in the global media. Schiffer and Gabay note: “In their competition for foreign media, actors (including national actors) must demonstrate skills, productivity and talent relevant to media value.” This conclusion, combined with the historical lack of interest and participation of some scholars from public relations and practitioners point to the need for expanded mastery of relevant disciplines in both fields. Data from the Public Education Education Report (2006) and the USIA Alumni Survey (2010) reflect the prospects formed before the introduction of mass communication channels, which predominate in public relations and public diplomacy today.[14] In particular, most of the participants in the study, graduates of USIA, left the civil service before the advent of social media. In addition, demographic and geographical variables are outside the scope of this study, but may have a significant impact on the theoretical and practical perspectives of future research. Finally, and perhaps most importantly, the interaction of public relations and public diplomacy, as political functions deserve further study.

Results

2.1. Education system in the training of public relations specialists in international relations. Areas of communication activities and features of training

Today, the modernization of communication education is seen not only as a key factor in improving the activities of modern media, but also as an important aspect of socio-cultural development. At present, it is difficult to find an area of open practice that could be carried out in isolation from public relations, as well as other modern forms of promoting the interests of governmental and non-governmental institutions and organizations. Including those who actively assert themselves not only domestically but also internationally.

In domestic and foreign practice, the training of specialists in the field of international PR is becoming especially relevant today. This is also important due to fluctuations in the professional market. To date, public relations has become a developed field of communication, which has different directions: public affairs - work on relations with state institutions and public organizations; corporate affairs - corporate image management; image making - creating a favorable image of the individual; media relations - building relationships with the media; employee communications - staffing, creating good relations with staff; public involvement - public examination; investor relations - relations with investors; special events - mobilization (competitions, championships, lotteries) and presentation events; crisis management; message management - managing the process of adequate perception of the audience of messages, etc.

A huge amount in the training of specialists is occupied by communication disciplines, so the curricula become media-oriented.

2.2. Analysis of the university experience in training PR specialists and practical recommendations for its use

At the present stage, various authors study the communication potential of the program of training PR specialists in the field of international relations on the basis of different educational structures in different countries (USA, UK, Russia, Germany, Ukraine), a comparative analysis of program texts. Given the current trends in the education system, the increasing role of student responsibility for academic success and achievement in the educational process, especially in the quarantine conditions associated with the spread of coronavirus, the communicative component has increased. This involves the use of various online platforms and other forms of online communication [2].

Academic research aims to study the mechanism of using communicative potential as a resource for conducting, for example, public policy. The communication capabilities of the government are not only the availability of effective information channels, but also the ability to communicate with the public, explain their decisions to society, and hear the requests of various social groups.[22]

Traditionally, in the system of Ukrainian education, public relations are studied within the educational programs of the specialty "Journalism". But as a special course, public relations are included in the training programs for translators, political scientists, marketers, etc.

And as you know, master's programs are mostly divided into academic and professional. This model of master's training is widespread in the United States. Graduates of academic programs with the degree of Master of Arts (Master of Arts, M. A.) and Master of Science (Master of Science, M.S., M.Sc.). This degree is usually awarded in the traditional arts, exact sciences and humanities. The course of study takes one or two academic years, "weighs" from 30 to 60 "credits" and is usually intended for those who are going to apply for a doctorate. The professional program is aimed at obtaining a certain profession and also lasts one or two years, however, the number of credit units here is less than the academic one - from 36 to 48. Professional master's programs are usually "final" and not related to doctoral studies. The name of the degree in the professional master's degree usually contains clarifications, for example, the Master of Social Work (M.S.W.).

To the tasks of preparation for a master's degree in relations with public (and advertising) in American universities includes the formation professional potential and practical skills of students in the chosen field of activity. Particular attention is paid to the creative presentation of information and education of critical thinking of PR managers. The most common disciplines of these programs are ethics in the field of PR, marketing, preparation of PR-texts, including business and persuasive nature, rhetoric / oral skills, modern information technology, etc.

The United States has accumulated solid experience in training masters of arts and masters of science in the international field. So, at Boston University (Boston University) you can get a master's degree in international marketing, international business (MIM, MIB) [The most popular master's programs in 2016 in Boston in the United States] [22]. The Master of International Business (MSIB) is taught at the University of Denver (Colorado) and the University of Miami (University of Miami, School of Communication) [Most Popular 2016 Miami Master's Programs in the United States; Training and consulting center Sistema-3], as well as in other universities.[22]

According to European standards, the master's degree is correlated with the models of higher education (graduate), the duration of which is one or two years. Studying for a master's degree

either promotes career advancement or provides an opportunity to prepare for a doctorate. Master's programs are academic, practical or mixed.

Various models of master's programs in public relations, advertising and marketing are presented at the School of Business, which is part of the Faculty of Business and Law at Manchester Metropolitan University (Manchester, UK, Manchester Metropolitan University, MMU). Manchester University has more than 30,000 students and more than 400 majors.

At the Russian University of Friendship of Peoples within the professional master's program "Master of Linguistics" in "Linguistics" was announced specialization "Communication Theory and International Public Relations", which focuses on the study of sociolinguistic aspects of communication and the principles of rhetorically organized texts. Particular attention in this program is paid to the study of management, marketing and advertising. In addition, a number of additional vocational education programs have emerged at the PFUR Faculty of Philology, one of which is entirely devoted to media communication and the study of manipulative technologies in advertising, journalism and PR [Peoples' Friendship University of Russia].[22]

At Moscow State University, two faculties are trained in public relations: journalism and political science, and so on.

St. Petersburg State University implements several master's programs aimed at training public relations specialists. For example, at the Institute of Higher School of Journalism and Mass Communication of St. Petersburg State University there is a whole area focused on training specialists in the field of advertising and public relations, which implements two master's programs: "Communicative Consulting" and "Strategic Communication in business and politics ".

An integral component of international relations today is informing and influencing the foreign community in the process of dialogue, which is the core of public diplomacy (PD). The dialogic nature of PD in many ways brings it closer to the phenomenon of PR. Changes in the conceptual understanding and practical implementation of public diplomacy, media and international PR are related to the dynamics of modern global and regional processes, as well as their reflection in the scientific consciousness. In this regard, the training programs pay attention to international organizations, which creates opportunities for exchange of information and experience and acquaintance with the practice of communication - the International PR Association (IPRA), the International Organization of Communications Consultants (ICCO) and etc. At the moment, one of the notable signs of change and transformation is the growth of media presence, socialization of society, as well as the idea of global cooperation and rapprochement of peoples and cultures. In this regard, the main areas of training of public relations specialists are:

1. Organization of the press services of governments and government agencies, PR departments (presentations, receptions, opening ceremonies, exhibitions, forums, symposia, summits, round tables, entertainment events - holidays, concerts, festivals, etc.), principles work of modern press services, goals of work, structure and powers, coordination of activity of employees of press services, functions of the press secretary.

2. Organization of work with mass media of various types (media relations), holding events for journalists (briefings, press conferences, press tours), information support of special international events, communication audit and monitoring of Russian and foreign media.

Media relations act here as a system of managed effective relationships with the media. The target public group in this type of PR activity - journalists; mainly journalistic technologies are used.

3. Information management, newsmaking in the field of international relations, work with information drive on the basis of modern media technologies, news and information drive - key concepts of newsmaking, basic newsmaking technologies in the field of international relations, work with information drive, information management and

spin-doctoral, information segmentation techniques, information partnership, presentation of events for groups of the target public in an optimized form, correction of information reasons in crisis situations (news management).

4. Creation of written and oral PR-texts in international public communication, analysis of PR-texts in the field of international relations, monitoring of Russian and foreign mass media. Particular attention is paid to defining the concept of PR-text, typology of PR-texts (basic and related, primary and PR-media texts), characteristics of genre-forming features of PR-text, stages of text creation, study of compositional features of oral and written PR- texts.

5. Work with target audiences and various groups of the public.

6. Modern technologies of public relations. The relevant area involves studying the features of the use of new information technologies by public relations professionals in their professional activities (mobile marketing, blogging, flash mob, road show, web presentation, offline events, community organization on the Internet, organization and maintenance of corporate sites).

7. Information support of special events of the international level, both oriented for the external public (presentations, receptions, opening ceremonies, exhibitions, expositions), and information (forums, symposia, summits, round tables) and entertaining (holidays, concerts, festivals, Days) events.

8. Territorial branding and PR, global and local image, the participation of the territory in global political, economic and socio-political processes and the problem of defining features and characteristics that reflect its individuality and advantages in the modern division of labor, development of brand management technologies .

In this regard, students should work out the key differences between PR-text and journalistic and features of the compositional construction of certain genres of PR [22]:

1. Operational and informational - release, invitation;

2. Information and factual - fact sheet, biography;

3. Analytical - media card, report;

4. Information-analytical - background, letter of answers, business letters, statement for the media, review article;

5. Artistic information - bayliner, greetings, information letter.

6. Genres of combined PR texts - media kit, booklet, prospectus, brochure, newsletter, newsletter, postcard, public speech (speech).

7. Related PR texts - slogan, resume, press digest (press review).

8. Media texts - image article, image interview, case story.

The organization of students' practice plays an important role in the successful development of educational classes. In the course of introductory practice, students get a broad idea of PR-services, especially those that carry out certain types of international activities.

Industrial practice not only allows to develop professional skills of undergraduates, but also to help them in employment.

Practice shows that students of the program and its graduates show high creative activity, for example, declaring themselves on the startup exchange.

Thus, to highlight the specific features of the model of teaching a master's degree in international relations in the field of public relations. Its peculiarity is that it provides creative training not only for experts in the field of international PR, but also for effective practitioners working in the press services of international organizations. Undergraduates need to master the skills of organizing the work of press services and PR departments of governmental and non-governmental organizations and institutions, conducting various PR-events, as well as working with traditional and online media. You need to be able to monitor the media, have the technology to create written and oral PR-texts in international public communication and analyze PR-texts in the field of international relations.

Conclusions

The media replace not only the channel but also the source of information. One can observe, in particular, the monopolization of socially significant information channels by the media. This leads to the fact that public authorities, which are obliged to inform the population about their steps, to some extent become hostages of the media in covering these steps (precisely because of the lack of opportunity to directly inform citizens about the activities of public authorities due to low confidence in government) , because the least trusted by those about whom they know nothing). The problem of diversification of socially significant information channels is urgent.

One of the promising areas, according to the author, is the widespread use of information and communication technologies, as well as the transition in the information society to a dialogic model (for the dissemination of information in a real communication network): individuals communicate directly with each other, ignoring the center or intermediaries time, place and topic of information exchange. A characteristic feature of the dialogue model is that it provides for horizontal equality of participants in the communication exchange.

As media coverage is no longer exclusively a transfer of the positions of the main socio-political actors, instead, independent management media reports are assigned a new role - the legitimizer of power. If earlier the process of legitimization through the media was not decisive, now it depends on them who will be considered legitimate. (That is, it will be defined by citizens as power - legitimacy depends on the tacit consent of the governed, and the state is legitimate to the extent that citizens recognize it as such [17]).

This role of the media is used, in particular, in the case of detailed coverage of a terrorist act. Terrorists, who are the source (initiators) of the message, become its addressees, who are subconsciously perceived by citizens as a legitimized source of information (and therefore "governing"). This is why the problem of coverage of terrorist acts is not only a problem of "freedom of the press" and the right to "comprehensive coverage of events", but also a problem whose solution is in the field of national security in general.

At the same time, it should be emphasized that society must be properly informed about the threats to the modern world. And on such issues as terrorism, it is necessary to develop qualitatively new legal and democratic approaches to the interaction of the state with the media. One such form could be permanent roundtables with representatives of the media, the authorities, media and security experts, during which common approaches to covering terrorist activities would be developed.

• In an era of global security challenges, the issue of social responsibility of the media in terms of combining press freedom with responsibility, with the tasks of integrating society, civilized

resolution of conflicts arising in the process of presenting different points of view, reflecting opinions and positions of different (sometimes - antagonistic) social groups.

• In the system of political communications, the media, due to the ability to interpret information, often replace not only the channel but also the source of information, thus acting as a subject (or pseudo-subject) capable of influencing the legitimization and legalization of both government and terrorist groups and their leaders.

• Needs a practical solution to the issue of determining the new role of the state in its interaction with the media in modern conditions and the development of appropriate democratic mechanisms for such interaction.

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EFFICIENCY OF THE GOVERNANCE AND ITS DEMOCRATIC PRINCIPLES IN THE PERIOD OF GLOBALIZATION

Abstract. *This research deals with the analyzing of the efficiency of the governance and its democratic principles in the period of globalization. Democratic principle is a complex system of interaction of political, economic and legal subsystems which is dictated by democratic needs and interests and is based on the laws of the society.Efficiency of the governance involves maximizing outputs such as the volume of services provided, minimizing inputs such as the amount of resources or capital required to produce those services and maintaining or improving quality of the life of the people. In the modern world people can achieve the democratic quality of the life through democratic organization of the governance which is based on principles of the democracy, the rules of the law and the priority of the individual. Besides, political changes that occur in democratic societies increase the interest of scientists in the peculiarities of democratic principles of the governance in the period of globalization. Global governance has introduced new issues and established democratic principles which express democratic ideas of the society. Democratic governance is one of the factors that determines the level of the democratic efficiency of the democratic development.Thus, it is important to strengthen managerial influence by constantly improving its forms and methods.*

Introduction.

In the modern world the process of the globalization can influence on the society differently. Globalization as complicated process of the global changes can have different features. The most important feature of the globalization is democratization of political and economic spheres of the society. The democratic governance is very important for states because it can help authorities to have equal rights for the people and give the opportunity for them to control the actions of the officials.

The goal of the research is analyzing of the efficiency of the governance in the period of globalization. This research is actual now. Many of scientist research it, such as Kovbasiuk Yu.V., Novachenko T.V., Voitovych R.V., Uzunidis D., Zozulia V., Waldvoge M., Reinsberg B., Soroko V.M.,Paliokha V.,Tsvietkov V.V.,Rubtsov V.P., Deepali Singh,Mikhrovska M.,Pasichnyk V., Zaruba V.M.,Turovska O.A.,Vlasenko S., Cherif Bassiouni,Romanenko Ye.O..

We can acknowledge that this research is very actual and modern because the future of the world depends on the modern forms of the governance. To my mind the most modern and effective model of the governance is democratic one which allows people to have equal rights and possibility to realize their ability and knowledge in the developing of the effective society in the period of globalization.

Efficiency of the governance depends on the democratic principles of the governance which can develop the society following the laws of the state.

Transparent authorities must properly ensure dialogue with the people in order to ensure the transparency of the governance including the quality and the ability of informing about their activities using democratic principles of the governance which can be used effectively.

Democratic principle is the complex system of the interaction of the political, economic and legal subsystems, which is dictated by democratic needs and interests which are based on the laws of the society. [1]

Democratic principle of the governance is the key to the prosperity of the democratic society and the formation of preconditions for the growth of the confidence of the people. The efficiency of the democratic principles of the governance in the period of globalization should be carried out by coordinating the interests of all subjects of innovation, which will ensure the effectiveness of its implementation processes and promote the growth of public confidence.[2]

If the governance wants to be effective it have to be modern in their democratic principles which can include the mentality of the people of the modern society.

We can admit that we can use the experience of the previous forms of the governance but we have to remember that the world has the possibility to be changed .It means that we have to change the forms and principles of the governance too .

1.Efficiency of the global development of the governance

Globalization is an internally contradictory process because it opens new opportunities for the political and governance discourse and exacerbates existing of new problems that are now defined as challenges.

In fact they are forms of exacerbation of problems caused by previous stages of the democratic development which did not find a proper solution in the global governance practice. This is directly related to the general problems that are associated with the emerg of the globalization which tends to accentuate interdependencies among countries. The democratic principles of the governance are characterized by severe asymmetries in terms of access, scope and outcomes while developing countries must abide the effects of global governance rules and regulations.

Meanwhile, the unbalanced nature of the globalization implies that important areas of common interest are currently not covered by the global governance mechanisms, while other areas are considered to be overdetermined or overregulated by arrangements with different rules and provisions, causing fragmentation, increased costs and reduced efficiency. [3].

On the one hand the problem of efficiency is the oldest and the most researched and on the other hand it is one of the most realistic. The main feature of this problem is that that governance works in conditions of rapid changes. The environment in which the governance exists is often based on the single situation which falls into another even more complex which is not regulated by the law. In such circumstances it is impossible to determine the criteria of the efficiency as well as a high degree of dynamism of changes of experienced

factors influencing efficiency and results of the activity of democratic decisions of the governance in the development processes of the globalisation.

Democratic efficiency involves maximizing outputs such as the volume of services provided, minimizing inputs such as the amount of resources or capital required to produce those services and maintaining or improving quality.

We can acknowledge that the democratic efficiency can be measured by how much it costs to deliver a program compared to previous years or the outcomes that governance obtain from a

certain level of expenditure. Rising citizen expectations have put pressure on governance to increase the value for money of public services to improve healthcare and education, strengthen social programs, grow the economy, enhance public safety, promote environmental sustainability and improve its global standing.

The paradoxes of globalization and the divergences which reveals between public and private, national and global interests, require a global governance system to manage this process efficiently. But our analysis shows that this system is not that organizational structure which defines and justifies the theory founded on legitimate decision-making structures and concretizing legitimate purposes, aiming at the sustainable development. Three reasons confirm this conclusion. Firstly, the concept of global governance is presented as substitutes for voluntarist economic policies. Secondly, the global governance system is in a crisis of legitimacy because it makes an aim of liberalization in itself and there is no balance of power at the decision-making process. [4]

We can acknowledge that political changes that occur in modern societies increase the interest of scientists in the peculiarities of democratic principles of the governance. Democracy is the leading means in the processes of the globalization, which is clear materialized in the problem of the global democracy. Today it is needed more systematic research in the field of the democratic principles of the governance with the aim of globalization challenges. Therefore, an important issue is: analysis,systematization of the intelligence of the democratic governance; development of the conceptual and categorical apparatus on this issue, the formation of the democratic governance of the state.[5]

In its process, a new global governance structure is promoting the paradigm of the greatest sustainable awareness, which is given further expression in the development of the democratic system. The global governance has introduced new issues and actors, established new networks and systems for the cooperation as well as formulated global treaties and guidelines, which express innovative ideas and bring forward and support upcoming norms in order to meet the complexity of problems. At the same time, the rise in the amount of non-state actors serves as evidence for the political and social reorganization of the global affairs, a shift from central and state-based decision-making to more dynamic and global-bound arrangements and policy processes.

The analysis of recent gatherings and their outcomes has shown that the sole number of global stakeholders alone does not provide for effective environmental governance processes. Since global governance does not constitute an end in itself but rather serves as a means to start and guide sustainable processes, the framework's single components need to be improved and better connected against the backdrop of the normative framework as an inclusive governance architecture is unlikely to meet environmental demands if it fails to create and recognize democratic principles. Therefore, only intensified democratic cooperation of the principles of sustainability leads to effective mediation as well as implementation of necessary means.

Thus, democratic principles serve as foundation for behavior of the governance and the people, while institutions, which create and foster norms, can influence on these processes and bring behavior changes. It is acknowledged that the global governance policy should be considered as the democratic obligation and economic opportunity . A global architecture, which incorporates and promotes the democratic principles of sustainability, encourages their effective implementation at all levels, from the local to the global, to meet the demands to cope with democratic challenges of the society. Democratic principles have to become part of the states' identity. A democratic governance of states, institutions, democratic organizations and the

economy, where the power of actors is balanced as well as guided by the respective other and common strategies prevail, is necessary to solve democratic problems . A democratic understanding of the sustainability as a significant principle by an inclusive international community is essential for the success governance processes in the period of the globalization.[6]

The global governance of democratic development increasingly relies on multi-stakeholder partnerships between states and democratic organizations. It is necessary to describe quantitatively the governance evolution of the democratic development of the state of the democratic system over the past century. It is important to juxtapose democratic explanations for why states establish new democratic organizations as transnational governance initiatives such as functionalism, democratic theories and state politics .[7]

We can acknowledge that attention has been paid on increasing the personal responsibility of people for democratic development of the state , which helps to reduce their alienation . Expanding of the representation and participation of the people in the implementation of state programs contributes to their implementation. [8]

The efficiency of the democratic principles of the governance in the period of globalization takes into account interaction of many factors, such as plenty of democratic activities in all spheres of the state and the public life and is used also the democratic criteria of the new sphere of the governance : political, social, economic, etc.

The democratic criteria should be defined by the democratic values, goals and norms, principles of trhe governance and public interests and have essential features of efficiencies that are unique for this type of the governance which can influence on the development of the democratic principles .

The democratic governance can be effective when it is consistent with the intrinsic properties of the democratic system. Accordingly, the purpose of democratic policy is determined the democratic knowledge which is possible and necessary for democratic conditions to intensify the democratic stability of the society.[9]

The democratic efficiency is the satisfaction of democratic goals and needs of society through the implementation of governance activities. We can acknowledge that the efficiency can be considered both at the national level and at the enterprise level. At the state level, democratic efficiency is manifested in the form of living conditions and living standards, education, freedom of the movement, social guarantees, and the health care system. In the state the democratic efficiency is ensured by improving working and living conditions, increasing wages, improving the staffing structure of the state apparatus, improving the education of people.

The democratic efficiency of the governance is a multifaceted concept that reflects the degree of the achievement of the general objectives of the governance and the quality of services to the population in relation to the resource provision of the democratic government activities.

The democratic governance is one of the factors that determines the level of democratic efficiency of the democratic development. It is important to strengthen managerial influence by constantly improving its forms and methods. By the way, the democratic governance determines the democratic future and quality of the modern life of the people.[10]

The strong and capable power is the first condition for the success of the democratic transformations in each country. They are the most relevant for the young democracy of the state. Without power it is impossible to create the preconditions for the democratic development, the formation of the democratic principles of the governance in the period of the globalization.[11]

2.Democratic principle of the governance

Governance means the process of decision - making and the process by which decisions are implemented (or not implemented). Democratic governance is a dynamic concept. It encompasses the changing of political, social and economic spheres of the society and democratic principles of the democratic governance. Democratic principles of the governance in the period of the globalization are accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of the law.

The democratic governance is associated with efficient and effective governance which is considered to be citizen friendly, , responsive and respecting human rights . The Indian state has adopted the processes of globalization, liberalization and privatization. It has embarked on the path of reorienting and restructuring its governance system. The canvas of reforms covers the states. It encompasses reforms in economic, social, administrative and political spheres.

Thus, the new governance package, popularly known as good governance, is advocated by the major multilateral and bilateral development/financing agencies. They share the view that better quality of governance would promote the democratic development. In the era of globalization, there are many streams of discourses doing the rounds within the political economy and political sociology at the national and international levels. The new challenges created by the globalization are compellingly illustrated by the democratic system. Globalization has also affected by the capacity of the governments to manage these new forces. Democratic governance will be the engine for the development of the effective economy.[12]

Democratic principles of the governance give the opportunity to people to follow the laws of the societies which help to them to have the right to change their life. People in the democracy must have some form of the economic freedom. This means that the governance allows some private ownership of the property and businesses, and that the people are allowed to choose their own work and labor unions.

The governance should play the role in the developing of the economy and it is generally accepted that free markets should exist in the democratic society and the state should not totally control the economy. It is argued that the democratic principles of the governance should be used in countries where the great inequality of wealth and discrimination exist and can give the opportunity to have the freedom.[11] .

In the modern civilized world citizens can achieve the democratic quality of life through democratic organization of the governance which is based on principles of democracy, the rule of law and the priority of the individual. We can admit that the mechanisms of its functioning can be quickly adapted to new external and internal changes.An essential factor in ensuring the rationality of the governance, which is determined by its feasibility, validity and efficiency, its sociality, democratic demands and expectations, and the guarantee of the ability to the democratic change of the governance, can be considered .[8]

We can admit that democratic governance is able to ensure human and civil rights of people. It is endowed with three important features that allow you to come to the following conclusions that the governance redefines the power of the state and can guarantee human rights. By the way, the concept of democratic governance is focused on meeting human needs and interests.[13]

Although equality has been discussed for centuries, it became important only in the twentieth century. Today equality is one of those concepts that produce fundamental disagreement

. For some people the achievement of some form of equality is absolutely essential and for others the achievement of the form of the equality is impossible. Equality as a general concept includes different types of equality: political equality, the law equality , equality of the opportunity, economic equality and social equality.

We can acknowledge that the democratic governance ,which was originated in ancient Greece, can be associated with equality of the law, participation of all citizens in elections of the governance and possibilities of them to control the actions of the society. Philosopher of that period of time had different point of views on the democratic governance, but they all agreed that the presence of this type of governance can be important for people.

Firstly, the term democracy was used to provide for the construction of the governance which was based on the trust. Supporters of democratic principles of the governance advocated equality in relations of people and the governance. By the way , opponents of the democratic governance made a significant contribution to the understanding of democratic governance too.

We can admit that it was formulateed the need of the election of the government by the people ensuring the implementation of the component of the democratic governance. It was contributed to the formation of ideas of the principles of the democratic governance and its development.

It was identified the principles of democratic governance as tyrannical which can have the features of the formation of despotism in the conditions of the democratic governance and its consequences.

It was admitted that if the state wanted to build an ideal society it had to consider the question of equality as the most important component omitting the fact that the premise of the democratic governance was equality. It was defined that the democratic governance was the government which could destroy the best without providing the law.

In order to ensure the research it is necessary to explore the theoretical and methodological foundations of the democratic governance in different historical periods by analysis of scientists' views; systematize the work and forecast prospects for the development of the state, which operates on the basis of the democratic governance in the conditions of the globalization.[5] If we can analyze the governance of Ukraine we can acknowledge that the main problem of the governance is corruption and bureaucracy of the governance and the decline of spirituality and morality of the people [14].

The democratic governance is an extremely important area of the state power. In its content it is organically combined with the executive branch of the government. The level of organizing influence of the executive branch on the social processes needs the dynamic development of the democratic society and reach the level of the democratic organization of the governance that can be inherent in the functionally efficient and structurally democratic system.[15]

In the context of the globalization the world is entering a new reality which

requires the development of the democratic governance in accordance with the democratic technology of the states . In result the impact of the globalization can change the democratic changes of the governance . Democratic changes are democratic forms of the democratic governance which can be used by the global society [16].

Democratization of the governance is comprehensive process aimed at developing all forms and mechanisms of democracy that are implemented in various spheres of the public life of

the state. Accordingly, the democratization instrument of rational solution of social, economic and political problems is the democratic governance.

We can admit that the optimization directions of democratization of the governance of Ukraine allowes to develop an optimal model of democratic governance [17] which can be governed by the rule of law in which there is an educated and qualified managers who constitute the democratic elite.

The democratic governance have to be governed by the rule of the law and its officials have to protect interests and needs of all people and to be neutral in confrontation and competition of social forces providing representation of citizens and communities on all levels of the government, to ensure the use of institutions and procedures for identifying and implementing the will of the people [11].

The main forms of democratic organizations of the modern society are the state which is the universal political form of organization of the society which can be characterized by the presence of the democratic system of the governance which is a set of democratic relations in society which can influence on the democratic development of the world.[1]

The key element in the democracy is the holding of free and fair elections at regular intervals enabling the people will be expressed. These elections must be held on the basis of universal, equal and secret suffrage so that all voters can choose their representatives in conditions of equality, openness and transparency that stimulate political competition.

It is admitted that civil and political rights are essential and more particularly among them, the rights to vote and to be elected, the rights to have freedom of expression and assembly, access to information and the right to organize the democratic organization and carry out political activities. Democratic organizations, activities, finances, funding and ethics must be properly regulated in an impartial manner in order to ensure the integrity of the democratic processes.[18]

The governance in the process of its functioning and implementation appears as the complex phenomenon that requires the disclosure and the knowledge of its nature. Depending on the identification of patterns of the deployment of the democratic principles of the governance in the period of the globalization efficiency determines the effectiveness of democratic organization, economic problems and the formation of the democratic governance.(19)

Conclusions

The current stage of the democratic development is characterized by the dynamic deepening of the integration of the political, economic and cultural life of the world. The term globalization has come into wide use as a characteristic of the formation of the single planetary society. Mutual rapprochement of different countries and people, penetration of information technologies, political transformation and integration at the regional and world levels continue.

The growing role of external factors in the economy, the creation of a single global market without national barriers and ensuring the same rules of the game for all participants is the main list of the economic aspect of the globalization.

Democracy is a leading means in the processes of globalization, which is clear materialized in the problem of global democracy. Today it is needed more systematic research in the field of the democratic governance with the aim of

globalization challenges. Democratization of the governance is comprehensive process aimed at developing all forms and mechanisms of democracy that are implemented in various spheres of the public life of the state.

Democratic governance means individuals or groups of people who are empowered to achieve the desired results. Democratic governance involves the power policies which are formulated by the people and is able to ensure human and civil rights of people. It is endowed with three important features that allow you to come to the following conclusions that the governance redefines the power of the state and can guarantee human rights.By the way, the concept of democratic governance is focused on meeting human needs and interests .

The main feature of the problem of the efficiency of the governance is that governance works in conditions of rapid changes. The environment in which the governance exists is often based on a single situation which falls into another even more complex which is not regulated by the law. In such circumstances it is impossible to determine the criteria of the efficiency as well as a high degree of dynamism of changes of experienced factors influencing efficiency and results of the activity of democratic decisions of the governance in the development processes of the globalization.

Democratic principles of the governance in the period of globalization are the set of the parameters by which the democratic systems can be controlled.

Democratic efficiency is the satisfaction of the democratic goals and needs of the society through the implementation of the governance activities. Efficiency of the democratic principles of the governance in the period of globalization takes into account interaction of many factors, such as plenty of democratic activities in all spheres of state and public life and is used also the democratic criteria of the new sphere of the governance . The democratic efficiency of the governance is a multifaceted concept that reflects the degree of achievement of the democratic objectives of the governance and the quality of services to the population in relation to the resource provision of the democratic government activities.

Democratic principles of the governance give the opportunity to people to follow the laws of the societies which help to them to have the right to change their life. People in the democratic society can have some form of economic freedom.

We can acknowledge that democracy can be defined as the democratic instrument of the influence of the people on the democratic development of the society and can be characterized as the state power. We can define the democratic governance as the mechanisms by which the economic, political and social power of the country is distributed and exercised, as well as the institutions available to citizens to express their views . Supporters of democratic principles of the governance advocated equality in relations of people and the governance.

The equality is one of the democratic concepts that produce fundamental disagreement . For some people the achievement of some form of equality is absolutely essential and for others the achievement of the form of equality is impossible. Equality as a general concept includes different types of equality: political equality, the law equality, the opportunity equality, economic equality and social equality.

The democratic principle of the governance provides a single set of requirements for state institutions: openness of legal and democratic systems; transparency of the mechanism of governance regulation; the presence of the honest government, which is guided by interest of their own state; professionally trained and qualified services with a high level of democratic principles of the governance ; protection of the democratic value of the society and the dignity of the people.

The democratic principles of the governance of Ukraine allowes to develop a democratic model of the governance which can be governed by the rule of the law in which educated and qualified managers can follow the democratic principle of the governance.

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DIGITAL TRANSFORMATION OF EDUCATION IN UKRAINE

Abstract. *This article is devoted to the changes taking place in the education system of Ukraine in the context of the formation of the digital economy. In connection with the priority direction of the development of the Internet economy, the economies of the most advanced countries of the world are being reoriented. The ongoing digitalization of production, business, finance, agriculture, and services has also affected the education sector. As planned by analysts, digitalization will lead to significant growth in the global economy and the creation of new jobs. In turn, these processes lead to an increase in requirements for the level of training of specialists. Global digitalization, like digitalization in general, requires highly qualified professionals with digital skills. This work is devoted to the prospects for the implementation of the digital economy in Ukraine and the related changes in the education system. The need to educate students to use digital tools in order to be competitive in the new economic environment is obvious. Outdated teaching methods can act as a brake on further transformations associated with the transition to new technologies. The revision of outdated teaching methods, the transition to software distributed according to the SaaS model, all this poses new challenges for modern teachers and requires changes in the modern education system, the use of modern methods based on the use of digital tools. Moreover, this affects not only academic subjects related to the study of information technology, but also other disciplines. After analyzing a number of government documents, it was concluded that the development of digital competencies of youth is today the primary task of the education system. Since cloud computing serves as the basis of digital technologies, a number of cloud service tools - MS Sway and DropBox Paper - were proposed for use in the educational process, which allow organizing joint activities of teachers and university students in real time.*

Introduction

In the Constitution of Ukraine in 2019, the country's intention to join the European Union was recorded. Choosing the European path of development, Ukraine is carrying out a number of political and economic reforms, including introducing e-government. In this connection, according to the Resolution of the Cabinet of Ministers of Ukraine dated September 18, 2019 p. the Ministry of Digital Transformation of Ukraine was created, which ensures the implementation of the following tasks – formation and implementation of state policy:

- in the fields of digitalization, digital development, digital economy, digital innovations and technologies, e-government and e-democracy, information society development, informatization;
- in the field of electronic document management;
- in the field of development of digital skills and digital rights of citizens;
- in the areas of open data, development of national electronic information resources and interoperability, development of broadband Internet and telecommunications infrastructure, e-commerce and business;
- in the field of electronic and administrative services;
- in the areas of electronic trust services and electronic identification; in the development of the IT industry [1].

Methods

In this work, a review and analysis of government documents planning the main directions for the development of digital competencies in Ukraine was carried out, scientific articles, materials of international conferences were analyzed, tools of a number of cloud services in the aspect of the educational process were studied.

The purpose of this article was to review and analyze government documents to determine the main vector for the development of higher education in Ukraine in the era of comprehensive digitalization. To determine the direction of development of digital competencies in Ukraine, scientific articles, materials of international conferences were analyzed. Due to the fact that one of the components of the digital transformation of the education system is the updating of the content of education, methods and organizational forms of educational activities, the tools of a number of cloud services in the aspect of the educational process were studied.

Results

The transition to the digital economy, which is currently (May, 2021) a priority area for the development of the most highly developed countries of the world community, has been chosen by Ukraine as the main vector of transformations. The main provisions concerning the digitalization of the economy and society as a whole were formulated in 2016 and are reflected in the document "Digital Agenda of Ukraine - 2020". The document listed the main goals of the state for the coming years:

- economic recovery, attraction of investments;
- formation of the basis for the transition to a digital economy, business;
- the possibility of using digital technologies everywhere;
- export of digital products and services.

The main principles of the policy of "digitalization of Ukraine", "Digital Code" are indicated:

Principle 1. Since the UN has recognized access to the Internet as a fundamental human right, everyone in the country should have free access to the Internet.

Principle 2. Digital technologies must have practical applications, i.e. lead to the creation of new jobs, an improvement in the quality of medical care, entrepreneurship, agriculture, transport, and so on.

Principle 3. Comprehensive digitalization that will enable significant transformations in industry, business and education.

Principle 4. Creation of content in different languages, supporting the principles of freedom of the press and information, as well as the principles of independence and diversity of the media. The digitalization of Ukraine should continue the development of the information society, as well as the mass media.

Principle 5. In the process of digitalization, Ukraine should maintain and develop international, European and regional ties, especially in the field of e-commerce and services, banking and exchange activities, etc., which will contribute to the European integration of the country.

Principle 6. Use of international and European standards in building the digital economy. Standardization is considered to be the basis of Ukraine's “digitalization”.

Principle 7. In the transition to the digital economy, it is important to pay special attention to the protection of personal data of citizens of the state, to maintain confidence in the security of the use of ICT, to develop a national culture of cybersecurity.

Principle 8. The state is obliged in a difficult transition period to ensure a painless transition to the digital economy for its citizens.

In the "Digital Agenda of Ukraine - 2020" [2] it is indicated that the country is supposed to carry out the so-called "digital leap" (a very fast transition, without waiting for the natural transition to new realities) in the field of economy, education, business in the coming years, through acquisition of digital competencies by citizens. At the same time, it is stipulated that in Ukraine there are objective conditions that make it possible to make such a leap: the presence of highly educated specialists, a sufficient number of ICT equipment, a sufficient level of system integration of ICT products, a high level of culture.

The transition to a “digital economy” and a “digital society” will lead to the development of new industries in industry, and therefore to the emergence of new jobs; improving the quality of life, as a result of using the concept of the "Internet of Things", online government services, utilities; increasing the efficiency of a number of sectors of the economy, small and medium-sized businesses, creation of products by Ukrainian companies that are competitive in the world market; the spread of innovative entrepreneurship; participation in the formation of the global market, the opening of new business projects that do not require significant initial costs, the launch of commercial Internet projects.

The main burden of building a digital society falls on the education sector. It is universities that must develop digital skills in young people and form digital competencies in them. In Ukraine, 70% of the population have a higher education (2021), in the Times Higher Education World University Ranking19 2020, among the 1500 best universities in the world, there are 9 Ukrainian universities, the level of scientific personnel at universities is very high - in 2018, about 49% of the teachers of the Institutions of Higher Education had scientific degree of candidate of sciences, about 12% of doctors of sciences and about 9% had a professorshipОсновная нагрузка по построению цифрового общества ложиться на сферу образования. Именно университеты должны развить цифровые навыки у молодёжи и сформировать у них цифровые компетенции.

Ukraine signed an Association Agreement with the European Union in 2014, other countries on cooperation in the field of education (Chapter 23, Article 431), which provide for «… cooperation in the field of higher education, in particular, in order to: reform and modernize the higher education system; promoting convergence in higher education under the Bologna Process; improving the quality and importance of higher education; deepening cooperation between higher education institutions; capacity building of higher education institutions; activating the mobility of students and teachers; … Simplification of access to higher education» [3].

In the document "Digital Agenda of Ukraine - 2020" it was noted that "Digital" literacy (or "digital" competence), recognized back in 2006 by the European Union as one of the 8 key competencies, is necessary for the full life and work of citizens. The opportunity to acquire digital skills and competencies is necessary for further employment and successful social integration, as well as for further learning throughout life [2].

In 2013, the Joint Research Center (JRC) of the European Commission developed a European system for digital competence of citizens - Digital Competence Framework for Citizens

(DigComp), and already in 2016, due to the rapid development of information technologies, in particular the widespread The European Commission's Joint Research Center (JRC) has published an updated version of DigComp 2.0, which has updated a number of provisions and terminology. The updated framework for digital competence of EU citizens today consists of 5 main blocks of competencies and contains 21 competencies in total, which include, namely:

1. Information literacy of the population.
   1.1. Competently search for information on the Internet.
   1.2. To be able not only to assess the reliability of information, but also to correctly interpret it.
   1.3. Be able to analyze and store the found data.
2. Ability to communicate and collaborate.
   2.1. Ability to interact through digital technologies.
   2.2. Ability to share digital information.
   2.3. Be able to use government digital services.
   2.4. Organize digital collaboration.
   2.5. Know and observe etiquette of behavior in a digital society.
3. Creation of digital content.
   3.1. Ability to work with various document formats.
   3.2. Ability to work with digital content to create new digital content.
   3.3. Compliance with copyright.
   3.4. Programming, to be able to write the program code.
4. Security.
   4.1. Ability to protect not only the device, but also digital content.
   4.2. Protection of personal data and confidentiality.
   4.3. Protecting your own health when working with digital technologies.
   4.4. Consider the impact of digital technologies on the environment.
5. Ability to solve problems in a digital environment.
   5.1. Ability to eliminate problems that arise when working with digital devices.
   5.2. Become familiar with a variety of digital tools and be able to use them to solve your own problems.
   5.3. Ability to create knowledge, processes and products through digital technologies.
   5.4. Be able to not only develop digital skills yourself, but also help others develop.

Based on the framework of digital competence of EU citizens, in Ukraine, taking into account national characteristics, a number of competencies have been developed that every citizen should have. In the educational process, a digital competence map is already used, based on the European DigiComp 2.0, which contains 26 digital competencies.

Confirming its desire for European integration, Ukraine in 2019 created the Ministry of Digital Transformation, which launched a national online digital literacy platform, which is available on the Internet at https://osvita.diia.gov.ua. The ministry's website notes that already 6 million people (May 2021) are involved in the digital skills development program. Significant support provided by the Ministry of Digital Transformation consists of familiarization with the Action project, which provides a range of services to build digital skills among the citizens of the country. In 2020, the ministry launched a number of educational series with the participation of well-known experts and famous Ukrainian stars with the support of companies: Google, Microsoft, CISCO, CFC Consulting, Osvitoria, Global Teacher Prize.

In the article V. Fishchuk, V. Matyushko, Є. Chernevoy, O. Yurchak, Y. Lavrika, A. Amelina "Ukraine 2030E is a country with a developed digital economy" Ukrainian Institute for the Future [4] formulates the main directions of the country's development until 2030, defines the main terms used in the digital economy, lists the main principles of digitalization, types of digital economies are presented, digital trends (tendencies) are presented - directly in the development of digital technologies, scenarios for the development of the digital economy of Ukraine are named, the view of the digital economy of Ukraine is projected 2030E , the goals of digitalization are clearly formulated, the key performance indicators (KPI) of the digital economy of Ukraine are presented, the list of initiatives and projects for reaching KPIs is indicated, the projects of digital transformation in Ukraine are outlined , outlined the program "Industry 4.0" and the concept of "smart factory", given examples of the digitalization of the agricultural sector in Ukraine and the application of digital transformation in the consumer goods industry, got acquainted with the effect of the digitalization of the country for the sphere of education. Thus, society: citizens, government, business received a roadmap for the implementation of the strategy for the development of the digital economy of Ukraine until 2030.

Considerable attention in the article was paid to the changes that are supposed to be made in connection with the transition to a digital economy in the field of education. Since the transition to a high-tech society is not possible without an appropriate level of education of the population, and first of all, the formation of highly qualified personnel, the main task of the education sector in the transition period is the formation of digital literacy of the population.

In February 2021, at a meeting of the Verkhovna Rada of Ukraine Committee on Education, Science and Innovation, the Minister of Education and Science of Ukraine Shkarlet S. noted that the digital transformation of education and science is one of the key goals of the Ministry of Education and Science for [5].

As the digital society requires the introduction of new educational methodologies, largely based on the use of cloud and diffuse computing.

Since the digital society requires the introduction of new methods in education, and cloud computing is the foundation of digital technologies, we will consider a number of methodological possibilities of using cloud services as tools for organizing the educational process. To effectively solve educational problems, educational institutions use various cloud software tools. Of particular interest at the present time, the time of the fight against acute respiratory infection caused by the SARS-CoV-2 coronavirus, are new types of programs, such as Microsoft Sway cloud services, DropBox Paper, which provide space for remote communication (organizing, among other things, joint work on document) with the ability to use both text content and multimedia tools. The MS Sway program is positioned as a cloud service for creating presentations, DropBox Paper as a virtual workspace in the form of a document in which you can format and display text, multimedia resources and files. With Paper, you can seamlessly collaborate on a project with other users, and the user will have access to Paper docs from anywhere in the world with an Internet connection [6]. A document created in DropBox Paper can also be presented in presentation mode.

Of greatest interest for the educational process are training programs, programs for testing students' knowledge, both at the end of the course and at admission to laboratory classes, knowledge control (programs for creating tests), reference books, encyclopedias, dictionaries, LMS, interactive virtual whiteboards, e-zines and diaries. As already mentioned, cloud computing is at the core of digital transformation in education. In this regard, the cloud services MS Sway and

DropBox Paper are of particular interest as digital tools that can be used to improve the efficiency of the educational process. This software can be considered as a new class of software, the use of which allows you to collaborate on a document in real time, control independent work, organize a distance learning form, which largely leads to a more productive organization of the educational process.

Both programs entered the market at approximately the same time in 2015; the demand for the digital tools under consideration in the world can be judged by the comparative charts obtained using the Google Trends web tool (Fig. 1).

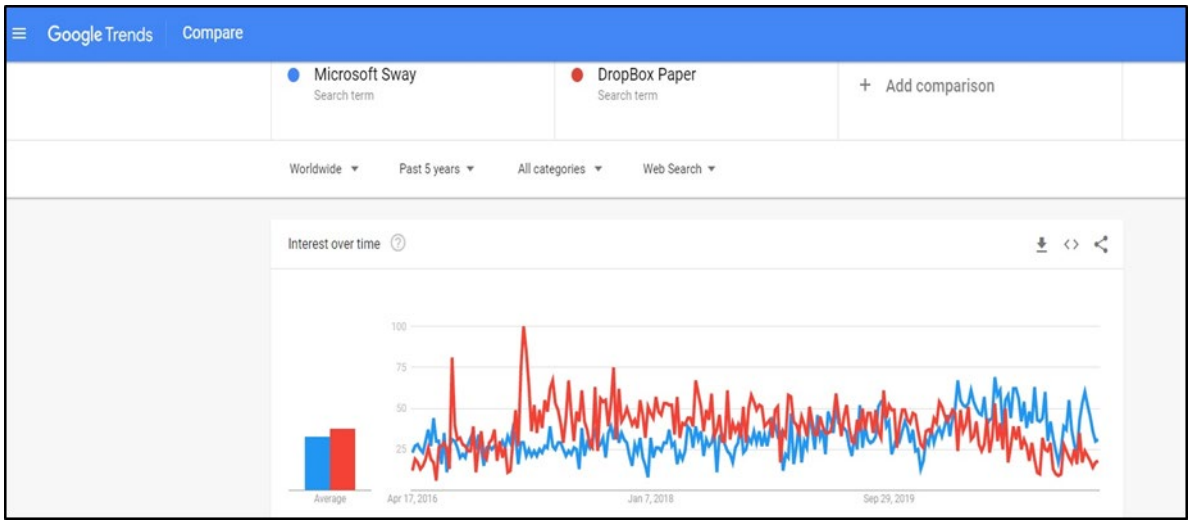

Fig. 1. Comparative analysis of the popularity of cloud services Microsoft Sway and DropBox Paper in the Google Trends web service Search for the period from May 12, 2016 to May 12, 2021

From the graphs above, it becomes obvious that the popularity of the MS Sway program distributed according to the SaaS model has been growing since 2020. Let's dwell on the main features of this cloud service, which allow us to make the educational process more visual and effective.

Microsoft Sway

As a rule, students from non-technical departments of the university do not have a Microsoft account, but they create one in laboratory classes rather quickly. A Microsoft account is required to sign in to Sway. The cloud service offers three options for creating a document (Fig. 2).

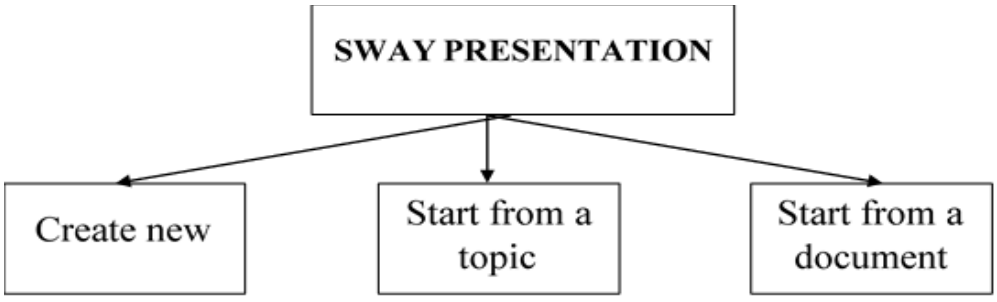

Fig. 2. Ways to create a document in Sway

The use of ready-made Sway templates can be attributed to the fourth way of creating a document in the program under consideration: templates offered for use - for creating resumes, business presentations, newsletters, portfolios, for personal purposes - vacation memories, ads, blogs [7].

The cloud service offers two types of cards for creating a presentation (unlike the classic and most commonly used Microsoft program - PowerPoint, where content for creating a document is placed on slides) - cards for creating a title: for the entire presentation or a separate section, as well as ordinary cards for placement of text or multimedia. The cards are located in sections, each section has its own name, which coincides with the name indicated on the first card with the section heading. A feature of the Sway program is not being overloaded with various tools and commands, the cloud service contains only those tools that are necessary for work. The program interface offers only two tabs for creating a presentation: Storyline and Design (Fig. 3).

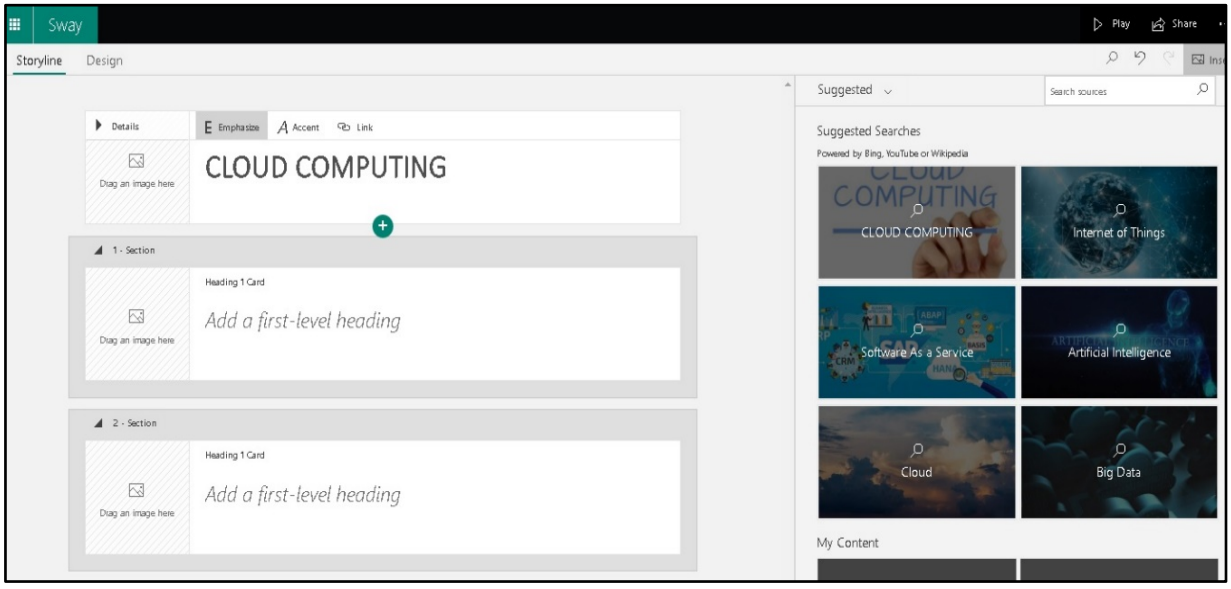

Fig. 3. MS Sway cloud service working window interface

When preparing for a lecture, it is enough to enter the topic of the lesson, Sway will offer a number of illustrations, videos on the specified topic. Thus, the teacher has the opportunity to illustrate the lecture material with relevant content. The lecture material can not only be placed on cards, divided into appropriate sections, but also accompanied by sound comments.

Due to the fact that the creators of this software obviously had a goal - to create the simplest product for use, the program has a minimum set of tools for formatting a document. For example, for formatting headings, tools are offered to enlarge the font, use italics and create a hyperlink anchored to the title of the document.

However, Sway has built-in ready-made formatting styles: 7 rulers, each of which contains 50 options for ready-made formats that can be automatically applied to the finished document. As many years of experience with this program show, the first four lines of styles are more suitable for creating office presentations, the last two variants of the styles proposed by Microsoft are more likely to be used for creating personal photo albums. Thus, when creating a document in the environment of the cloud service in question, the user does not have to engage in routine work related to document formatting. This is one of the great benefits of the Microsoft Sway service.

Fig. 4. Styles offered in MS Sway

It should be noted another tool that allows you to place documents created in the MS Word, MS Excel, MS PowerPoint environment for use in educational work, when creating a document in the MS Sway environment - an embedded object.

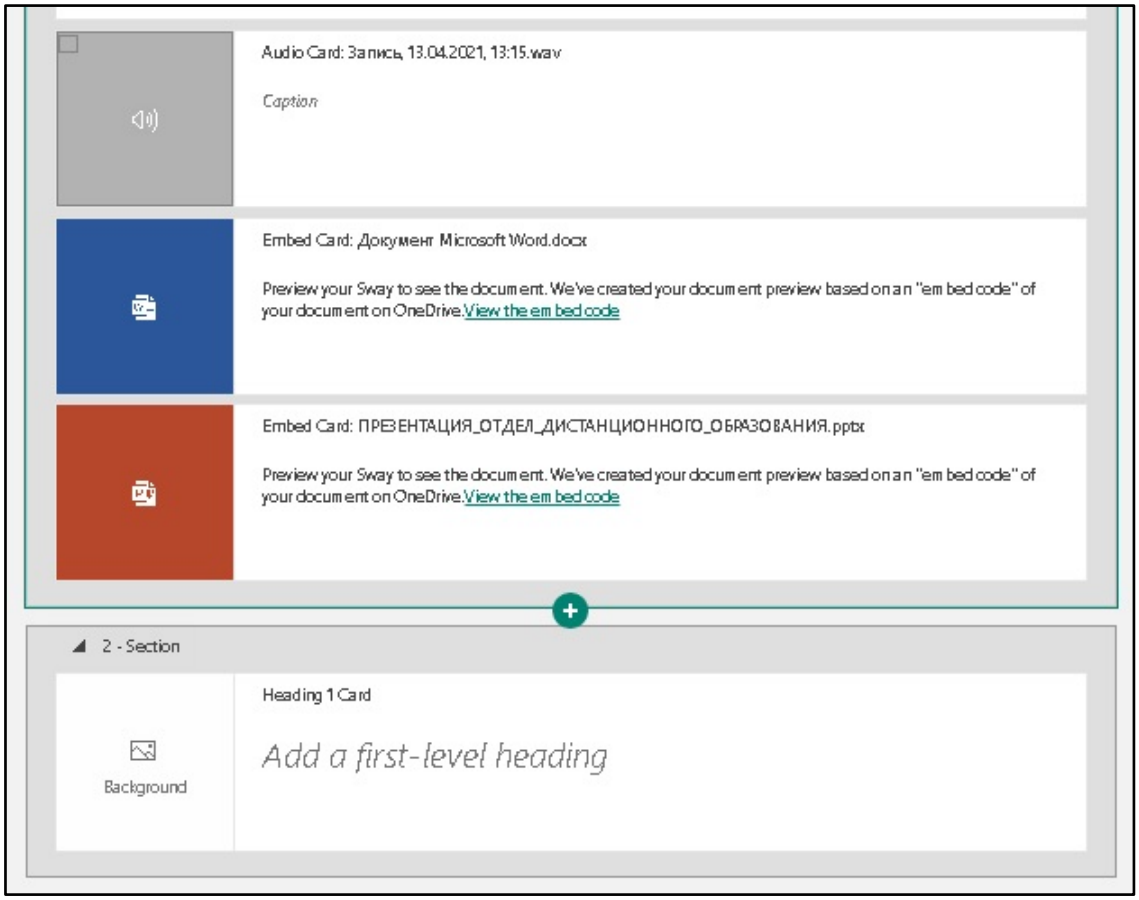

Fig. 5. Embedded objects

Thus, starting to use the Microsoft Sway cloud service at the beginning of teaching, the teacher can start placing lectures (with sound), multimedia accompaniments of lectures, text documents (possibly the text of the lecture itself in * .DOCX or * .PDF format, test questions, Excel tables and charts, instructions for laboratory works, assignments for practical exercises, test assignments to test the knowledge and skills of students created using Microsoft Forms The set of the described tools allows you to develop methodological support for individual topics and training courses.

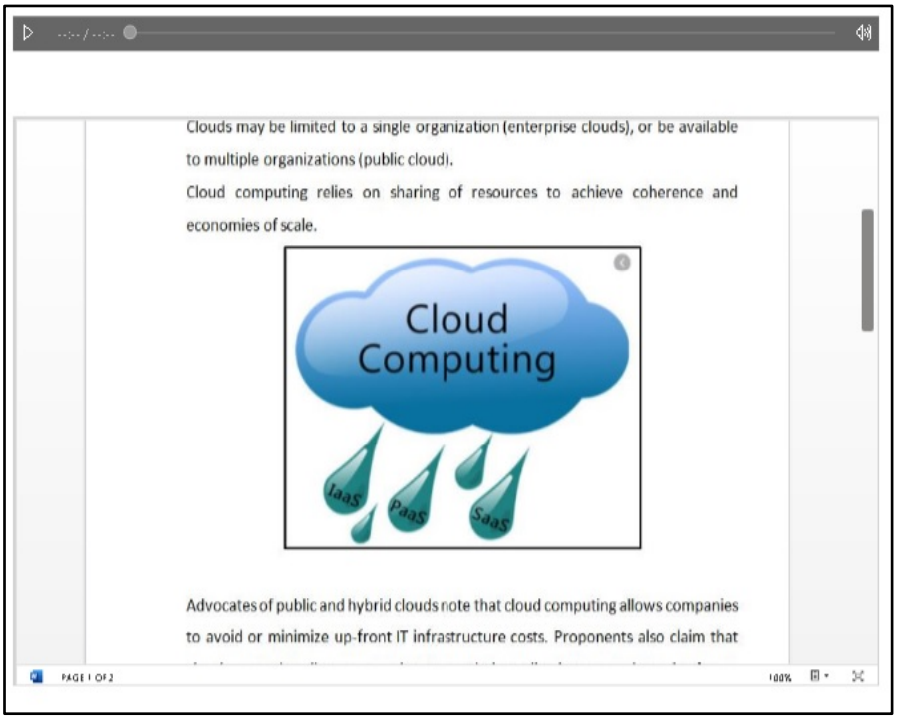

Fig. 6. Embedded MS Word Document and Sound

Another tool that is especially in demand due to the current epidemiological situation in the world, which supports distance learning, introduced in educational institutions not only in Ukraine, but throughout the world, and provided to the user when working in the Microsoft Sway environment, is the joint work on a document in the mode real time. In this case, two levels of access to the document are assumed: the ability to view and the ability to edit.

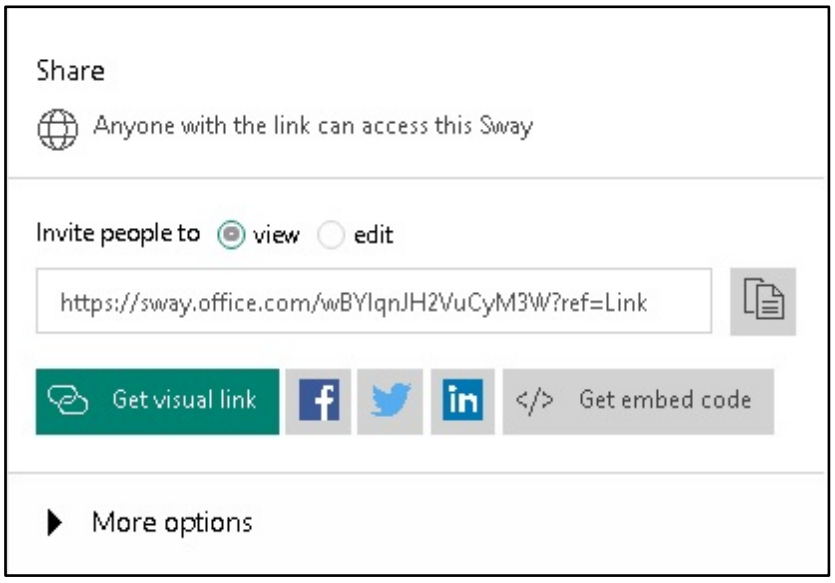

Fig. 7. Link to a document for collaboration

There is the ability to export the program in question in PDF and DOCX format.

Having mastered the skills of creating documents in MS Sway, having studied the main capabilities of this program, students-future teachers will be able to use the capabilities of the service in question not only to create presentations, but also create methodological aids in the program environment that can also be used in distance learning, and which can be improved throughout the course of study.

DropBox Paper

Another digital tool with a significant set of commands, including those that allow you to organize a blended form of learning, is DropBox Paper (8).

DropBox Paper is a functional workspace, one of the modes of operation of the well-known cloud storage DropBox, which has more than 500 mil. users. In order to start working in Paper mode, you must have a DropBox account.

The mode of operation under consideration provides the user with a space for work, where students and teachers can post their own notes, multimedia objects, and create links (Fig. 8). The created document can be presented as a presentation.

Fig. 8. DropBox Paper working window interface

Unlike MS Sway, DropBox Paper has a slightly larger set of formatting tools, but also negligible. The floating toolbar that appears when working with a text document contains the commands: selection (font), underline, large heading, medium heading, creating a hyperlink, bulleted list, list of tasks, adding comments.

The main advantage of this cloud program is the ability to collaborate on a document in real time. Unlike Microsoft Sway, DropBox Paper has a tool: creating comments to a document, and when you create comments, you can see who created them. A great advantage of this mode of operation is the ability to comment on both individual objects and the entire document as a whole, the program will display the name of the person who made the comment. When working in the cloud service, the user is given two types of access to the document: the ability to view the document and the ability to edit the document. Thus, conditions are created for the work of a group, for example, developing a project. Through the use of this function, students develop the ability to work in a team, which is one of the requirements for personnel in the digital economy.

Thanks to cloud computing, it is possible to implement the "remote work" function, in the cases considered in the article - work on a document in real time. Therefore, studying the possibilities of using cloud services for organizing remote work is the main task of the present time.

Scientists V. Bykov, O. Spirin, O. Pinchuk noted that today, under the influence of the latest information technologies, the processes of digital transformation of social development are so fundamental and global that, in addition to the positive impact, they naturally bring with them serious problems, threats and risks in case of underestimation of new factors and conditions. It should be borne in mind that the pace and speed of transformation is so high that, if we do not take into account the nature of global change taking place today, tomorrow to catch up and correct the situation will be extremely difficult, even impossible [9].

Serditova N.E. and Belotserkovsky A.V. point out the importance of transformations in the education system associated with the transition to a digital society, noting that digital transformation leads to fundamental changes in all aspects of professional activity, radically changing technologies, culture, operations and principles for creating new products and services. For educational programs, this means abandoning a narrow specialization in favor of a broad crossdisciplinary training as a foundation for the superstructure of constantly updated packages of professional competencies [10].

Conclusions

As Ukraine strives for full integration and accession to the European Union, the Ministry of Education and Science of Ukraine is carrying out a number of reforms in the field of education and science. In the transition to a digital society in Ukraine, the main task of the education system is to train a highly qualified specialist who is well acquainted with digital technologies. Teaching students with digital skills and competencies will lead to the successful construction of a digital economy in our country. Therefore, the prospects for further research is the study of cloud service tools, as well as the possibility of using cloud software products in education.

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COMMUNICATION OF EUROPEAN VALUES IN TEACHING OF FOREIGN STUDENTS IN THE CONTEXT OF THE INTERNATIONALIZATION OF EDUCATION

Abstract. *The monograph is devoted to the analysis of the best practices of European values promotions in the context of internationalization of university education. According to the work, the authors point out that Sumy State University implements the idea of a European university in the cross-cultural studies, technologies, research and education quality, focus on innovation, strong democratic traditions, academic freedom, the atmosphere of creative work and publicity, forming European values. Much attention is paid to the coverage of the concept of «values» and «European values». The problem of implementation of European values to the Ukrainian space is one of the most important nowadays. Values are interconnected with the goals of the European Union. Among the main goals of the European Union are: promote peace, its values and the well-being of its citizens; offer freedom, security and justice without internal borders; sustainable development based on balanced economic growth and price stability, a highly competitive market economy with full employment and social progress, and environmental protection; combat social exclusion and discrimination; respect its rich cultural and linguistic diversity. An important aspect of the monograph is devoted to the innovative technology of Values-based simulation games.*

Introduction

Anticipating Ukraine's European future, educational institutions step forth as powerful agents of change in terms of European Values promotion. By focusing on European Values' role as an all-encompassing groundbreaking framework for national education reform, we treat this concept first and foremost as values as powerful tools – be it teaching, studying, policy making, quality assurance procedures, academic process management, student government or intellectual product design. Therefore, the aim of this monograph was to discuss current issues case studies, analysis of best practices and success stories in the process of language training, as well as intersectoral and multidisciplinary theoretical contributions at Sumy State University. In the context of European integration and internationalization of education, one of the promising areas of education development focuses on the European values in Ukrainian education. Focus on European values is necessary for reforming Ukrainian higher education system. The study of students' value orientations showed the greatest importance of the values of independence, of personal well-being, such as: family, health, education, career and self-realization, material well-being and prosperity, personal security and personal freedom; the smallest – power, traditions and social status. This monograph is devoted to the study of European value orientations of foreign students in the context of the internationalization of education and the main goals of Sumy State University (SSU) internationalization.

Analysis of recent research and publications on the problems of European values promotion of modern university education are covered in the works of Ukrainian and foreign scientists. The ethical values of modern university education are presented in researches of N. Boychenko [2]. It should be added, that scientists held the First International Online Conference (May 28-29, 2021, Zaporizhzhya, Ukraine) «European Values in Ukrainian Education: Challenges and Frontiers» [15]. The aim of this conference was to share the best practices with publications proceedings.

The study consists of two chapters, where the conclusions outline the prospects for future research. In the first chapter, the research is devoted to the study of the value orientations of foreign students who are studying in Ukrainian universities in the context of the internationalization of education. The author's method «Personal and moral values of foreign students» is used in the work, which allows to identify common and personal value priorities of educational migrants in the SSU.

The practical frontiers dimension is highlighted in the second chapter, which presents the experience of educational work with foreign students through the introduction of cross-cultural studies as instrument of socio-cultural integration, sharing of customs, learning the features of culture, promoting European values. The practical recommendations are aimed at implementing such initiatives as values-based simulation games. Much attention is given to the explaining the potential role of values based of games and simulations in teaching of Ukrainian. The essence of the simulation game is an innovative method of forming tolerance in the educational environment. Second chapter describes some of the simulations that have been developed by authors through language training. The analysis of the experience of the European non-profit organization CRISP (Crisis Simulation for Peace) has enabled to outline the possibilities of the progressive ideas implementation in the practice.

European value orientations of foreign students in the context of the internationalization of Sumy State University

The internationalization of education has raised the issue of tolerant intercultural interaction of foreign students, the creation of a tolerant society. In this regard, it becomes important to study the problem of value orientations of foreign youth in university education, aimed at leveling the negative manifestations of ethnonationalism of foreign students and citizens of Ukrainian society. One of the necessary regional tools that can update and intensify the process of formation of values to tolerant interaction with representatives of other cultures in the course of vocational education is Strategy of internationalization of Sumy State University for 2019-2025 [12].

The main vector of development of Ukraine and its national higher education system is the European integration. The key stage of this process was Ukraine's joining the European Higher Education Area (EHEA) since its establishment in 2010, which was preceded by signing of the Lisbon Convention on recognition of higher education qualifications in 2000 and the accession to the Bologna Process in 2005. The development of systems of quality assurance for higher education in accordance with European standards and guidelines (ESG 2015) was set in national legislation in 2014. Articles 430-431 of the Association Agreement between Ukraine, on one side, and the European Union, the European Atomic Energy Community, on the other side, stipulate that Ukraine and the EU should promote the development of cooperation in the field of education, studying and youth policy in order to improve mutual understanding, activation of intercultural dialogue and enhancement of knowledge of the corresponding cultures; commit to intensify cooperation within higher education, in particular aiming at: reformation and modernization of higher education systems, promotion of convergence within the Bologna process, improving the quality and

importance of higher education, deepening of cooperation among higher education institutions, and activation of student and teacher mobility.

The main goals of SSU internationalization are:

1) sustainable development, strategic orientation of existing best practices, support of partner networks;

2) constant improvement of the quality of educational, scientific and other services through introduction of the best world practices, realization of joint innovation projects, tracking world educational trends;

3) formation of a modern innovative environment for students and staff with a high level of lingual and intercultural competencies that can respond adequately to global challenges;

4) development of SSU graduates' skills that will allow them to compete confidently in the global labor market and feel themselves as full members of the world community;

5) development of own multicultural profile, expansion of geography of the brand promotion and results of the university activity;

6) access to modern technological, as well as human and financial resources, required for development of the major directions of the university activity;

7) introduction of a culture of openness, tolerance and support with the purpose of engagement of foreign students, teachers and scholars, intensive use of the benefits of international environment for university's own innovative development.

Sumy State University implements the idea of a European university in the cross-cultural style, technologies, research and education quality, focus on innovation, strong democratic traditions, academic freedom, the atmosphere of creative work and publicity, forming European values. The University currently serves about 1900 foreign students from more than 50 countries of Europe, Middle East, Southern-Eastern Asia, Africa, Australia and North America [17:14]. It is clear that the diversity of cultures and values is an important aspect of research.

Scientific interest in the study of value orientations in the conditions of modern university education is presented in the work of the Ukrainian scientist N. Boychenko [2]. According to the results of this scientific research, educational communication is one of the highest values for students, including educational migrants of all those who receive education. Given the values-based approach of modern university education, it should be noted that the paradigm of European values of educational migrants include both personal, universal and educational values. In the context of internationalization of education, the priorities are the values associated with the development of tolerance and equalization of educational rights, namely: gender and social equality, democracy, globalism, interethnic tolerance.

Let's analyze the content of the concept in the theory of «values». Important in the development of society have values, because they form needs, interests, stereotypes, influence behavior. Values affect quality characteristics relations between social groups in society within one country and relations between representatives of different countries, between states. The problem of finding the essence of values paid attention to philosophers, sociologists, in particular, ancient Greek philosopher Aristotle, German sociologist M. Weber, French sociologist E. Durkheim. He was one of the first to systematically study the philosophical problems of the nature of values G. H. Lotze, who is considered by many philosophers to be the founder of axiology – the theory of values.

In modern psychological, pedagogical and sociological literature, there are a variety of views on the classification and characteristics of values.

Based on the classification of values by carriers, given that in the qualities of the subject can be: individual, class (group), society, values are divided into 1) individual (personal); 2) group; 3) universal. Values largely determine the specifics of the individual's perception of the surrounding reality, motivate people's social behavior, because a person correlates his life with those values that are more important to him. Etymological analysis of the concept of «value» revealed its original meaning – «valuable», and therefore positive. Value – the object of various human aspirations and desires at the level of society, values perform the fundamental function of an integrating element in the social structure, acting as socially acceptable and shared by the vast majority of people ideas of goodness, love, friendship, family, wealth, justice, patriotism, duty, etc.

Theoretical analysis of the concepts of leading scientists allowed us to clarify the essence of the concept of «values». Generally, value has been taken to mean moral ideas, general conceptions or orientations towards the world or sometimes simply interests, attitudes, preferences, needs, sentiments and dispositions. But sociologists use this term in a more precise sense to mean «the generalized end which has the connotations of rightness, goodness or inherent desirability» [14]. In the Cambridge Dictionary we find the following definitions: Value (noun): 1) value is the importance or worth of something for someone; 2) the beliefs people have, especially about what is right and wrong and what is most important in life, that control their behavior; 3) to consider something as important and worth having [3].

However, the problem of implementation of European values to the Ukrainian space is one of the most important nowadays. The values should be aligned with the times in providing of Ukrainian persons and foreign students (educational migrants) intentions of good living and state protection of their rights and freedoms. This is based on the definition of social values: Social values form an important part of the culture of the society and provide the general guidelines for social conduct [8].

The problem of theoretical learning of European values as modern social phenomena is being discussed by N. Amelchenko [1], O. Sakhan [9], N. Zerkina et al [16].

It should be stressed that the peoples of Europe, in creating an ever closer union among them, are resolved to share a peaceful future based on common values. Conscious of its spiritual and moral heritage, the Union is founded on the indivisible, universal values of human dignity, freedom, equality and solidarity; it is based on the principles of democracy and the rule of law [4].

In thought and action, European Culture is formed by European values. These values unite all the member states – no country that does not recognize these values can belong to the Union. The rules and norms of a society are derived from its values. From this point of view, it becomes clear that values have a deep significance for the respective social system due to the fact that they significantly influence, control and regulate this social system. Values are the foundation of a society [7:3]. An important step towards the development of the values of the European Union was the adoption by the European Parliament of the «Charter of Fundamental Rights of the European Union» in 2007. In the Charter, the rights and freedoms of EU citizens emerged as the values of all EU member states, on which the activities of EU institutions are based. The 54 articles of the Charter, which are divided into 6 sections («Dignity», «Freedoms», «Equality», «Solidarity», «Citizens' Rights» and «Justice») reproduce fundamental European Values.

The term «Basic European Values» contains only the very essential and elementary values from which the fundament of free, modern and democratic society has evolved. Values are interconnected with the goals of the European Union. Among the main goals of the European Union are: promote peace, its values and the well-being of its citizens; offer freedom, security and justice without internal borders; sustainable development based on balanced economic growth and price stability, a highly competitive market economy with full employment and social progress, and environmental protection; combat social exclusion and discrimination; respect its rich cultural and linguistic diversity [13].

Intergenerational connections are an important characteristic of society, therefore in the context of values, much attention is paid to the study of the system of value orientations of young people, since the future of the world and civilization largely depends on what they think, what they profess, what guides modern youth today [10]. We conducted a survey to study the value orientations of foreign students studying and temporarily residing in Ukraine. The respondents of the study were 160 students of Sumy State University, who come to study from around the world: from Ghana, India, Jordan, Kazakhstan, Nigeria, Pakistan, Tanzania, Turkey, Turkmenistan, Uzbekistan. In the questionnaire, we relied on the Charter of Fundamental Rights of the European Union presented in the Preamble Charter of Fundamental Rights of the European Union [4:8] paradigm of European values – dignity, freedom, equality, solidarity, security, respect and tolerance for diversity of cultures and traditions, national identity and used the author's research methodology "Personal and moral values of foreign students", which allows to identify common and personal values of educational migrants [6:146].

According to the questionnaire, students were asked to distribute 20 values from the presented list on a 20-point scale: from 1 to 20 places according to the level of decreasing significance of each specific value in their lives. List of proposed values: 1) the value of human life; 2) human rights; 3) personal security; 4) personal freedom; 5) freedom of religion; 6) peace in the world; 7) tolerance in intercultural interaction and non-violent communication in society; 8) solidarity, support for others; 9) equality; 10) traditions and ethnic identity; 11) care for the planet (nature protection); 12) family; 13) friendship; 14) interpersonal communication; 15) education; 16) career; 17) material well-being and prosperity; 18) health; 19) self-realization; 20) patriotism [6].

According to the results of this study, we noted that the main feature was to bring to the fore the values of personal well-being, such as: family, health, education, career and self-realization, material well-being and prosperity, personal security and personal freedom. It is in the priority zone of value orientations. In the priority zone, young people placed both personal and paternalistic values, such as freedom of religion, friendship, interpersonal communication, tolerance in intercultural interaction and non-violent communication in society; the value of human life, human rights, world peace.

Respondents stress on the periphery such values as: equality, solidarity, support of others; human rights, traditions and ethnic identity, care for the planet (nature protection), patriotism. Leadership of such a value as a family is explained, in our opinion, by several circumstances: at first, the universality of the value itself, secondly, the age and social status of respondents (there is a dependence of students on the financial situation of the family), thirdly, temporal component of this value (the relationship between the past – the family where students spent their childhood, and the future – creating your own family).

Also, as priority students identified such European value orientations related to self-realization, such as career, education and health. This choice of determined desire of young people to receive a quality education in a European country (at our age, looking for education in Ukraine. To achieve these goals, it is necessary to maintain physical health and a healthy lifestyle, which explains the priority of the position of such values as gaining a role that is extremely relevant in the period of exacerbation of the COVID-19 pandemic.

The priority of such values as personal security and personal freedom is explained, in our opinion, by the turbulent socio-political situation in many countries around the world, which inevitably affects the value choices of young people.

In conclusion, we would like to emphasize that innovative practices are used to promote European values of foreign students on the basis of SSU and to form positive values in the process of learning of Ukrainian as a foreign language. What exactly will be the subject of the next chapter.

Simulation game as an innovative technology of promoting the universal values of humanity, tolerance, equality, honesty, justice and freedom in the educational environment

In order to promote the international and intercultural understanding, tolerance and democratic values of foreign students on the basis of SSU was created an open educational platform «Cross-Cultural Studies» by teachers of Department of Language Training for Foreign Citizens of Sumy State University. The introduction of cross-cultural studies is aimed at solving a number of problems faced by foreign citizens during cross-cultural contacts: 1) a lack of knowledge of cultural etiquette, traditions, customs of the Ukrainian people whose language is studied; 2) the study of values and features of the Ukrainian population; 3) the prevention of maladaptation in a foreign language environment; 4) the prevention of various manifestations of violence, discrimination, segregation, bullying; 5) the formation of cross-cultural competence of Ukrainian and foreign students; 6) the formation of ethnocultural competence and culture of mutual understanding in the process of cross-cultural interaction; 7) promotion European values [5].

Cross-cultural studies is an university initiative that covers various areas of socio-cultural and educational activities, including: diagnostic work, educational work using innovative learning technologies (communication training, workshops, design, interactive game technologies), project work, socio-educational and training activity using components of non-formal education (volunteering). In our opinion, during the COVID-19 pandemic, the following forms and types of work with foreign students can be relevant: creation of an online platform for exchanging information on the lives of foreign students, distance language courses, organization of art festivals «Kaleidoscope of European and Eastern cultures», «Different languages one world», training of interethnic tolerance, conducting virtual tours of local history for migrants, simulating games. An interesting form of work can be project activities, for example, the creation of photo albums by foreign students «Streets of the city», «Local History Quest», «Sumy through the eyes of foreigners». The purpose of such projects is to get acquainted with the traditions, customs, culture and enterprises of the city of temporary stay during training [5].

Our activities include different formats such as projects, workshops and seminars, the implementation of values-based simulation games, as well as communicative theatre. In the following you find an overview of our current and completed activities.

The most productive form of classes in the process of educational activities, in particular, in lessons on the study of the Ukrainian language as a foreign language, is the training of intercultural

communication. Interesting methods of work are art lessons and master classes on making symbolic works in the spirit of dialogue of cultures, for example, «Canvases of Peace» (see Fig. 1). On the canvas, students express their own term "tolerance" in different languages. The purpose of training sessions with elements of art skills: to acline participants with different views on the problem outlined by making social advertising, to involve foreign students in training role-playing exercises with equal participation.

Hence, today's modern society is characterized by multiculturalism, and the problem of forming interethnic tolerance of foreign students while studying at universities in Ukraine is an urgent issue. It is the use of such interactive methods of work as art lessons and master classes in language training in a multinational group that contribute to the formation of unity, teach students to live in the world community, guided by the principles of tolerance. In our opinion, the effectiveness of cross-cultural communication as a condition for adaptation of foreign students depends on the use of innovative communicative technologies such as: the communicative training in the formation of interethnic tolerance, the communication theatre.

An interesting form of work is a communication theatre, aimed on the formation of cross-cultural competence (see Fig. 2).

Fig.1. Making symbolic works "Canvases of Peace" during the training of interethnic communication in the process of language training

Fig.2. The communication theatre as instrument of cross-cultural interaction of foreigners

The analysis of the content and directions of activity, experience of the European non-profit organization CRISP gives the chance to analyze more thoroughly innovative methods of educational work as simulation games which focus on the formation of positive values [11]. CRISP (Crisis Simulation for Peace) is based in Berlin. Since 2007 members have been working in the fields of civic education and civil conflict management. Through their projects they aim to promote a critical democratic culture. Their aims of promoting international and intercultural understanding, tolerance and democratic values, especially in conflict affected areas and regions. Through this, they support a non-violent conflict management culture. Their activities focus on educational seminars and trainings on conflict management and civic education. With the use of simulation games enriched by role-play elements, CRISP aims to promote a self-organizing, holistic, and highly hands-on learning culture. CRISP's main target group are young people and civil society

organizations interested in interactive, experience-based learning methods. The analysis of the manual «Simulations games in civic education» made it possible to implement simulation games on the topic of forming interethnic tolerance [11]. The special attention is paid to cooperation. As cooperation is one of the key components of simulation games, they offer a good opportunity to get quickly in contact with people of different backgrounds.

Furthermore, working together on a common problem facilitates the development of a group feeling. Through this process, a strong basis for further cooperation emerges. All this makes the method very valuable for intercultural and inter-sectoral learning environments.

We have come to know and understand the essence of the simulation game as an innovative method of forming tolerance in the educational environment. Simulation game is a new technique that allows not only to use theoretical knowledge, but also to obtain practical navigation systems, the main thing - understanding the interaction with the use of objects, interdisciplinary concepts.

Didactical approach of the Values-based simulation game as an innovative method of forming tolerance in the educational environment.

The general principle of all value-based simulation games is to create situations in which the participants are required to not only take decisions on their own but also to face both the implication of their own and other's decisions. In our simulation games, we encourage our participants to conceptual involvement and responsible action. Values-based simulation games offer opportunities to experiment with different behaviors and conflictual actions and thus can contribute to learning authentic and complex problem descriptions and developing a self-organized and practice-oriented learning culture of interethnic tolerance.

Change of Perspective. A main feature of simulation games is the valuable experience of a change of perspective. Assuming a role in a conflict makes motives, constraints and possibilities of the different stakeholders clearer and more comprehensible.

Social Skills. Moreover, by taking over a different role and assessing one's own behavior and its effect on others the participants will develop empathy for each other. Apart from testing one's social capabilities a simulation game will also improve important skills like negotiation, strategic planning and the ability to find compromise.

Democratic Consciousness. Simulation games turn participants into stakeholders and let them experience by themselves these political processes. Thus, simulation games also promote the development of a democratic consciousness of an active and critical citizenry.

Let us illustrate this contention with a few examples of Values-based simulation games.

Simulation game 1. «Hessa».

Gender Equality, Democratic Principles, Citizen Participation [11:22].

Description. Women empowerment supports the development of society in many ways, in true sense a society cannot considered developed if not the both genders contribute in accordance with their potentials. This simulation game is exposing the participants to the concept of gender equality through discussing different topics and rights related to women. The simulation game is challenging the perspectives of the participants and allowing them to put themselves in the shoes of someone else.

Procedure. An Arabic village called «Hessa» is deprived of educational, health, environmental and other community needs, that was one of the main reasons that forced many families in the village to go to surrounding villages to get these services. In the village of «Hessa», according to traditions, men are privileged in most rights such as inheritance, education, age of

marriage, and those with power and influence who control various aspects in the village. The conflict in the village of «Hessa» is a historic conflict vested in one of the biggest families in this village. It started when one female grandchild began to study, supported by her father. This young woman's ambition helped her complete her higher studies until she reached the highest positions and became a member of Parliament. This young woman comes back to the village after her father death and from here different events take place and several actions should be taken.

Objectives. The events in the simulation game revolve around the discussion and conflict between the people of the village to the difference of their views on the social problems facing their village especially those related to gender equality and how to find solutions to them. Challenges are represented in community participation and education of women and their right to inheritance and reproductive health. With the passage of events, change occurs among the village residents. The main objective is to highlight the rights and challenges of women and emphasize the importance of social participation and integration of women in the society.

Learning targets: 1) Raising awareness about the importance of Gender Equality through enhancing knowledge about the benefits and importance of equality and its positive impact on individuals, families and community. 2) Changing perspectives of the roles of both genders in the society and the misconception of power relation between them. 3) Changing the stereotypes of Male's dominance in the society through demonstrating the challenges that women face. For example: early marriage, women rights in inheritance and women rights to work and to be a change agent in her society Target-Group: international youth between 14 and 25, heterogeneous composition desirable (see Fig. 3).

Fig. 3. Simulation game «Gender Equality and democratic principles in the context of internationalization of university in the Sumy State university»

Simulation game 2. Nidal`s struggle.

Value-based Decision-Making, Democratic Principles, Citizen Participation [11:30].

Description. This simulation game focuses on promoting the universal values of Humanity, Equality, Honesty, Justice and Freedom. The participants will increase their awareness of value-based decision-making. During the evaluation-phase the participants try to anticipate challenges in applying value-based decision-making in their real lives. The simulation game explicitly highlights the differences between short-term and long-term effects of decisions and stresses the importance of using values as a guiding reference while taking decisions. However, during the evaluation

questions like why should we follow values in our lives and how prioritize among values will be discussed.

Procedure. In order to tackle the five values mentioned above, the scenario focuses on the personal level. Therefore, we created a fictious scenario in a small village, with the community leader (Nidal) in the very centre. While suffering from a serious sickness, Nidal reflects about his life and the crucial decision he took. At that stage, he decides to tell his family members his lifelong secret: an ancient, extremely valuable artefact is buried in the backyard of his house. However, the information spreads rapidly among the villagers and different interests collide. Now, participants have to negotiate with other actors in order to develop a proposal that is supported by as many actors as possible. The goal to find a majority, to please the last wish of Mr. Nidal and to contribute to the welfare of the village.

Objectives. This simulation game is modelled after real conflict situations and refers to the diverse causes for conflict. The participants realize how complex such conflict situations can be and that resolutions should be as comprehensive as possible. The simulation game shows the dynamic nature of conflicts, and provides a base to discuss questions like how to still follow their values even in challenging situations and what are first steps to a sustainable peace agreement. The fictional scenario is a helpful way of discussing the possible solutions in an experimental environment.

Learning targets: 1) Reflecting about values and why we should follow values in our lives. 2) Teamwork within the respective interest groups and between larger coalitions. 3) Personal negotiations skills in order to persuade others and to organize majorities. 4) Develop and test alternative problem-solving approaches when it comes to negotiating agreements. Target-Group: Teenagers, international students (see Fig. 4), between 14 and 25 years old. Participants: 10 to 20.

Fig. 4. Simulation game «Value-based Decision-Making, Democratic Principles, Citizen Participation»

Authors have come to the conclusion that values-based simulation games highlight different aspects, depending on the overall learning goal and the target group: from the dynamics of decision-making-processes, strategy development and actors' mappings, to experiencing personal conflict behavior in stressful situations. From our own practical experience we confirm that the outlined technologies have an impact on the promotion of European values in intercultural communication.

Conclusions

In our study, the attention is focused on communication of European values in teaching of foreign students in the context of internationalization of university education. The main vector of development of Ukraine and its national higher education system is the European integration. The main goals of Sumy State University internationalization are analyzed. Sumy State University implements the idea of a European university in the cross-cultural style, technologies, research and education quality, focus on innovation, strong democratic traditions, academic freedom, the atmosphere of creative work and publicity, forming European values. In the context of European integration and internationalization of education, one of the promising areas of education development focuses on the European values in Ukrainian education. Focus on European values is necessary for reforming Ukrainian higher education system.

In conclusion, according to the results of this work an important approach is to spread the humanistic values of tolerant communication, gender equality, equal rights in education, respect for people of different cultures and nationalities. The use of innovative teaching methods such as trainings and role-playing games is effective in the learning process. The analysis of the experience of the European non-profit organization CRISP (Crisis Simulation for Peace) has enabled to outline the possibilities of the progressive ideas implementation in the practice of Department of Language Training of Foreign Citizens of Sumy State University.

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PEDAGOGICAL AND SOCIAL FUNDAMENTALS OF ENVIRONMENTAL COMPETENCE OF FUTURE CHEMICAL ENGINEERS FORMATION IN THE PROCESS OF PROFESSIONAL DISCIPLINES STUDYING

Abstract. *It is proved that environmental competence is an important structural component of life competence and is an indicator of the environmental education quality. Three main directions of consideration of the future engineers ecological competence formation problem are formulated. A model of ecological competence formation has been developed. An experimental verification of the effectiveness of the developed model and its impact on the higher education institutions graduates environmental competence formation wes carried out. A system of recommendations for practical implementation of the developed model of the future chemical engineers ecological competence formation is proposed. Experimental verification of the model was performed according to the algorithm of nine consecutive tasks. The step-by-step plan for the formation of environmental competence of future engineers includes the formation of environmental competence as a pedagogical problem; formation of essential characteristics and aspects of ecological competence and introduction of a special course "Ecochemistry"; development of didactic bases of preparation of students of chemical specialties on formation of ecological competence. The optimal amount of ecological information in the curriculum of the special course "Ecochemistry" and their availability in technical higher educational institutions in the process of studying professional disciplines is provided. To form the content of the special course "Ecochemistry", nine priority criteria for its content selecting have been developed and taken into account. Six criteria for determining the competitiveness of a modern specialist in environmental competence are proposed. Test control in experimental groups of students revealed the availability of selected material, completeness and systematic acquisition of knowledge, as well as the ability of students to analyze the acquired knowledge and the ability to apply them in practice. As a result of research, the organization of educational activities of future engineers to acquire environmental competence in their professional activities was further developed. The results of the study are implemented in the practice of educational activities through various forms of educational process.*

Introduction

Actual task of nowadays education is to prepare competitive personality, able to accept globalized, European integration processes, to the functioning in the new socio-economic and socio-cultural transformations including modern views according to the common man and nature evolution (co-evolution). So, without refusing national characteristics and interests, in Ukraine we have to take the best experience from abroad according to the mentioned problems and its adaptation to the national ground. Particularly, it applies to the specialist training who should be competent in the field of ecology. [1,2].

The concept of competence in the pedagogy becomes more extensive due to the introduction of new educational standards and is seen as an important indicator of educational progress of pupils and students. By the specialists in the field of pedagogy the competence is determined through such abilities:

- the capability to practice that requires the presence of conceptual apparatus and, therefore, material understanding, appropriate type of thinking that allows to resolve arising issues and problems quickly;
- the capability, that in the basis has the knowledge, disposition, experience, values which are the heritage of the educational process;
- the capability of graduate to the survival and to the sustainable life;
- the capability to solve problems and to operate effectively [3].

Ecological competence is a structural component of vital competence and as the indicator of quality number of ecology education only recently became important. Ecological competence includes knowledge and skills that are essential for future chemical engineers in further practical work. The condition of the successful formation of ecological competence of students is new content, use of forms and methods of pedagogical influence that include an experiment and scientific research (especially on the master level, during the realization and presentation of a diploma composition), develop intellectual skills (analysis, synthesis, reasoning, etc.), the ability to reflect events, information and experience critically, to find and to give grounds of alternate solutions of ecological problems

In the «Program of Actions» on the subject of Bologna Declaration implementation in higher education and science of Ukraine is stressed about creating a system of determining of graduates competence level and developing methods of objective assessment of professional competence of specialists of different educational levels in Ukraine. A special role in the implementation of this task is played by the universities because the necessary conditions for free development, for the formation of a sustainable ecological position and professional competence of students, as well as for cooperation with foreign institutions, are created there [4,5].

Ecological competence enables for future professionals to solve production and living situation, subjecting them to the principles of sustainable development. The coordination of economic and social development and environmental protection applies the particular attention to the ecological education. Ecological competence of future engineers consists of motivational, cognitive, active and reflective components and requires further development of criteria and indicators of components that are mentioned above.

The use of new and high technologies in the modern conditions while increasing harmful emissions into the atmosphere and water bodies, poor development of technologies of recycling raw materials contribute new and higher requirements to the professional competence of engineers and especially to the chemical engineers. Training of chemical engineer that is capable to the realization of professional activity is definitely associated with the formation of his/her ecological competence. The last provides professional ability to participate actively in preventing and overcoming ecological crisis, reducing the harmful impact of industrial chemical wastes, prevention of emergency ecological situation and, if it is necessary, the ability to liquidate it. The ecological crisis, in turn, leads to the rethinking of relations in the triangle "nature – man – society" and to the searching ways of its harmonization [6,7].

The aim, object, subject, and methods of research

Generally comprehensible is that the impact on the environment of the ecologically incompetent engineering is extremely dangerous that in some cases can lead to environmental disasters. That's why, one of the most actual problems of higher education is to develop responsible attitude of the students towards future generations to the natural and social environment. Thus, the formation of ecological competence of future chemical engineers gets in pedagogy non-crossing meaning. Much attention is paid to the issue of ecological competence formation, but its formation in chemical engineering specialties in the scientific and methodological literature is still not considered.

In the course of the project will be done the need of theoretical underpinning of ecological competence formation, developed and tested a model of ecological competence formation of future chemical engineers.

The object of research – the process of subjects' studying of chemical area of students of chemical engineering specialties at the universities.

Subject of research – ecological competence formation of future engineers of chemical specialties during the studying of professional disciplines.

Methods of research: theoretical analysis, data generalization of psychological, pedagogical and special literature of the research problem, theoretical modeling of the content, forms and training methods of engineering students, pedagogical experiment (summative, search and formative), questionnaires, interviews with students and teachers, monitoring of the educational process, methods of statistical analysis of experimental data.

State of the problem

Analysis of psychological and pedagogical sources [8,9] on the ecological competence formation of future engineers allowed to confirm three main areas of consideration of this problem: features of engineering profile training; grounding of the need of ecological education and ecological training and thinking; theoretical and methodological principles of ecological competence formation of the individual. The analysis results and the facts of the threat growing of environmental conditions show that the question of ecological competence formation require further study and development.

At the same time in the pedagogical science and in the practice of ecological competence formation of future chemical engineers requires clarification of certain aspects, in particular, the increased need to resolve the contradictions that occur objectively in the theory and practice of teaching. The main of them is a discrepancy between:

a) requirements applicable to the chemical engineers, as a subject of ecological safe activity, that is proposed with educational program content, on the one hand, and the level of students' training of the given profession - on the other;

b) experimentally detected experience of ecological training of future specialists-chemists and the lack of focused ecological training;

c) the need of develop and introduction of modern effective forms and methods of the teaching with the aim of forming ecological competence on the one hand, and on the other – an excess of old approaches to the training of specialists-chemists in the engineer education system [10,11].

Relating to the general task, the following sub-tasks were determined:

1) to analyze the state of studied problem in the pedagogical theory and practice;

2) to develop a model of ecological competence formation that would include didactive basics of training, development of forms and methods of students' teaching of chemical specialties, personality-oriented teaching technologies for students with disabilities, organizational and pedagogical conditions of course functioning "Ecochemistry";

3) to make experimental verification of the effectiveness of the developed model of students' teaching activity in the ecology sphere and its impact on the ecological competence formation of graduates;

4) to develop the system of recommendations for practical implementation of ecological competence formation model of future chemists-engineers.

Methods

Experimental-researching work will be carried out in the training groups in Kyiv and Zaporizhzhia in the sphere of different engineering specialties of three universities. The total number of students both in the experimental and control groups will be about 400 people. The material basis of laboratories and specialized classrooms of all experimental and control groups was roughly the same. This allowed to have the same specifications and to impose the same requirements on conducting chemical experiments under the program of chemical disciplines.

Algorithm of project implementation was follows [12,13].

1. It has been analyzed starting positions of competence approach, the definition and development of the terms "competence" and "ecological competence", and paid the attention to the ecological competence formation and its aspects.

2. The theoretical analysis of existing training programs on "Fundamentals of Ecology" for universities was done based on a study of the current state of problem of ecological competence formation and teaching of ecological courses in pedagogical theory and practice; the level of ecological competence formation of students was checked experimentally. It was proposed to include the course "Ecochemistry" to the training process as a factor of ecological competence formation of students.

3. The content of special ecochemistry course for future chemists-engineers was defined on the basis of systematic didactive concepts, approaches and principles of ecological competence formation selection principles and developed. Inclusion of the special course "Ecochemistry" to the educational process strengthened the ecological aspects of chemical education, raising the level of general culture and the ecological competence formation of future engineers.

4. Ttraditional and innovative methods of teaching for the future engineers with ecological orientation were used. Particular attention was paid to the content and conduct of seminars and workshops on the subject of "ecochemistry of metals, non-metals and their compounds, their general chemical and physical properties, distribution in nature, pollution sources and their impact on the environment, biological role in human bode, toxicity, livelihoods of flora and fauna".

5. With the aim of successful operation of the special course, organizational and pedagogical conditions of its operation were identified and implemented into the pedagogical practice, namely, teacher qualification , the quality of the student training, his or her motivation, the availability of modern material and technical base of the institution, communication with other discipline rates and requirements for education and professional training, as a basis for national qualification framework.

6. In order to ensure equal access to education for the persons with disabilities, on the basis of legal documents relating to the education of people with disabilities, the need was emphasized to create integrated groups and to introduce personal-oriented teaching technologies to the educational process.

7. Combination of didactic principles of formation of ecological competence, of forms and methods of training, of organizational and pedagogical conditions of course "Ecochemistry" functioning, and of personal-oriented teaching technologies for persons with disabilities, allowed to propose the model of ecological competence formation of future chemists-engineers.

8. The influence of the use of the proposed model of ecological competence formation on the level of ecological knowledge was investigated.

9. The possibility was estimated to improve the efficiency of students acquiring practical ecological knowledge by the use of the manual that was prepared by us "Ecochemistry" for lectures, seminars, practical and laboratory classes, excursions, student conferences, self-study, visiting of research institutions, industrial enterprises, student participation in scientific conferences.

Step-by-step plan for the formation of environmental competence of future engineers

1. Ecological competence formation for future engineers as a pedagogical problem

The question of ecology evolvement and development was considered, and the content of methodical literature and scientific researches was analysed from the viewpoints of formation of students' ecological competence, as well as of modern state of the investigated problem in a pedagogical theory and practice of teaching. Basing on the determination of the article of ecology, interdisciplinary structure of ecology the basic tasks of ecological science will be systematized as a study by means of quantitative methods of bases of structure and functioning of the natural and human-created systems, increase of factors of environment, that influence on a human-health. A great attention was paid to contradictions that arose up between the necessities of society and development of ecological science. It was proved that conception of ecological education in Ukraine needs further perfection and must be taken into account to unprecedented integrity of ecology, and orientation to the study of sphere for the direct vital interests of human. The necessity of improvement of ecological education is related to the documents of international and state levels relating to environmental protection.

According to analysis of methodical literature and scientific researches it was convincingly well-proven from the questions of forming of ecological competence of future engineers of chemical specialities [1-3,8,9,12] that the increase of requirements for employers are to the graduating students of Institutions of higher education, intersubject character of knowledge, abilities and capabilities of ecological education need a transition from knowledge to competence approach in education. It is for the development of competence model will guarantee a requirement for specialists at the market of labour and stipulate actuality of the obtaining the higher education. It is for the development of competence model making the guarantee of a requirement for specialists at the market of labour and stipulate actuality of the obtaining the higher education, enabling to develop the professional thinking. Introduction of Bologna process, the refocusing of modern higher education to European standards causes the necessity of operating to the concepts to the "competence" in Ukrainian education. All that is offered by European countries in a sense showing the index of higher education quality.

2. *Ecological competence: substantial characteristics, aspects of formation, introduction of the special course «Ecochemistry»*

As the basic substantial characteristics of ecological competence the following was offered: ecological culture; naturalizing activity; ability of intermingling with other people within the limits of ecological activity; aspiration and ability to develop the inner professional potential; the ability to use the knowledge and experience in a certain situation; ability and willingness to accept ground of decision [14,15]. It was admitted that the number of researches in relation of forming the ecological competence inspite the different looks to the concept. There is no proper attention given to the ecological competence of engineers in the sphere of chemistry and this subject has a need of scientific research.

The state of the research problem was analysed in a pedagogical theory and practice of teaching, namely such aspects of forming of ecological competence, as: ecological, valued, educative, cognitive, etc; an analysis of modern publications is in a relation to the list of key-competency; analysis of normative sources; a theoretical analysis of operating on-line tutorials from the bases of ecology for higher educational institutions; results of experimental verification of level of formed of ecological competence of students. It was shown that a next sequence of study of ecological themes bases of life, research of the state and the use of natural resources, contamination of environment is doingthe continuous ecological education of the system and results in forming of ecological competence.

On the basis of analysis of the operating programs and textbooks from "Basics of ecology" [16-18], that are necessary for general education of students regardless of profession, the conclusion was reasonable in relation to the necessity of additional knowledge and deep study of ecological disciplines exactly for the students of chemical engineering specialities. In order to form the ecological competence, especially for the students of chemical specialities, an introduction of the special course "Ecochemistry" was offered developed by Ukrainian scientists and teachers.

3. *Didactical basics of learning offor the students of chemical specialities concerning the formation of the ecological competence*

The selection of maintenance was carried out for the special course "Ecochemistry" from the ecological studies of students and didactic principles of its mastering. The features of forms and methods of studies were systematized and offered in the process of forming of ecological competence for the future engineers in the shere of chemistry, organizationally pedagogical operating of the special course conditions "Ecochemistry", personality-oriented technologies of studies for the students with special needs. One of necessary didactic terms of forming the ecological competence is the development of corresponding maintenance of the special course for students` mastering. It was taken into account that in the period of its development, the quality and the results of education are determined by its maintenance, system, organization, mastering, studies and education, capabilities and motivation of all subjects of educational process. At the moment of formation of the content of the special course, all the constituents of social experience of educational systems in Ukraine were taken into account: the system of scientific knowledge, methods of activity, experience of creative activity, emotionally evaluating attitude toward an environment, particular vital values..

The optimal amount of environmental information was provided in the curriculum of the special course "Ecochemistry" [18]. The knowledge of one educational discipline is not enough for

solving the particular problem. Solving the professional tasks is an interdisciplinary area although each discipline contributes in the process of solving the task. The knowledge from the different areas of science especially chemical one is needed for solving of ecological problems. In particular, the ecological information must be in technical institutions in the process of studying such courses as: "General chemistry", "Analytical chemistry", "Physical chemistry", "Organic chemistry". And in such generaly profesional courses, as "Health and safety course" and "Basics of labour protection", etc. Basic didactic approaches were taken into account (sinergistical, system, the approach of activity, differentiated, personality-oriented, acmeologic and competence). Developing the contents of the special course, there were the criteria that worked out for the studies of chemists [18]. So, a table of contents of the special course must be: scientifically reasonable; modern in relation to the given information; objective; purposeful; systematic.

The substantiation of expediency of introduction in the new special course "Ecochemistry" will include the following:

1) forming of clear and reasonable ideas about co-operating between the humanity and an environment;

2) obtaining ecological education and forming ecological competence;

3) the cooperation and intercommunication of these components: natural, social and technological spheres;

4) strategies and tactics of maintenance of stable life development on Earth.

All necessary requirements for the confirmation of efficiency in the special course "Ecochemistry" were the following: 1) scientific validity; 2) contemporaneity of the given information; 3) objectivity; 4) purposefulness; 5) systemacity; 6) socio-economic approach for the consideration of ecological problems; 7) taking into account both, global and local ecological problems; 8) application of the most modern forms and methods of mastering of maintenance.

The criteria for ecological information selection [10,19] were taken into account: organic connection with maintenance of chemistry studying program; assistance in chemistry mastering; an assistance in making the sense of anthropogenic influence to a biosphere; education of thrifty attitude toward nature; sense of civil responsibility for the maintenance.

To form the contents of the special course "Ecochemistry", the prior criteria were worked out and taken into account of ecological maintenance selection for the special course "Ecochemistry": 1) integrity of reflection in educational maintenance of leading ecological and chemical ideas and their intercommunication; 2) scientific and practical meaningfulness of ecological information maintenance; 3) accordance to the amount of studying term maintenance; 4) accordance of educational maintenance to the facilities and resources of educational institution; 5) creativity and research character of maintenance, functionality of chemical knowledge; 6) introduction of information about the prospects of chemistry development as the sciences; 7) use of the integrated possibilities of maintenance of contiguous educational courses; 8) taking into account of international experience of maintenance forming ; 9) the presence of creative tasks.

Both traditional and innovative methods of studies were used for providing the modern educational process: reviewing and adjusting lectures, seminars, colloquiums, interview, tests, laboratory and practical employments, educational practices, educational projects, research activity, telecommunication methods, telecommunication projects, research and practice conferences, virtual scientific expeditions or excursions, virtual acquaintance on different parties of social activity, playing technologies, method of projects, dispute. The traditional and innovative methods of studies

supplement each other. The individual, individual for groups, and collective forms of study were used. During previous experimental researches we assured our hypothesis that the condition of successful forming of ecological competence for the students is an application of forms and methods of pedagogical influence, that includes an experiment and scientific search (especially at the master's degree level), develop intellectual abilities (analysis, synthesis, deductions, etc.), ability critically to comprehend the phenomena, information and experience, find and ground the variants of decision for the ecological problems.

With the introduction of Bologna process principles in Ukraine, the problem of quality of ecological education appears especially strictly. In this connection, for the successful mastering of the special course "Ecochemistry", proper organizationally-pedagogical operating conditions for its functioning were defined, in particular the qualification of teacher, quality of students studying, their competence and motivation, facilities and resources of Institution of higher education, connection of educational discipline with other courses, requirements of educationally-professional studying for specialist, fixed in basis of the National scope of qualification. Determination of these terms will assist the formation of ecological competence for the future engineers of chemical specialities.

State educational standards are the basis of functioning of higher school and they are obligatory for all students regardless of their bodily condition. The exact approach for studying of people with special needs can lead them to becoming professionals and be competitive at the market of labour. The feature of studies for the students with special needs in the integrated groups is that they have the same requirements from the teachers, as well as to other students, id est perceive them equally , but apply the personaly-oriented technologies of studies. Taking into account fact that the great part of pedagogical research took its place in University "Ukraine" and its branches, where the students with disability take the studying course, the specific personality-oriented technologies were defined for teaching persons with special needs taking into account all the individual necessities and possibilities of each student, namely: independent work, remote studies, and in private lessons, providing an opportunity for this category of students to have an equal access to education.

On the basis of generalization of basic criteria of competitiveness of modern engineer in chemistry and didactic terms of forming of ecological competence, methods and forms of studies, organizationally-pedagogical operating of the special course conditions "Ecochemistry", the criteria of ecological competence completeness, the model of ecological competence formation was developed for the future engineers in the sphere of chemistry. As the criteria of ecological competence for a competitive modern specialist, the following were necessarily taken into account: 1) capacity for adaptation in various life-situations; 2) practical orientation to knowledge; 3) the abilities for independent acquisition of necessary knowledge; 4) understanding of problems and forwarding on the ways of their decision; 5) permanent increase of the professional level; 6) ability to analyse the information [10,19].

Results

Experimental verification of thr research efficiency

The experimental research organization technique was developed, the investigation was carried out, and the relevant results were obtained. At the first stage of pedagogical research, the experience was studied and generalized of scientists and teachers' work who investigated issues related to the research subjects. Also, the first stage included the analysis of research papers on the

development of ecological science, ecological problems, problems of ecological education and training, analysis of educational pragrams and textbooks from "Fundamentals of Ecology". At the same time, the condition was found of studying ecological issues of disciplines of fundamental and professionally oriented training cycles, that is professional disciplines.

The scientific concept and the working hypothesis were developed, as well as the tasks were defined according to the aim and hypotheses of research, at the second stage of our pedagogical research. The working and educational programs of professional disciplines were analyzed regarding to the presence issues in them related to ecological education and solving of ecological problems. The didactic backgrounds were determined for students training on chemical specialties and for ecological competence formation, which include the following points: development of a training program on the subject "Ecochemistry"; development of selection criteria of educational information and proper selection of ecological education content of students for special course "Ecochemistry"; selection of forms and methods of teaching; clarification of personal-oriented technologies of teaching students with disabilities; creation of training guidelines, and special course "Ecochemistry", and publishing of relevant training manual. Considering that some students of experimental groups have health problems, various means of distance education and individual consultations were applied. During the practice, work of the teacher with students was realized by the means of online conferences and experiments using Zoom software. The work with the platform Moodle was often used as well.

Experimental and control group of students were participated in the research at the third stage of pedagogical experiment. Conducting of the test control in the experimental groups allowed to make conclusions on the availability of selected material for the studying by students, to determine the completeness and systemacity of knowledge achievement on explored topic, and also to find out the ability to analyze by the students' knowledge achievement and the ability to apply them in the future. Knowledge testing of students was done with the help of level and pixel-by-pixel knowledge analysis. Questions of the control works were divided by the knowledge achievement that enable to implement the level analysisof mastering by them. Questions to the tests also were divided by the knowledge achievement that enable to implement the level analysis of the general control measures of the achieved material. The control knowledge test in the written form for students of control and experimental groups was done for the knowledge achievement of the course "Fundamentals of Ecology". The difference for the experimental group was in the course studying "Ecochemistry." The issues were divided into the elements of knowledge, the number of items in each issue will be equal to three. Except of general ecological questions, the questions of special course "Ecochemistry" about the impact of chemical elements on the human body were added in the experimental group. Besides, in the control groups, some part of the questions was changed (also three elements in each question), but the total number of questions was the same.

At the final stage of ecological competence formation of future engineers of chemical specialties, the completeness was checked of knowledge achievement and accessibility of selected information usingcontemporary methods [10,18]. The possibility of introduction of the developed technique of the organization of experimental researches in the course of studying by students of professional disciplines of fundamental and professionally oriented cycles of preparation is proved. Working curricula have been improved to include environmental education issues. The introduction of a special course "Ecochemistry" allowed to significantly increase the level of students knowledge and their environmental competence.

Conclusions

Development of pedagogical and social bases of formation of ecological competence of future engineers of chemical specialties in the course of studying of professional disciplines has scientific and practical novelty in the considered subjects. Scientific novelty consists of:

1. The development of the ecological competence forming model which includes didactic basics of studying, development of forms and methods of studies for students of chemical specialities, personality-oriented technologies of studies for students with special needs and organizationally-pedagogical operating in the special course "Ecochemistry".
2. The objectifying of the ecological competence forming didactic bases for future engineers of chemical specialities.
3. The development of forms and methods of educational activity organization for students of engineering chemical specialities in relation of forming their ecological competence.
4. The definition of the ecological information selection criteria for the special course "Eco-chemistry" and it`s contents.

For the first time in pedagogical science of Ukraine, the special course "Ecochemistry" was created for the future engineers of chemical specialities, and the model of organization of educational activity was developed for the students of ecology. The process of studies of Ukrainian students was improved from acquisition of ecological competence due to development of maintenance of the new special course "Ecochemistry». The organization of educational activity for the future engineers in chemistry was developed furthermore from acquisition of ecological competence in future professional activity due to the improvement of methods and forms of studies.

The practical value of results consists of**:**

a) the development of approaches that assist the increase of ecological education level of chemical specialities future engineers and positively influence to the development of personality as a whole;

b) creation of a studying-book "Ecochemistry" for the students being future engineers of chemical specialities.;

c) forming of world view positions and ecological competence of graduating students of Institutions of Higher Education;

d) an experimental verification of an offer model of ecological competence forming for future engineers in the sphere of chemistry.

The results of research were inplemented into educative practice of Ukrainian high schools by means of such forms: lectures, seminars, practices, effective trainings, tests and publications. The following pedagogical approaches for organization of educational activity of students were iplemented in practice of teaching in the groups of engineering specialities of Engineer-technological institute of University "Ukraine" (cars and motor-car economy, design, technology of food, chemical technology), and the Zaporizhzhya state engineering academy.

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KNOWLEDGE SOCIETY IN THE MANIFESTATIONS OF DYNAMISM AND SUSTAINABILITY, THE PARADIGMATIC DIMENSION OF THE SYSTEM "MAN – NATURE", THE GENESIS OF SUSTAINABLE DEVELOPMENT

Abstract. *The knowledge society is characterized by the use of the categories dynamism and sustainability. In the knowledge society, the category of dynamism is manifested in the rapid growth of knowledge. The category of sustainability refers to the sustainable development of society. Sustainable development of society meets the needs of the present and does not jeopardize the ability of future generations to meet their own needs. The research is based on the analysis of the content of paradigms. The research aims to identify paradigms that assert the functioning of the system "man – nature" without the dominance of one of the components of the system. The research also aims to determine the stages of the genesis of the theory of sustainable development of society. The research is carried out taking into account the various processes that took place during the second half of the 20th century – today. According to the results of the research of paradigms, the following fact is established. The system "man –nature" considered as a holistic formation only in the context of two paradigms. 1. This is the educational paradigm of "natural pedagogy". 2. This is a paradigm of sustainable development. According to the results of studying the genesis of the theory of sustainable development, we distinguish 5 stages. Stage I (the 1960s) – the emergence of the idea for the formation of the theory of sustainable development. Stage II (the 1970s) – the formation of the scientific basis of the theory of sustainable development. Stage III (the 1980s) – the formation of the ecological basis of the theory of sustainable development. Stage IV (the 1990s) – the formation of the conceptual foundation of the theory of sustainable development. Stage V (2000-2017) – the formation of the educational basis of the theory of sustainable development.*

Introduction

The knowledge society can be characterized in different ways. We focus on those characteristics that reveal the essence of this phenomenon in the context of the categories "dynamism" and "sustainability". Analysis of scientific sources showed that the phrase "knowledge society" as a term spread in pedagogical science and practice in the beginning of the 21st century (Sbrueva 2004). This term began to denote a certain stage of development of modern society, which characterized the transformation of knowledge into a key component of any sphere of society, the main product of human activity, the main raw material of social and economic activities.

The formation of the knowledge society is considered (Miyer and Holodiuk 2020) as a result of the transition of the information society to a new level of development in the triad of genesis processes "formation - formation - development". In the knowledge society, the signs of the information society remain. This is an accelerated increase in the volume of information in all areas of human activity without exception, the growing role of computer communication. In turn, this gives rise to mediated global interaction of the inhabitants of the planet Earth, the global circulation of many information flows, availability of quick access to data on request.

Also in the knowledge society there is an active process aging information, formation of new knowledge as tested by socio-historical practice of the results of scientific and practical knowledge, which exist in the form of ideas, concepts, facts, judgments, theories, etc. The active course of processes leads to the realization of the importance of dynamism, on the one hand, and sustainability, on the other.

Dynamism is a view of the world as one that develops, changes, is in motion. This movement can be reflected in the civilizational dimension as follows. Transition from "Homo sapiens" to "Homo educates".

V. Ogneviuk characterizes an educated person as one who has certain qualities. In particular:

1) subjectivity (formation of life position, self-determination, responsibility and activity);

2) education (ability to act adequately and responsibly in conditions of constant change and expansion of knowledge);

3) tolerance (acceptance of the values of the world and the values of another person) (recognition of dissent, awareness of the limits of their freedom and the rights of another person, the ability to negotiate);

4) functional literacy (knowledge of the world around and the language of communication, which provide a person with the opportunity to become the master of their own destiny);

5) responsibility for oneself, society and the world (V. Ogneviuk 2012).

Dynamism is manifested in the contradiction between the rapid growth of knowledge in the modern world and the limited ability of man to acquire all knowledge. In addition, the dynamism in the knowledge society leads to the formation of a young person's installation that the knowledge he acquires quickly loses its relevance.

Analyzing the educational process, T. Miyer proposes to look at knowledge not only as a means of professional self-realization, but, above all, as a result of maturation of brain structures in order to emerge new educational needs. Also, in order to there was a formation of more advanced cognitive capabilities and in order to there was a transition to higher levels and forms of mental activity (Miyer 2020).

T. Meyer is convinced that the process of acquiring knowledge is like morning walks, 30-minute runs in the stadium, work in the gym, swimming in the pool, which is always carried out with a greater load on the body and gives results.

Knowledge acquisition is a process, the dynamics of which ensures human life in the knowledge society. Knowledge in this society should be perceived not as a product whose expiration date is exhausted, but as a necessary condition to move from one level of self-development to another much higher, to prepare brain structures to perform new, previously unknown actions. Also in order to understand the new meaning of man as a cosmoplanetary phenomenon (Miyer 2020).

The analysis of the knowledge society in the category of "sustainability" concerns the desire for sustainability. In the dictionary source (Grinchyshyn 2010) the term "sustainability" means that does not change, retains its composition, shape, size. Also that which does not cease; continuity, immutability. Thus, the desire for sustainability is an essential attribute of the development of the phenomenon, processes in general and the knowledge society in particular.

Methods

The research of the manifestations of sustainability in the knowledge society was conducted in two directions.

1. Research of sustainability in the system "man – nature" on the basis of paradigmatic dimension (in other words: research of key ideas of paradigms).

2. Research of the genesis of the theory of sustainable development as the basis of the functioning of the knowledge society.

The research was conducted using theoretical methods. This analysis, synthesis, comparison, systematization of data, generalization of philosophical, psychological, pedagogical and methodological developments.

The purpose of the research. Analysis of the content of educational and pedagogical paradigms, definition of paradigms that affirm the functioning of the system "man – nature" without the dominance of one of the components of the system. Determining the stages of the genesis of the theory of sustainable development of society, taking into account economic and educational processes in Ukrainian society and globalization in the world in the period of the second half of the 20th century – today.

Results

The results of the research of sustainability in the paradigmatic dimension

The introduction of the concepts of "paradigm", "scientific paradigm" in the terminological field of science is associated with the works of T. Kuhn (Kuhn 1962). In the work "The Structure of Scientific Revolutions" the philosopher explained the concepts he first introduced as follows:

- A paradigm is a scientific achievement that for some time gives the scientific community a model of problem statement and solution. Paradigms characterize elements of the world and their behavior in different ways. Paradigms differ in content. They are the source of methods, problem situations and standards of solutions that are accepted by the scientific community (Kuhn 1962).

- Scientific paradigm - law, theory and their practical application create models from which specific traditions of scientific research arise. Scientists whose scientific activity is based on the same paradigms, rely on the same rules and standards of scientific practice. This commonality of attitudes and the apparent coherence provided by paradigms are prerequisites for normal science (Kuhn 1962).

The spread of philosophical developments in pedagogical science is evidenced by the introduction of a number of new terms. These are:

- "Paradigms of basic models of the educational process" - these paradigms determine the sources and method of setting pedagogical goals and the interaction of participants in the educational process (Kornetov 1990).

- "Pedagogical paradigms" - perform cognitive and normative functions; these paradigms are the main direction of pedagogical research, educational activities (Radugin 1996).

- "Paradigm in education" - knowledge about the construction of the pedagogical process, which is accepted as the truth by the pedagogical community (Bezrukova 2004).

- "educational paradigms" are paradigms that determine the stable development of psychological and pedagogical science. They concern the idea of the system of knowledge and skills necessary for a person of a particular historical epoch; awareness of the type of culture and means of human development in the process of mastering it; encoding and transmission of

information. Also, concern the awareness of human cultural development; determining the role of education in society; the idea of the image and place of the teacher as a carrier of knowledge and culture in the educational process; image and place of the child in the structures of training and education (Bordovskaya and Rean 2006).

In the scientific work (Holodiuk 2018) identified key ideas of different educational paradigms, which over time have not lost relevance for the educational process. These are the ideas of comprehensive development of the child and special training of teachers (kalokagative paradigm); determination of the standard of education (paradigm of dogmatic learning); acquaintance with the object, which is outside the educational institution (paradigm of explanatory-illustrative learning). As well as the ideas of focusing on the needs and capabilities of the student, practice-oriented motivation, the introduction of differentiation and integration into learning (paradigm of adaptive learning); activation of development of natural opportunities of students, drawing up of special methods of training, development of educational technologies (paradigm of developmental training). In addition, the idea of focusing on the subject and ways of knowing the objects of reality (cognitive paradigm); involvement of students in universal culture, in various conditions of the natural and social environment (culturological educational paradigm).

The monograph (Savosh 2020) considers the paradigms that influenced the formation of continuity of education. According to the paradigm of research and practical training with mystical and ritual elements, the process of transferring experience from one generation to another is provided on the basis of learners' activity. Observation and imitation of adults, active participation in all household and social activities. According to the paradigm of explanatory-illustrative learning, the content and system of education must take into account the development of the child in six-year periods: childhood, adolescence, maturity (Comenius 1896). According to the paradigm of developmental learning, building the learning of the younger generation taking into account the levels of development: current (mental properties or qualities that have already been formed, learned by the child) and the nearest (properties of the psyche that are still in formation, growth, movement).

The analysis of different paradigms was conducted in order to study the presence of constancy in the system "man – nature", which is manifested in the perception of this system as indivisible, or lack of constancy due to the dominance of man in the system "man – nature". The research revealed the following:

1. The dominance of man in the system "man – nature" is typical of most paradigms, but the content of dominance takes different directions, namely:

1.1. Dominance in the system "man – nature" of man. Directions of dominance:

- human development (educational paradigms:

a) kalokagative paradigm (emphasis on the idea of comprehensive human development);

b) cognitive paradigm (emphasis on the development of scientific and technical (abstract-logical) thinking);

c) KSA-paradigm (emphasis on knowledge, skills, abilities));

- the content of education (educational paradigm of dogmatic learning (the idea of standardizing education originated in the Middle Ages));

- way of teaching (educational paradigms:

a) kalokagativna paradigm (use of teaching methods in ancient Greece (conversation, reasoning aloud, dialogue system)); explanatory-illustrative paradigm (the beginning of the use of

the textbook as a mass book during the Enlightenment in Europe; the origin and practical implementation of the idea of conducting educational tours, educational experiment);

b) adaptive learning paradigm (differentiation and integration of learning));

- the knowledge (cognitive pedagogical paradigm) (knowledge, skills and abilities acquire absolute value));

- the culture (culturological pedagogical paradigm (focus on human assimilation of content, which includes elements of culture, learning, behavior, communication));

- adaptation to the environment (pragmatic educational paradigm (emphasis on the selection of educational content that will benefit the student in the future));

- humane relations in society (humanistic educational paradigm (emphasis on universal values and their manifestation in the educational process)).

1.2. Domination in the system "man – nature" of man. Objects / subjects determine the directions of dominance.

- It is a technique (technocratic pedagogical paradigm) (teaching aids dominate the goal, and technology dominates the values)).

- This is another person (pedagogical paradigms: a) anthropological paradigm (proclamation of man as the highest value); b) pedocentric paradigm (the leading role in teaching and educating the younger generation belongs to the teacher)); c) child-centered paradigm (creation of favorable conditions for children's development).

2. The presence of sustainability in the system "man – nature". Perception of this system as a holistic formation:

2.1. Sustainability in the system "man – nature" in primitive society (educational paradigm "natural pedagogy" – nature in primitive society was organically intertwined with the natural flow of life of children and adults and equated to the content on which unfolded life and learning of the younger generation).

2.2. Sustainability in the system "man – nature" in the knowledge society (paradigm of sustainable development – sustainable means development that meets modern needs and does not jeopardize the ability to meet the needs of descendants, based on the harmonization of interaction in the system "man – nature").

The results of the research of the genesis of the theory of sustainable development as the basis for the functioning of the knowledge society

The theory of sustainable development emerged in the second half of the XX century as a response to the challenges posed by the effects of the dominance of man-made thinking. This thinking is characteristic of a person who conquers nature and uses technology to gain complete control over the elements and ensure their own well-being. Technogenic thinking is characteristic of the society of technogenic culture (V. Ognevyuk 2012). This society combines significant economic achievements with the negative consequences caused by the same achievements.

It should be added that the activities of a society with technogenic thinking has positive consequences (V. Ogneviuk 2012). These activities contribute to the development of education, science, technology, technology, medicine and agriculture; frees a person from hard physical labor in favor of cultural leisure; prolongs human life expectancy; improves the quality of life.

Also for the activities of a society with man-made thinking is characterized by negative consequences. This is a significant anthropogenic impact on the environment and the unlimited exploitation of natural resources. It is also the negative impact of large-scale industrial giants and

the excessive use of energy in production. This is the neglect of true values, including human life and the existence of the bio-and noosphere on planet Earth.

To reveal the genesis of the theory of sustainable development, it is necessary to highlight a number of significant events that led to the emergence of new ideas of social development based on stability in the system "man - nature". The author of the article, based on a research of the processes that took place in the second half of the XX century and at the beginning of the XXI century, identifies five stages and significant ideas for each of the stages.

Stage I (the 1960s) – the emergence of the idea for the formation of the theory of sustainable development.

- 1968 – Scientists from more than 30 countries together begin the work of the International Non-Governmental Organization "Club of Rome".

Club members are developing a methodology to take into account the maximum allowable capacity of the natural environment to cope with the ever-increasing anthropogenic impact.

The methodology includes determining the boundary ecological limits of scientific and technological development of civilization. Formulation of priority goals for society to reach a new level of development. Promoting the earliest possible awareness of systemic threats to the existence and development of mankind. Adoption of a new philosophy of human life based on the use of all available means and knowledge. Introduction of policies aimed at improving the situation.

The stage of origin of the idea of forming the theory of sustainable development unfolds against the background of a certain social policy in Ukraine. The monograph "Theory and practice of formation and implementation of social policy in Ukraine" (N. Baltacheeva 2010) notes that for Ukraine in 1953 - 1991 are characterized by such social processes. This is the acceleration of socio-economic development; reduction of real incomes of the population; availability of plans for social development of enterprises, implementation of social planning at the enterprise.

The directions of development of the educational sphere are evidenced by the following events. Since 1958, the introduction of compulsory 8-year school education has begun. Primary school has lost the status of "closed independent structure". A new goal, a new content of education (including natural education) and new learning outcomes are defined for primary school. Also, the indicators of processes in the system "man – nature" include changes that have occurred in the natural component of the content of education.

This component of the content of education is simultaneously characterized by the dynamism of processes. According to the generalizations reflected in the monograph "Reforming school education in Ukraine in the XX century" (L. Berezivska 2008) and dissertation research "Organization of natural education of primary school children in secondary schools of Ukraine (second half of the XX century)" (N. Smolyanyuk 2010), in the period from 1950 to 1967 various changes were recorded. This is a restructuring of primary education and primary natural education; active activity of teachers, which is focused on the introduction of school science as an independent discipline; substantiation of new approaches to mastering by students of the maintenance of natural discipline.

There is also no sustainability in the content of education. The lack of sustainability in the content of primary natural education is caused by the imperfection of scientific and methodological support for teaching school science as an independent discipline. In turn, the lack of sustainability in the content contributed to the implementation by teachers of practical elaboration of the content of the natural discipline, starting from the 1st grade (Bugaevich and Kiselyov 1965).

Stage II (the 1970s) - the formation of the scientific basis of the theory of sustainable development. Significant events of the second stage took place in the following sequence:

- 1972 – J. Forrester introduces a new approach "global modeling". This approach has become a new area of research. Mathematical modeling was used to determine the long-term consequences of the world situation. Mathematical modeling was carried out taking into account various interdependent changes. These are population growth, increased industrial production and growing demand for food, as well as the use of natural resources and environmental pollution (Forrester 2003).

- 1977 – A. Peccei introduces a new term "cultural self-determination". This term denotes a new principle of the world economic order and the orientation of the strategy of human development.

According to this principle, human thought has a certain direction. This is a careful attitude to nature and its resources. Paying attention to the internal capabilities of a person, including his ability to experience stresses caused by the results of scientific and technical activities and of socio-political processes without deteriorating health. Formation of a socio-cultural attitude to the transformation of general cultural heritage into a defining landmark of progress and self-determination of mankind (Peccei 1985).

The process of forming the scientific foundations of the theory of sustainable development unfolds against the background of the continuation of a certain social policy in Ukraine. This is the acceleration of socio-economic development, reduction of real incomes, the implementation of existing plans for social development of enterprises, the continuation of social planning by enterprises (Baltacheeva 2010).

At the stage of formation of the scientific basis of the theory of sustainable development, significant changes are recorded in primary school. New social needs, the results of psychological and pedagogical research led to the transition to a 3-year primary school in the 1971-1972 academic year on new theoretical principles. In the period from 1968 to 1980, primary natural education was intensively developed.

This development is accompanied (Smolyanyuk 2010) by developing theoretical foundations (formulating the purpose of introducing natural education in primary school, enriching the content of natural education, defining areas of enrichment (local lore, environmental and research activities) and areas of content. Also includes substantiation of conditions, forms, methods, means of efficiency of teaching of natural sciences in elementary school. Writing relevant scientific and methodological developments. Introduction of innovative approaches to teaching students natural sciences.

Stage III (the 1980s) is characterized by the formation of the ecological basis of the theory of sustainable development. The events took place in this sequence.

- 1983 – The United Nations establishes the World Commission on Environment and Development.

- 1987 – First report of the World Commission on Environment and Development. The report puts forward the idea that economic growth, which is driven by people's needs, should be kept within the ecological capabilities of the planet. Therefore, the main factors of changes in the environment are recognized as population, consumption, technology.

The International Bureau of Education has defined a strategy for the development of education in the context of ensuring the sustainable development of society. Sustainable

development of society is a regulated socio-economic process, more orderly than the existing one, which provides for long-term positive development and changes in society, consistent with current and future needs on the basis of new technologies. Sustainable development of society meets the needs of the present and does not jeopardize the ability of future generations to meet their own needs.

During the third stage of formation of the ecological basis of the theory of sustainable development there were significant changes in the field of education. These changes were primarily due to the shortcomings of 3-year primary education, the need to increase the total duration of education to 11 years and the transition to 4 years of primary schooling. In accordance with the 1984 reform "On the further improvement of general secondary education", a mass transition to the education of children from the age of six began. To implement the transition, a new educational and methodological support was developed.

Stage IV (the 1990s) is characterized by the formation of the conceptual foundation of the theory of sustainable development. This is a sequence of significant events of the IV stage.

- At the beginning of 1992, a UN conference on the state of the environment and further development of mankind was held. During the event, the concept of sustainable development was discussed, as well as the ideas of the strategic document "Agenda for the XXI century". The content of these documents was aimed at bringing humanity to the level of development, characterized by ensuring a stable balance between consumption, population and the Earth's ability to sustain life. The strategic document "Agenda for the XXI century" proposed programs and measures that provided for bringing humanity into a position of sustainable balance between consumption, population and the Earth's ability to sustain life.

- At the end of 1992, the definition of the Human Development Index (HDI) was introduced.

- 1996 – D. Herman in the work "Beyond Growth: The Economics of Sustainable Development" promotes the idea of conflict-free, harmonious and balanced civilizational progress (Herman 1996).

The formation of the conceptual foundations of the theory of sustainable development unfolds against the background of a certain social policy in Ukraine. This is the formation of market structures, a rapid departure from the former (paternalistic) model of social policy. There is a decrease in real wages and pensions, rising unemployment, mass poverty, increasing population differentiation. There is also a significant reduction in social infrastructure and social activities at the macro and micro levels (Baltacheeva 2010). In the 90s of the XX century, modernization processes were recorded in primary natural education. This is the definition of new goals of natural education in primary school. Improving the content on the basis of humanization and ethnicization of the educational process. Organization of teaching primary natural education on the basis of personality-oriented pedagogical technologies. Introduction of greening of the content of primary natural education. However, in these years, traditional forms and methods of organizing natural education dominate in educational practice. Insufficient use of educational and developmental influence of natural sciences is fixed. Stage V (2000-2017) – the development of the process of forming the educational basis of the theory of sustainable development. At the beginning of the XXI century, one of the indicators of sustainable development was education, as the result of education significantly affects a person's income, employment, health, participation in public life. The essence of sustainable development is characterized in view of human health, life expectancy, expanding choices, the impact on various decisions.

The process of forming the educational basis of the theory of sustainable development is implemented consistently.

2002 – Summit on Sustainable Development. The summit adopted UN General Assembly Resolution 57.254 "On the UN Decade of Education for Sustainable Development, starting from January 1, 2005". The event defines the "Decade of Education for Sustainable Development". This is the period from 2005 to 2014. UNESCO is also beginning to develop an International Plan for the Decade of Education for Sustainable Development.

At the beginning of the XXI century, the formation of the theory of sustainable development is under the influence of globalization. The process of globalization is manifested in a number of ways. This is the growing interdependence of the economies of different countries. Development of integrity and unity of the world economy. Strengthening the openness of national markets. Deepening the international division and cooperation of labor.

Processes that are characteristic of countries with a certain level of economic development have had an impact on the formation of the theory of sustainable development in the context of globalization. The monograph "Marketing mechanism in the context of globalization: theory and practice" (Korzh 2008) states that in countries with developed economies recorded an increase in unemployment as a result of the introduction of new technologies. There is labor mobility and changes in the structure of production. In countries with a lower level of economic development, other processes are taking place. This is an increase in the technological lag behind developed countries. Rising socio-economic inequality. Impoverishment of the majority of the population. Strengthening the dependence of this group of countries on the state of the world economic system and the growth of external debt.

Also in the monograph (Korzh 2008) it is indicated that the increase of the general competitiveness of the states in the world economic system was realized in different ways. The cluster approach has become especially popular. This is confirmed by the experience of industrial clusters. Varieties: 1) clusters within national economies (North America, Latin America, Africa and the Middle East); 2) at the international level (metalworking and machine-building clusters (Germany, Switzerland); 3) financial centers (London, Cambridge, Lyon, Montpellier); 4) automotive cluster (Detroit); 5) industrial (Silicon Valley USA); 6) aerospace (Seattle, USA), etc.

The article "Social potential of society: current status, trends and features of development" (Pankova 2010) states that in Ukraine in 2000-2017 against the background of increasing labor migration of the working population recorded positive trends. This is an increase in the share of new types of institutions and maintaining a high overall level of staffing. Active development of the higher education system, growth of the number of students, expansion of opportunities for education abroad. During this period, the scientific potential of Ukraine consists of scientists, specialists in academic, branch science. There are more than 80 scientific institutions and more than 70 enterprises of scientific-design and production base.

Further development of the process of forming the theory of sustainable development is discussed at international conferences. Also begins to appear in international documents.

A number of events contribute to the development of the theory of sustainable development.

2009 – UNESCO World Conference on Education for Sustainable Development. During the event, a new direction of education and training is determined to ensure sustainable development of society. This direction envisages the development of education based on effective response to current and future challenges.

2010 – adoption by the European Union of the Europe 2020 Strategy. The document defines priorities. This is a priority of mental development (based on new scientific knowledge and innovations); priority of sustainable development (the most efficient use of resources); priority of inclusive development. The document also identifies program initiatives. This is the development of research and innovation. Promoting the educational and professional mobility of young people. Integration of professional activity and education. Modernization of higher education.

2012 - According to the Bucharest Communiqué, Europe is experiencing a financial and economic crisis with devastating social consequences. In view of the above, this communiqué provided:

1) development of higher education based on ensuring the quality of higher education for all, improving the ability of graduates to work, increasing mobility as a means of ensuring better learning;

2) promoting higher education institutions in sustainable development by ensuring a strong link between research, teaching and learning at all levels.

In the context of the formation of primary natural education as an indicator of orientation to sustainability in the system "man – nature" a number of events appear significant. Since 2011, the main goal of teaching natural education in primary school (Educational programs 2011) is aimed at forming students' science competence. Attention is focused on mastering the system of integrated knowledge about nature and man. Also important are environmental knowledge, the organization of educational and cognitive and environmental activities and the development of value orientations in relation to nature.

Conclusions

The knowledge society should be characterized in the categories of dynamism and sustainability. Dynamism is a view of the world as one that develops, changes, is in motion. Sustainability is a view of the world as one that strives for continuity.

Interdependent processes characterize the knowledge society. The dynamism of the growth of knowledge causes a young person to form an attitude: knowledge in a dynamic world quickly loses its relevance. T. Miyer (Miyer 2020) sees the destruction of this installation in the formation of another installation. This knowledge is the result of the maturation of brain structures for the emergence of new educational needs, the formation of more advanced cognitive capabilities. Also for the transition to higher levels and forms of mental activity.

The results of the research of sustainability in the paradigmatic dimension showed:

1. Paradigms are the recognition by scientists of the model of problem statement and their solution (Kuhn 1977).

2. The system "man – nature" is considered as a holistic formation only in the context of two paradigms.

- This is the educational paradigm "natural pedagogy". Nature in primitive society was organically intertwined with the natural flow of life of children and adults. Nature equated to the content on which unfolded life and learning of the younger generation.

- This is the paradigm of sustainable development. Sustainable development is the development of a society that meets modern needs and does not jeopardize the ability to meet the needs of descendants. This is the development of society, which is based on the harmonization of interaction in the system "man – nature".

The results of the study of the genesis of the theory of sustainable development as the basis for the functioning of the knowledge society testified:

1. The theory of sustainable development is a response to the challenges posed by the consequences of the dominance of man-made thinking. The theory of sustainable development emerged in the second half of the XX century.

2. The genesis of the theory of sustainable development includes five stages.

- Stage I (the 1960s) – the emergence of the idea for the formation of the theory of sustainable development.
- Stage II (the 1970s) – the formation of the scientific basis of the theory of sustainable development.
- Stage III (the 1980s) – the formation of the ecological basis of the theory of sustainable development.
- Stage IV (the 1990s) – the formation of the conceptual foundation of the theory of sustainable development.
- Stage V (2000-2017) – the formation of the educational basis of the theory of sustainable development.

The system "man – nature" is a holistic formation in the theory of sustainable development. Orientation to sustainability in the system "man – nature" is formed by the natural component of the content of education.

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ENTREPRENEURIAL UNIVERSITY: INSTITUTIONAL DIMENSION

Abstract*. The aim of this publication – is to analyze conceptual approaches to understanding the problem of Entrepreneurial University according to their belonging to definite areas of social sciences – «new institutional economics» («institutions» concept), «organization theory» («institutions», «entrepreneurial field», «institutional entrepreneur» concepts), management («entrepreneurial concepts»). Despite conventionality of corresponding classification, in this paper attempts are made to single out specifics and peculiarities of each theory in order to determine their conceptual abilities in studying Entrepreneurial University – its current institutional potential and relevant prospects for implementing its social mission. Solution for this task is substantiated by several circumstances. Above all, there is necessity for mutual adaptation of Ukrainian researching tradition and dominating in the world discourse views on the problem of Entrepreneurial University, which is based on theoretical background. Considering scale and multi aspect nature of this task, we have analyzed only available in modern discourse key conceptual approaches to the problem of Entrepreneurial University. This, in our opinion, is one of necessary conditions for solving current problems of international comparative analysis of modern education institutions.*

1. University and modern socio-economic realities: co-evolution peculiarities.

Priority in initiating development of problematics of Entrepreneurial University emergence and genesis belongs, of course, to American scientists. First of all, they include: B. Clark [9], H. Etzkowitz [12], S. Fuller [13], D. Kirby [19], J. Meyer [24], W. Powel [29; 30], B. Rowan [24], W. Scott [32] and others. Theoretical background stated and formulated by them in the 80s - 90s are the starting point for numerous studies conducted over the past 30 years in the following areas: globalization and commercialization of higher education, specifics of interaction between market and education institutions, knowledge society and entrepreneurial university, its essence, functions and perspectives, etc. Activities of the world's leading universities, especially the United States and European countries, have become empirical basis for research.

Ukrainian and Russian scientists paid attention at this problematic in the XX and XXI centuries. It is clear that Ukrainian educational realities could not, due to objective reasons, provide any serious signs of entrepreneurial component in national universities' activities. Western experience of Entrepreneurial University establishment and functioning has become subject of research in works of V. Poliakov, V. Savchuk, H. Kostantynov, S. Filonovych, S. Kurbatov, T. Zhyzhko and others. First of all, it should be mentioned that relevance of the problem of Entrepreneurial University place and role in modern knowledge society is reflected in the growing number of corresponding publications. In particular, it is specified that for the period from 1981 to 2005 in 28 scientific journals were published 173 articles devoted to university entrepreneurship review. 127 of them appeared between 2000 and 2005, and 50 articles appeared in 11 specialized journal issues devoted to university entrepreneurship. In this rather significant volume of literature,

only 4 articles (2%) were of a purely theoretical nature, and 9 articles (5%) were devoted to relevant literature review. The most popular topics of the articles are: Entrepreneurial Research University (86 articles – 50%) and new companies' creation (42 articles – 24%) and environmental context and innovation (29 articles – 17%). 77 articles (45%) were published outside the United States, mostly in Great Britain (26%), Sweden (14%) and Belgium (11%) [1, p.110]. This trend is also distinctive for publications, studying activities of Entrepreneurial University from the perspective of institutional theory [15]. This theory finds more and more supporters who consider «commercialization of research and teaching activities carried out withing higher education institutions» as the main object of their research [33, p.175].

Searching and developing new forms of university activity that should more adequately respond to today's challenges, as a rule, is justified in perspective of socio-economic and socio-political realities of contemporary globalized world. «Attaching for more weight to intraneural efficiency and effectiveness, contemporary universities are under immense pressure to transform their roles to adopt to rapid socio-economic and socio-political changes» [26, p.539]. The author of publication supports this conclusion with appropriate scheme [26, p.540], which «shows how globalization accelerates higher education restructuring along the line of «marketization», «corporatization» and «privatization», universities going entrepreneurial is becoming an increasingly popular restricting strategy for promoting efficiency, effectiveness, economy and competition in the higher education sector»:

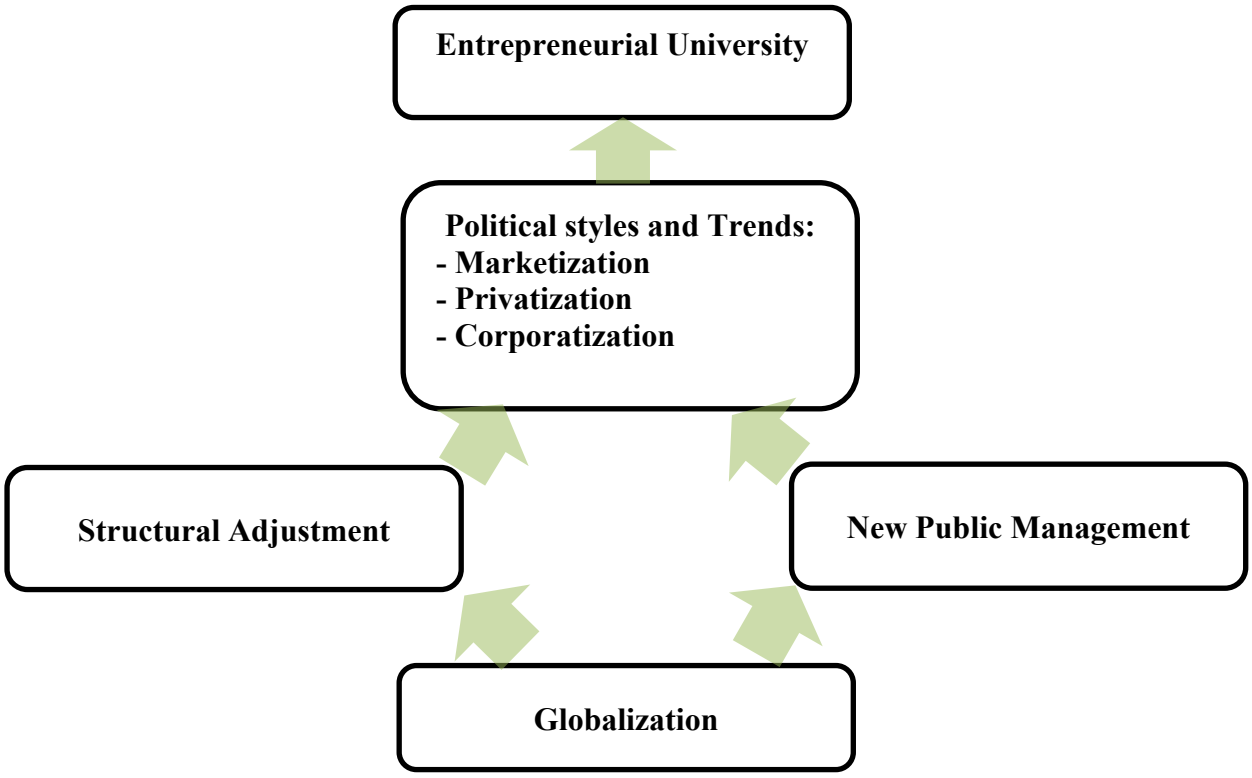

Fig. 1. Globalization, new policy trends and Entrepreneurial University

As it is defined in literature, universities are becoming entrepreneurial, developing, primary, in the direction of «academic entrepreneurship» (commercialization of knowledge and process of research funding). In this context, universities are considered as «an important instrument in the facilitation of the contemporary knowledge-based economy. Since much knowledge is developed withing universities and government research establishments, they are seen as important catalysts

for regional economic and social development, through the spin-off of new, innovative enterprises that add value through knowledge creation» [15, p.2]. In this context, universities «are seen as knowledge hubs with the associated challenges and opportunities of technology transfer» [16]. Accordingly, universities have joined the process of forming «new university-academic-productive sector relations», as a personification of «academic capitalism» [26, p.539].

It should be indicated that process of forming Entrepreneurial Universities in the direction of «academic commercialization» has been quite controversial from the very beginning. Respectively, it has been reflected in scientific literature, public and educational thought. On the one hand, it has formed a very active educational, scientific, public community following education commercialization and focusing on formation of appropriate entrepreneurial competencies in youth. And this is quite natural given irreversible changes in socio-political climate of globalized society. «Phenomenon of entrepreneurship, - says S. Kurbatov, - can be considered a leading factor that determines radical changes in civilization in the XX and XXI centuries. From a philosophical point of view, in recent decades there has been evidence not only of active growth in goods and services production, but also formation of new production needs and relevant consumer practices. Therefore, at ideological level, institutions of entrepreneurship, which are primarily the structures of a big business, enter the field, which is traditionally served by educational institutions in general and structures of university education in particular» [22, p.109]. As S. Fuller indicates, we live in «an entrepreneurial age» [13, p.50].

Despite indicated worldview changes in educational community consciousness, it is not surprising that, as M. Lackeus says «the idea of infusing entrepreneurship in to education has spurred much enthusiasm in the last few decades» [23, p.6] in educational environment in many regions of the world, especially highly developed ones. From the very beginning, it has been considered that this should affect economic growth, job places creation, have positive impact on educational process, etc. Similar ideas are popular in Ukraine. This is evidenced by information from NAPS website, which states that «national vision of Ukraine until 2030 provides for using creative potential as a «key driver», encouraging entrepreneurial initiative of every citizen, creating «comfortable business climate» and freedom of business ideas. This thesis was voiced on April 13, 2020 during webinars held to publish results of scientific research «theoretical and methodological background of training future qualified personnel for entrepreneurial activity in the context of small business development» [27].

These are certainly attractive intentions. Although there are some doubts about their practical implementation. First of all, external environment, especially socio-political one, is by no means very favourable for entrepreneurship development. There is extremely disincentive negative trend in this. No political force has managed to break it so far. In fact, there is a problem in education system regarding implementing entrepreneurial ideas into curriculum. Summarizing the world and European experience, M. Lackeus highlights that solving this problem is quite successful in higher education sector. Significantly problematic is establishing appropriate direction of educational process at the level of primary and secondary education [23, p.6].

There are also too many skeptical educators and even those, who are ranged against commercialization of education. Quite typical are warnings that «entrepreneurship, we are often reminded, is an intrinsically elusive concept. It is all the more elusive when attempts are made to apply it to seemingly non-commercial fields of life» [33, p.175]. In this regard, position of famous American researcher S. Fuller is quite indicative. First, based on the results of his colleagues'

research, he believes that universities appeal to business – as well as to its theory and practices – is a dangerous trend for them [13, p.66]. Besides, there are some doubts about thesis of supporters of higher education commercialization as an important factor in its positive impact on economic development of society. According to American scientist, «direct influence of academic institutions on economy development is elusive and even quite illusory» [13, p.66-69].

Second, S. Fuller justifies that it is important to «distinguish between different types of entrepreneurships where universities can be involved. Very often «Entrepreneurial University» concept is used to define actions of individual teachers or teams that are particularly strong in providing themselves with funds, as a rule, by marketing their knowledge (or research or training) to specific clients from public and private sectors» [13, p.65]. American researcher considers this form of entrepreneurship «dangerous for university integrity if institutional entrepreneurship would not exist … (emphasis added). In this context, unique product that university should sell – is itself (emphasis added) as a certain integrity that insists on integration of research and teaching» 13, p.66]. Entrepreneurial University, as S. Fuller highlights, «lies in systematic transformation of social capital into public wellbeing» [13, p.55]. Specifically, «knowledge universalization as a public wellbeing» makes university «a kind of entrepreneurial organization» [13, p.50].

Market forces are pushing universities in the direction of transforming it into a corporate-selfish social formation. In this regard, it is noted that «it is important to point out that the drive on the part of manyuniversities to secure intellectual property rights for the purposes of commercialization and their own enrichment is problematic if it means that this will compromise their institutional obligations to produce collective goods in respect of which members of various communities have joint moral rights…» [25, p.226].

Emphasis, made by S. Fuller at the level of entrepreneurship social dimension, distinguishes its position against the background of traditional and quite common one-sided vision of university's function to «play on equal terms» in business environment [22, p.109]. Such theory is criticized by supporters of institutional theory regarding emergence and functioning of Entrepreneurial University. It is believed that «research on university entrepreneurship lacks a complexity in models and richness that is needed to letter understand interdependent processes across different actors, agents and institutions» [16]. From representatives of institutional economic theory perspective, implementing majority of researches «directed into academic capitalism, knowledge commercialization» have consequences of existing «one reality that still remains under-studied, such as environmental factors that effect the development of entrepreneurial university» [15, p.3].

2. Two theories: differences and interpenetration.

Institutional theory regarding analysis of social, including educational reality, was formed and implemented among various social sciences, which caused a significant level of different views being present in new institutionalism, in particular on nature of institutions. Considering nature of the article, we are primarily interested in their understanding of «new institutional economics» and sociology. In general, within the institutional paradigm, its supporters «define institutions broadly» [3]. However, it should be noted that representatives of «new institutional economics» and sociologists have some similar views concerning nature of institution as social phenomenon in the theory regarding Entrepreneurial University issue. In particular, the direction that focuses on «institutional organization theory».

Representatives of these new institutionalism' areas are characterized by the definitions «importance of the environment in which the university is embedded» and «importance of institutions which surround, «penetrate» and are «penetrated» by the entrepreneurial university» [16]. Provided that importance of interdependence between university and its environment is recognized, it is considered as «multifaced and culturally complex and are best understood as organizations with multiple levels of control and loosely coupled activity where different components are likely to have a cultural identity that motivates normative and cognitive behavior» [16]. Such university definition, in our opinion, is a confirmation of reasonable W. Scott's conclusion that «institutional theory provides the most promising and productive lens for viewing organizations (as well as other aspects of contemporary life) in modern society» [32, p. IX].

In the context of «new institutional economics» defining concept «institution» there is dominating tradition established by founders of early institutionalism (T. Veblen, W. Hamilton, J. Commons, etc.). These authors, as T. Gaidai says, «despite some deviations in meanings (definitions), «institution» concept is mostly understood as a set of established customs, traditions, ways of thinking and behaviour of individuals, social groups and society as a whole». «These are mental and behavioural patterns that regulate human interaction at customary and legal levels» [14, p.141]. This tradition found its continuation and final conclusion in D. North's study, who defines «institution» in his paper published in 1990, as «game rules of society, … restrictive frameworks created by people, that organize relationships between people… they set motivating motives structure of human interaction» [20, p.22].

There is no doubt that D. North is «one of the most cited authors in social sciences» [10]. This proves that his views, as W. Scott has mentioned, are «embraced by many institutional economics» [32, p.182], and his idea «is based on a game analogy». Therefore, «institutions provide the rules of the game, whereas organizations act as a players». Entrepreneurial University as an organization, consequently, «may well assist in constructing the rules, attempting to devise rules by political and other means. However, a consideration of rules and rule-setting and enforcement processes is to be clearly distinguished from concern with the player's response to an existing set of rules» [32, p.182].

D. North and his followers emphasize in their works that «institutions can be either formal – such as political rules, economic rules and contracts – or informal – such as codes of conduct, attitudes, values, norms of behavior and conventions, or rather the culture of a determines society» [15, p.5]. Regarding «Entrepreneurial University» the nature of «environmental factors» is shown in the following table [15, p.6]:

Table 2. A flamework for Entrepreneurial Universities

Formal Factors	*Informal Factors*
University organizational structure and university government, Mission, Organizational structures, Strategic Management, Professionalized university manager, Independence, Flexibility.	**University attitudes to entrepreneurship**, Students, faculty members, academic and other university employees.
Support measures to university startups Information, consultancy, incubators, centers to new firm creation, science parks, others.	**Entrepreneurship subject at university** How-teaching methodology.
University entrepreneurship education programmes Doctoral, master programmes and undergraduate courses (what and where-transversally).	**Role models, cases and university rewards systems** Success students, faculty members, academic or other university employees. University rewards systems.

The authors of the table have analyzed «five theoretical models associated with Entrepreneurial Universities», and «there are elements associate with formal and informal factors proposed previously» in each of them. [15, p.6]. These models were developed and offered by B. Clark, H. Etzkowitz, D. Kirby. Based on the results of these studies, Guerrero-Cano M., Kirby D., Urbano D. offered well substantiated «model to analyze the factors that affect the creation and development of Entrepreneurial Universities» [15, p.10].

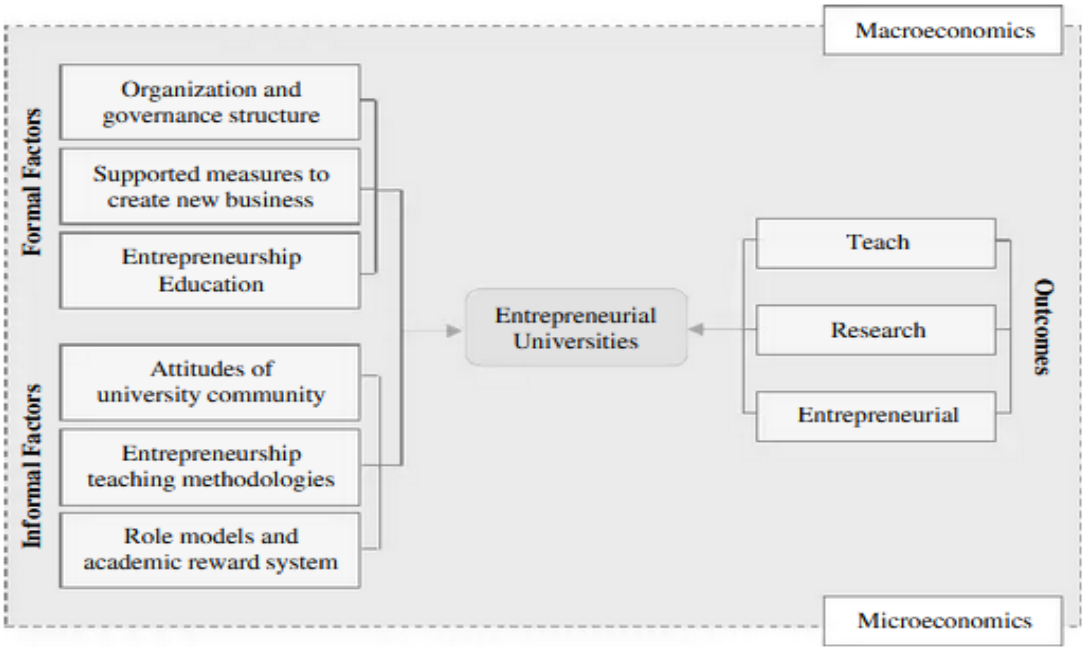

Fig. 2. Factors of creation and development Entrepreneurial Universities

This model authors have a similar approach «A University Entrepreneurial Architecture in terms of five key dimensions [16]:

1. Structures: Includes technology transfer offices, incubators, technology parks and business portal
2. Systems: Focuses on networks of communication and the configuration of linkages between structures and administration
3. Leadership: Emphasizes the qualification and orientation of key influencers including administrators, board of directors, department heads, and “star scientists”
4. Strategies: Refers to institutional goals elaborated in institutional planning documents, incentive structures, and policy
5. Culture: Refers to institutional, departmental and individual attitudes, and norms.

Above table developers, paying attention that there is no «consensus in the definitions about Entrepreneurial Universities», offer their own definition of this phenomenon. This are universities, «that have the ability to innovate, recognize and create opportunities, work in teams, take risks and respond to challenges, on its own, seeks to work out a substantial shift in organizational character so as to arrive at a more promising posture for the future. In other words, is a natural incubator that provides support structures for teacher and students to initiate new ventures: intellectual, commercial and conjoint» [15, p.19].

Together with researching problem of Entrepreneurial University from «institutional economics» viewpoint, a vision of this phenomenon from «organization theory» viewpoint was developed and substantiated. Defining breakthrough of this process were the ideas substantiated in

publications of J. Meyer, P. DiMaggio and W. Pawel, which came to light in 1977 and 1983 and acquired the status of «canonical components of neo-institutional theory» [8]. From these publications, as it is believed, has grown «a tightly self-identified school of thinking with many scholars being graduates from Stanford Department of Sociology and tight or influenced by J. Meyer or his students» [3].

In their papers, «Stanford school» representatives deviated from their predecessors, who focused mainly on functional peculiarities of «big institutions» at macro level, and rationally motivated individuals' actions at micro level. As it was noted by P. DiMaggio and W. Pawel «the new institutionalism in organization theory and sociology comprises a rejection of rational-actor models, an interest in institutions as independent variables a turn toward cognitive and cultural explanations, and an interest in properties of subraindividual unites of analysis that cannot be reduced to aggregations or direct consequences of individuals attributes or motives» [29, p.754].

Firstly, representatives' understanding organization theory of nature of institutions, nature of interaction between them and organizations almost coincides with views of scientists representing «institutional economics». Institutes are – «formal and informal procedures, routines, norms, and conventions…, cognitive scrips, moral templates and symbolic systems…These scholars break down the distinction between the institutional and cultural» [3].

Secondly, similarity of defined areas position is manifested in the fact that «the core idea, that organizations are deeply embedded in social and political environments suggested that organizational practices and structures are often either reflections of responses to rules, sebiefs and conventions build into the wider environment» [30]. From this theory point of view, university is considered «as constrained withing a wider context or environment including different institutions comprising organizational field of activity» [16].

In their «canonical articles» J. Meyer and B. Rowan substantiated a fairly static model of relationships between organizations and institutional environment, where the emphases were made on decisive influence of institutions on social actors' behaviour, including educational organizations, in particular, universities [24]. Situation started changing after publications of P. DiMaggio's article in 1988 and P. DiMaggio and W. Powell's article in 1991, who encouraged scientists to explain «not only how institutions influence actors' behaviour, but also how an actor could, in turn, influence and change institutions if possible. [5, p.66]. Quite logically in 1988 P. DiMaggio substantiated in this context the concept of «institutional entrepreneur», which, in fact, started area of focus researching sociology and organization theory. Implementing institutional theory has been particularly useful in the study of entrepreneurship. This theory, according to many researchers, «plays a leading role that ensures defining forces determining entrepreneurial success». It is relevant to find an adequate answer to the question «how entrepreneurs can influence (positively or negatively) the process of changes at local, regional and national levels» [21, p.3].

Formulating definition of «institutional entrepreneur» concept, P. DiMaggio relied on ideas expressed by S. Eisenstadt – «a well-known researcher of enceinte civilizations» [4, p.42]. Israeli scholar substantiated «concept of institutional entrepreneurs» in his work (1980) «in his work on Weber's concept of charisma, where he studied rare, but epochal, individuals who sparked institutional change» [29, p.766].

P. DiMaggio defining «institutional entrepreneur» concept expressed that it is creative actor who mobilizes available resources, opportunities with aim to achieve changes at institutional environment in their interests. This thesis has been further developed in the study of many authors.

«Institutional entrepreneurs – are, as J. Batilan, W. Lek and E. Boxenbaum point out, – agents of social transformation who violate institutional status quo in their field of action and, accordingly, contribute to the process of changes in existing institutions or creating new ones». [5, p.67]. Institutional entrepreneur is – «institutional innovator, or agent of institutional changes, whose actions are supported by numerous motives. It functions in different contexts» [28, p.979]. Substantiating parameters of this activity and creative phenomenon is reflecting «efforts to move away from image of too much socialized individuals who obediently follow existing customs and requirements of today» [29, p.6]. It is important to note that «institutional entrepreneur» can be not only an individual, but also an organization or group of organizations (including university).

«Institutional entrepreneurship», «institutional entrepreneur» concepts are result of synthesis of two traditions – institutional theory and entrepreneurship researching. As S. Albertini and C. Muzzy express that «institutional entrepreneurship has been attracting growing attention in recent years …mainly because the analysis of change withing a specific institutional field has become increasingly crucial for understanding innovation processes. Institutional entrepreneurship is the result of the paradoxical integration of the two concepts of institution and entrepreneurship. It combines, on one side, institutions – which provide continuity and stability of organizational processes and constrain actor's behavior – with, on the other side, entrepreneurship – which is a creative force shaping and transforming institutions themselves» [2, p.111].

One of the reasons why supporters of institutional theory referred to entrepreneurial activity was substantiated in 1991 vital necessity of P. DiMaggio and W. Powell to «develop such a theory, the absence of which was the main disadvantage of institutional theory. When its representatives faced necessity to explain the changes, actors' and actions' role in formulating «diffusion and stabilization of institutions, this task was not solved» [5, p.66]. Research focusing on institutional entrepreneurship is – «formulating clear action theory» [5, p.66]. It is obvious that, first of all, the idea is to shift focus from sustainability in relationships between actors and institutional environment to reveal their potential and ability to generate changes in this environment. Therefore, «growing interest in ideas of institutional entrepreneurship in theoretical tradition, whose representatives emphasized appropriate stability of institutions and interpreted changes as an exception to the rules, prove fundamental theoretical in collective ideas and actor's concepts» [6].

Corresponding evolution has taken place in the field of entrepreneurship studying. Undoubtedly, under the influence of economic theory and sociology and organizational theory until the 80s, emphasis was mainly laid on characteristics of entrepreneurial individual and its functions, in particular, realizing their own interests in the context of environment (cultural, legal, political) [21, p.2-3]. The next stage is growing attention to the issue of «institutions effect on entrepreneurship». Modern trend is to find out conditions under which «entrepreneurs can influence (positively or negatively) the process of changes at local, regional and national levels». This means that «discourse on institutional entrepreneur contributed to reorientation of institutional analysis to the study of actors and their role in stimulating institutional changes» [18].

Opposite movement of institutional theory and researching area of entrepreneurship is perceived by their representatives with noticeable enthusiasm. In particular, it is stated that «overlapping ideas of entrepreneurship and institutional theory is promising in perspective of providing opportunities for further study that will enable our better understanding phenomenon of entrepreneurship and thus strengthen intellectual tradition of institutional theory» [18]. Moreover, it is believed that «concept of institutional entrepreneur should be a leader in promising trends of

institutional theory» [5, p.67]. And this theory, in turn, is «especially useful in study of entrepreneurship» [7, p.421] and entrepreneurial activity of universities.

Its consideration in a broad, systemic social context is, in our opinion, more promising than in a purely commercial-market dimension. Expressed by S. Fuller nature of institutional entrepreneurship of university as a mechanism transforming knowledge into public wellbeing includes, of course, educational institution's active position in providing necessary institutional conditions for implementing its mission. University, in particular, cannot be an outside observer of current legal framework in educational sector, responding accordingly to existing changes based on its own understanding of its mission. University is a multidimensional «cultural complex», organization with different levels of activity, in which «various components have their own identical culture, which motivates their norms of behaviour» [16].

University realizes its function of institutional entrepreneur also by means of organizing and implementing entrepreneurial education. In relevant literature, various terms are used to define process of educational entrepreneurship. Two most essential English terms are – «enterprise education» and «entrepreneurship education». First of them is used in the UK, and, as noted by M. Lackeus, means process of personal development, skills and mental abilities. In the United States, there is only one term – «entrepreneurship education», which focuses on specific context of formulating entrepreneurship. Some scholars unite both concepts. They also offer unified term – «entrepreneurial education». This term is, for example, used by M. Lackeus in his analytical material. Detailed clarification of the content of these terms, in our opinion, is an issue addressed to scholars concerned with comparative education, analyzing content of relevant curricula in different national traditions.

Let us only highlight that this terminology is reflection of two major trends in modern literature dedicated to entrepreneurship education. Representatives of the first of them believe that this process in the sector subordinated to business jurisdiction deals with training of future entrepreneurs and consultants in medium and small business. «Under these conditions, universities (usually offering MBA programs) and private training organizations are the main educational institutions whose main goal is to provide specialized knowledge and skills needed to open and develop their own business» [17].

Specific feature of the second trend is that its representatives see in entrepreneurship education «development of numerous qualities that are basic for entrepreneur 's character and personality. This theory considers of great importance introducing entrepreneurship education in primary school, because children of this age receive new ideas easier, and it is easier to form their entrepreneurial type of thinking» [17].

It is clear that the process of entrepreneurship education is based on dominant ideas about this phenomenon, especially in economics and management science. There is, in fact, theory of entrepreneurship, which «according to term ambiguity…is interdisciplinary researching area in the West, which is rapidly developing» [8, p.53]. Within this area, there are, of course, different understandings of entrepreneurship and entrepreneur phenomena. Quite influential we consider tradition, which has been started by Austro-American economist J. Schumpeter, who was the first to use the term «enterprise». Literature also draws attention to importance of scientific works of economists from Austrian school. There is definition of entrepreneurship that synthesizes Schumpeterian approach and Austrian school approach. Entrepreneurship – is individual's proven ability independently or in a team, inside or outside the organization, recognize or create new

economic opportunities (new products, processes, business models, combinations of products and markets) and implement their ideas at the market, in the context of uncertainty or other circumstances, making decisions about form and scope of using resources and institutions» [6, p.100]. This definition is characteristic of economics, management theory.

It is clear that economists' scientific works have affected position of scientists (sociologists, representatives of organizational theory), concerned with issues of entrepreneurship education. In relevant literature, there is both «broad» and «narrow» definition of entrepreneurship in relevant curricula. «Narrow» - deals with identifying opportunities, business development, self-sufficiency, creativity and growth - that is, how to become an entrepreneur. According to «broad» definition of entrepreneurship, we are talking about personal development, creativity, self-confidence, initiative, focus, that is, how to become entrepreneurial. Content of educational goals, target audience, course content design depends on «which definition and approach is used. Educational methods and student assessment procedures» [23, p.9].

Entrepreneurial education is categorized into three approaches. This is training about entrepreneurship, training for entrepreneurship, training «in process», which is based on experimental, practical approach. Regarding the latter, M. Lakeus, based on J. Dewey's definition of «learning-by-doing» process, proposes the term «learning-by-creating-value», which is specific for entrepreneurship field. Accordingly, as it seems to us, well substantiated definition of entrepreneurship education is proposed. This is – «content, methods and activities that are focused on students' knowledge, competencies and experience formation, which gives them opportunity to be initiators and participants in creative process of creating values» [23, p.10-11]. In turn, this definition is based on the following understanding of entrepreneurship: «it is when you act towards creating opportunities and ideas and transforming them into value for others. These values can be financial, cultural or social» [23, p.11]. Thus, values creation is – entrepreneurial education quintessence, including education in the framework of university. University has special responsibility for broadest circles of society, whom, according to J. Pelican, it has had something like an ethical agreement with. [31, p.231]. Social responsibility of university «builds on the understanding that entrepreneurship involves the pursuit of opportunities to create future forms of value». These «future forms of value may be understood variously in terms of civic good, technical efficiency, scientific advancement, or any other end that an entrepreneur may been worthy» [33, p.185].

A universal, rather than purely functional-market, approach to the study of university entrepreneurial activity allows to identify and emphasize its general social, and not purely utilitarian, significance.

Conclusion. University implementing its function as an institutional entrepreneur depends on availability of its corresponding potential – organizational, scientific, financial, etc. Determining its parameters – is a rather complex scientific and practical task. One of the ways to solve it, which seems quite constructive to us, is to appeal to «agency» concept, which «is becoming increasingly popular in social sciences, psychology, as well as in studies of professional life and gender issues» [11, 46]. First of all, appeal to the concept was not accidental, because the issue of activity component of individual as social actor became relevant. But not just individual. Problem of defining activity, transforming component of organizations, including educational ones, has also become relevant. «Agency» concept «is associated with subjective autonomy and self-sufficiency, acts as force for changes and resistance to structural influences» [11, p.46].

Developing entrepreneurial component within the framework of «organization theory» was mainly highlighted in «agentic turn», which took place in the 80s - 90s, when there was reclamation of «actor's agency» problem in institutional analysis [5, p. 66]. Within the framework of defined turn, which has been rather «wide-ranging and profound», a lot of important issues were addressed, which are directly related to the issues associated with study of entrepreneurial university phenomenon. What is relevant and what we cannot disagree with, is searching for answers to the following questions: «What is the meaning of «agency» concept? «To what extent is «agency» embedded to «institutions» structure? «How adequately does «paradox of embedded agency» reflect complex and sensitive historical connections between actors and institutions» [1, p.2]. It should be noted, that answers to these questions in existing literature are quite ambiguous. And this is not accidental. Nobody brings into question the fact that «agency» concept popularity takes place in the context of «absence of any clear its content definition». It preserves «elusive, although popular uncertainty» [11, p.46]. This factor, in particular, affects this term translation into Ukrainian. Actually, as well as «institution» term. We faced this problem in the process of analyzing relevant English-language literature, which represents different sectors of social sciences (philosophy, sociology, economics, political science) and national traditions. Problem solving of terminological consistency – is an important condition for implementing comparative researching, including Entrepreneurial University phenomenon. Defining its institutional «agency» involves organic synthesis of theoretical developments with large-scale sociological studies. In our further scientific activity, we intend to organize joint work of representatives of various social sciences, first of all economics, sociology, comparative education, to ensure establishing interdisciplinary, generalizing direction of comparative researching Entrepreneurial University phenomenon.

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ENGINEERING PROJECT ACTIVITY AS A NEW PHILOSOPHY OF THEORY AND METHODS OF VOCATIONS EDUCATION IN A PROFESSIONAL COOLEDGE

Abstract*. The relevance of scientific research on engineering design activities at the present stage is obvious. This activity is a Russian force of technical and technological development of society and largely determines the progress of development of the material base of societies. Today, engineering design activities can no longer be formed only in engineering sciences. It is a question of its transformation in system designing which direction of designing of human activity. Today the ideas of lin-education, the main content of which is the continuity of education, professional knowledge, skills and abilities in the naturally created within the educational institution "continuous value flow, where the educational process acquires prognostic production of knowledge" aimed at double anticipation and economical use of the opportunities of the educational process of the relevant educational institution. Engineering design activities are equally focused on the requirements of today's production and the needs of the long term. The leading logical and methodological aspect of the study of engineering design is the disclosure of the features of the functioning and development of prognostic engineering thinking, the study of the vector of its orientation. Today we live in an era of crisis of civilization, the power of engineering is preparing for its crisis. The causes of this crisis - the deformation of human relations with the social and natural environment, the inadequacy of the technosphere to the social essence of man. At the present stage, engineering project activity initiates the creation of new projects taking into account the socio-economic requirements of society, aimed at developing students' logical analysis, synthesis, creative thinking, personal qualities, readiness for its implementation. The development of engineering project activities depends on: - the goals of teaching (in the activities of the teacher) and the goals of training (in the cognitive activities of future professionals); - from the problem of transforming the system of scientific knowledge into design; - from the essence of the real motives and stimuli of cognitive activity of students in the learning process. Readiness for engineering project activity is defined by us as a system of organizational and didactic measures that ensure the formation of students' project abilities. The development of engineering project activity in technical applied college is a continuous process, system of general pedagogical, psychological and didactic conditions which change in time and depending on certain conditions and factors, value and result of training of students of general engineering disciplines in technical applied college.*

Introduction

For a long time, the ideas of engineering and development of technology on the basis of engineering activities were just a plan and embodied in some practical examples. Gradually, with the development of new science and engineering, and in the XIX-XX centuries. industrial production, which is based entirely on engineering and design the appearance of the new technical world is becoming more noticeable. Among the sources and determinants that determine the functioning and development of technology, an important place is occupied by the scientific and engineering picture of the world, formed in the late XIX - early XX centuries.

The formation of project engineering has a long history. In the days of the Ancient World, we have many examples of the manifestation of ingenious engineering design activities of man: the Egyptian pyramids, the temple of Artemis of Ephesus (V century BC); mausoleum in Halicarnassus (IV century BC); "hanging gardens" Semiramis (VI century BC); Faros lighthouse (III century BC); a statue of Zeus the Olympian (5th century BC), a huge Colossus of Rhodes (4th century BC).

But for a long time for philosophers, scientists, the combination of technology and science was unnatural. Therefore, for example, Plato and Aristotle proposed to create artificial structures not to further improve technology or practical use in the economy, but to identify the causes of existence and that is to solve purely philosophical, theoretical problems.

This attitude to engineering design activities, with some changes, has existed for more than two thousand years and the real combination of philosophy and engineering occurs in the nineteenth century. The German philosopher E. Kapp was the first scientist to take a difficult and bold step for the first time in the history of philosophy in the title of his work, he combined two "incompatible" concepts ("philosophy" and "technology"). The program idea of his work "The main directions of the philosophy of technology" is the principle of "organoprojection": man in all his creations unconsciously reproduces his organs and knows himself, based on these artificial creatures.

The relevance of scientific research on engineering design activities at the present stage is quite obvious. This activity is the driving force of technical and technological development of society and largely determines the progress of development of the material base of society. The development of information technology, means of accumulation, processing, storage and dissemination of information, the creation and dissemination of complex human-machine systems, sociotechnics, as well as changing the overall scientific picture of the world qualitatively improve the design engineering activities.

Their analysis indicates the need to create a general methodological approach to the knowledge of this complex socio-cultural phenomenon. The philosophical approach to research of engineering design activity and its problems meets these requirements. The specifics of modern engineering design activities should be considered in terms of the leading question of philosophy: what is the relationship between engineering thinking and engineering practice? That is, we can say that modern engineering design is an answer to a purely philosophical question, namely - how the process of transforming the ideal into the material and vice versa.

Today, engineering design activities can no longer rely solely on engineering sciences. The entry of engineering design activities in the field of both socio-technical and socio-economic studies has led to the separation of engineering design activities into a completely independent field of activity. That is, it is a question of its transformation into system designing which is directed on designing of human activity (it can be, for example, administrative activity), instead of only on development of cars.

Forms and methods of engineering design activites at the presnt stage

Engineering design activities include all areas of modern social practice (service, consumption, training, management, distribution), not just the maintenance of industrial production. In fact, this means the formation of socio-technical design, the task of which is a purposeful change of socio-organizational structures. After all, the main attention is paid not to machine components, but to social and psychological aspects of human activity. Socio-technical design is characterized by humanization. It becomes a source of formation of engineering design subjects, entering the sphere of cultural and historical activity.

In addition, it makes itself the object of design, developing standards and regulations for engineering design procedures and knowledge of these procedures (meta-design). Scientists (philosophers, cybernetics, psychologists, sociologists) also began to act as design engineers. Design is strongly intertwined with planning, management, programming, forecasting and organizational activities. However, constructive tasks come to the fore - they subordinate everyone else. All new types of socio-technical design are rapidly developing: urban planning, ergonomic, system design (artistic design), organizational design. Therefore, socio-technical design goes beyond the traditional scheme "science - engineering - production" and is faced with different types of social practice. All this leads to a change in the content of engineering design activities, which is becoming an independent area of modern culture.

Taking care of methodological balance and completeness in the constructive solution of a separate scientific problem, we took into account that modern engineering design activities have a fairly wide range of methods and forms of existence. Thus, the study of the content and structure of engineering design activities allows to reveal its essence and identify its most common issues. Their solution will help to find answers to the understanding of private problems and tasks of engineering design activities. In this sense, ontological problems are closely related to epistemological. At first glance, they are similar to the problems of technical sciences, because the engineer uses the methods of technical sciences, uses their knowledge.

However, the differences are quite serious and deep. The fact is that the purpose of the engineer and the purpose of the scientist are different: the purpose of the scientist - knowledge of a particular process or object, and the purpose of the engineer - to create a fundamentally new technical and technological artifact. Accordingly, scientific activity is epistemological, and project engineering activity is practical-subject. The study of these problems becomes relevant today in connection with the changing scientific picture of the world and the emergence of new, non-traditional types of engineering activities and the introduction of methods used in synergetics. In modern engineering design activities qualitatively changes the object of study: it is characterized by openness, self-development, nonlinearity. The study of such an object requires a comprehensive, activity-based approach, the integration of different fields of knowledge and specialists around a single problem scientific category. Thus, the study of modern engineering objects allows us to talk about them as complex.

Problems of engineering project activity are closely connected with social problems. This activity is genetically social, and therefore it can be disclosed only on the basis of analysis of sources, causes and elucidation of the main stages of its development in the historical context. The engineer in the process of his activity, on the one hand, actively influences the practice, and, on the other hand, engineering project activity is determined by a number of social factors (economic, political, ethical, psychological, aesthetic).

At the present stage of development of society, the creation and development of technical information processes and technologies makes the activities of the engineer comprehensive. In this regard, it should be noted that in full cycles of automation a person is excluded from the technical system, but still remains the main agent in the development, implementation and development of new equipment and technology.

Taking into account the above parameters, the philosophical analysis of engineering design activity requires two concepts of technology [17, 19]: instrumentalist and socially deterministic. Disclosure of their dialectic involves the use of systemic and activity approaches [14, 15, 17, 19], as

it will understand the socio-cultural aspect, where technology and technology are considered in connection with the existence, needs and values of society. The need for philosophical study of engineering is due to: the negative consequences of a one-sided pragmatic approach to the creation and use of equipment and technology, the need to take into account the dialectical relationship of purpose, means, results, which allow to predict prospects and consequences of new technical objects.

Here the issues of humanization of equipment and technology that would not harm humanity and nature come to the fore [7]. It is in this connection that the role of ideological and axiological aspects is especially growing, so there is a need for professional training of engineers of a new type. At the same time there was the formation of a wide range of sciences that combine education with science and industry. Their convergence leads to the fact that various types of engineering activities are permeated by scientific research, ie there is an interpenetration of science and engineering. This trend is reflected in the experimental attempts of foreign researchers [8].

At the present stage of development of engineering project activities the ideas of *lin-education*, the main content of which is the continuity of education, professional knowledge, skills and abilities in the naturally created within the educational institution "continuous value flow, where the educational process acquires prognostic knowledge production "aimed at double advancement and economical use of the educational process of the relevant educational institution.

The technology of lean production in engineering design activities can be reduced to the implementation of five consecutive steps [11]:

- determination of value, engineering and technical knowledge;
- creating a process of production of modern knowledge and obtaining this value;
- organization of a continuous innovation route of this process;
- introduction of the principle of "pulling out" (instead of pushing out);
- continuous improvement of all elements of the system.

However, all these steps are complicated [11] by the priority tasks of engineering design activities, which is the definition of the result of values. Thus, in accordance with the model of N. Kano [11], it is necessary to distinguish three levels of values.

The first level is those properties, requirements or opportunities that seem self-evident to the student. Such values must be performed "by default". But the teacher may have other ideas. This is the first difficulty. At the second level are measurable values. These can be, for example, the characteristics of a product, such as the design of the appearance of the car. Measurable values must first be measured in some way. Therefore, in this case the choice of concrete indicators (measures), a choice of means and methods of measurement, establishment of standards (if it is possible), an estimation of metrological characteristics is necessary. At the third level are values that the student himself does not yet know. The point is that the student, as a future qualified specialist, most likely has a vague idea of any quality of his products. It often happens that the student has not yet formed their requirements, so he himself, as well as the teacher, can not clearly state what can make products valuable in the market. Nevertheless, for the employee of engineering design activity questions about requirements (values) of the third level - key.

The second step, the main task of engineering design activities is to create a process of obtaining value. When developing it, it is important to avoid, if possible, operations that do not create added value for anyone.

The third point is the introduction of the product creation process through engineering design activities and the creation of a product that provides the necessary values to all stakeholders.

The fourth stage means the practical application of the principle of drawing in engineering design activities. This means that no action is taken until the next stage of the process announces that it is ready to accept new knowledge, information, skills, and so on. Measures to implement lean production are already carried out on the basis of total initiatives to improve quality and reduce costs in the study of any technology. The masterful direction of these initiatives towards the support of continuous flow through the infrastructure (equipment and optimally planned premises) leads us to TPM technology (general equipment management).

The fifth step is stable, it is a continuous improvement of engineering design activities. This feature is due to the fact that it is never possible to immediately create a process, including in engineering design activities, the optimal once and for all. It has to be constantly improved. This is due to the changing environment. If the main goal of engineering design activities is to meet the requirements of the consumer, it must invariably improve and develop itself [11, 22].

The formation of engineering design activities indicates the formation of a scientifically sound model, a competitive modern engineer and a radical transformation in technological and technical knowledge. The field of technical sciences is evolving with the change of objects and tasks of design engineering. Moreover, the type, structure, presentation and forms of organization of knowledge of complex scientific and technical disciplines are determined by their functioning in certain contexts of activity.

Therefore, based on the functions of the general engineering concept, it is necessary to highlight its cognitive vector:

- identification of laws and patterns of development of general engineering activities, its socio-cultural determination, ontological regulations and epistemological imperatives;
- analysis of the logic of development and change of various concepts of general engineering activities and styles of engineering thinking in the general social context of evolution;
- study of the system of methods, techniques and methods of cognition of engineering design activities and thinking, identification of the specifics of the functioning of general scientific methods in engineering;
- study of the system of conceptual apparatus and conceptual foundations of the theory of engineering activity.

Modern developments of scientists and the requirements of modern production of engineering and technical knowledge affect the specific feature of engineering design activities. This is due to the fact that the most acute and controversial issue today is the relationship, relationship and subordination of engineering design and technical activities. Technical activity is marked by an executive function. In turn, engineering design activities go beyond the actual technology and technical relations. In addition, it is engineering design activities involves the regular application of new scientific knowledge, in contrast to technical activities, which are based on experience, practical skills, intuition.

The problem of engineering design activities today [15] is that the surrounding reality is rapidly filled with artificially created, designed subject structures - various in shape and size, equipment and engineering structures. Technology has managed to penetrate into all spheres of social life, it has radically changed the status of its social functions and way of life and at the

present stage there is a need to change traditional ideas about the nature of engineering design, its ontological and epistemological regulations.

Considering the phenomenon of engineering design activities, we see that the first task of a competent modern engineer is the transformation of natural into artificial, and this transformation applies to literally everything - matter, energy and information. Therefore, the purpose of engineering design activities should be considered the use of the properties of objects of subject practice for the creation of various technostructures and technologies. Engineering design activities are characterized by both original, creative, and reproductive non-creative, stereotypical components.

In its various forms, this component composition is represented by various quantitative components [7]. Theoretical analysis of engineering design activity allows us to identify several qualitatively different components, such as the activities of executive engineers, organizational engineers, or the activities of design engineers, technological engineers, operating engineers, or the activities of research engineers, design engineers.

It should be noted that a significant place in the design and development of engineering design activities is given to industry practice and its main form - material production. Scientific practice shows that initially engineering occurs in the depths of production and technical activities and for a huge period of time they existed together, and such a symbiosis has been mutually beneficial for centuries. Accordingly, the process of any scientific knowledge [1] is due primarily to the characteristics of the object under study. After all, carrying out his activities, the engineer transforms the natural and social environment, meeting the various technical needs of society [2].

This transformation is always determined by the essential connections, the laws of change and development of objects, and the activity itself can be successful only if it agrees with these laws. Note that the creation of technostructures is carried out not only on the basis of developed, existing scientific and technical knowledge. In the history of engineering there are cases of creating new productive technical means on the basis of intuition and experience, without reliance on scientific knowledge [12]. Therefore, a distinctive feature of engineering design activities is the application by the engineer not only of technical experience, skills, abilities, engineering skills, but also a variety of humanities and natural sciences.

Engineering design activities are mobile and balanced to solve immediate and future production problems [7, 14]. Engineering design activities are equally focused on the requirements of today's production and the needs of the long term. Investigating on the basis of scientific knowledge natural objects that are transformed in the process of work into artificial, the engineer is not limited to the creation of technical means that can be used within existing production technologies.

Designers and designers must anticipate possible future production and technical changes, including those that would meet the possible, promising requirements of public life. Engineering design activity in this case is determined by the following parameters: production regulations; today's social orders; cognitive needs; forecasting the future.

Productivity of engineering design activity is characterized by special training of the specialist connected with mastering of special means, methods and the sum of knowledge of a technical and technological order, ability to operate with this knowledge. Along with this, the engineer must clearly master a specific system of norms and values that stimulate engineering

research and aims to create socially significant, environmentally friendly and resource-saving technologies.

A feature of engineering design activities is its creative nature. Creativity means the process of human activity that creates qualitatively new material and spiritual values [20]. Creativity is a special ability of man from the existing material to build on the basis of knowledge of the laws of the objective world a new reality: to meet various social needs [20].

The established tendency allows to present in the most general form process of prognostic thinking as follows: the abstract model of subject structures of practice is fixed in consciousness of the engineer for the purpose of achievement of concrete production and technical and technological results. It is significant only if with the help of this model the engineer manages to organize a new technology, educational program or create an engineering structure and technical means with more optimal structural and functional characteristics.

Thus, in identifying the main features of engineering, which distinguishes it from other forms of subject-practical activities, especially production and technical, it is necessary to clearly define its distinctive features, among which the main are: research based on systematic engineering knowledge of properties and characteristics subject structures of practice for the purpose of transformation of natural into artificial; transformation of matter, energy and information to identify the optimal structural and functional relationships of the created engineering structures, technical means and organizational forms of technology.

Social and humanitarian orientation of engineering and design activities in a modern vocational college

It is proved that in modern conditions at creation of difficult technical systems and high technologies problems of philosophy of engineering design activity and thinking are especially significant [7, 18]. The leading logical and methodological aspect of the study of engineering design is the disclosure of the peculiarities of the functioning and development of prognostic engineering thinking, the study of the vector of its orientation. In the study of creative design activities of the engineer is especially important analysis of the problem of regulations and conceptual foundations that form the technical picture of the world and the style of engineering thinking.

There are several basic categories, everywhere the subject of research is revealed. These include "design and technological" thinking, "engineer's style of thinking", "technical picture of the world".

Examining the originality of "engineering design thinking" [22], it should be noted the important features that are inherent in each logical reflection of reality. Common to all types of thinking is that they reflect the needs of the social system. The thinking of the engineer, as well as other types of mental acts of man, objectively, it is aimed at mastering the subject of need and necessarily includes knowledge about the future of the technical object. Anticipation is one of the main components of any thinking. The engineer of project activity provides not only achievement of the purpose, but also ways and ways of use of all arsenal of available means.

The content of engineering design thinking includes features of physical processes that characterize the properties, functions, structural features of technical means; engineer thinking is determined by such social factors as anatomical and physiological parameters of human action and the field of social functioning of the technical object. The thinking of the engineer is largely determined by the subject area of operation of the technical object.

Taking and implementing technical solutions, the engineer is forced to rely not only on their skills, abilities, production skills, intuition, but also on a wide range of socio-cultural knowledge, showing dexterity and ingenuity.

Engineering project thinking [23] is a specific form of active reflection of morphological and functional relationships of subject structures of practice, aimed at meeting the technical needs of knowledge, methods, techniques, in order to create technical means and organization of technology.

The formation of thinking and its basic theoretical constructs is inextricably linked with the main form of practice - material production: design and engineering tasks are purely practical; aimed at finding structural and functional relationships of properties of objects of subject practice. Figuratively speaking, the engineer "draws" ideas from subject practice. In this regard, the successful solution of the problem involves a comprehensive analysis of production and technical practice in different historical periods of time, the disclosure of the basic material and ideal design and technological regulators of the engineer. In this way of understanding there is a question of determining the foundation, the basis that allows the engineer to make decisions in their practice. Such a basis is scientific humanism, which expresses universal interests and recognizes the highest value of human life. Reassessment of values in this way encourages the prognostic thinking of the engineer [23] to the comprehensive implementation of scientific and technical programs, the creation of fundamentally new and socially safe technical systems and environmentally friendly technologies.

Engineering design of complex technical systems requires [21, 23] from a modern competent engineer not only a high level of general theoretical technical training, careful systematic processing of projects, but also high abstract thinking. This allows you to navigate, understand and take into account the broad interdisciplinary links, to perceive them as the norm in the construction of a particular technical system. For the implementation of engineering projects in accordance with the principle of focusing on the economic and social measure of man, every designer and designer needs deep humanitarian knowledge.

The creation of large multifunctional technical systems, today repeatedly multiply the technological capabilities of man and endangered not only nature but also the existence of society.

The thesis that human life is the highest value dictates the general need to develop new orientations in technical creativity. These orientations are largely determined by humanistic norms and should be "filled" with appropriate ergonomic, aesthetic, socio-psychological, legal and other requirements. These requirements become important for both the modern competent engineer and the leading specialist of the future.

The modern technical picture of the world includes [16] the whole set of scientific and technical information obtained on the basis of: development of empirical, theoretical, engineering and technical knowledge, methodology of technical creativity, conceptual and categorical apparatus of technical theory, and its generalization is a reflection of certain philosophical principles that permeate all technical knowledge and directs the prognostic thinking of the engineer to a comprehensive understanding of the functional and morphological relationships of the technical object.

Playing an important heuristic role already at the stage of formation of technical design as an imaginary technical model, philosophical ideas explain the original principles, act as a justification for the most general, highly abstract ideas about the technical object and methods of its study. These

methodological regulations function at all stages of creation of the technical device, defining the general strategy and optimum ways of the decision of engineering design problems.

It is impossible not to note that today we live in an era of crisis of civilization [16], the power of engineering prepares its crisis. Today, at least four areas of such a crisis have been scientifically identified: the absorption of engineering by non-traditional design, the absorption of engineering by technology, awareness of the negative consequences of engineering, the crisis of the traditional scientific and engineering picture of the world.

The causes of this crisis - the deformation of human relations with the social and natural environment, the inadequacy of the technosphere to the social essence of man. In solving these and other global problems of today, rethink the value of engineering reality. Humanistic, ergonomic, ecological requirements are comprehensively reflected in the accepted engineering decisions. And thanks to the rapid development of technical knowledge, the creation of large research and production complexes, modern technical means, new engineering and technical communities, natural and humanitarian knowledge, a new style of engineering design thinking is formed.

This style is characterized by some specific factors: systemic; focus on the axiological aspect as a basis for engineering and technical creativity; focus on the creation of fundamentally new equipment and the organization of modern technologies. Therefore, there is every reason to believe that the new engineering design thinking will be widely accepted and its role will grow more and more together in the development of science and production as social and spiritual vectors of human social life.

Therefore, it should be noted that social and scientific and technological progress is directly related to the activities of technical specialists. Engineers are the creators not only of new technology, but also of social technologies, and the quality of life today and in the future depends on their creative thinking.

The study of such a multifaceted category as "engineering design activities" can be conducted from different scientific positions.

From the standpoint of philosophical and socio - economic engineering project activities are seen as the creation of a new project different from the existing one.

In this case, the basic principles of project activities are: independence, implementation, compliance, completeness, project integrity and optimality. Studies show [3, 26] that design combines the development of semiotic models (scientific knowledge and theories) with practical action, organizing from them a single process of project activities. In design it is very important to take into account the connection of natural, practical, economic, aesthetic in order to effectively develop the project.

In addition, design is the art and science of creating models, prescriptions, projects using symbolic design tools (mnemonics, semiotics). Through design, various requirements are met, offered, on the one hand, to the student's personality: independence, responsibility, mobility, competence, education; on the other hand, - to the productivity of the educational process: readiness for project activities through the integration of knowledge, intensification of the educational process. In the new socio-economic conditions, design is one of the components of professional activity. Planning, programming and design are combined into groups of constructive approaches that have an active impact on the future by improving the management of social processes and phenomena [9]. Today, many scientists and designers talk about creating a global engineering and design picture of the world [21, 28]. Thus, from a philosophical point of view, project activity is the

science and art of design, from a socio - economic - a holistic process of creating a new project, taking into account the socio - economic requirements of society.

From the psychological and pedagogical point of view [12] the leading basic means of project activity are [4]: creative thinking, creativity, imagination. It is manifested in solving problems that require prognostic initiative, intuition. Development of creative thinking of future competent specialists is an important condition of project activity. In addition, the productivity of creative thinking increases through the design of mnemonics, drawings, diagrams, process modeling [18]. Leading scientists consider the mobility of cognitive processes (perception, memory, imagination, etc.), mental operations (analysis, synthesis, comparison, generalization, new decision-making, etc.), forms of thinking (concepts, judgments) to be an important condition of project activity. etc.). This leads to the productivity of knowledge use, synthesis of information and the development of new ways of action [11, 28]. That is why the design process is a creative process consisting of several components: goal setting, tasks, questions, mobilization of necessary knowledge, logical analysis, identification of ways and means of solving problems, observation, experiment, synthesis, generalization, optimal decision making, decision making in the form of a project, mnemonics, structures.

Project activity of students from the point of view of the psychological and pedagogical approach - is defined by us as constructively - project creativity in system of engineering activity which is directed on development of cognitive processes, mental operations and forms of thinking. Consider the project activity from the standpoint of logical analysis and synthesis. In this way, project activities are aimed at mastering by students the techniques of logical analysis and synthesis through observation, comparison, specification, modeling, design. After all, students who have the techniques of logical analysis and synthesis, are quickly oriented in solving design problems, which means they have a higher level of readiness for project activities.

According to the project-search orientation of training, engineering project activity is actualized as a productive means of competitiveness and self-affirmation of the future engineer. Project activity provides students with the assimilation and active use of principles and methods of information selection, the ability to select better, analyze, synthesize based on the use of various didactic forms and methods. From the standpoint of personal orientation, project activities can be considered as a student's readiness for its implementation. Therefore, the vector of development of project activity is the dynamics of formation of student readiness for activity and its properties as a system object.

Thus, engineering project activity initiates the creation of new projects taking into account the socio-economic requirements of society, aimed at developing students' logical analysis, synthesis, creative thinking, personal qualities, readiness for its implementation. The peculiarity of engineering design activities is the "entry" of the student into a new reality, mastering each of its components, making transitions from one component to another [5].

The development of engineering project activity from the pedagogical point of view [11, 15] is a process, system, value and result of training of students of technical vocational college in general engineering disciplines. We detail this position in relation to our subject of study.

Development of engineering project activity of students in the process of professional training in technical vocational college is a process of movement from goal to result, process of interaction of teachers with students, when from passive object a student, as more active, deep and comprehensive participation in learning, development and self-development, becomes a full partner,

a subject of pedagogical interaction. The process of development of engineering design activities involves certain organizational forms (individual, group, collective), involving a variety of learning tools - training tests, diagrams, graphs, drawings, models, mnemonics, visual aids, computers, telecommunications, etc. In this sense, it can be argued about a fairly rigid technologization of the process of development of engineering design activities, as the activities of the teacher is due primarily to the need to achieve learning goals. The need for new special technologies aimed at the implementation of pedagogical tasks is to develop various didactic methods, tools and forms that depend on the personality of the teacher, his professional competence. Thus, the development of engineering design activities depends on:

- from the purposes of teaching (in the activity of the teacher) and the purposes of professional training (in the cognitive activity of future specialists);
- from the problem of transforming the system of scientific knowledge into design;
- from the essence of the real motives and stimuli of cognitive activity of students in the learning process.

Given the above, the theoretical basis for the system of psychological, general pedagogical, didactic conditions of interaction between teachers and students, taking into account their abilities aimed at implementing the content, methods, forms and means of learning are the following ideas: integration of knowledge, intensification of learning process . We specify their essential content. Integration of knowledge - is the ratio of humanities, general mathematics, general technical, general engineering knowledge based on their interdisciplinary and intradisciplinary synthesis, necessary for use in engineering project activities [11, 14, 21, 22, 24, 25]; promotes the formation of creative thinking in project activities. The idea of integration is closely related to the intensification of the learning process. Intensification involves "strengthening the reality of how to maximize the amount of educational information at the lowest cost of time" [18, 26]. In our study, the intensification of the learning process is to develop schemes, drawings, mnemonics, conditional images [18, 27]. To determine the productivity of the system of development of engineering design activities in the technical college it is advisable to use diagnostics and evaluation criteria, monitoring studies, on the basis of which could be created models of students' readiness for their project activities. The system of development of engineering project activity at training of students is directed on the final result of professional training in technical professional college - formation of readiness of students for engineering project activity.

Conclusions

Axiological priorities for the development of engineering design activities include state, social and industrial and personal significance of technical education. However, the state needs investment to create a material and technical base for the introduction into the learning process of new competitive technologies of theoretical and practical action, aimed at ensuring and enhancing the prestige of engineering design activities in society. Society is interested in the progressive development of engineering education. The production and social significance of technical education presupposes the personal value of education in terms of readiness for engineering project activities. The values of engineering project activity in the unity of state, social-production and personal components of the categories create the necessary prerequisites for defining the educational, pedagogical category "goal", which, in turn, directs the activity and adjusts its course.

We consider the formation of students' readiness for engineering project activities as one of the components of readiness for professional activities. In psychological and pedagogical research, "professional readiness" is defined as the subjective state of a person who considers himself capable and prepared to perform professional activities and seeks to perform it, the result of professional development and social maturity of the individual [13]. That is why the readiness for engineering project activities is defined by us as a system of organizational and didactic measures that ensure the formation of students' project abilities. Therefore, the development of engineering project activities is a value of technical education and is focused on public and private interests.

In addition, the development of engineering design activities is also associated with the professionalization and informatization of the learning process in the technical college. Professionalization of the learning process contributes to the mastery of technology by students, but also the inclusion in the content of general engineering disciplines of professional knowledge on the basis of interdisciplinary and intradisciplinary links.

Informatization of the learning process is associated with obtaining information, its processing, analysis, creation of a database using the latest information tools. Professionalization, modularity and informatization of the learning process affect all components of training of a modern engineer; first of all it concerns such element of preparation, as readiness for engineering project activity. The result of the development of students' project activities in the teaching of general engineering disciplines includes the general development of personality (readiness for project activities), the amount of project knowledge, modularity and professionalization of the process.

Thus, the development of engineering design activities in technical vocational college is a continuous process, a system of general pedagogical, psychological and didactic conditions that change over time and depend on certain conditions and factors, the value and outcome of students of general engineering disciplines in technical vocational college.

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PUBLIC CONTROL AS AN ELEMENT OF THE RESPONSIBLE PUBLIC GOVERNANCE GUARANTEE MECHANISM: NATIONAL AND INTERNATIONAL IMPLEMENTATION MEASURES

Abstract. *The purpose of the article is to review and characterize the state of legal support of public control as an element of the mechanism of guaranteeing responsive public governance. It is suggested to consider responsive public governance as a government that is able to respond to and act on the interests of the various groups and institutions of civil society. The author has carried out a comparative analysis of the means of implementation of public control on the example of Ukraine, the European Union and individual member countries. The most effective public control tools used in the EU Member States are suggested to include a consultation mechanism that includes: public discussions, public forums, public juries, public meetings, citizens' initiatives, questionnaires, opinion polls, stakeholder meetings, stakeholder meetings, establishment of monitoring bodies, monitoring bodies by the public, setting up joint working groups, jointly adopting and implementing political x solutions. Attention is drawn to the urgency and necessity of introducing a modern system of guaranteeing repressive governance at the national level. The gaps in the legal regulation of this area at national level are highlighted. It is proposed to consider ways of solving the identified problems by reforming the legal means of exercising public control and monitoring of the actions of the authorities, the purpose of which should be to create an effective mechanism for challenging actions and decisions of public officials. It is emphasized that securing partnerships between civil society and government depends on the level of development of the civil society representative sector, and therefore measures of strengthening and enhancing the role of NGOs in the political arena are of great importance.*

Introduction

According to the Association Agreement between Ukraine, the European Union and the European Atomic Energy Community and their Member States, the introduction of a modern European model of public resource management is an important task facing our country, among other things.

The ongoing administrative reform in Ukraine is aimed at creating a state-of-the-art system of responsive public governance, which envisages the simultaneous incorporation or enhancement of traditional civil service values, such as impartiality, honesty and commitment to the civil service, and promoting innovation in governance and improving efficiency open and responsive forms of public administration. Responsive public governance is a government that is able to respond to and act on the interests of the various groups and institutions of civil society.

Ensuring the functioning of modern responsive public governance, first of all, requires the creation of an effective legal mechanism for its guarantee. Such a guarantee mechanism is a set of specific legal remedies and is based on building relationships of control and accountability of public administration. In turn, they are implemented through an extensive system of legal means to ensure public control over the activities of public officials.

Most forms of human organization rely on individual honesty. When individuals engage in dishonest or otherwise illicit forms of behavior, costs of rule monitoring and enforcement increase, common resources can be depleted, and patterns of cooperation and trust can break down (Asmus Leth Olsen, Frederik Hjorth, Nikolaj Harmon, Sebastian Barfort, 2019, p. 572). One of the main remedies proposed for this concern is greater investment in direct government communications to citizens (Saar Alon-Barkat, 2012).

Governance theory looks beyond management and service reform by pointing to new kinds of state-society linkages and new, more multilayered and decentred forms of governing. Citizen involvement is given a new emphasis through co-production of services (various forms of self-help), a coordinated customer focus in order to address individual needs and problems holistically, and a desire to incorporate the views of citizen groups directly into the service delivery process (World Public Sector Report. 2005. p 13).

Based on the nature of public control, it is a key legal tool for guaranteeing repressive governance of public control. The emergence of public control is associated with a change in the classical paradigm of subject-object relations of subjugation of society to power, to the construction of relations of subject-subject and reorientation of the vector of accountability and responsibility of government to society. The theoretical substantiation of the category of public control is carried out in the framework of the study of concepts and problems of social governance, transparency of governance, efficiency in the public sector, the concept of "Good Government", "good administration", public administration, legitimization of state power, the theory of social rule of law, ensuring the right of participation the public in the process of governmental decision-making.

1. Legal means of exercising public control: national level

Today, politicians face a daunting task, on the one hand citizens demand that the state authorities solve urgent social problems related to the crisis in all spheres of public life, but on the other hand, there is a serious crisis of belief in society that the existing system of public administration can provide the implementation of effective measures that the society needs. The starting point for transforming a modern public administration system into a mechanism for effectively developing public policy is to understand the need to bring democratic institutions and people's deputies closer to civil society. For this aim, public policy should be developed and adopted in a way that is as open, transparent and accessible to the public as possible. In turn, the establishment of a system of responsive public governance in Ukraine is possible only through the introduction of an effective system of public control, which today is a key link in the communication interaction between government and society.

It should be noted that at the national level, the process of implementation of public control is hampered by the existence of gaps in the rules of the current legislation. The basics of legal regulation of relations in the sphere of public control have been enshrined in the norms of many acts: the Constitution of Ukraine, the Law of Ukraine ‘On Access to Public Information,’ the Law of Ukraine “On Democratic Civilian Control of the Military Organization and Law Enforcement Bodies,” the Law of Ukraine “On prevention of corruption,” Law of Ukraine “On Citizens Appeal,”

Law of Ukraine “On Environmental Protection,” Law of Ukraine “On Environmental Expertise”, Law of Ukraine “On Scientific and Scientifical-Technical Expertise”, Law of Ukraine “On Scientific and Scientific and Technical Activity”, Law of Ukraine “On the Improvement of Settlements”, CMU Resolution No. 976 “On Approval of the Procedure for Promoting Public Expertise of the Executive Bodies”, CMU Resolution No. 996 “On Ensuring Public Participation in the Formation and Implementation of State Policy”, Presidential Decree No. 272/2015 “On Approval of the Regulation on the Public Control Board at the National Anti-Corruption Bureau of Ukraine”, ministry orders and regulations: Order of the Ministry of Construction, Architecture and Housing and Communal Services of Ukraine No. 7 “On approval of the Regulation on public control in the sphere of urban settlements improvement”, Order of the Ministry of Ecology and Natural Resources of Ukraine No. 88 “On approval of the Regulation on public environmental inspectors” Ministry of Justice No. 2010/5 “On Approval of the Regulation on the Public Council of the Ministry of Justice of Ukraine” and others.

At the same time, the Ukrainian legislation does not establish the meaning of the public control concept. There are a number of contradictions regarding the subjective composition of public control. The Law of Ukraine “On Access to Public Information” fixes the possibility of exercising public control over the provision of information to public administrators by deputies of local councils, public organizations, public councils, citizens personally (Law, 2011 No. 2939-VI). At the same time, the Law of Ukraine “On Settlement of Settlements” fixes that public control in the sphere of settlement improvement is carried out by public inspectors of settlement improvement (Law, 2005 No. 2807-IV). The Law of Ukraine "On Prevention of Corruption" states that the right to exercise public control in the activity of preventing corruption is granted to public associations, their members or authorized representatives, individual citizens (Law, 2014 No. 1700-VII). It is not very clear whether the members of local councils or public inspectors who are appointed by the local state administration are attributed to the subject. Based on the essence of the concept and mechanism of implementation of public control, its implementation should be entrusted to representatives of civil society.

Public authorities are legally obliged to promote the means of public participation and public control, but they are only able to create the legislative and practical conditions for the implementation of various forms of its manifestation. In turn, the development and achievement of an effective level of public control depends only on the subjects of its implementation, who are representatives of civil society.

Legislatively entrenched means of exercising public control in Ukraine are: 1) the Institute of Public Appeal, 2) the introduction of Public Councils by executive bodies, 3) public expertise, 4) public monitoring, and 5) public opinion polls.

At the same time, the legal acts do not enshrine more modern mechanisms of implementation of this measure, such as public audit and public monitoring of state and local budgets.

The most advanced legal means of guaranteeing responsible public governance in Ukraine is still the citizen appeal institution. According to the “Information on work with appeals of citizens which were received by the Cabinet of Ministers of Ukraine in 2019” during 2019, 14 127 individual and collective appeals from 86 340 citizens from all regions of Ukraine and from abroad came to the Cabinet of Ministers of Ukraine. The Governmental Portal's Electronic Petitions service is continuing its work, to which 585 petitions were received in January-September of the current year, 446 of which were published, and 139 were rejected, with corresponding explanations

provided to the authors. According to the data submitted by the central and local executive authorities, 524,459 applications from 1,042.8 thousand citizens were received jointly by the executive authorities in January-June 2019 (Government portal, 2019).

The Institute of Appeal gives everyone the opportunity to influence the activities of public authorities by providing comments, complaints and suggestions to improve the implementation of public policy and the possibility of restoring their rights and freedoms, which have been violated in the course of professional activity of public authorities and officials. In turn, the exercise of the right to apply to public authorities depends entirely on the initiative of the citizen themselves, so it is a clear example of public control over the activities of public officials.

Among the positive aspects of the development of the Institute of Public Appeal, it is also necessary to note the adoption of a new edition of the Law on Citizens' Appeal, in which the institute of electronic petition and e-petition was established in order to implement e-democracy mechanisms in the country. Between January and September 2019, 8,935 e-mails were received from the Government Portal (Government portal, 2019).

A well-established means of exercising public control in the activities of public administration is the practice of introducing advisory bodies set up by executive bodies of Public Councils, which are formed of representatives of non-governmental public organizations, mass media, scientists, and representatives of central executive authorities.

The importance of functioning of the institute of public councils lies in the fact that public councils have a duty to exercise public control over the consideration of the proposals and remarks of the public by the body, ensuring its transparency and openness of its activity, access to public information in its possession. The main powers of public councils include organizing and conducting consultations of executive bodies with the public, submitting proposals and comments to executive bodies regarding their activities and conducting public examinations of the activities of these bodies.

The main positive factor in the interaction between councils and executive authorities is that authorities are mostly accountable to the councils for considering, responding to and justifying the reasons for not considering the proposals submitted by the councils and comments on their activities.

The shortcomings in the activity of public councils, in turn, are:

- low level of joining the expert councils and not engaging in joint consultations with the public and public expertise of the activities of executive bodies of interested persons, scientists and other non-council members, but whose interests may be involved in the process of resolving the issues raised by the Board or whose professional knowledge is relevant when making specific political decisions;

- lack of common criteria on the basis of which the procedure for inclusion of councils would be determined;

- the low level of communication by the councils of public information obtained in the course of exercising their powers to the public; low public awareness of the work of public councils;

- lack of information on governmental web sites of public councils on public websites;

- low level of activity of public councils aimed at carrying out systematic control of the activity of executive bodies.

Today, one of the most effective means of achieving public scrutiny over public administration activities is the ability to initiate and conduct public expert review of their activities.

According to the legislation, public expertise envisages civil society institutions to evaluate the performance of public authorities, the effectiveness of decision-making and enforcement by such bodies, and prepare suggestions for solving socially significant problems for their consideration by the executive authorities in their work (Resolution No 996, 2010). The subjects of public examination are: public associations, trade unions and their associations, creative unions, employers' organizations and their associations, charitable and religious organizations, self-organization bodies of the population, non-state media and other non-business societies, and institutions legalized in accordance to the law (Resolution No 996, 2010).

In Ukraine, civil society institutes are granted the right to conduct various types of public expertise: public scientific and technical expertise, public anticorruption expertise of current regulatory acts and drafts of legal acts, public environmental expertise, public expertise on public health, public health examination of draft programs and plans for ensuring the sanitary and epidemic well-being of the population.

Thus, the legislator has identified a wide range of issues in the public administration's activities, which are included in the subject of public expertise, and guaranteed the need to take into account expert proposals by the public authority in the preparation of socio-economic development programs, state target and regional programs, budgeting appropriate level, addressing issues current activities. On the other hand, the findings of the public examination are only advisory, which casts doubt on the classification of the public expertise as a means of control and approximation with the category of supervision. Measures of administrative influence remain unaddressed when expert’s opinion is not taken into account. The legislator only foresees the need to provide a reasoned answer of the representatives of the public authorities regarding the disagreement with expert’s opinions and suggestions.

In addition, the main problems of not realizing the full potential of public expertise in practice are:

- low level of citizens’ awareness of the possibility of initiating and participating in public expertise of the activities of public authorities;
- low level of public organizations’ professionalism on issues of public expertise, which leads to numerous examples of non-completion of public expertise launched;
- low level of public experts independence from the authorities;
- lack of information and involvement of interested persons when initiating expert examination on issues affecting their rights and interests;
- lack of interest of the officials themselves in carrying out public examination of their activity; lack of development of methodological recommendations and a unified program of public examinations;
- lack of a prior public awareness on effective system of the public examinations plan;
- the difficulty of finding existing opinions and expert advice on the Internet, since there is no single electronic resource that contains consolidated information about the examination in Ukraine, in turn, the authorities often ignore the obligation to publish expert opinions on their own sites.

Another monitoring tool is public monitoring. Monitoring as a control tool is an integral part of the management cycle. The functional importance of monitoring is to provide "feedback": the ability to identify the needs of the management object, assess the effectiveness and efficiency of the selected methods and tools of influence on it by the management entity (Markina V.V., 2008. p. 122). Monitoring applications are linked to the monitoring of the situation or process in the sphere

of management activities, the impact of management decisions made, legal acts on public relations. In doing so, the methods used are not so many inspections, audits, as observations and analysis (Pushkaryova N.O., 2014. p. 69).

The issues that may be the subject of research during the monitoring include: regulatory framework, functions, competence, processes and procedures, public administration activities.

In recent years, there has been an increase in the number of monitoring councils and cases of public monitoring of the Government's performance. On the other hand, the level of implementation of public monitoring in Ukraine does not correspond to the global level of its development in the democratic countries of the West. There are no legally mandated measures for conducting public monitoring of the public officials' activities who have significant influence on issues of transparency and accountability in the activities of public authorities.

Public financial (budgetary) monitoring is also of particular relevance, and attempts to implement it in Ukraine are of a single and declarative nature: reports on the implementation of state and local budgets, which must be made known to the public; introduction of open source electronic resources on ways of allocating and using budget funds; isolated examples of council monitoring the implementation of local budgets, the conclusions of which are not taken into account by the authorities, and the mechanism of mandatory implementation and accountability by the current legislation is not prescribed.

Public scrutiny is ensured through opinion polls. Unfortunately, the full potential of this tool of public control in our country is not used. The main channels of expression are: the ability of citizens to participate in elections and referendums; information space formed by media resources; lobbying; poll. Of particular relevance is the issue of research into the state of development of the Institute of Sociological Research in Ukraine.

In recent years, there has been an increase in the number of independent community centers that conduct sociological research and opinion polls in the context of a specific study ("O. Razumkov Ukrainian Center for Economic and Political Studies", All-Ukrainian Sociological Service, "Institute of Sociology of NASU", "Ukrainian Institute") Social Research Center, SOCIS, Center for Social and Political Studies, Democratic Initiatives Foundation, regional and regional political research centers at universities, professional re regional sociological structures, etc.).

Despite the ever-increasing number of special structures, sociological research is being conducted to a greater extent in the process of securing election campaigns, in order to examine the ratings of political parties and candidates. Today, there is no practice of using public authorities to use the main purpose of the public opinion mechanism, which is to obtain feedback and necessary information that would reflect the public's reaction and response to governmental actions and political decisions. It ignores the provision of the Institute of Public Opinion as a powerful communicative resource for obtaining preliminary social information by representatives of the authorities, which would reflect the support or denial by the public of the programs of social, economic and political development of the state at the stage of forming and implementing political decisions. Thus, the Institute of Public Opinion Research in Ukraine does not perform its own function of providing support to the public sector for political actions and decisions of the government, and therefore is not able to act as an effective means of guaranteeing repressive public governance in the country.

Having analyzed the nature of the legal provision of public control over the activity of public administration in Ukraine, we outlined the problematic aspects. In order to increase the efficiency of

the implementation of legal remedies of the responsible public administration in Ukraine, we offer the following recommendations:

- the need to adopt a normative legal act in the field of legal regulation of public control (for example, the Law on Public Control) and state control (Law on State Control). In the science of administrative law there is no common understanding of such key concepts as "state control in the sphere of executive power", "public control", "public monitoring", "public opinion", etc;

- it is necessary to develop and approve unified and mandatory rules for conducting public examinations, public monitoring, activities of Public Councils;

- carrying out activities aimed at further development of the civil society in the country, enhancing the culture of social control and introducing effective institutions of consultation and partnerships between the authorities and society;

- the main role in conducting public control should be given to NGOs, as most NGOs have the ability and practical experience to influence representatives of governmental structures. The idea of creating public organizations should proceed from the understanding of their main purpose - participation, supervision and control over the observance of the principle of transparency in the activity of executive bodies;

- raising the initiative and active position of the citizens themselves, forming an understanding of their own place in the system of public management, which is achieved by carrying out educational work by representatives of executive bodies of public organizations;

- change of the declarative nature of public control, which in fact is fixed as a recommended measure of oversight (civil society institutions have no right to interfere with the professional activity of executive authorities, the conclusions of public control are advisory, citizens are not involved in the process of budgetary policy making in the state) . In addition, the current level of public funding for public control activities is inadequate;

- the level of development of public control measures in our country does not correspond to the world practice. We propose to put into law enforcement practices: public budget monitoring, social audit, stakeholder survey reports. In addition, the full potential of statutory public control measures is not utilized. As an example: executive authorities do not use the practice of contacting independent opinion polls for the purpose of obtaining social information on the conclusions of their activities and proposals from society at the stage of political decision-making;

- the effectiveness of public control should be enhanced by: establishing a uniform procedure for the formation of control subjects; involvement of independent experts, specialists, scientists and stakeholders in the public oversight process; improvement of the system of informing the public on the implementation of public control measures, their conclusions and the responses of the executive authorities to the recommendations of the control subjects (all this information should be freely available on the official websites of the public authorities);

- public control should be systematic;

- a mechanism should be established and enshrined for the responsibility of control subjects for failure or improper performance of their duties related to public control.

The study of collaborative governance can benefit from more research investigating the role that participant motivations play in shaping the patterns of interaction in these systems that ultimately determine the outcomes achieved through collaborative deliberation and decision-making (Taehyon Choi, Peter J Robertson, 2019. p. 410).

2. Legal means of exercising public control: international level

European Union Legislation in the area of public control is based on an innovative scheme for involving public in the political decision-making process, which consists of the stages of consultation, dialogue and partnership. At EU Member State level, the Counseling-Dialogue-Partnership model has been widespread.

Ensuring public control of public administration activities involves the application of various measures: public discussions, public forums, public juries, public meetings, citizens' initiative, questionnaires, public opinion polls, meetings with stakeholders, creation of public authorities and organizing bodies by the authorities, joint working groups, joint decision-making and implementation of political decisions. In order to increase the transparency and accountability of the public authorities activities, these engagement measures have their own characteristics and are used differently in different countries. The emergence of numerous measures of influence is explained both by the national peculiarities of each state and by the efforts to develop a perfect mechanism for ensuring all elements of public influence in the political decision-making process.

One of the most effective means of exercising public control is the consultation mechanism, which is provided through the creation of public councils, advisory groups and public consultations, including on-line broadcasting.

At the European and national levels, the openness of the political process is ensured by generating public understanding: the issues under discussion, consultation mechanisms, the range of participants in the consultation process, and the factors influencing decision-making in policy-making.

In order to ensure the effectiveness of public consultations and their proper implementation, the European Commission has developed practical guidelines available on the Commission's website, set up a help desk for clarifying minimum principles and standards, and organized training and outreach events, and created online content for official information on Committees and other departments of the Commission that hold official planned consultations with public organizations (CONECCS). The instructions of the Commission have been implemented at the level of the national legislation of Portugal, Poland, the Czech Republic, Italy, Spain, Belgium and other participating countries.

The European Commission, together with the governments of the EU Member States, has developed a major means of representing the interests of civil society in public authorities and of providing political dialogue, which is to form public councils. Advisory structures have been set up at EU level - the European Economic and Social Committee (EESC) and the Committee of the Regions (CoR), whose main task is to bridge the gap between EU institutions and European citizens by involving the public in shaping the European agenda. The EESC is composed of “representatives of employers' organizations, employees and other parties representing civil society, particularly in the socio-economic, social, professional and cultural spheres” (Treaty, Protocol of 1992, 1957).

The EESC model has become widespread at the national level. Examples include the National Economic and Social Council of Ireland, the National Council of the Republic of Slovenia, the Economic and Social Council of Bulgaria, the Joint Committee of the Government and representatives of public associations of Estonia, the Council on Public Benefit Activities at the Ministry of Social Welfare of Poland, in the UK. Public councils are run by structures such as Compact Voice, an independent volunteer and community sector body, and Local Strategic Partnerships, etc.

At the stage of dialogue and partnership relations between the authorities and the society, the level of activity, self-awareness and responsibility of civil society representatives plays an important role. The experience of the West in the field of public sector development includes a large number of funds that have been formed on the basis of intra-national traits and the particularities of the culture of representative democracy in each country.

It is typical for Belgium to hold annual meetings with non-governmental organizations to discuss important state affairs and conclude Framework Cooperation Agreements. In Lithuania, ministries are obliged to send requests to councils with proposals to participate in public consultations, and as a result of such public discussions, the Government prepars a report reflecting civil society involvement in addressing a particular issue with specific information on what proposals were received, provided by civil society structures, taken into account in the activities of the Government (Ministry of Foreign Affairs of Ukraine, 2013). Given the high level of citizen engagement in Sweden, a joint government and public body - the Commission on the Future of Sweden, headed by the Prime Minister - has been set up. The Commission discusses issues of the state in order to find the most effective ways of building public policy. Portugal is pursuing a policy of promoting and publicly financing NGOs on the basis of the Protocol of Cooperation concluded between the Government and the representative body of the Portuguese Platform NGO. A Governmental Council on Non-Governmental Organizations was established in Slovakia, which aims to ensure the development of the civil society sector and to create the conditions for the participation of non-governmental organizations in the activities of public authorities.

In addition, special government liaison groups and non-governmental NGOs have been set up across Europe to build co-operation between the two sectors.

For example, Public Forums are designed to provide broad discussion of interest groups on a particular political issue. In 2005, in the Netherlands, the government resorted to the introduction of the Electoral System Public Forum, with the aim of receiving public sector advice and suggestions on changes to the state's electoral system. The forum consisted of 142 citizens, selected from a random sample of 50,000 people. The final composition of the forum was selected from this group by lottery with equal representation of men and women and geographical coverage of all regions of the country (Kuyumdzhieva A., 2010. p. 73) and the revised recommendations of the public forum were submitted to parliament. In Norway, the Youth Forum for Democracy gathers young people between the ages of 15 and 26 and identifies barriers to youth involvement in politics and proposes new measures for the Ministry of Family and Youth (N. Hnidyul, V. Gorshkova, N. Dniprorenko, T. Markina, 2004. p. 38).

On the basis of suggestions made by the executive authorities in the area of public sector transparency (“National Legal Framework for Increasing Public Participation”), a Public Jury mechanism, an independent public forum, has been introduced in the UK, which has common features from a jury, designed by type of conciliation conferences and aimed at to gather expert information on identified issues. In turn, the government is obliged to publish its own response to the following decision: either as a general response to the results of broad public consultations or in the form of a separate public document (Kuyumdzhieva A., 2010. p. 75). The practice of holding this event has helped to increase the level of public participation in the country and has been borrowed by many EU countries.

In Italy, a directive of the Ministry of Civil Service of 17.10.2006 introduced the Institute of Social Report of the Public Administration, the so-called social budget. The Public Administration

Social Report provides, firstly, that the social budget, in a transparent and comprehensible form, should provide citizens with information on what the executive authorities have done for them in the year and, second, openly reflect the priorities and goals of public administration planned and the results achieved. Thus, the social report is an effective tool for building a dialogue between the executive and the stakeholders.

Article 11 of the Treaty on European Union introduced a new instrument of involvement - the so-called "citizens' initiative" - at least one million citizens, who are nationals of a large number of Member States, may propose to the European Commission, within the limits of its powers, any appropriate proposal on the matter for which, in their opinion, a legal act of the Union for the implementation of the Treaties should be adopted. The procedures and conditions necessary for such a citizens' proposal are determined in accordance to Article 24 (1) of the Treaty on the Functioning of the European Union [9] and the rules of European Commission Recommendation No 211/2011, which introduced the European Public Initiative.

The practice of public initiative implementation has taken root at the level of EU Member States. For example, in the Netherlands, a state-owned website (www.petities.nl) was created, which provides everyone with the opportunity to launch a public initiative, along with the right to petition. Similar websites have been set up by local governments.

Beaking as a fairly common means of dialogue, a great influence on the development of the national developmental program is the mechanism of opinion polling. For example, in the process of discussing changes to the educational program, the UK Ministry of Education conducted a survey on the Government's strategy paper Tomorrow's Future building a development strategy for children and young people. "At the end of this consultation document, a questionnaire was provided which foresaw open and closed questions for discussion (N. Hnidyul, V. Gorshkova, N. Dniprorenko, T. Markina, 2004. p. 34). An Internet platform (WeEvaluate) was created in the Netherlands, where citizens express their views on the quality and social value of public services (Kuyumdzhieva A., 2010. p. 76).

In addition, European countries use a range of transparency tools to monitor the performance of executive authorities. An effective measure of control in the sphere of observance of the principle of transparency by the bodies of executive power is the institute of participatory budgeting. This tool acts as a factor in ensuring open access to budget information, gives citizens the opportunity to exercise their legal right to transparency of the fiscal policy of the executive authorities, reducing the scale of corruption.

Numerous cities in Spain, France, the United Kingdom, Poland, the Netherlands, Germany, Italy, Portugal, Denmark, Switzerland and Belgium have implemented a process of participatory budgeting. Of particular interest is the Dutch city of Hoogeveen, which introduced the so-called district reconstruction budgets, which enabled citizens to plan and spend the budget allocated to their districts and independently monitor their implementation. The City of Selfford (UK) has introduced a special budgetary procedure that allows each local community committee to decide how the allocated budget (about £ 3.00 per person) should be spent (Kuyumdzhieva A., 2010. p. 91). Thus, the mechanism of participatory budgeting enables citizens to better understand the process of public administration and accordingly increases public confidence in the government.

Also, we would like to focus on the soft/social public service of eldercare, which was provide in Sweden. The service of eldercare is a core responsibility of the welfare state and a truly relational service, that is, this service involves physical and emotional care through social interaction. It is

also an enduring service with fundamental importance for the recipient. Another fundamental reason for using this case is that Swedish eldercare is a good example of a mixedprovider welfare system. The public institution holds the ultimate responsibility for the service and welfare of the citizens. The services are financed through taxes and relatively small and uniform fees payed to the local government. However, both in-house and contracted third-party private providers coexist as producers of the service. In Sweden, the local governments are responsible for providing eldercare in addition to other welfare services, such as childcare, education and social services. Eldercare is a major task of local governments and accounted for approximately 18% of their budget in 2017 (SKL). All citizens are offered care by the municipality either at their homes or through residential care operated under the responsibility of the ocal government, and due to the universal welfare system, such services are used by most older citizens to varying degree (depending on their health status) (M. Berg, Tobias Johansson, 2019).

Swedish local governments enjoy considerable freedom of action in how to organize and manage eldercare and are free to choose between in-house production or contracting external, mostly private for-profit, providers (Johansson T., 2008). In total (population mean), the share of external providers for eldercare services was approximately 20% in 2016 with great variation among the municipalities (some municipalities contract for the lion's share of their services) (SKL, 2016).

Consequently, conducting public scrutiny and ensuring the practical implementation of the results of its manifestation, such as public examination or public monitoring, is a manifestation of feedback, evaluation and public opinion, which is a key element in ensuring efficiency in public administration activities.

As a legal means of guaranteeing the responsiveness of the authorities, public control performs the following functions:

- creation of an indirect mechanism for building public trust relations between the authorities and society; ensuring the realization of democracy;
- creating partnerships of cooperation between public authorities and society;
- public control is a means of reviewing and influencing a civil society institute in relation to government officials;
- expresses the moods, positions, needs and priorities of society;
- is a means of reaching a compromise between government and society in the process of government.

The conditions for feedback from public administration are created through the implementation of public control. While non-governmental organizations (NGOs) may act as organization spaces for activism, they also present spaces into which governmental power can be projected (Prince Aian G. Villanueva, 2019. p. 2*).*

Conclusions

Public control is a unique means of implementing the European model of repressive governance. The complexity of public control lies in its nature. Public control is one of the factors of individual socialization, so the level of development of the institution of public control depends entirely on the individual initiative position, as a representative of civil society.

At the national level, public control is ensured through: expertise, monitoring, citizens' appeals, introduction of public councils by executive authorities and public opinion polls. At the

same time, the rules of the current national legislation provide for the advisory and supervisory character of public control.

It should be noted that, unfortunately, the national system of public control in Ukraine does not meet European standards and still remains fully prepared for the necessary transformation. It should be understood that the process of interaction between the public sector and the public authorities, their communicative communication, serves as a stable link between citizens and the state, and the quality, effectiveness and convenience of their provision increase public confidence in the government, as well as ensure progress in the field of sustainable development. Thus, the introduction of the means of implementation of the European model of public control is a source of innovation and a guarantee of improving the quality of life of Ukrainian society, and therefore, it is a paramount obligation of our country.

Thus, the analysis of the domestic legislation revealed that the normative-legal provision of public control in Ukraine does not meet the European standards of providing a model of repressive public governance.

At the international level, the Commission and the Council of the EU have been playing a leading role in developing a system of means of guaranteeing respon- sible public governance in the European Union. It is important to consolidate the recommendations, theoretical foundations and the newest mechanisms for the functioning of the system of public involvement in political decision-making.

EU member states have implemented the implementation of EU legislation in the field of national responsiveness in the activities of national governments. A number of countries with a long history of adopting a model of open and accountable public administration, such as Sweden, Norway, Denmark, Finland, the United Kingdom, Austria, France, the Netherlands, have in recent years actively developed and implemented their own new means of public control over the activities of public authorities, which have been built according to the conditions and characteristics of the national culture, history, environment and needs and expectations within the country.

Therefore, in our opinion, basing on the state of the legal support of the guarantee mechanism of reponsive governance, it is urgent to implement the legal norms of the European Union in the field of public control as an element of the mechanism of guaranteeing repressive public governance, which should take place in several stages:

- exploring the theoretical concept of a system of guaranteeing respon- sible public governance in the European Union in the activities of public authorities in the EU;
- comparative analysis of public administration systems of Ukraine, the EU and the participating countries;
- study of experience of harmonization of CIS countries' legislation with Union legislation;
- coordination of national and foreign conceptual and categorical apparatus;
- the gaps of domestic legal regulation must be filled by the refinement of foreign theory of administrative law;
- general implementation of EU standards in the field of regulatory support, ensuring an effective system of public control in the activities of public administration by reviewing already existing acts to comply with EU standards and adopting new provisions aimed at ensuring the new law and order;
- consolidation of public control in the public sector at the level of national legislation;
- ensuring the practical implementation of the established rules of law.

In order to ensure the efficiency of the process of harmonization of national legislation and the implementation of European Union legal norms in the field of public control, it is necessary to take into account the degree of implementation of the established norms in practice. Ensuring practical implementation of the implemented norms of the EU legislation should take into account the specificity of implementation of public control, which depends on the status of involvement of representatives of non-governmental public organizations already at the stage of developing the European integration course. The relevant practice allows to obtain the necessary information and analytical support for the process of harmonization of the latest standards of activity of public authorities, increase its transparency and transparency to the public.

Civil society is a powerful array of opportunities in preparing society for a change in the nature of legal regulation of relations between government and the public. Public authorities entrusted with the obligation to harmonize national legislation with EU law are obliged to obtain support for the changes introduced in society. Otherwise, implementation as a process that involves the successful implementation and implementation of new European rules and regulations will not succeed. A declarative inclusion of European governance standards is not sufficient to implement an effective adaptation policy. Entry into the EU requires the functioning of European standards in the midst of the candidate country and, therefore, their approval by civil society. The process of legislative changes towards the implementation of EU standards should be carried out in close cooperation with non-governmental non-governmental organizations, which are intended to represent the interests of society and to prepare a platform for the rapid and successful implementation of the latest measures to ensure the implementation of the norms.

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FEATURES OF PROFESSIONAL TRAINING OF FUTURE TEACHERS IN THE CONTEXT OF COMPLIANCE WITH THE RULES OF LABOR PROTECTION AND SAFETY

Abstract*. The problem of ensuring human safety in the labor process has always been relevant and has become aggravated during the period of scientific and technological progress, when a person began to deal with large energy capacities, computer equipment. This problem has become especially significant at the present time. One of the most important activities of the state as an object of management is to ensure the protection of life and health of its citizens, national wealth and the environment. The fifth article of the Constitution of Ukraine states. Health protection is a common duty of society and the state" . Among the factors that cause significant damage to human health and enormous material damage, the fire element takes a special place. Despite significant achievements in the field of scientific and technological development, people have not yet been able to invent reliable means of ensuring fire safety, and the result - the constant human and material losses. Code of Civil Protection of Ukraine defines fire safety as the absence of risk of fires and the possibility of damage to living organisms, property or the environment.*

Introduction.

Problems of improving the training of teaching staff are among the most pressing and urgent issues in our country. The quality of training of the younger generation, and consequently the further all-round development of our country depends on the level of quality of pedagogical activity of teachers. At the same time, objective globalization changes are vectoring in the direction of transition of all processes of human activity from the post-industrial stage of their development to the stage of comprehensive Informatization and technologization. The specifics of this stage in the development of our society requires radical optimization of the training of the younger generation adapted to effective life in modern conditions. A priority in these conditions is the training of students in the use of modern information and production technologies. A teacher of technology carries out such training in the modern practice of domestic education. It would be fair to say that the quality of technology teacher training will determine the quality of the younger generation, and consequently the potential development of modern high-tech economy of Ukraine.

Technological training is been implemented by studying the subjects "Technology" and "Labor training". It should been noted that these subjects are characterized by an increased level of danger for both pupils and teachers, owing to the extensive use of hand and mechanized tools and technological equipment. In addition, the law regulates the teacher's full responsibility for preserving the health and performance of the student during the teaching and production process. The above-mentioned state of teachers' working conditions and safety requirements demonstrates the importance of improving the training of technology teachers, especially in the area of occupational safety and health. Furthermore, it is the responsibility of the technology teacher, while introducing students to different types of technology, to make them aware of different types of risks and hazards, thereby developing in them clear and profound beliefs of responsibility for their own safety and the safety of others, knowledge and skills for their own safe work.

A necessary and timely task for the scientific-pedagogical community is to find, develop and justify new modern approaches to improve the training of future teachers of technology. It is advisable to develop new methodological approaches, substantiate the content and implement modern innovative means of teaching occupational safety and health to future teachers of technology. It is necessary that occupational safety training should be practical, i.e. it should correspond to real conditions of future professional and pedagogical activity of a technology teacher.

1. Concept and components of fire safety systems.

The national fire safety standard DSTU 8828-2019, which entered into force only at the beginning of 2020, contains conceptual requirements for fire safety management and standardized terms and concepts in this area. The focus of fire safety is the elimination of factors that can cause fires and the minimization of their consequences. Objects must comply with procedure of subjects of management of fire safety and management measures to meet the technical requirements of the fire protection system and ensure the fire regime of the object of protection [2].

In the legislative and regulatory field of Ukraine there is no clear definition of the term "fire safety", so the study of approaches to formulate this concept became very relevant. Analyzing scientific sources, we find different approaches to definition of concept "fire safety". V. K. Oknyan in his dissertation study defines fire safety as ensuring the system of fulfilling the requirements of normative-legal acts, regulating human activity in the field of safe use of combustible substances and materials [3, p. 10]. In the work of I. G. Kutz fire safety is a state of protection of people, property, society and state from fires [4, p. 52]. V. V. Kolesnikov understands fire safety as "a set of the social relations regulated by normative-legal acts, directed on prevention of possibility of fire, prevention of possibility of influence of dangerous factors of fire on people and property" [5, p. 23]. V. A. Domansky defines fire safety as a state of protection of people, objects, material values and the state from fires. In addition, the scientist attributes fire safety to the system of national security of the state, with which it is difficult to disagree [5, p. 116]. G. Ponomarenko, analyzing the concept of fire safety, reveals its multifaceted nature socio-economic importance, legal and technical principles, environmental consequences and much more. There is a lot of information in literature about technical features of fire safety, economic and legal problems connected with non-compliance with fire safety rules. According to the researcher, fire safety is one of the areas of national security, which "is to protect human life and health, property and other values of physical and legal persons, national wealth and the environment, which ensures timely prevention, detection, termination and neutralization of fires and their consequences"[7, p. 49].

Fire safety of an object is been defined by its condition, which with a regulated probability excludes the possibility of occurrence and development of fire and influence on people of its dangerous factors, and provides protection of property. We find here a definition of fire risk, which reflects the possibility of the appearance and development of fire. The purpose of fire safety of an object is to prevent fire at the level set by the current regulations and in case of fire occurrence to detect and extinguish the fire in time, to limit its spread, to protect people and property [8, p. 23].

Fire hazards can be different - posing a direct threat to people's homes and health or causing damage to the environment and leading to significant material losses. In addition, fire hazard includes the action of the following indirectly dangerous and harmful factors: toxic products of combustion; fire; increased ambient temperature; smoke; lack of oxygen; destruction of building structures; explosions, leakage of hazardous substances due to fire; panic. Therefore, when considering the main issues of fire safety it is important to define the key concepts of the issue.

A fire is a combustion outside a specific hearth that is uncontrolled, spreads in space and time and poses a threat to human life and health, the environment and results in material damage. Fire is one of the hazards of fire, because the temperature of the flame can reach 1200-1400 °C and people in the radiation zone of fire flame can get burns of varying degrees of severity, which can lead to death [9, p. 6].

The danger of high temperatures caused by fire is that inhalation of heated air together with products of combustion can lead to respiratory damage and death. An increase in ambient temperature of up to 60 °C during a fire is already life threatening.

Toxic combustion products, the main sources of which are a large number of synthetic materials in modern industrial, domestic and office buildings, pose the biggest threat to human life. On burning polyurethane foam and nylon produces hydrogen cyanide (hydrocyanic acid), on burning vinyl - hydrogen chloride and carbon monoxide, on burning linoleum - hydrogen supplied and sulphur dioxide, etc., inhalation of which at a concentration of 0.4% is fatal for humans. For example in cellars, mines, tunnels and warehouses, its content may vary from 0.15 to 1.5% and in rooms from 0.1 to 0.6% [9, p. 9].

One of the causes of fires is smoke, a large amount of fine particulate matter in the air, which can irritate mucous membranes and respiratory organs. In addition, smoke in a room impairs visibility, which slows down evacuation. For example, if a room is very smoky, the visibility of objects illuminated by a 20 W light bulb is no more than 2.5 m.

Lack of oxygen is also life threatening due to the chemical oxidation reaction of combustibles and materials during combustion. When the oxygen content in the air drops, to 14% (the normal rate is 21%), people lose coordination of their movements, and weakness, dizziness and mental confusion occur [10, p. 22].

Explosions during fires increase the burning area and may lead to the formation of new ones. Explosions of hazardous substances can been caused by heating when exposed to fire, by the depressurization of tanks and pipelines with hazardous liquids and gases. Persons in the vicinity may been exposed to the blast wave and be injured by debris.

Destruction of building structures is one of the indirect hazards caused by fire and is been characterized by the loss of load-bearing capacity of structures due to high temperatures and explosions. The danger to people lies in the possibility of significant mechanical injuries under the debris of collapsed structures and the inability to evacuate due to blocked exits or collapsed escape routes.

Panic is one of the factors that can lead to massive loss of life in a fire, as people lose control of their actions and their judgement. It is mainly been caused by rapid changes in a person's mental state, usually of a depressive nature in an extreme situation. Most people who are not sufficiently trained and mentally resilient are susceptible to panic when confronted with complex and unusual fire conditions [11].

Any fire can only occur where there are combustible or flammable substances, materials, certain structures or machines capable of heating, and when any source of ignition arises in the environment of combustible materials or is been brought from the environment.

Fire prevention systems thus aim to achieve two main objectives:

1) eliminating and preventing the creation of optimum conditions for ignition in the premises and open areas of enterprises (reducing the amount of such materials per unit area, placing them at a safe distance from sources of fire or high temperature, using non-combustible or flammable materials when constructing production buildings; regular cleaning of premises from rubbish, dust, production waste).

2) avoidance of sources of ignition (direct fire, overheating of any technical equipment systems, generation of sparks from mechanical impacts, systems operating with friction or current, static electricity or lightning, installation of such devices or equipment mechanisms in unsuitable places or in an open area).

The following methods are been used to prevent fire:

- Reducing the amount of oxygen in the room to a level at which combustion or shouldering is not possible. This is achieved by adding diluents to the combustion zone: inert gases, aerosols, non-combustible vapors (including water vapor) and other non-combustible substances;
- cooling the combustion zone and the most flammable materials to a temperature that does not cause the ignition of these substances (for most flammable substances this is below 10000 °C);
- Separation of combustible materials from the ignition zone;
- Application of chemical fire-extinguishing (inhibition) methods;
- Mechanical fire extinguishing by strong jets of water or inert gas [12, p. 31].

Water is the most common extinguishing agent. It has a sufficiently high heat capacity and a relatively high evaporation temperature, is chemically neutral to most substances in nature, and is very accessible and inexpensive when used as an extinguishing agent. It is most effective at absorbing heat at temperatures below 100 °C. At 100 °C its heat absorption decreases, it evaporates and removes part of the heat from the burning materials and brings it below the critical value. The most important properties of water for extinguishing fires are:

1) Cooling effect, which results from considerable heat capacity and intense evaporation.

2) Dilution by water vapor of the medium in which the ignition occurred and displacement of oxygen from the cell, which is due to the much larger volume of vapor compared to water (1,700 times).

3) Mechanical destruction of fire from the surface of burning materials.

In such cases where combustible substances, mainly liquids, dissolve and continue to burn, e.g. oil or petrol, extinguishing with a jet of water is ineffective and may even increase the size of the area covered by the fire.

Improving the extinguishing effect can been achieved by spraying water over the seat of fire. A single jet of water can been used to deliver water over long distances if the fire is large enough, but in this case, the extinguishing mechanism will be to cool the combustible materials or

substances, or to suppress the flames. The use of a mixture of water and soapy substances, which reduce surface tension, allows a more effective wetting of the surface of combustible materials during a fire and therefore a better cooling of them.

The main disadvantages of water as an extinguishing agent are: violent chemical reactivity with some substances (acids, alkali metals, metal carbides and hydrides); water's ability to conduct electricity; water freezing at temperatures below freezing; negative effects on some materials that it can damage (e.g. paper, so use in archives or libraries is not advisable). Systems are not effective in areas where there is a fire risk from explosions; insufficient wetting power and sticking it should been remembered that when extinguishing oil and petroleum products with water jets, it is possible for them to be ejected or sprayed, which increases the burning area.

Some countries have developed recommendations for extinguishing fires with hot water. According to these recommendations, the area of rooms controlled by a single system should not exceed 250 square meters. If the room is larger, it should been divided into sections with partitions that reduce the possible combustion area. The sprayed water jets must cover the entire area of the section at the specified flow rate.

It is more effective to apply the water horizontally to the floor or at a certain angle to the floor. In the latter case, the diameter of the water spray is no more than 700 mm, if the diameter of the water supply nozzle is 4-8 mm. With horizontal irrigation, it is advisable to position the pipeline 0.3-0.5 m above the floor. With this method, the effective irrigation area is 5-6 metres in diameter, provided the nozzle diameter is 5-6 mm. The use of such systems is possible in rooms with low air tightness, but the intensity of the extinguishing agents must been increased by a factor of three. Calculations determine the amount of water needed to extinguish the fire in a particular room, its temperature and supply pressure. The distance between sprinkler nozzles must not exceed 0.6 m. The greatest disadvantage of using heated water to extinguish fires is the high-energy costs of maintaining its temperature [54, pp. 11-69].

Fire protection system (FPS) is a system of technical means that is been installed at the facility and is designed to determine the presence of fire, localization and suppression of fire without human intervention in order to protect their health and life, preservation of property and the environment. [20, p. 18].

According to DSTU 8828: 2019, fire safety of a facility shall been provided by fire prevention system, fire protection system and fire safety management system of the facility. Fire safety systems aim at preventing fires and exposing people to their hazards at the required level. The probability of fire occurring in a facility is determined during the design, construction and operation phases. In order to assess the probability of fire occurrence in existing plants or facilities or buildings under construction it is necessary to have statistics of various fires and explosions. The probability of occurrence of a fire in the designed objects is determined based on the reliability indicators of the components of the object, which allows calculating the probability of occurrence of situations that can lead to the realization of fire and explosion events [2].

2. Fire protection as a basic component of fire safety.

The basis of the fire safety system is fire protection, i.e. a set of mandatory rules for the conduct of people and employees, rules types of work and the operation of a facility or product, aimed at ensuring its fire safety. Fire protection systems are been divided: Automatic fire extinguishing systems; Warning and alarm systems; Automatic fire extinguishing systems; Fire alarm and evacuation management systems; Smoke protection systems; SDR control systems.

Fire protection systems also includes: lightning protection, fire lifts, fire doors, fire hydrant kits, air valves, gates, fire screens and more. Today, these SPZs are installed at all modern facilities, but still the old systems, which cannot differ in principle from the new ones in terms of functionality and perform their functions well with proper maintenance.

Automatic fire extinguishing systems (AFS) play an extremely important role in protecting against fires and their consequences. They are fire-extinguishing systems that are capable of detecting signs of burning, warning of the presence of a fire and delivering certain extinguishing agents to the points of fire without human intervention [54, p. 48]. These systems must operate for less time than the time of the initial phase of the fire, provide the necessary amount or volume of extinguishing agent and prevent the fire from spreading for the time necessary for the application of operational forces and resources. At the same time, they act as fire alarms.

One or a combination of the following shall provide fire protection:

- Provision of fire extinguishers and appropriate types of fire-fighting equipment;
- Use of automatic fire alarm and extinguishing systems;
- The use of building structures and materials with standardized fire safety performance;
- Impregnation of building structures with flame retardant compositions and application of flame retardant paints to their surfaces;
- The use of devices that prevent the widespread spread of fire;
- Installation of technical means for automatic and timely notification of people about the need to evacuate;
- Provision of means of collective and individual protection of people from fire hazards;
- The use of anti-smoke protection.

Automatic water fire extinguishing systems remain the most common means of extinguishing class A, B, C fires. An automatic water suppression system is a system of technical means capable of extinguishing a fire by forcing a certain amount of water into the seat of fire. It is able to detect, localize and extinguish fires with water when signals of fire breaking are available [10, p. 97].

Water fire extinguishing systems are been used in a variety of applications. It should been used in all cases where the use of water is effective and will not cause harm. When selecting water fire extinguishing systems to provide fire protection for facilities, one should consider the level of fire risk, the properties of the materials stored indoors and analyses the hazards of the technological processes used in the facility.

According to the method of water supply, such systems are been divided into sprinkler systems, drainage systems and fire extinguishing systems. Sprinkler systems are been used in rooms where the minimum air temperature is at least 5°C. Pre-extinguishing systems are equipment that can been triggered by several detection systems. That is, it requires the operation of several fire protection equipment to activate it.

A distinction is been made between the following systems for the storage of extinguishing agents: centralized storage, which is located outdoors and modular storage, which is located directly indoors.

The classification division of automatic gas fire extinguishing systems (AGFES) is been based on the design features and physical and chemical characteristics of extinguishing agents. A distinction is been made between centralized and decentralized storage depending on the installation

process. Centralized storages for gas fire extinguishing systems have a separate room from where the substances are been fed to the source of ignition in different rooms of the facility.

Decentralized storage facilities contain a stockpile of extinguishing agent where it is located. Centralized storage facilities are often capable of protecting a much larger area of rooms and even the entire building against fire. ASGP extinguishing agent storage systems are structurally been divided into: modular gas fire extinguishing units, automatic gas fire extinguishing units and isothermal units. Modular automatic systems are ASGPs, which have one or more modules filled with gaseous extinguishing agents and located in a particular room that needs fire protection or at the entrance. The modules are cylinders filled with a specific gas-extinguishing agent and equipped with a locking and triggering device.

Automatic gas fire extinguishing systems are a system of modules connected by common manifold, manual and automatic starting devices, which make it possible to control the release of extinguishing agents only from the required modules. Isothermal gas fire extinguishing systems are been used to protect large volume fires and can store about 25 tons of extinguishing gases [3].

Powder fire extinguishing systems (PFS) are a set of technical means that are been designed to extinguish fires with extinguishing powders. The scheme of operation of such fire-extinguishing systems is been based on the phenomenon of pseudo-capture of the powder layer when the working gas enters the enclosure tank and the extinguishing powder is released into the fire zone.

PFS is been used for extinguishing various fires, phlegmatic or explosion suppression in particular. According to national building regulations [9], the use of powder extinguishing systems can been used for all fire classes (A, B, C, and E, D). Powders have a very high fire-extinguishing ability, fast action, versatility, low cost and can been used in unheated rooms. This number of advantages determines a wide spread of powder fire-extinguishing systems in Ukraine. The systems are not efficient in extinguishing of deeply penetrated fires, shouldering of class A1 substances (substances able to self-ignition and shouldering indoors). Pyrophoric materials that can burn or smolder without access to the surroundings and flammable gases of group C. Powder systems According to DBN B.2.5-56: 2014 [13, p. 26] fire extinguishing systems are been classified according to the following features:

a) By extinguishing method: powder extinguishing systems by volume; surface powder extinguishing systems; three-dimensional local powder extinguishing systems; surface powder extinguishing systems;

b) By method of activation: - automatic with multiple manual local or remote start; self-contained modular systems;

c) By automatic actuation method: fire-extinguishing systems with electric start; fire-extinguishing systems with pneumatic start; fire-extinguishing systems with mechanical start; fire-extinguishing systems with combined start;

d) By design: fire-extinguishing systems with distribution pipeline system; modular fire-extinguishing systems equipped with shut-off and spray devices; fire-extinguishing systems with barrels; manual fire-extinguishing systems;

e) By type of working gas source: fire-extinguishing systems with external compressed working gas tanks of independent type; fire-extinguishing systems with an external working gas tank of centralized type; fire-extinguishing systems with gas generator; pump-type fire-extinguishing systems.

Aerosol fire-extinguishing systems (SAPS) are been used for three-dimensional containment and suppression of fire in the premises. SAPS are most effective for extinguishing fires caused by inflammable substances or flammable liquids (class B fires), some solid combustibles such as plastics or rubber, live electrical equipment, electrical insulation, for containment and extinguishing fires. Combustion of LLW and HLW (petrol, paraffin, diesel fuel, organic solvents, i.e. class B fires); some solid combustible materials (plastics, rubber - fires of subclass A2); electrical equipment (including live ones), electrical insulation materials [4, p. 113].

When extinguishing combustible materials that can shoulder (wood, cotton wool, cloth, paper or cardboard - Division A1 fires, the use of aerosol systems often extinguishes the flames, but overheated shouldering sources can continue to smolder and cause a re-ignition when they reach a critical temperature. Such systems are most commonly been used for fire protection in residential buildings, administrative, educational, and industrial and warehouse buildings, offices, factory production facilities, laboratories, power plants, rail and road vehicles, marine and river vessels. Premises under the control of these systems must be not more than 10 m high and not more than 10 000 m3 in volume, the leakage parameters must not exceed 0,04 m-1 [13, p. 59].

Fire extinguishers cannot provide absolute fire suppression and must not be used to extinguish: fibrous, porous, loose and other combustible materials capable of self-ignition and shouldering within the materials (firewood, cotton, grass meal); chemicals, mixtures thereof, polymers prone to decomposition, self-ignition or combustion without oxygen access; metal wires and pyrophoric substances; certain metal powders (magnesium, zirconium, titanium).

Facilities where fires can lead to mass casualties of the public by fire hazards and their secondary manifestations or to significant material damage are required to have fire safety systems that ensure the lowest possible probability of a fire occurring. The designers and technologists determine the values of this probability and the main input data for the development of the set of technical and organizational solutions for the required fire safety level in each individual case are the current fire safety regulations, the explosive properties of the materials and substances used. In the production cycle, the amounts of explosive and flammable materials and substances and the production characteristics. Based on that information the explosion- and fire hazard criteria as well as explosion- and fire hazard classes of rooms and buildings are determined.

The process of development and implementation of effective measures aimed at minimizing the risk of fire and reducing the amount of possible damage in case of fire is been carried out by solving the tasks of formation and implementation of the mechanism of state management of fire safety. The functional responsibilities of a teacher of technology, which we defined earlier, indicate that one of his/her tasks is to identify and eliminate the causes of possible injuries to students and to maintain working tools and equipment in good working order. The content component of the model EOP programmer "State management of labor protection, state and public control" is important for the reason that the responsibility for unsatisfactory organization of safe conditions of educational process is borne by a teacher of technology. This is justified by the fact that, as a rule, he/she is the head of the labor training room. A future teacher should be clearly aware of the control procedure, understand his/her duties and responsibilities of the state supervisory bodies' employees, such information should be included in the content of the EOP course. The functioning of occupational safety and health system in an educational institution is a prerequisite for its activities, so a future specialist in technological education must understand his/her responsibilities in the field of occupational safety and health.

The section "Labor protection training" is been designed to form those knowledge and skills that a future teacher will most often apply in his/her professional activity. This statement is been unreasonable, because the teacher provides direct training in the safe performance of certain types of technological operations. His or her task is to identify and explain the hazards and introduce methods of prevention. The next step is to check them and record the control in the logbook. It is worth noting that the teacher should understand their health and hygiene competence in extracurricular activities (excursions, visits to production facilities), so the question of instruction in the content of this section should been designed for the organization of labor training and technology, not for the production process, as it usually is.

Promoting the prevention of injuries and occupational diseases is the task of any professional. In this context, the dangers of the technology teacher's job are multifactorial, since potential injury threatens not only the students, but also the teacher in particular. It is the teacher's task to monitor the correct performance of the various operations by the students and to acquaint them with the safe ways of performing these operations. Injury prevention is a preventive component of occupational health and safety for technology teachers. Since the task of labor education is to provide vocational guidance to students, which consists in familiarizing them with different types of occupations, the teacher is obliged to form knowledge of students about the nature of work of workers in different branches of the national economy and possible dangers threatening a specialist. The most complete information about the conditions and specifics of a worker's work will enable the pupil to make the right choice - to ensure the pro-orientation purpose of the lesson. General rules of injury prevention do not fully provide the teacher of technology of education, because the teacher must be aware of potential hazards that threaten not only the student, but also him or her personally. It is the teacher's responsibility to create normal (optimum) conditions of microclimate, sanitation and hygiene and to monitor their observance.

Conclusions

1. Analysis of the state of research of the problem of organization of fire safety in scientific theory and practice The basic concepts of research: "fire", "fire safety", "fire safety of the object", "fire safety system", etc. have been considered. The analysis reveals the main levels of fire hazards, as well as indirectly dangerous and harmful factors. It was also been found that the provision of fire prevention system, fire protection complex and fire management system (FMS) of the object is been regulated by the state standard of Ukraine 8828: 2019. The main components that can be included in the fire protection system are been defined: Fire extinguishers and related types of fire equipment; Automatic fire alarm and fire extinguishing systems.

Building structures and materials with standardized fire safety performance; impregnation of facility structures with flame-retardants and application of fire protection paints to their surface; devices to prevent wide spread of fire; technical means for automatic and timely notification of people about the need. On the basis of the content-analysis of scientific works the legal base of regulation of the sphere of fire safety in Ukraine which consists of Constitution, laws, decrees and orders of the President, regulations of fire safety, decisions and orders of the Cabinet of Ministers, decisions of state authorities and local authorities is determined. The study of a number of scientific sources on the problem of state management in the field of fire safety allowed clarifying the existing directions in this area and identifying the most important aspects that should been reflected in the fire safety curriculum. The main groups of state measures in the field of fire safety are: Law making; Law enforcement; Control and supervisory; Constitutive; Organizational.

The paper reveals features and characteristics of each of these groups. In addition, methods of organizational mechanism of management of fire safety are been analyzed and characterized, among which are: coercion; persuasion; administrative-psychological measures.

The requirements to fire safety of objects and means of fire protection, regulated by the Rules of fire safety in Ukraine, are been analyzed in the article. Duties of a head of enterprise or institution, a procedure of establishment of fire safety, conducting of briefings on fire safety on objects, organization of evacuation of people from buildings and professional training of firemen.

2. The formation of the content component of fire safety in future teachers of vocational training in occupational safety is been based on competence and integration approaches.

Integration of fire safety training is been carried out at the level of didactic synthesis, which is been characterized by the following features: Coordination of individual scientific knowledge and preservation of own subject of study; Integrative selection of methods corresponding to the content of training material; Concentration of training material and its compaction; sufficient volume of training material for assimilation at the training session.

A promising area of scientific research is the further scientific and methodological development of the content of the proposed integrated course on fire safety and the development of educational and methodological support for the organization of distance learning.

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INFLUENCE AND RISK MINIMISATION FACTORS OF THE NATURAL POPULATION MOVEMENT

Abstract*. The current demographic situation in Ukraine is experiencing a crisis due to a rapid decline in the birth rate, a high mortality rate and low life expectancy in comparison to other countries. In this connection, the relevant issue is the development and adoption of appropriate measures of state policy focused on improving of the demographic situation, the basic foundation of which should be systematic monitoring, evaluation of projection trends and comprehensive analysis of recent shifts in population reproduction, consideration of multiple factors to determine their quantitative impact on the natural movement of the population. The purpose of the article is to identify the peculiarities of the demographic situation in Ukraine, to assess the prospects and risks associated with the deterioration of the natural movement of the population, and to form a methodological toolkit to identify the influencing factors on fertility and mortality in Ukraine in order to improve the validity of stabilisation measures. The study found that the current tendencies that are driving changes in Ukraine's demographics are a rapid decline in the population, due to a falling birth rate and a prevailing mortality rate. An assessment of the scale of the risk situation in the demographic sphere in Ukraine has been made through projecting. calculations have shown that the high mortality and depopulation rates are becoming a threat to the development prospects of the nation as a whole. The result of the ongoing predicted tendencies in fertility and mortality - high rates of fertility decline - will be an increase in natural decline in 2025, leading to a significant excess of older people over the number of working-age people in the country's population structure, and further predetermining the growth of the poor population and reduction of consumer demand with a corresponding deterioration of the socio-economic indicators of Ukraine. By constructing a correlation-regression relationship between fertility and factors, the most influential of these factors have been identified: income factors, poverty level, unemployment rate and the share of women of reproductive age; and the extent of their influence on the fertility rate. The determining factors influencing the mortality rate in Ukraine are: morbidity, unemployment rate and standard of living, while environmental indicators have shown a rather weak relationship with the mortality rate.*

Introduction

The fundamental source of economic growth in any state is labour potential - a factor of national economic productivity. Its value and quality depend mainly on the demographic state of the country. Depopulation of the population, falling birth rates, reduced life expectancy, increased mortality and migration losses, ageing of the nation have a significant negative impact on the quantitative and qualitative structure of the labour force, which satisfies needs of society and state. The current demographic situation is characterised by unfavourable tendencies and negative shifts

in the population structure. For several decades now, demographers have noted in Ukraine the development of a deep demographic crisis that predetermines the emergence of new risks in the socio-economic sphere and poses threats to the economic security of the state.

Accordingly, an adequate response to the extremely threatening state of Ukraine's demographic system needs to be based on knowledge of the domestic demographic realities in a broad historical perspective and in the relevant international context.

The object of the study is population of Ukraine.

The purpose of the study is to identify the features of the demographic situation in Ukraine, assess the prospects and risks associated with the deterioration of the natural movement of the population, and to form a methodological toolkit to identify the influential factors of fertility and mortality in Ukraine in order to improve the validity of measures to stabilise it.

Literature Analysis

The factors influencing the trends of natural population movement and the risks associated with its reduction are reflected in the works of foreign researchers, in particular: Biggs and others. (2010), Bohk & Rau (2015), Kertzer & Laslett (1995), Smelzer (1998), Lesthaeghe (2010). In the works of leading Ukrainian scientists-demographers such as Hladun (2015), Herasimenko (2017), Krimer (2018), Libanova (2006, 2014), Paliy (2013), Yakuba (2015) and others, the current and projected trends of the demographic situation in Ukraine have been widely studied, changes in the structure of the population have been analysed, the main factors of demographic shifts have been identified, and the interrelations between demographic trends and socio-economic development have been shown. In addition, in the works of Kurylo (2019), Lisitsyn (2010), Ryngach (2016), Chepelevska (2018) the state of health and causes of mortality are thoroughly studied in the medical and demographic direction. However, the necessity of reconsidering of contemporary demographic problems dictates the requirement for systematic monitoring, evaluation of projected trends and comprehensive analysis of recent shifts in fertility, mortality and life expectancy of the population. Moreover, in order to assess population`s fertility and mortality, it is important to take into account a wide range of factors in order to quantify their impact.

Methods

To achieve the goal of the study and to realise the set objectives, the following theoretical research methods were used: theoretical generalisation, structuring, systematic and statistical analysis, comparison, economic and mathematical modelling and others.

Results

1. Demographic Shifts In Ukraine

Among the main demographic factors of structural transformation are fertility and mortality rates, natural and mechanical increase, the reproduction rate, average life expectancy and the like. They determine the demographic situation in the country, which in Ukraine is characterised by a decline in the birth rate, an increase in mortality in the working-age population, the outflow of the working-age population abroad in search of work and the growing need for medical and social assistance for the elderly. Academician E. Libanova, studying demographic shifts during 22 years of Ukraine's independence, states such features as: absence of cardinal changes in the mortality regime typical of this period, observed in most Eastern European countries; formation of a large-scale migration outflow of population, quite significant for the demographic development of the country; rapid demographic ageing; depopulation; formation of territorial demographic degradation; depopulation. In her opinion, in the foreseeable future, it is most likely that further ageing and reduction of the population of Ukraine will take place (Libanova, 2014).

As shown in Table 1, between 2010 and 2018, the available population decreased in Ukraine from 45.5 million to 41.9 million people. And while in 2010, according to the State Statistics Committee of Ukraine (Population and migration statistics, 2010-2018) there was a natural decrease in the population due to the number of deaths exceeding the number of births by 200,5 thousand people, in 2018 there was more than 250 thousand people. Fertility in Ukraine has been gradually decreasing, with the sharpest decline recorded in 2015 (by 11.6%). But even though mortality rates have declined, Ukraine remains a leader in certain types of diseases, according to the World Health Organization (Review of social determinants and gaps in health indicators in the WHO European Region: final report, 2014).

Table 1. Demographic indicators of Ukraine

	2010	**2011**	**2012**	**2013**	**2014**	**2015***	**2016***	**2017***	**2018***
Resident population (end of year), thousand people	45598,2	45453,3	45372,7	45245,9	42759,7	42590,9	42414,9	42216,8	41983,6
Number of births, thousand people	497,7	502,6	520,7	503,7	465,9	411,8	397	364	335,9
Number of deaths, thousand people	698,2	664,6	663,1	662,4	632,3	594,8	583,6	574,1	587,7
Natural increase, decrease (-), thousand people	-200,5	-162	-142,4	-158,7	-166,4	-183	-186,6	-210,1	-251,8
Number of incomers, thousand people	683,4	669,4	726,3	675,9	542,5	533,3	256,8	442,3	629,3
Number of people leaving, thousand people	667,3	652,3	664,4	644,0	519,9	519,1	246,2	430,3	610,7
Migration growth, decrease (-), thousand people	16,1	17,1	61,8	31,9	22,6	14,2	10,6	12,0	18,6

** - excluding the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the area of the United Forces operation.*

Source: constructed by the authors based on (Population and migration statistics, 2010-2018; Statistical Yearbook of Ukraine for 2017, 2018)

In general terms, the population at the beginning of each year is based on fertility, mortality and migration, and is defined as follows:

$$S_{t+1} = S_t + N_t - M_t + \Pi_t - B_t \quad (1)$$

where S_t and S_{t+1} - number of population at the beginning of the year t and year (t+1) correspondingly;

N_t - number of births in the year t;

M_t - number of deaths in the year t;

Π_t - number of people coming to the territory in the year t;

B_t - number of people left the territory in the year t.

Over the last 7 years, the population of Ukraine has decreased by 3.4 million people (by 7.4%; in 25 years by 20.7%) (Statistical Yearbook of Ukraine for 2017, 2018) which resulted, first of all, from the decrease in the total birth rate, increase in the mortality rate, increased migration activity of population, as well as annexation of Crimea and military actions on the territory of Donetsk and Luhansk regions.

At the beginning of 2019, the available population of Ukraine was 42153.2 thousand people, of which 29256.7 thousand people (69.4%) lived in urban settlements and 12896.5 thousand people (30.6%) lived in rural areas (Population and migration statistics, 2019).

In 2018, the population of Ukraine decreased by 233.2 thousand people, including urban population by 114.3 thousand and rural population by 118.9 thousand (Population and migration statistics, 2018).

The decrease in the population of Ukraine was due to the natural population decline.

The composition of Ukraine's population is characterised by a significant gender imbalance. The numerical advantage of women over men in the composition of Ukraine's population has been observed since the age of 36 and increases with age.

According to the data (Population and migration statistics, 2018), the number of men as of 1 January 2018 was 19558.2 thousand and women 22658.6 thousand; there are 1159 women per 1000 men (in urban settlements - 1180, in rural areas - 1112).

Ukraine has developed a population structure characterised by a high proportion of older people and a low proportion of younger ones (Figure 1). Moreover, in 7 years the population between 15 and 64 years of age, which constitutes the demographic basis of the workforce, declined by 10.6%. Further, the decline in the share of the largest group “18 years and over” continues, from 82.5% in 2010 to 81.9% in 2017 (Figure 1).

Already today, scientists in most developed countries have noted the emergence of a new phenomenon - the so-called “young old”. Its essence is that people who have reached the age of 65 cannot be classified as old according to any other criteria than the officially recognized age in most countries. These people have not only high professional and educational potential, but also sufficient health. Thus, Kertzer and Laslett (Kertzer, D. & Laslett, P. (1995) proposed to divide the human life cycle into four components instead of three, as it was previously accepted. The last two are the “third age” (the Young Old) and the “fourth age” (the Old Old). We can fully agree with scientists that the traditional image of the “infirm old”, who has health problems and requires constant functional support, can nowadays be applied mainly only to people who are in the “fourth age” group. It is precisely for them that the issue of care provision is becoming increasingly important - there is a growing need for care homes and other specialised institutions.

This has caused an increase in social expenditure and exacerbated the problem of balancing policies aimed at increasing the independence of older people on the one hand, and providing social services to those who need them on the other, while encouraging the involvement of family members in caring for the older generation.

In the group of single people of the “fourth age”, social risks take on a particular dimension - above all, their health status is much worse than that of people living in families and, accordingly, the financial costs of their care are much higher and are not shared with the family.

As for the “third age”, it is the result of successful socio-economic and demographic policies, which makes it possible to consider this group as a significant resource on the labour market, which in turn will significantly improve their quality of life.

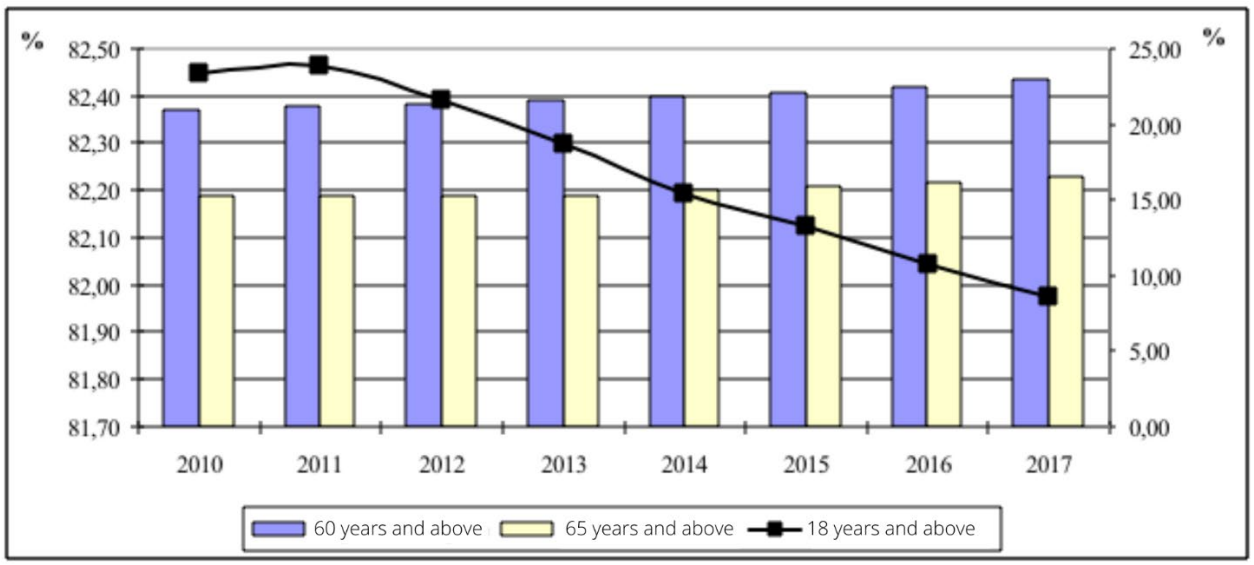

Fig. 1. Dynamics of the share of age groups in the total population, %

Source: constructed by the authors based on (Statistical Yearbook of Ukraine for 2017, 2018)

This scenario seems unlikely in Ukraine because of the low probability of men reaching this age, but the corresponding indicators for women are comparable with European ones. In this regard it is necessary to quote quite a fair conclusion of N. Smelser (Smelzer, N., 1998) - the main difficulties of elderly people consist in the fact that they have to overcome numerous, imposed on them stereotypes of behaviour that seem to be peculiar to their age. The danger of stereotypes lies in the fact that people often perceive them as predictions that are justified, regardless of their will. Thus, in the countries of the European Union the share of working pensioners after 65 years of age is very significant, in some countries it reaches 15% (Lesthaeghe, R., 2010). The potential of the elderly should therefore be seen as an important basis for reducing social risks. The implementation of relevant policies, especially for Ukraine, cannot be based only on raising the retirement age - in this case the development of motivational mechanisms is related to the desire to work and have a full life.

2. Projections

The purpose of projections and warnings is to predict possible negative situations in future changes in population size and structure, fertility, mortality and migration. They form the basis of methods for early risk management of demographic development of the population.

The results of functional projecting include obtained projecting information on the population required for decision-making in the economic, social, political and other spheres of public and social institutions.

The tools of population projecting can be the application of mathematical functions, such as: linear, exponential and logarithmic functions, or the component method, involving the movement of age groups (The integrated demographic forecast of Ukraine for the period up to 2050, 2006). These methods are mainly used for projecting the population size of small areas, especially where reliable demographic statistics are not available.

The extrapolation method uses linear and exponential functions, i.e. data on average annual absolute changes of the population over a period or on average annual rates of growth or increase. This makes it possible to calculate population projections for any number of years ahead, assuming

they are stable over the entire projection period. Extrapolation is a function of time, in which the effect of other factors determining its direction and intensity is accumulated (The integrated demographic forecast of Ukraine for the period up to 2050, 2006).

In principle, any projection is based on an extrapolation of a trend in one form or another. Even the method of expert judgement involves the application of trend extrapolation with probable changes, which again are based on trends.

Extrapolation methods are based on the hypothesis that identified past trends will persist in the future. With that method, it is possible to make an indication of the dynamics of a demographic phenomenon if its change is consistent with established trends. For example, it is possible to find a projected rate of population ageing if a long-term decline in fertility is known. This makes it possible to calculate the overall decline in population mobility, as young population is characterised by migratory mobility. However, this method cannot be used when projecting the development of certain population groups, as it is based on the notion of a certain "average" development and does not take into account the specifics of their development (age groups or cohorts).

Thus, if we apply the continuation of existing trends method, we can obtain a projection of the total population until 2025 (Figure 2).

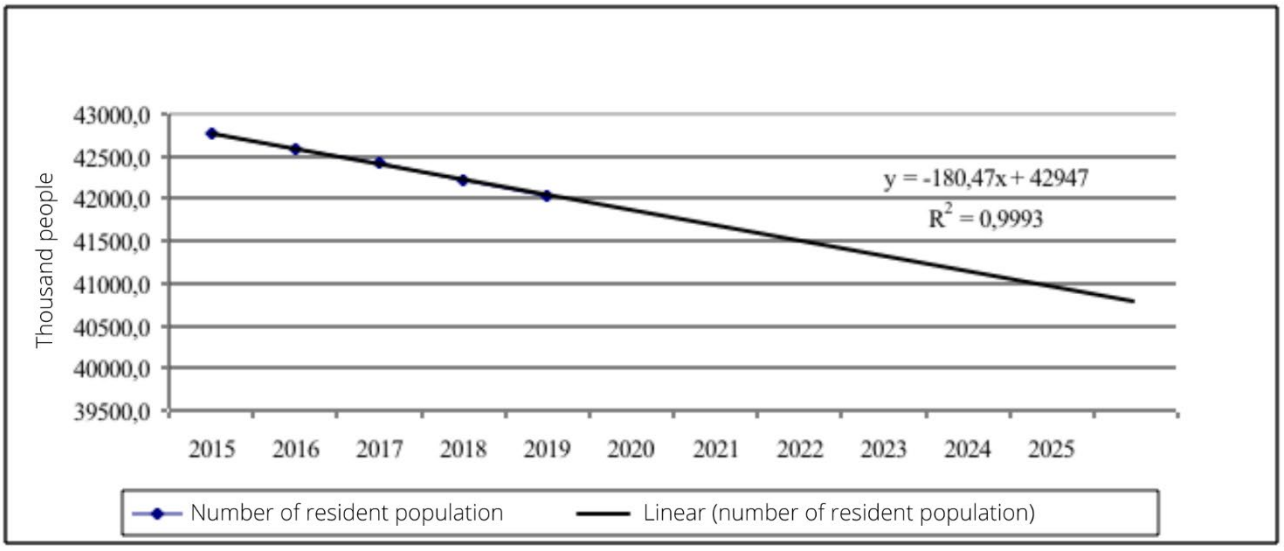

Fig. 2. Population projection for Ukraine until 2025

Source: Calculated by the authors on the basis of data (Population and migration statistics, 2015-2025)

As can be seen from the graph of population dynamics above, the projected population decline is described by a linear function:

$$y = -180,47x + 42947 \quad (2)$$

at $R^2 = 0,99$, which indicates a significant approximation of the estimated series to the factual one.

Thus, according to this projection, if current trends continue, the expected decline in population will be 180,500 people and the permanent population will reach 40961,83 thousand people in 2025. There will be 19029.34 thousand men (with an annual reduction of 76.2 thousand people) and 21932.24 thousand women (with an annual reduction of 104.3 thousand people). The main critical reason for the rapid population decline in Ukraine is the low birth rate. Thus, in 2017, there were only 64 births per 100 deaths in Ukraine.

It must be noted that the retrospective series of population numbers are based on data from the State Statistics Service of Ukraine from 2015, excluding the temporarily occupied territory of the Autonomous Republic of Crimea and the city of Sevastopol. In addition, these retrospective data may also be inaccurate, as Ukraine actually missed the 2005-2014 round of censuses and, consequently, it has taken too long since the last population census. The most burning issue for the future is the extent to which the current estimate of the size and sex and age structure of the country's population corresponds to the real situation.

As mentioned above, the projected population dynamics are shaped by three main components: fertility, mortality and migration (formula 1).

Therefore we will further analyse the projected trends of these components. In order to form the projected figures for fertility in Ukraine, we use the data series of the fertility rate (Figure 3) and extrapolation of its trend to 2025.

The power function describing the projected fertility trend in Ukraine is as follows:

$$y = 10{,}962x^{-0{,}0746} \quad (3)$$

at $R^2=0{,}68$, which indicates a non-moderate approximation of the calculated series to the factual ones.

This is due to a decrease in the fertility rate in 2017 to 9.4 from 10.3 in 2016, which has led to significant deviations in the series from the current trend.

According to the above trend, the fertility rate is expected to decrease further and the fertility rate in 2025 is projected to be 9.17 births per 1000 population, which will correspond to the level of 2003-2005 (8.5 and 9.0, respectively). (8.5 and 9.0, respectively). The overall reduction of the fertility rate during 2018-2025 will be 25%.

A study of Ukraine's demographic situation indicates a high mortality rate and depopulation, which is becoming a threat to the future development prospects of the nation as a whole. Ukraine has the highest mortality rate and last place among the EU countries in the life expectancy index, as evidenced by the UN's ranking. If the birth rate does not rise further, the number of elderly people will far exceed the working age population, which will lead to a vicious circle from which the country will be unable to escape. All this will further increase the number of poor people and reduce consumer demand and worsen Ukraine's social and economic indicators.

When analysing the retrospective dynamics of mortality in Ukraine, it is worth mentioning that it has a decreasing trend. Therefore, a projection of the number of deaths based on a linear function (Figure 3) showed that the mortality rate will decrease from 14.5 people per 1000 population in 2018 to 13.9 in 2025 (by 3.8%).

The linear function of the projected mortality trend looks as follows:

$$y = -0{,}08x + 14{,}9 \quad (4)$$

at $R^2=0{,}87$, which indicates a sufficient approximation of the calculated series to the factual ones.

Thus, for a continuation of the existing trends in fertility and mortality (Figure 3) - a high rate of fertility decline (25% for the period), we obtain an increase in the natural decline (-6.51) in the projection period 2025, which will correspond to the level of 2006 (-6.4).

Developing reliable projections of population migration is a much more difficult task than predicting the parameters of natural population movement. While natural reproduction represents the self-development of a single population, migration is the result of the interaction of two territorially separate populations. Therefore, the future scale and direction of external migration in

Ukraine depends not only on domestic factors, but also on factors external to Ukraine. Although the determining influence of territorial differentiation of social conditions and living standards of the population on migration processes is beyond doubt, attempts to identify the exact mathematical dependence between the relevant quantitative indicators, which have been repeatedly carried out by researchers from different countries, have not brought the desired results. In these conditions, the method of expert assessments as the main tool for predicting the scale of migration processes is almost the only way out.

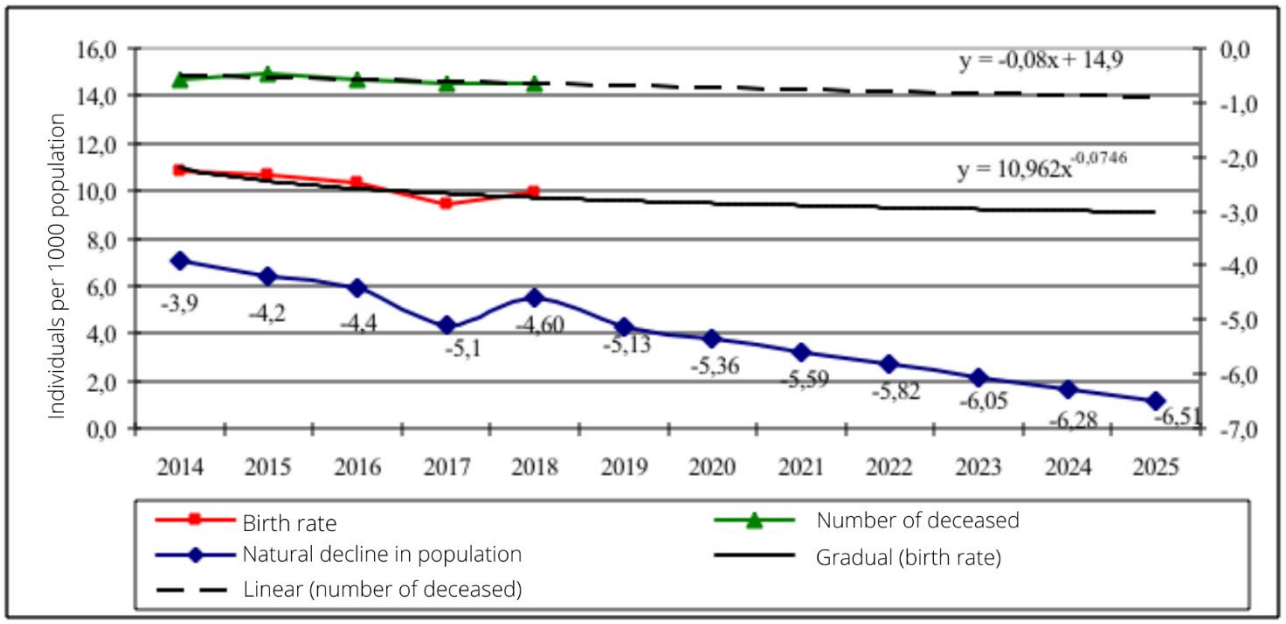

Fig. 3. Projection of fertility, mortality and natural decline in Ukraine until 2025*

** Data excludes the temporarily occupied territory of the Autonomous Republic of Crimea and Sevastopol and administrative data and parts of the temporarily occupied territories in Donetsk and Luhansk oblasts*

Source: Calculated by the authors on the basis of data (Population and migration statistics, 2014-2025)

Accordingly, migration projections in advance will be less accurate than birth and death rates. This is explained, in our view, firstly, by the lack of adequate statistical information for the formation of initial data on external population movements in Ukraine, and secondly, by the significant volatility of migration processes (changes in socio-economic trends on population migration indicators are reflected fairly quickly, while natural movement processes respond to changes in external conditions with a certain lag). It is to be noted that it is impossible to achieve the same level of accuracy in predicting migration as in predicting natural movement. The challenge for the researcher is not to eliminate the objective difference in the level of accuracy between the components of population projections, but to reduce this difference as much as possible. This task is solved by a comprehensive analysis of the current trends of migration movement and the factors forming it, as well as by applying a correct methodology of migration projecting (The integrated demographic forecast of Ukraine for the period up to 2050, 2006).

Thus, analysis shows that, if the current trends continue, the projected demographic situation in Ukraine will be characterized as follows: a reduction in mortality rates at a lower rate than the reduction in the number of newborns will result in the absence of natural population growth;

reduction in life expectancy; population ageing, increasing “burden” on its working-age part; deterioration of national health; intensification of migration processes, whose impact on demographic and socio-economic indicators are often of negative nature.

In order to quantify the preconditions for changes in the natural movement of the population, it is necessary to identify and quantify the impact of the factors determining demographic indicators - fertility, mortality and migration.

Thus, all demographic indicators are influenced by factors related to the environment, which encompass a wide range of phenomena such as social, economic, cultural and political factors, as well as physical, chemical and biological factors. Examples include access to clean water and sanitation, working conditions, air pollution and the social environment. The economic factor is the level of income of the individual, the family, the country, the region. In particular, for high- and middle-income countries, the most influential physiological risk factors are those related to long-term illness, while in low-income countries risk factors such as child malnutrition and unprotected sex are much more common. Next, it is useful to analyse the factors influencing the components of the natural movement of the population.

3. Fertility

As analysis has shown, the system of factors and conditions influencing fertility includes the following: political (the social system that exists in the country); economic (the level of material well-being of families, employment of family members, women's labour activity); social (housing conditions, state assistance to young and large families); legal (legislative regulation of demographic processes); demographic (the level of marriage, the degree of marriage stability, the age composition of the population, the family composition of the population etc.), ethnic (traditions, peculiarities of everyday life and culture of different nations); moral and psychological (public opinion regarding generally accepted norms of reproductive behaviour); medical and biological (state of health of spouses), etc. These factors always have a complex influence, but their impact on fertility needs to be assessed quantitatively.

The influence of the factors on demographic processes is measured by generally accepted statistical methods, in particular by correlation and regression analysis.

The factor variables for constructing the regression equation are as follows:

X_1 - marriage rate, ‰;

X_2 - rural population share in the total population, %;

X_3 - average monetary income per capita, UAH per month;

X_4 - unemployment rate, %;

X_5 - divorce rate, ‰;

X_6 - working-age population share (15-64 years), %.

X_7 – poverty level of the population (the number of people with an average per capita equivalent gross monthly income below the legal subsistence minimum - in % of the total population);

X_8 – share of women of reproductive age (15-49 years old), in % of the total number of women.

X_9 – share of wages and salaries in total income of the population, %;

X_{10} – share of total state aid in the total income of the population (includes: pensions, scholarships, social benefits provided in cash; benefits and non-cash subsidies to pay for housing

and communal services, electricity, fuel; non-cash benefits to pay for goods and services for health care, tourist services, trips to recreation centres, etc., to pay for transport and communication services), %.

The initial data for constructing a multifactor regression of the dependence of fertility on certain factors are given in Table 2.

Table 2. Factors influencing fertility in Ukraine

Variables	2010	2011	2012	2013	2014	2015	2016	2017
Fertility rate, ‰ (Y)	10,8	11	11,4	11,1	10,8	10,7	10,3	9,4
Marriage rate, ‰	6,7	7,8	6,1	6,7	6,9	7,8	5,4	6,5
Rural population share, %	31,32	31,23	31,12	31,02	30,88	30,81	30,77	30,71
Average monetary income per capita, UAH	3481,0	3853,9	4144,5	4470,5	4563,3	5231,7	6238,8	8165,2
Share of wages and salaries in total income of the population, %	47,6	48,9	50,8	50,6	48,8	47,2	46,7	52,4
Share of state aid in the total income of the population, %	26,9	26,6	28,2	28,0	27,8	26,9	28,2	25,3
Unemployment level, %	8,1	8,0	7,6	7,3	9,3	9,1	9,3	9,5
Divorce rate, ‰	2,71	4	3,7	3,6	3	3,3	3,3	3,3
Working-age population share, 15-64 years, %	60,0	70,4	70,1	69,9	69,3	68,9	68,4	68,0
Poverty level of the population, %	8,6	7,8	9,0	8,3	8,6	6,4	3,8	2,4
Share of women of reproductive age, 15-49 years old, %	47,3	46,7	46,4	45,7	45,3	44,9	44,4	44,1

Source: constructed by the author based on (Statistical Yearbook of Ukraine for 2017, 2018)

The results of modelling using the econometric software package E-Views.8 have shown that the highest level of determination of the outgoing fertility rate is observed between the factors: average monetary income per capita (R^2= *0,89*), poverty level of the population (R^2= *0,84*), the average level of relationship was shown by the factors: rural population share (R^2= *0,67*), unemployment level (R^2=*0,58*) and share of women of reproductive age (R^2= *0,52*). Since the variation of other factors determines the variation of fertility by less than 50%, it is concluded that they are removed from the model.

If we analyse the model of dependence of fertility level on average per capita income and on poverty level by direction of change, we can see an inverted relationship with income and a direct one with poverty level.

It is known that countries with a low standard of living and education have higher fertility rates than economically developed and educated countries. In turn, in families with low income and education (regardless of the country of residence), the total number of children is also often higher than in families with high income and education. This phenomenon has been called the inverse relationship between fertility and standard of living. This was discussed in the academic world by

the mid-seventies and continues to be debated on a day-to-day basis. The reason for this is that the perception of this phenomenon goes against common sense - why an increase in prosperity leads to a decrease in fertility, when it should seem to be the other way round. Nevertheless, the fact of the inverse relationship has been repeatedly confirmed. Reality itself must defend this position, and therefore the welfare factor has come to be considered as a factor of inverse influence on fertility. The indirect character of fertility with status characteristics, established by numerous studies, does not itself mean that the relationship of fertility with material conditions is "inverse". The expression "inverse relationship" does not become any clearer and certainly should not be taken literally. Otherwise we would be forced to believe that a high income somehow leads to a reduction in fertility, while a poor material situation itself contributes to an increase in fertility (The impact of material living conditions on fertility and demographic policy issues, 2018).

Construction of a multifactorial regression describing the dependence of fertility on the factors of income, poverty level, unemployment rate and the share of women of reproductive age showed the following results:

$$LOG(Y) = -0.1054*LOG(X_3) - 0.1984*LOG(X_6) + 0.0938*LOG(X_9) +1.2336*LOG(X_{10}) + 8.2208 \quad (5)$$

$$(R^2= 0,94)$$

The selected factors explain 94% of the change in fertility. By analysing the coefficients of a conditionally pure regression, the following conclusions can be made. With a 1% change in per capita average monetary income per month, the fertility rate will change by 0.1 ppm on average while other factors remain unchanged. With a 1% drop in the number of unemployed, the fertility rate would increase by 0.19% on average. With a 1% change in the poverty rate per year, the fertility rate would change by 0.09 ppm, on average, with all other factors included in the model unchanged. With a 1% increase in the share of women of reproductive age, the fertility rate would increase by 1.2 ppm on average.

The significance of the regression equation as a whole was assessed using Fisher's F-criterion. Since the actual value of the criterion (11.9) is greater than the tabulated value (2.35), the regression equation is statistically significant and reliable, and can be used to analyze the birth rate and its projection for the future.

To solve the critical demographic situation in the country, in our opinion, the following options exist: encouraging the population to create two- and three-child families through propaganda and material incentives; banning abortions; shifting the attention of the state to two- and three-child families rather than to large families as the main regulator of the demographic situation; improving the economic condition of the state, since the impoverishment of most people negatively affects the demographic situation.

4. Mortality.

The study of mortality factors raises the question of the trend towards Ukraine's lowest level of life expectancy compared to European countries (table 3).

Thus, according to the State Statistics Service of Ukraine (Statistical Yearbook of Ukraine for 2017, 2018), the average life expectancy is 67.0 years for men and 76.8 years for women (2017). This situation is determined by the structure of mortality by cause, sex and age: a high mortality rate in the young and middle age groups from the main causes (circulatory system diseases, neoplasms, accidents, poisoning and injuries).

Table 3. Life expectancy in countries around the world in 2017

Country	Life expectancy at birth, years	
	for women	***for men***
Ukraine	**76,8**	**67,0**
Austria	84,0	79,4
Belgium	83,9	79,2
Bulgaria	78,4	71,4
Greece	83,9	78,8
Denmark	83,1	79,2
Spain	86,1	80,6
Germany	83,4	78,7
Poland	81,8	73,9
Romania	79,1	71,7
Slovenia	84,0	78,2
Hungary	79,3	72,5
France	85,7	79,6
Czech Republic	82,0	76,1
Switzerland	85,6	81,6
Sweden	84,1	80,8

Source: (Statistical Yearbook of Ukraine for 2017, 2018)

Male mortality is 4.5 times higher than female mortality from external causes, three times higher than that from respiratory diseases and some infectious and parasitic diseases, twice as high as that from mental and behavioural disorders, digestive diseases and nervous system diseases and one and a half times higher than that from neoplasms. In turn, the morbidity, mortality and disability from various pathologies are a direct factor in preserving the undesirable sex-age distribution of mortality rates.

The exceptions are accidents, poisonings and injuries, the mortality from which is directly caused by many specific environmental factors, including socio-economic ones. In order to identify effective mechanisms to influence the reduction of mortality and develop socio-economic and medical and demographic measures to increase life expectancy, it is necessary to understand the patterns of mortality dynamics and structure, analyse the main mortality rates, and assess the impact of the current situation in morbidity and disability from major pathology groups on the mortality rate.

The state should focus on the qualitative rather than quantitative parameters of demographic reproduction. It is necessary to concentrate efforts on solving current and strategic tasks - economic reproduction of the population, adequate social protection of families with children and the elderly,

improvement of the environmental situation, reduction of occupational and domestic accidents, promotion of healthy lifestyles, ensuring access to quality health care and education, which in the end will become a significant basis for transition to the modern mode of population reproduction and increase the duration of full-fledged active life.

Conclusions

The current trends determining the development of Ukraine's demographic indicators are rapid decline in the population, fall in the birth rate and high mortality rate. The increase in life expectancy and quality of life leads to a gradual ageing of the population and a reduction in the share of persons of younger and working age, which causes the risk of a labour shortage.

The estimate of the scale of the risk situation in the demographic sphere of Ukraine was carried out by projecting on the basis of the construction of a linear function of the number of the population. This has established that it will decrease by 180.5 thousand people and that the permanent population will reach 40.96 million in 2025. At the same time there will be 19.03 million men (with an annual reduction of 76.2 thousand people) and 21.93 million women (with an annual reduction of 104.3 thousand people).

The projection of the fertility rate based on the construction of a power-law function showed a further decrease in the fertility rate and it is projected that the fertility rate in 2025 will be 9.17 births per 1000 population, which will correspond to the level of 2003-2005 (8.5 and 9.0, respectively). (8.5 and 9.0, respectively). The overall decline in the fertility rate during 2018-2025 will be 25%.

In the projection period (by 2025), the number of deaths per 1000 population, as indicated by the trend of the linear function of the mortality rate, will decline from 14.5 in 2018 to 13.9 in 2025 (overall, by 3.8% - at a much lower rate than the decline in the birth rate).

Analysis and projection of Ukraine's demographic situation (fertility rate based on the construction of a power function and mortality rate based on a linear function) showed a high mortality rate and depopulation, which becomes a threat to the development prospects of the nation as a whole.If the projected trends in birth and death rates continue - high birth rate decrease (25% for the period), the natural decrease will increase in the projected period (-6.51) in 2025, which will correspond to the level of 2006 (-6.4). This will result in a significant excess of elderly people over working-age people in the country's population structure, which will further lead to an increase in the number of poor people and a reduction in consumer demand with a corresponding deterioration of Ukraine's socio-economic indicators.

To estimate fertility rates, the following factors have been studied: the marriage rate; the proportion of the rural population in the total population; the average monetary income per capita; the unemployment rate; the divorce rate; the proportion of the population of working age; the poverty rate; the proportion of women of reproductive age (15-49 years); the share of wages in total population income; the share of total public assistance in total population income.

The correlation regression dependence of fertility on the factors of income, poverty level, unemployment rate and the share of women of reproductive age is constructed. The use of econometric tools and analysis of the model showed that if the average monthly per capita cash income changes by 1%, the fertility rate will change by 0.1 ppm on average, while other factors remain unchanged. With a 1% decrease in the number of unemployed, the fertility rate will increase by 0.19% on average. With a 1% change in the poverty rate per year, the fertility rate will change

on average by 0.09 ppm with all other factors included in the model unchanged. With a 1% increase in the share of women of reproductive age, the fertility rate will increase by 1.2 ppm on average.

It has been found that morbidity, unemployment rate and standard of living are the determining factors influencing the mortality rate in Ukraine, while environmental indicators have shown a rather weak correlation with mortality.

The results of multi-factor modelling have shown that a 1% increase in morbidity would increase mortality by 0.26 (as the parameter is positive) and a 1% increase in unemployment would increase mortality by 0.14. In addition, an inverse relationship with the standard of living was obtained - with a 1% increase in GDP per capita (with a lag of two periods), the mortality rate decreases by 0.06. According to this model, the influential factors on the mortality rate in Ukraine are the standard of living, job security and the morbidity rate, which is formed under the influence of the conditions, lifestyle and behaviour of people.

The solution to many social policy problems is linked to the financing of the social sphere, and the reduction of social policy risk depends almost entirely on economic growth, as only sustained and long-term economic development will ensure the capacity of the state and other institutions to allocate the necessary share of funds for social needs.

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DEVELOPMENT OF UKRAINIAN MARITIME COMPANIES

Abstract*. Following the state of affairs analysis of the maritime industry and the crisis level of the Ukrainian economy, the authors of the research have defined key prerequisites for developing the latest innovative system of tariffs setting in Ukrainian seaports, which include: structural changes to the maritime companies; the need to review and verify the current rates of port charges for economic feasibility; considering the worldwide trends and relationship system for the port charges management in the countries of the European Union; the need to pay attention to the formation of alternative sources for public port infrastructure maintenance and development; taking effective measures to expand Ukraine's presence in global logistics, using the transit potential; development of the latest government strategy to develop maritime transport companies and logistics infrastructure. The authors have analyzed the main legislation and regulations, which are required bases to form proposals in the course of transforming tariffs setting system at public maritime companies. A comprehensive analysis performed of seaports operation and key aspects defined: the need to create a sectoral document to form competitive tariffs; present inconsistency between the objectives of the maritime companies and the state; present bureaucratization in developing effective tariffs due to a number of problematic issues in the activities of maritime companies; off-balance financial planning; compliance with the current system of tariffs setting concept of consumption; the presence of a subjective nature in the tariffs setting development system; the presence of a disproportion in the distribution of interests between the state and the business; the impossibility identified of developing a full-fledged KPI system as a tool to monitor public spending efficiency. The second section of the article illustrates the key elements of macroeconomic environment of tariff formation in seaports of Ukraine. The authors emphasized the need to build a sustainable and effective system of tariff formation in seaports of Ukraine, based on public sea transport policy as the main element of macroeconomic environment.*

1. Tariff setting system in Ukrainian seaports.

The initiated development of Ukrainian seaports, which commenced only in 2013, requires a new and professional impetus, especially the tariff system relations, which given the lack of state support and unfavorable investment environment forms an independent circulatory system of the seaports strategic infrastructure. Thus, the adoption of a sectoral law – the Law of Ukraine 'On Seaports of Ukraine' No. 4709-VI dated 17 May 2012 [1] – became a special event the maritime industry needed for more than 20 years of Ukraine's independence. The law, as the main sectoral document, defined, apart from conditions for operation and attraction of private capital, a systematic transformation and structuring of the maritime industry in accordance with global standards and approaches. The maritime industry needs constant modernization, and the outdated tariffs setting system in the seaports of Ukraine requires special attention.

The authors of research work, while analysing the modern tariffs setting system, have defined the preconditions for developing innovative tariffs setting system in Ukrainian seaports, namely:

1) Structural changes to the maritime companies.

Pursuant to the Law of Ukraine 'On Seaports of Ukraine' and the order of the Cabinet of Ministers of Ukraine 'On Approval of Proposals for Reorganization of Public Maritime Transport Companies' No. 133-p dated 4 March 2013 [2], the public maritime transport companies were reorganized by allotting strategic port infrastructure facilities, other property, rights and obligations related thereto in accordance with the distribution balances. This resulted in establishing public company "Seaports Administration of Ukraine".

2) Based on historical aspect analysis of developing current rates of port charges, the need defined for their revision and verification in terms of economic feasibility.

The rates level of port charges, which is currently approved by the Order of the Ministry of Infrastructure 'On Port Charges' No. 316 dated 27.05.2013 [3], stems from the Resolution of the Cabinet of Ministers of Ukraine 'On Port Charges' No. 1544 dated 12 October 2000 [4], which in turn is derived from the Resolution of the Cabinet of Ministers of Ukraine 'On approval of the Regulations on port charges' No. 442 dated 18 April 1996 [5]. That is, at the time of approval of the Order of the Ministry of Infrastructure 'On Port Charges' no accurate estimations have been provided. It should be noted that systematic changes and indexations of port charges have not previously been justified by preliminary estimations.

3) The port charges developing should take into account global trends and relationship system development for port charges management in the countries of the European Union.

The management system for port charges in Ukraine still retains the base of collecting from the vessel notional volume, which is calculated in cubic meters and is equal to the product of three values (vessel length, vessel width and shipboard height) specified in the tonnage certificate (main dimensions) or substituting document, contrary to global practice – based on vessel gross tonnage. Approaches to collect certain charges, berths and sanitary fees, including those that need to be taken into account in the relevant estimation, have made significant progress, especially in the ports of the European Union.

4) It is necessary to pay attention to the formation of alternative sources for public port infrastructure maintenance and development, including strategic ones, due to limited public funds and the social nature of their use.

Despite the legally defined possibility of financing the Public Company "Seaports Administration of Ukraine" at the expense of the state budget of Ukraine, including modernization, repair, reconstruction and construction of hydraulic structures, other port infrastructure, the specified regulation is of formal nature. That is, taking into account almost seven years of experience of the Public Company "Seaports Administration of Ukraine", funding is provided at the expense of port charges collected in accordance with the Law of Ukraine 'On Seaports of Ukraine', service fee and rent, other sources not prohibited by law. In addition, given the political instability, the issue of privatization of state stevedoring companies or attracting foreign direct investment in these assets on the terms of public-private partnership remains non-implemented. Thus, the current operating conditions form the state approaches to tariffs setting, focused on 100% coverage of costs, including investment, solely from the own sources of the Public Company "Seaports Administration of Ukraine".

5) Take effective measures to expand Ukraine's presence in global logistics as a country with transit potential.

The government is working out for ten years already the development of Ukrainian transport infrastructure as a logistics hub to ensure goods shipping link between the Asia-Pacific region and the European Union in both directions. Thus, the tariff regulation steps with a corresponding reduction in cost of services provided by the Ukrainian companies in the public sector of economy, so far have been considered as real impetus for these relations without reviving intergovernmental relations in this direction. The declining trends of transit cargo base showed the inability to achieve this goal only through tariff changes.

6) The government strategy is extremely necessary for developing maritime transport companies and logistics infrastructure, which has not yet been formed.

To develop, based on analysis of the current state of affairs of tariffs setting system at the Ukrainian maritime companies and defining its deficiencies, the innovative approaches to improving the tariffs setting system in seaports within the framework of public-private partnership.

The existing development strategy in the transport sector represents the development of individual components without building a single and integrated system. Even the seaports development program is implemented in non-compliance with the seaport development plan, which should be prepared taking into account the development plans of sea terminals, as well as companies, the main products and/or raw materials of which are subject to the export-import transactions. The program is implemented as separate projects with unclear prospects. Thus, the strategy of Ukrainian seaports development approved by the government in accordance with the Order of the Cabinet of Ministers of Ukraine 'On approval of the strategy for Ukrainian seaports development until 2038' No. 548-p dated 11 July 2013 [6] is of a formal nature due to the lack of a step-by-step plan for its implementation with appropriate performance targets.

According to the authors of the research, despite the significant underfunding of the industry, an additional lever that forms a restrained approach to public policy in maritime transport, including the development of strategic benchmarks, existing transport infrastructure and ensuring economically reasonable level of tariffs, is a significant accumulated potential of strategic port infrastructure, laid during its construction, along with the shortage of professionals who understand the subject of study. Thus, the governmental task becomes inherent to address a narrow range of issues that have no strategic impact on solving industry problems or improving transport infrastructure as a key element of the national economy.

A comprehensive seaports analysis showed that:

- no sectoral document has yet been drafted, which would constitute basis for competitive tariffs. This circumstance causes the adoption of ill-considered decisions formed by manipulating both the semantic and digital components;
- to date, a mismatch is present and becomes enhanced between the objectives of the maritime industry and the state, leading to a significant differentiation of the state system and objectives of the executive bodies concerned;
- there is a bureaucratization in developing effective tariffs due to reluctance and misunderstanding of problematic issues in the activities of maritime companies on part of former managers and centralization of powers in the sector of tariff regulation by the authorized body;
- off-balanced annual financial planning, i.e. the imbalance factor is the annual change in the base of net profit deductions by state companies;

- lack of strategic benchmark for Ukrainian seaports development. That is, the general strategy of Ukrainian seaports development approved by the government fails to characterize the current state of industry affairs, approaches to transform the existing system into a perfect one;

- the current system of tariffs setting corresponds to the concept of consumption, which does not correspond to the maritime industry development;

- the tariffs setting system development has a well-expressed subjective nature, i.e. it is carried out only in the presence of potential interest from the private sector, regardless of the results of performance and effectiveness analysis for industry as a whole;

- the disproportion defined of interests distribution between the state and business, i.e. money-spending is a state duty, while receiving profit is a business prerogative; the authors showed the differentiation in rates for using berth (see Fig. 1);

- the impossibility defined to build a full-fledged KPI (Key Performance Indicators) system [7] as a tool to ensure control over efficient public spending.

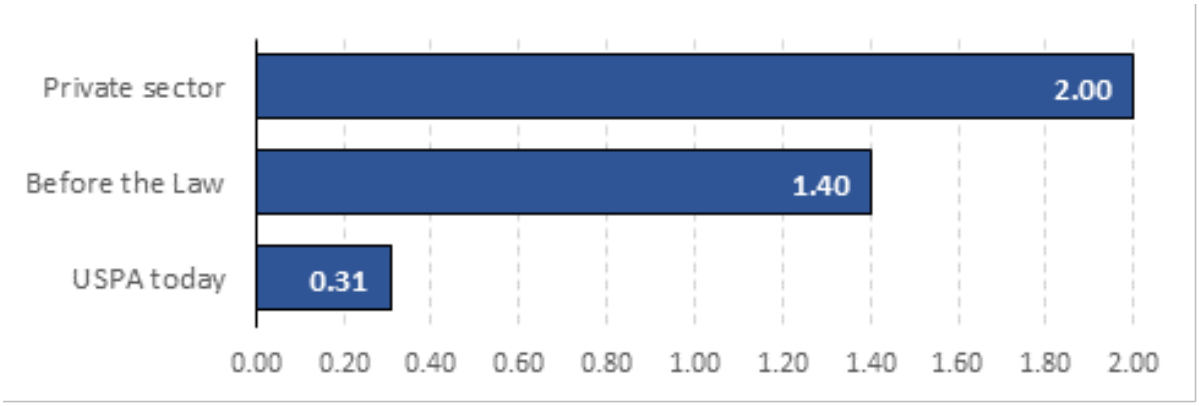

Fig. 1. Differentiation in rates for using berth, USD/t (author's development)

Summarizing the identified shortcomings, the authors concluded that it is necessary to improve the tariffs setting system within the public-private partnership, maintaining the priority of developing public sector of maritime companies, increasing their competitiveness and efficiency.

The authors of research propose a number of innovative approaches to improving the tariffs setting system at the Ukrainian maritime companies.

According to the authors, the Ministry of Infrastructure of Ukraine has a capacious task to develop a full-fledged method of calculating seaport charges in order to ensure the competitiveness of port entities.

It is necessary to form a state system of goals of the interested central executive bodies and establish a single mission to achieve significant technical and economic results, to weaken the monopoly of tariff regulation powers of the main executive body of Ukraine.

It is necessary to create mechanisms to promote the profitable part of the maritime companies operation through the renewal of mechanisms for collecting charges, establishing additional discounts and changing the rates of state regulated tariffs. It should be noted that the key aspects of Ukrainian seaports development are set forth in the Order of the Cabinet of Ministers of Ukraine dated 11.07.2013 'On approval of the strategy for Ukrainian seaports development until 2038' (hereinafter referred to as the "Strategy") [6]. The purpose and objectives of the Strategy are focused on such aspects as balanced development and efficient use of port capacity on an innovative basis, ensuring the competitiveness of logistics and improving service in seaports.

The common problems that need to be addressed in the Strategy include a whole list, namely: the lack of effective mechanism for attracting private investment in port infrastructure development; insufficiently developed transport infrastructure in seaports and water areas (lack of sufficient deep-water anchorages, storage areas for vehicles, etc.); insufficient level and inconsistency of depths in some seaports and canals with passport characteristics and slow renewal of fixed assets in public sector companies of the port industry, inconsistency of their technical level with modern requirements for the provision of services in cargo, vessels, rolling stock operations, etc.

Solving the problems as specified in the Strategy will be achieved within the framework of such tasks as harmonization of port infrastructure development plans (railway approaches, port railway stations, auto-roads) and port capacity with transport infrastructure development programs at the national and local levels; joint development with PJSC "Ukrainian Railways" of effective mechanisms for investing in the development of port stations and access railways; conversion of existing port facilities that are not involved in the production process into efficient cargo handling complexes (attracting private investment on terms of public partnership) with a focus on creating added value in seaports; ensuring the formation of investment sites within seaports with the involvement of public, municipal and private property and land; legislative provision of mechanisms for attracting private investment for the development of port infrastructure facilities and relevant access roads on terms of public-private partnership; creation of specially designated places for temporary placement of freight transport with the provision of appropriate storage conditions for cargo that meet current environmental and sanitary standards; ensuring compliance of the actual depths in the seaports of Ukraine and access channels with the established passport characteristics; establishing deep-sea seaports; expansion and increase of the shipping canals capacity; reduction of cargo handling time and simplification of administrative procedures for international transportation; prevention of environmental pollution, compliance with the requirements for the use and protection of water bodies within the territory and water area of the seaport and ensuring the modernization of their port infrastructure and renewal of the national specialized fleet for dredging.

It should be noted that the establishment of a single tariff without available indicators of achieving the target model does not motivate the system to efficient consumption with increasing profits, which is the main source of further development.

Results

According to research problematics and purpose, the authors made the following conclusions:

1. The analysis of the modern tariffs setting system at the Ukrainian maritime companies allowed determining that, in the absence of state support and unfavourable investment environment of the country, this system requires improvement under the public-private partnership.

2. The following prerequisites are defined necessary to develop the innovative tariffs setting system in Ukrainian seaports: structural changes to the maritime companies; review and verification of the current rates for economic feasibility; consider, while developing the innovative tariffs setting system, the global trends and developing relations for port charges management in the European Union; focus on alternative sources for public port structure maintenance and development; take effective measures to expand Ukraine's presence in global logistics; government strategy is imperative for developing maritime transport and logistics infrastructure.

3. A comprehensive analysis of the national seaports operation defined the following shortcomings: no basic industry document has been drafted for competitive tariffs; no compliance with the objectives of the maritime industry and the state, bureaucratization in developing effective tariffs; off-balanced annual financial planning; no strategic benchmark for Ukrainian seaports development; current tariffs setting system corresponds to the concept of consumption, which does not encourage the development of the maritime industry; disproportion of interests distribution between the state and the business.

4. Summarizing the identified deficiencies, the authors proposed a number of innovative approaches to improving the system of tariffs setting under the public-private partnership to maintain the priority of public sector development of maritime companies, namely: to develop a full methodology for the development of seaport charges (responsibility of the Ministry of Infrastructure of Ukraine); to form a state system of objectives for the interested central executive bodies, to weaken the monopoly of powers of tariff regulation of the main executive body; to create a mechanism for promoting the profitable part of the maritime companies operation through the renewal of mechanisms for collecting charges, establishing additional discounts, changes in rates of state regulated tariffs.

5. It is necessary to make certain efforts to address the common problems, which are set forth in the Order of the Cabinet of Ministers of Ukraine dated 11.07.2013 «On approval of the strategy for Ukrainian seaports development until 2038'. The purpose and objectives of the Strategy are focused on such aspects as balanced development and efficient use of port capacity, ensuring the competitiveness of logistics and improving service in seaports.

2. Factors of influence in the formation of tariffs for seaports

In the above scientific work, the authors have formed and submitted the list of the key elements of macroeconomic environment of the seaport tariffs formation in Ukraine, namely: Ukrainian state development programs, the main directions of fiscal policy of the country, the national transport strategy of Ukraine, the indicators of social and economic development of Ukraine.

Ukraine is one of the countries possessing the Black Sea-Azov basin access and its port industry is one of the main sectors of transport infrastructure. It should be stated that today there is a deliberate push to weaken the state's position in the national port complex. The forced closure of the seaports of Kerch, Sevastopol, Feodosia, Yalta and Yevpatoria in the temporarily occupied territory of the Autonomous Republic of Crimea and the city of Sevastopol has been an additional lever significantly affecting the maritime economy complex.

Under the conditions of significant growth of competition in the port services market, the volume of cargo flows is significantly reduced, accompanied by the reduction of loading of state-owned port facilities.

Thus, the authors have calculated statistical data on the dynamics of cargo handling by state-owned companies at Ukrainian seaports in recent years. Since 2014, the specific share of cargo handling by state-owned stevedores has been gradually decreasing, namely: 2014 - 34% or 49.2 million tons; 2015 - 34% or 48.9 million tons; 2016 - 29% or 38.4 million tons; 2017 - 26% or 34.7 million tons; 2018 - 25% or 33.4 million tons; 2019 - 22% or 35.2 million tons. It ought to be noted that the above decrease has been fully offset by an increase in cargo handling by the private sector, as a consequence of the gradual denationalization of the state stevedoring business.

All of the above has prompted a more thorough and balanced approach to the tariff formation process in Ukrainian seaports and to identify the key factors influencing this process in the current macro environment. The key factors of influence on the tariff formation process include: the availability and essence of the state development program of country; the essence of state infrastructure reforms; the availability and effectiveness of the national transport strategy of Ukraine; the main directions of fiscal policy; indicators of socio-economic development of Ukraine; the investment climate in Ukraine. Thus, a rational approach to tariff formation will improve the efficiency of the port industry.

The purpose of the work is to analyze the determinants of the key elements of the macroeconomic environment in the tariff formation process in Ukrainian seaports.

Let us consider the key elements of macroeconomic environment.

State development programs are always the basis for the development of all sectors of the national economy. They make an effective factor and element of state policy in the systemic restructuring of strategic directions activity and overcoming challenges to society, carried out in accordance with the Law of Ukraine “On State Targeted Programs” dated on March 18, 2004 No. 1621-IV [8], and has a determining influence on the economy and security of Ukraine. Regarding the maritime industry, the state target programs influence the formation of state policy according to the level of state tariffs formation for maritime transportation vector, allocation of promising areas of state enterprises in the ecological sphere.

Within the framework of active economic development, the state reform of infrastructure is being carried out - this is the creation of an effective transport complex of Ukraine integrated into the world transport network [9]. The reform process extends to the implementation of major structural projects, aviation, railroad transport, car transport and road economy, sea and river transport. Thus, on 24.04.2020 the Supreme Council (Verkhovna Rada) of Ukraine has finally adopted in the first reading the “On Inland Water Transport” draft law (No. 1182-1-д) in the maritime and river transport sector.

It should be noted that the above reform will be implemented taking into account global trends suggesting [9]: use of high-tech and ergonomic vehicles, principles of multimodality and intelligent transport systems; use of alternative fuels, “green” vehicles, partial reorientation of transportation from road to inland waterway and rail transport, priority of environmental protection; increasing the share of container transportation, interoperability of transport systems within supply chains; encouraging in Ukraine development of latest transport technologies and systems in partnership with the world's leading companies; attracting strategic investors and partners in the development of public-private partnerships and more.

Among the major national projects, we should mention implementation of the Go Highway - a major international infrastructure project that aims to combine the ports of the Black Sea and Baltic Sea and TEN-T enter to the European transport network. This will bring the maritime infrastructure of Ukraine to a higher level of competitiveness and operability.

The authors of scientific work agree with [9], that the most important aspect today is to develop and approve an effective methodology of port tariff calculation, review their amount taking into account the structure and directions of cargo flows, which would have a positive impact on enhancing the attractiveness of commercial seaports for users of transport services and the creation of a guaranteed source of compensation costs for the reproduction and development of port infrastructure.

An effective national transport strategy of Ukraine is a key element in the formation of attractive conditions for the development of state-owned maritime enterprises in the current macroeconomic environment. The strategy has been approved by the national government for the period up to 2030. In accordance with the Regulation of the Cabinet of Ministers of Ukraine dated on 30.05.2018 No. 430-p [10] and is a basic strategic document for the development of the transport industry, determining the main problematic issues, tasks for implementation and expected results of implementation. Thus, the national transport strategy identifies the need to introduce transparent and effective tariff models, the transition of tariffs formation for transportation to market practice, in particular through the development and approval of methods for calculating port tariff rates, viewing their amount with the structure and direction of cargo flows, which will increase the attractiveness of commercial seaports for users of transport services and create a guaranteed source of cost recovery for the reproduction and development of port infrastructure.

The objective of the strategy is to define the conceptual foundations for the formation and implementation of state policy to ensure the stable and efficient functioning of the transport industry, to create conditions for the country socio-economic development, and to improve competitiveness of the national economy and living standards.

The strategy emphasizes the need for urgent technical re-equipment and modernization of seaport infrastructure, which is necessary for the development of the maritime industry in line with international standards and regulations.

One of the key principles of strategy implementation is the liberalization of pricing in the transport services market and the functioning of transport enterprises on the basis of self-sufficiency.

Among the main directions of the strategy implementation is improvement of the investment climate by ensuring the development of public-private partnerships and attracting investment on concession terms. In these aspects the strategy coincides with the main state development programs of the country.

It should also be emphasized that in the current situation there is a need to reform the state management system for all modes of transport and commercial seaports in particular.

The main directions of fiscal policy are social and economic conditions creation for the national producer, tax changes and innovations introduction, dividend policy of the public sector of the economy adjustment, foreign debt management, etc., which in general promotes transparency of economic planning not only at the level of an individual country, but also on a global scale. As an example, the authors cite the draft Basic Fiscal Policy Guidelines for 2019-2021, approved by the Cabinet of Ministers of Ukraine on 18 April 2018 No. 315-p [11].

Indicators of socio-economic development of Ukraine are macroeconomic and microeconomic indicators of socio-economic development of Ukraine and regions, regularly formed by the State Statistics Service of Ukraine [12] to provide indicative information to the executive authorities of the country, and economic entities aimed to adjust the current activity plans, planning and forecasting for the short and medium term.

Socio-economic indicators in the context of maritime industry development should include such categories as: volume of sold industrial and agricultural products, index of industrial and agricultural products, export and import of goods, cargo and passenger turnover. The above indicators allow us to make a complex economic analysis of the factors influencing the tariff

formation process of maritime industry on the state level in the short-term and long-term perspective.

The investment climate in Ukraine - is the leading driving force of national economic recovery, in economic terms it is a derivative category and the result of the state policy implemented in relation to the global perception of Ukraine in the world and the national economic sector as a potential and effective partner for attracting foreign direct investment.

In the list of priority investment projects in the maritime industry, the Cabinet of Ministers has included [13] the concession of the railway ferry complex of the SE “Sea Commercial Port Chornomorsk”, the project for the concession of the “Chornomorsk” first and container terminals, the project for the concession of the passenger complex in “Odessa” seaport, concession of berths No. 6-9 in Berdiansk branch of SE “Administration of Seaports of Ukraine” as well as the project for development of transshipment capacities on the adjacent territory of the “Ukraine” shipyard (includes deepening of the water area and reconstruction of the berths).

A few words should be said about the world practice of forming maritime tariffs.

World practice illustrates the ambiguous dynamics of world port dues, which, according to the authors, depends on several factors: 1) the legal framework of the country; 2) geographical location of the seaport and natural conditions; 3) "anchor" volume of cargo handling.

Regarding the world practice of the level of port dues, it is necessary to give a number of examples. The port of Rotterdam (Netherlands), the largest port in Europe, intends to increase port duty rates by 1% annually for the next three years. According to the Port Authority, the practice used in recent years to formulate the tariff policy of port fees for a three-year period (2018-2020) gives the market clearer guidelines. A slight (conservative, as the Port Authority called it) increase in fees should help improve the competitive position of the port of Rotterdam [14], primarily as an international container hub (transfer, transshipment hub of the transport system).

In addition, the port of Rotterdam is consistently reducing the gap between port dues from tankers carrying crude oil and tankers carrying food. Fees for river vessels will also be gradually increased annually over the next three years by 1% in the port.

It should be noted that port dues are one of the main sources of revenue for the Port of Rotterdam administration. In 2016, revenue from port dues from seagoing vessels amounted to 295 million euros, from river vessels 14 million euros. The second main source of income – rent - last year brought 249 million euros.

In turn, the port administration of Marseille (France) has joined the World Ports Climate Initiative and plans to set discounts on port dues for ships with emission levels below current international requirements [15].

Currently, about 50 ports in the world offer a program to reduce port fees based on the Environmental Ship Index (Marine Environmental Index). The Port of Marseille is considering a discount for ships that have the opportunity to use electricity supplied from the shore station while at berth, instead of using marine diesel generators.

The port of Marseille was the first in France and the Mediterranean to establish such a station after concluding an agreement with the ferry operator La Meridionale (Corsica and Sardinia). Since January 2017, the operator has equipped three of its ferry vessels for the use of shore-side electricity, which has significantly reduced emissions of sulfur oxides, carbon dioxide and particulate matter from ships.

The Ministry of Transport of China (PRC) and the National Development and Reform Commission of the PRC [16] have announced a reduction in the rates of some port dues from April 1, 2019 for a period of five years.

The largest ports in China are Shanghai, Shenzhen, Ningbo-Zhoushan, Hong Kong, Guangzhou, Qingdao, Tianjin, Dalian, Qinhuangdao, Xiamen. The country's ports in 2018 increased cargo turnover compared to 2017 by 4.3% to 9.22 billion tons.

In turn, the international port of Singapore in 2014-2015 officially acknowledged the fact of overstatement of port dues, according to the Maritime and Port Authority of Singapore (Maritime and Port Authority of Singapore) on two separate positions of port dues [17]. According to the request of the Singapore port administration, the management is ready to compensate the damages.

During the ongoing international competition, Egypt is reducing port dues for container vessels and ferries calling at Port Said [18]. According to the Suez Canal Authority, ships with less than 80,000 tons of cargo on board will receive a 30% discount on port services, including berthing and pilotage. The discount for ships carrying large consignments will be 40%. Vessels carrying more than 50 containers will be entitled to a discount of up to 60%. The discounts will not be added up. Discounts will be valid for a certain period.

In August 2014, the President of Egypt announced his intention to spend $ 8.2 billion. USA to expand the Suez Canal to increase its capacity to 97 vessels / per day. Construction was completed in August 2015. But due to increased competition with the Panama Canal, which opened new gateways in 2016, Suez Canal traffic gradually declined. The recession was reversed through discounts on ship transit.

In 2017, according to the Suez Canal Administration, discounts allowed to increase traffic by 4% - up to 17.55 thousand vessels. Revenue from transit increased by 5.4% to $ 5.3 billion. USA per year.

It should be noted that currently the Ministry of Infrastructure of Ukraine is actively developing an effective domestic Methodology for calculating port dues for more efficient and productive work of the maritime sector of Ukraine.

Each of the above elements of macroeconomic environment has a significant impact on the tariff formation of maritime enterprises at different state levels of development of the country, which is reflected in the need for new effective approaches to the formation of the port tariff rate level according to global trends and the overall development planning of a unified and more modern logistics system in Ukraine.

Conclusions

Ukraine is the leading link in the global transport chain. It has access to the Black Sea-Azov basin. Under the conditions of uncertainty, economic crisis, pandemic and social tension in Ukraine the number of ports is decreasing, cargo traffic is shrinking, cargo transit is being cut, that is, the port industry is being reformed.

The above-mentioned obliges specialists to take a balanced approach to the tariff formation process in the port industry of Ukraine and to take into account that the determining elements of influence on the tariff formation process are: state programs of country development; state infrastructure reforms, national transport strategy of Ukraine, fiscal policy of the country, indicators of socio-economic development of the country, the investment climate of the state.

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THE TRENDS OF TRANSFORMING THE ENERGY SECTOR OF UKRAINE IN THE CONCEPT OF SUSTAINABLE DEVELOPMENT WITH USING THE RENEWABLE ENERGY SOURCES IN THE PERSPECTIVE TO 2050

Abstract*. The study presents an approach aimed at assessing trends in the transforming the energy sector of Ukraine in the future until 2050, using renewable energy sources in the concept of Sustainable Development, with taking into account the trends of transforming the energy sectors of World and European Union in the perspective to 2050. Our research is aimed at: analysing of the trends of transforming the energy sectors of the world, the European Union and Ukraine and identifying the benefits of using renewable energy sources in the concept of Sustainable Development in the perspective to 2050, assessment of prospects for the application of innovative technologies based on renewable energy sources in the concept of Sustainable Development. A number of criteria for energy, economic and environmental efficiency of innovative technologies for the use of renewable energy sources are analysed in order to conduct a comprehensive assessment of the effectiveness of energy and resource-saving, environmentally friendly and cost-effective innovative technologies in the concept of Sustainable Development in the perspective to 2050. This approach allows providing a reasonable definition of prospects for the use of energy and resource-saving, environmentally friendly and cost-effective innovative technologies for the use of renewable energy sources in the concept of sustainable development to increase energy, economic efficiency and environmental security of Ukraine's energy sector in the perspective to 2050.*

Introduction.

As it is noted in (Ostapenko, Savina, et al, 2020), Sustainable Development is the basis for global international cooperation. The 2030 Agenda for Sustainable Development, adopted in 2015, is defines the directions of development of humanity in the perspective to 2030. The Sustainable Development concept contributes to sustaining economic progress and protecting the environment in the long term. The concept of Sustainable Development involves a combination of economic, social and environmental trends in the modern world. The concept of Sustainable Development combines the optimal use of scarce natural resources with the application of environmentally friendly nature-, energy- and resource-saving technologies in the production of environmentally friendly products at all stages of the life cycle.

As it is noted in (Ostapenko, Savina, et al, 2020), the concept of Sustainable Development is determinates the 17 Sustainable Development Goals (SDGs), that defined the tendencies of development of sustainable energy and fuel and energy complex of Ukraine in the direction of European integration, ensuring reduction of greenhouse gas emissions and increasing the use of non-traditional and renewable energy sources with the application of energy- and resource-saving, environmentally safe and cost-effective innovative technologies.

The concept of sustainable development, according to (Arkhypova, et al, 2021; Brych and Fedirko, 2018; Emas, 2015; Koval, et al, 2019; Mandryk, et al, 2017; Ostapenko, 2020), aims to

maintain economic advancement and progress while protecting the long-term value of the environment. The concept of sustainable development implies the optimal use of limited resources and the use of environmentally friendly nature-, energy- and material-saving technologies at all stages of the life cycle with the production of environmentally acceptable products (Koval, et al, 2017, 2018, 2019).

1 Analysis the trends of transforming the energy sectors of World and European Union in the perspective to 2050 in the concept of sustainable development and determination the trends of renewable energy sources technologies for Ukraine

The analytical work "Forecast of world energy development for the period up to 2035", prepared by the International Energy Agency (IEA), states that in the period 2010 – 2035 there will be an increase in world energy consumption by 35%: the smallest increase in consumption will be use of coal (13%), the largest - for the use of renewable energy sources (RES) (87%). It is noted that fossil energy resources will play a key role in the further development of world energy, however, their share in primary energy consumption in 2035 will be reduced to 75% (today – 81%) ("Foreign experience in improving energy efficiency and introducing new technologies for electricity generation", 2021).

It should be noted that the long-term forecast of the IEA and other international organizations provides for an annual reduction in energy intensity of gross domestic product (GDP), which is planned to increase energy efficiency in all sectors of the economy, especially the most energy-intensive - industry and energy. At the same time, in Ukraine the level of fuel and energy expenditures on GDP production, especially in industry and energy, is declining at a relatively slow pace and as of the end of 2020 significantly exceeded the average level both in the European Union (EU) and in the world as a whole. This indicates a relatively low level of implementation of energy efficient technologies in the sectors of economy and energy in Ukraine. It should be noted, that the long-term forecast of the IEA and other international organizations takes into account the annual decline in energy intensity of gross domestic product by increasing energy efficiency in all sectors of the economy, especially more energy-intensive – in industry and energetics ("Foreign experience in improving energy efficiency and introducing new technologies for electricity generation", 2021).

According to the IEA, world consumption of renewable energy sources (RES) by 2040 will reach almost 3 billion tons of oil equivalent, of which 2,7 billion tons of oil equivalent, including 0,5 billion tons, can be directed to electricity and heat production oil equivalent of hydropower.

In paper (Ostapenko, Savina, et al, 2020) shows that in Ukraine, the percentage of usage of renewable energy and biofuels is 3…4 times lower than in the EU. This indicates the need to increase the share of non-traditional and renewable energy sources in the fuel and energy sector and in the energy sector of Ukraine.

As it is noted in (Ostapenko, 2020) sustainable development of society is possible only in the conditions of energy saving, that is, the development of systems that use energy more efficiently, provide the same or even higher level of transport services, lighting, heating, etc. with less energy consumption. The use of fossil fuels and nuclear energy is contrary to the principle of sustainable development, since these resources are non-renewable, and their use pollutes the environment. Moving towards a sustainable society requires a slow elimination of dependence on fossil fuels. Therefore, the way to overcome the current energy crisis is to switch to the use of alternative (non-traditional) energy sources, in particular, the introduction of heat pump

installations. Advantages of application of heat pump installations for the conditions of Ukraine are determined and substantiated on the basis of the results of research, published in a number of national and foreign publications (Ostapenko, 2015, 2016, 2017, 2018, 2019, 2020; Ostapenko, Savina, et al, 2020; Ostapenko, Bakum and Yuschishina, 2013; Ostapenko, Leshchenko and Tikhonenko, 2015; Ostapenko and Portnov, 2018; Ostapenko and Shevchenko, 2011; Ostapenko, Valigura and Kovalenko, 2013), as it is noted in (Ostapenko, 2020).

A number of investigations in recent years were devoted to the studying of efficiency of application of innovative resource-saving technologies in the world and Ukraine (Arkhypova, et al, 2021; Koval, et al, 2019; Ostapenko, 2019, 2020; Ostapenko, Savina, et al, 2020).

Our research (Ostapenko, Savina, et al, 2020) is based on the "Tracking SDG7" – resource, which uses the databases of the International Renewable Energy Agency (IRENA), the International Energy Agency (IEA), the World Bank, the United Nations Statistics Division (UNSD) and others ("Tracking SDG7", "Rise", "Esmap"). We also used statistics from Eurostat and World Bank resources ("Eurostat", "DataBank. WorldBank").

The paper (Ostapenko, Savina, et al, 2020) considers the prospects for the application of innovative resource-saving technologies in the concepts of green logistics and sustainable development. Assessment of the perspectives of application of innovative resource-saving technologies in Ukraine was carried out with taking into consideration the main goals of sustainable development, tendencies of development of sustainable energy and fuel and energy complex of Ukraine in the direction of European integration, ensuring reduction of greenhouse gas emissions and increasing the use of non-traditional and renewable energy sources. The study illustrates the application of principles and objectives of the concept of green logistics in order to increase the level of energy-economic efficiency of the energy sector of Ukraine with the application of energy- and resource-saving, environmentally safe and cost-effective innovative technologies.

Presented research is also based on the "Tracking SDG7" – resource, which uses the databases of the International Renewable Energy Agency (IRENA), the International Energy Agency (IEA), the World Bank, the United Nations Statistics Division (UNSD) and others ("Tracking SDG7", "Rise", "Esmap"). We also used statistics from Eurostat and World Bank resources ("Eurostat", "DataBank. WorldBank").

The scientific results, presented in our study, are based on data from the International Renewable Energy Agency (IRENA) database ("IRENA", 2021).

The International Renewable Energy Agency (IRENA) is an intergovernmental organization that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international cooperation, a center of excellence, and a repository of policy, technology, resource and financial knowledge on renewable energy. IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar and wind energy in the pursuit of sustainable development, energy access, energy security and low-carbon economic growth and prosperity. The «REmap 2030», developed by IRENA, is a roadmap to double renewable energy use worldwide by 2030 ("IRENA", 2021).

The «Global Renewable Energy Outlook: Transforming Energy by 2050 (April 2020)», developed by the International Renewable Energy Agency (IRENA), shows the path to create a sustainable future energy system. This flagship report highlights climate-safe investment options

until 2050, the policy framework needed for the transition and the challenges faced by different regions.

The «Global Renewable Energy Outlook: Transforming Energy by 2050 (April 2020)», shows the outlines the investments and technologies needed to decarbonize the energy system under the Paris Agreement. It is also exploring deeper decarburization options for the heaviest sectors, with the aim of eventually reducing carbon dioxide (CO_2) emissions to zero ("IRENA", 2020, 2021).

With a mandate from countries around the world, IRENA encourages governments to adopt enabling policies for renewable energy investments, provides practical tools and policy advice to accelerate renewable energy deployment, and facilitates knowledge sharing and technology transfer to provide clean, sustainable energy for the world's growing population ("IRENA", 2021).

In Figs. 1 – 15 shows the criteria for energy, economic and environmental efficiency of innovative technologies for the use of renewable energy sourcesin world and European Union (EU), which analysed in order to conduct a comprehensive assessment of the effectiveness of energy and resource-saving, environmentally friendly and cost-effective innovative technologies in the concept of Sustainable Development in the perspective to 2050.

The results of research, shown in Figs. 1 – 15, were obtained by the author with using a database IRENA.

Fig. 1 displays the ranks of countries/areas to their renewable energy power capacity on all renewable sources of energy in 2020.

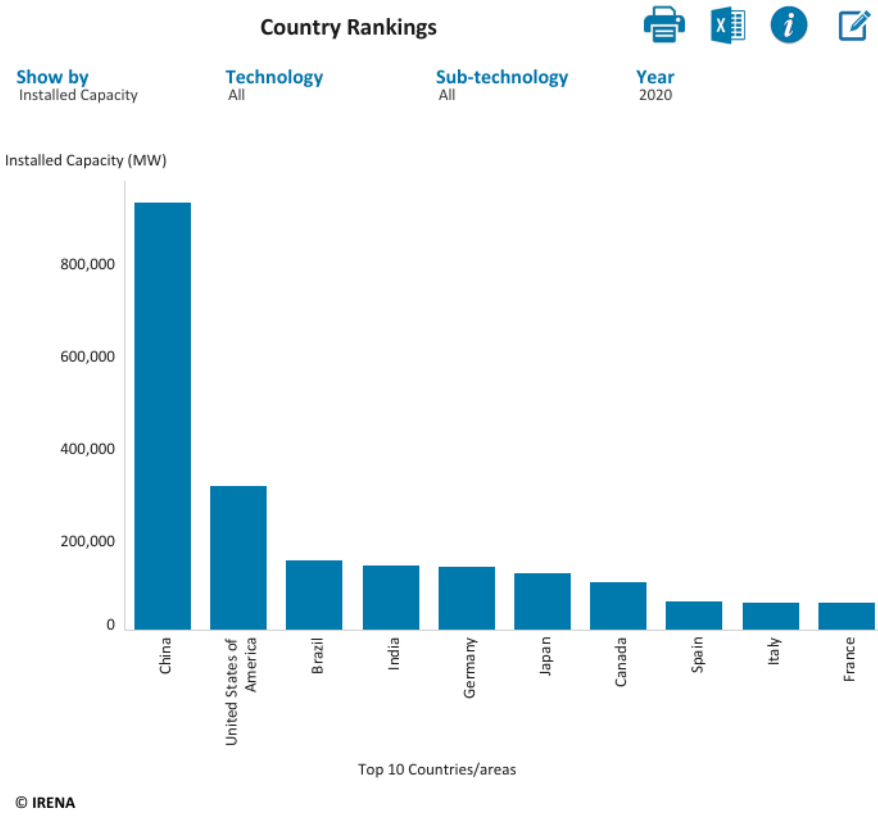

Fig. 1. Data by ranks of countries/areas to their renewable energy power capacity on all renewable sources of energy in 2020
(Source: author's research results with using database IRENA)

Fig. 2 displays the ranks of countries/areas to their renewable energy power capacity on bioenergy in 2020.

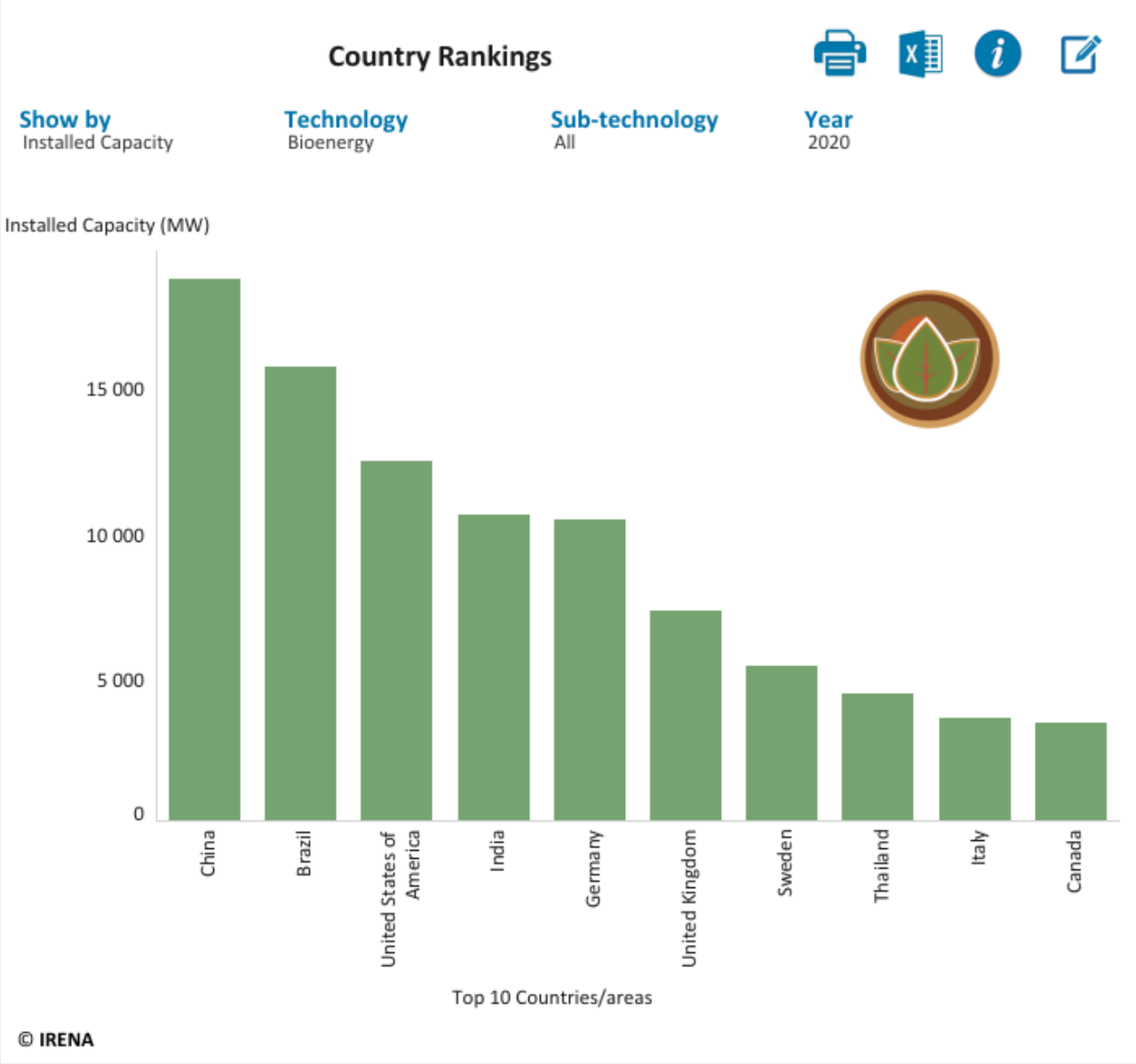

Fig. 2. Data by ranks of countries/areas to their renewable energy power capacity on capacity on bioenergy in 2020
(Source: author's research results with using database IRENA)

Fig. 3 shows a global overview of the renewable energy installed capacity and electricity generated in Europe. It displays progress over time for the selected technology.

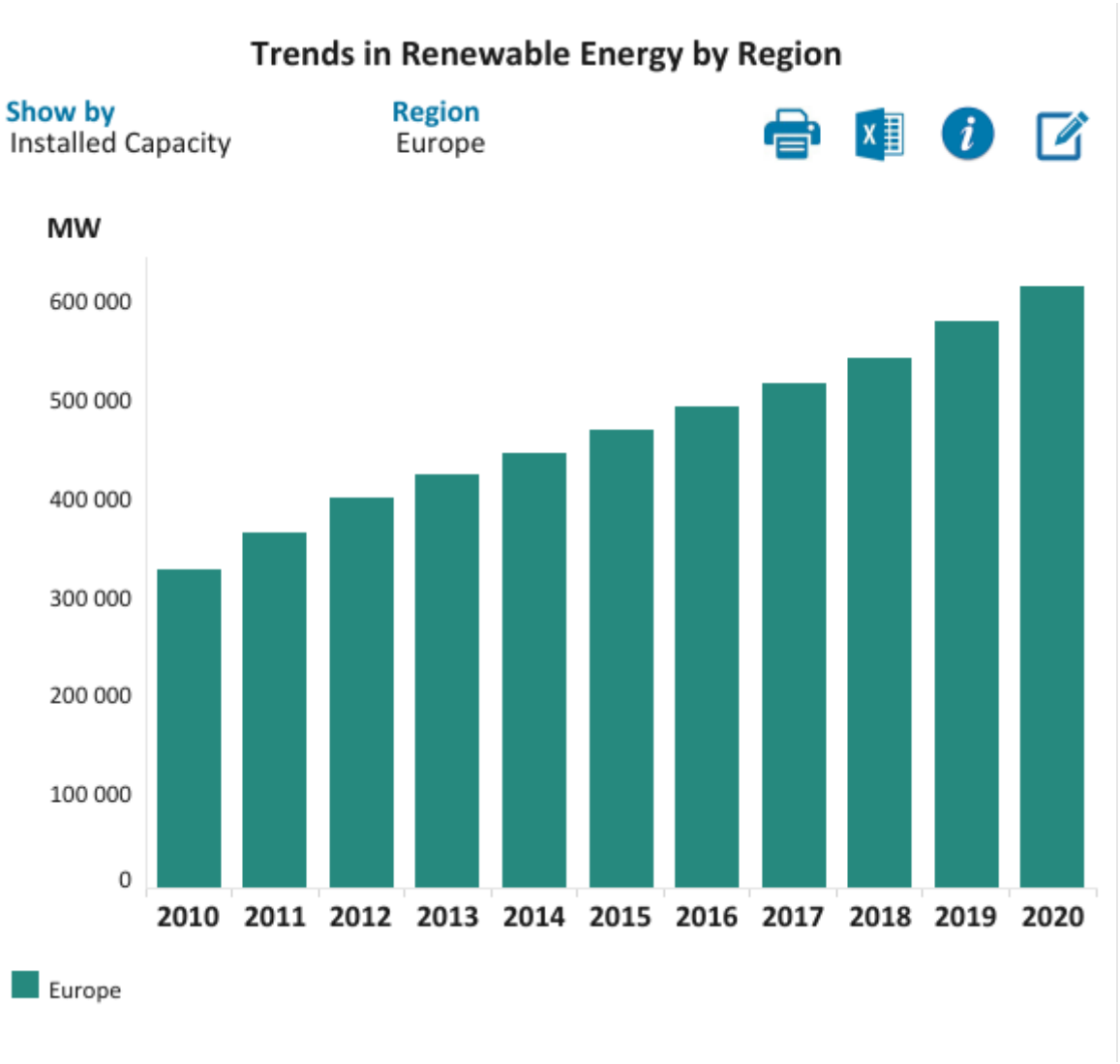

Fig. 3. Global overview of the renewable energy installed capacity and electricity generated in Europe from 2010 to 2020
(Source: author's research results with using database IRENA)

Fig. 4 provides data by employment figures in the renewable energy sector worldwide for different renewable technologies.

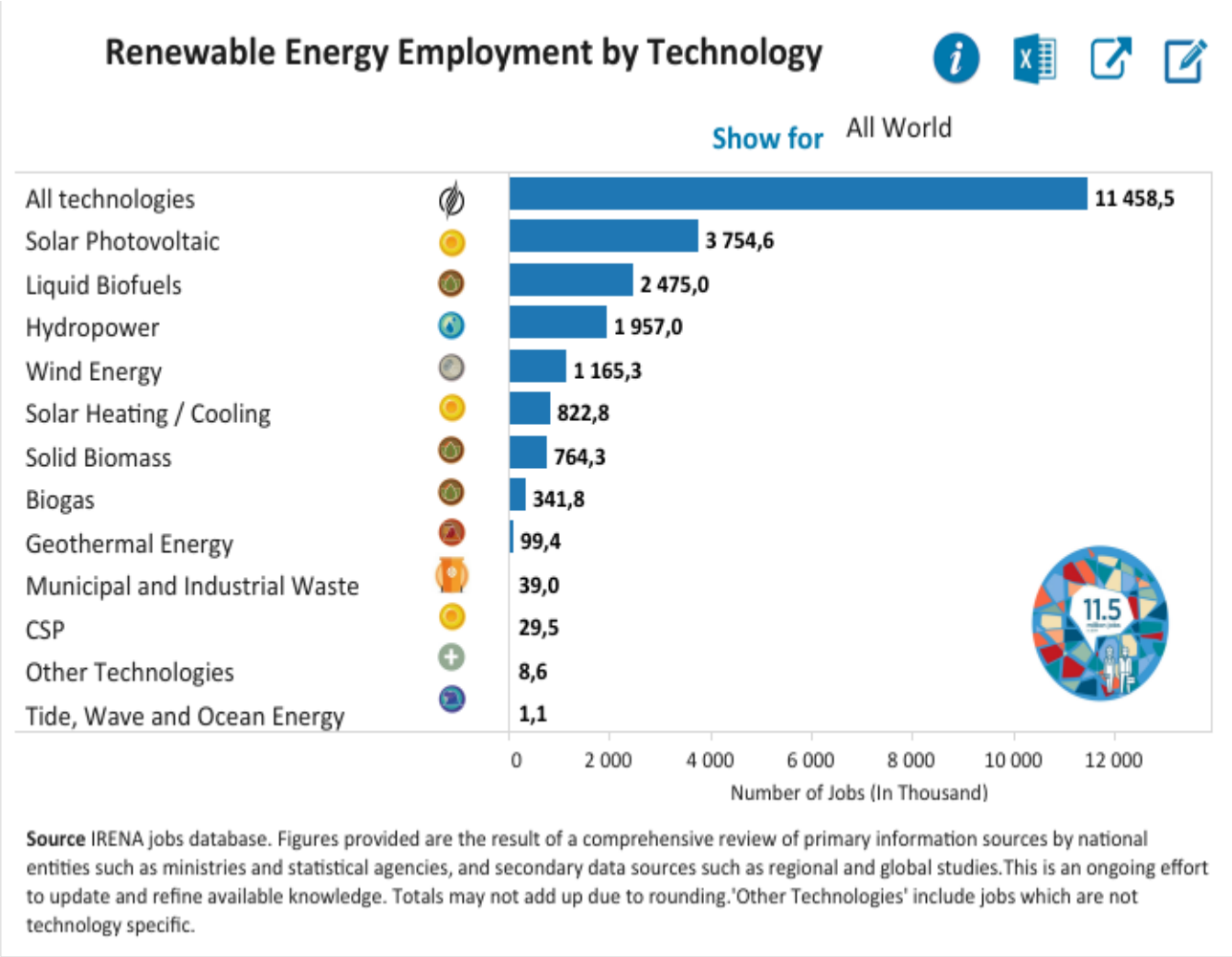

Fig. 4. Data by employment figures in the renewable energy sector worldwide for different renewable technologies
(Source: author's research results with using database IRENA)

Fig. 5 provides an overview on the total employment figures in the renewable energy sector by technology in 2012-2019.

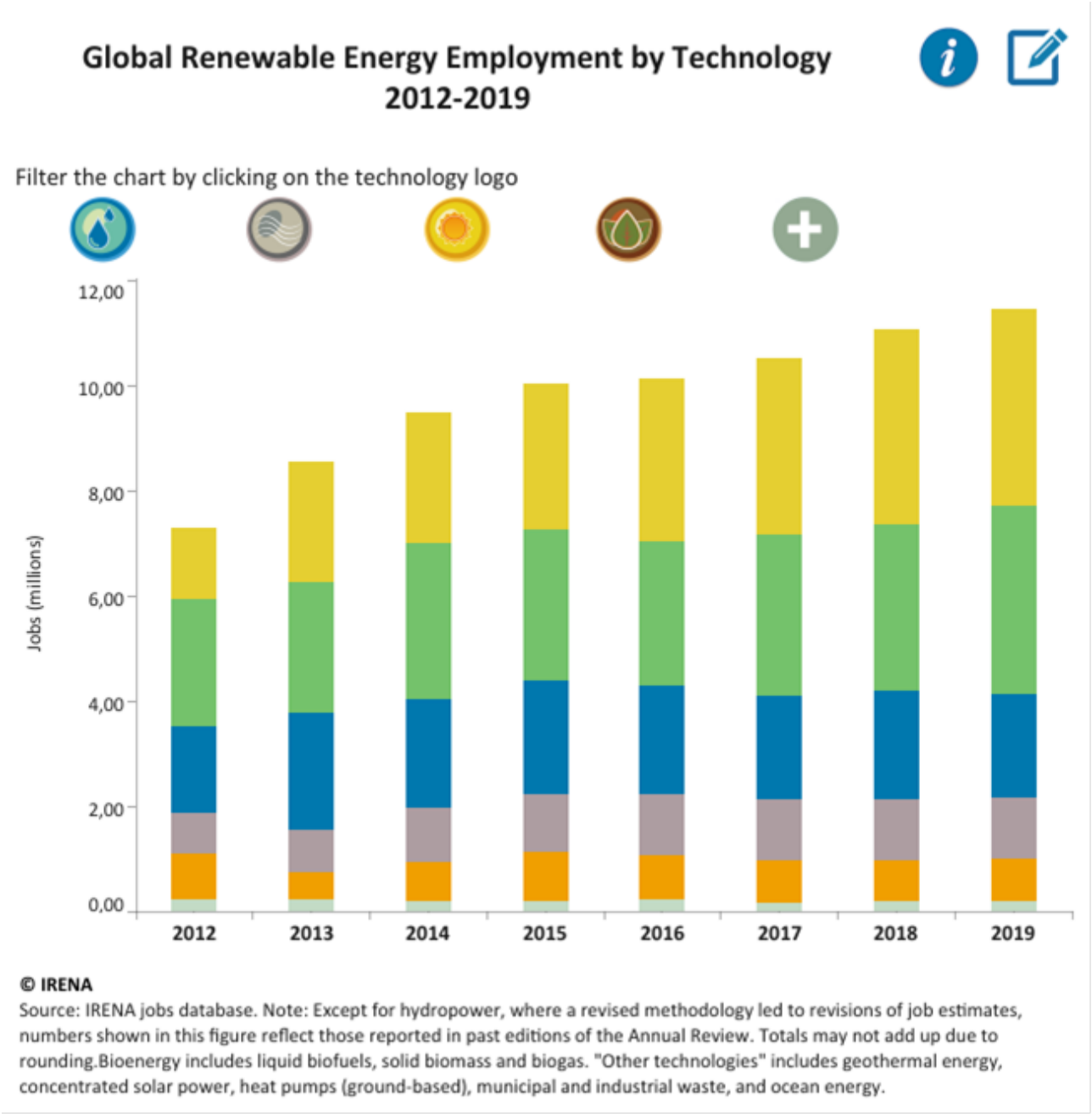

Fig. 5. Overview on the total employment figures in the renewable energy sector by technology in 2012-2019
(Source: author's research results with using database IRENA)

Fig. 6 provides information on the annual energy-related CO2 emissions by sector by year for planned energy scenario to 2050 in the world.

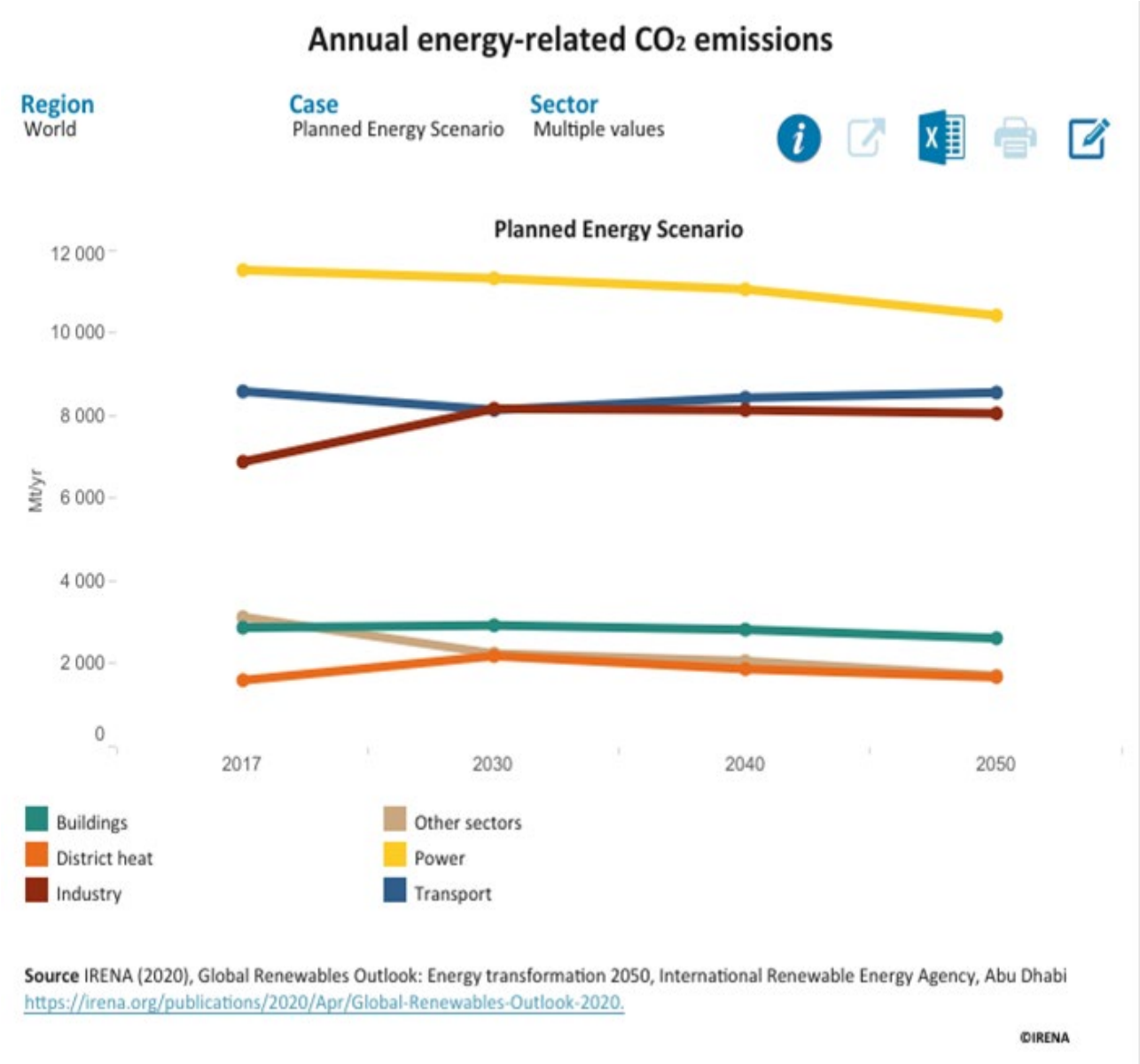

Fig. 6. The annual energy-related CO_2 emissions by sector by year for planned energy scenario to 2050 in the world
(Source: author's research results with using database IRENA)

Fig. 7 provides information on the annual energy-related CO2 emissions by sector (and total) by year for planned energy scenario to 2050 in the world.

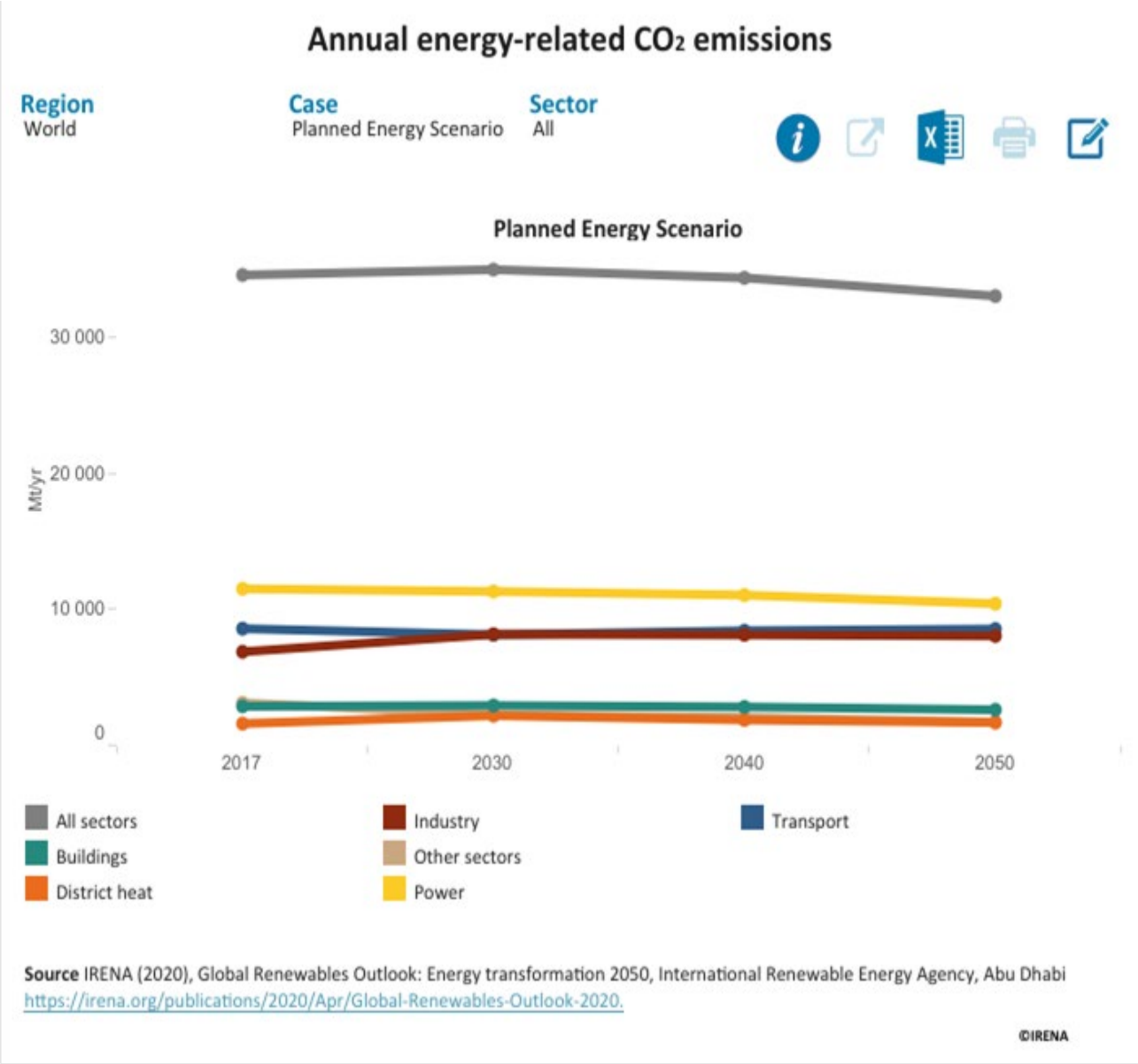

Fig. 7. The annual energy-related CO_2 emissions by sector (and total) by year for planned energy scenario to 2050 in the world
(Source: author's research results with using database IRENA)

Fig. 8 provides information on the annual energy-related CO2 emissions by sector by year for transforming energy scenario to 2050 in the world.

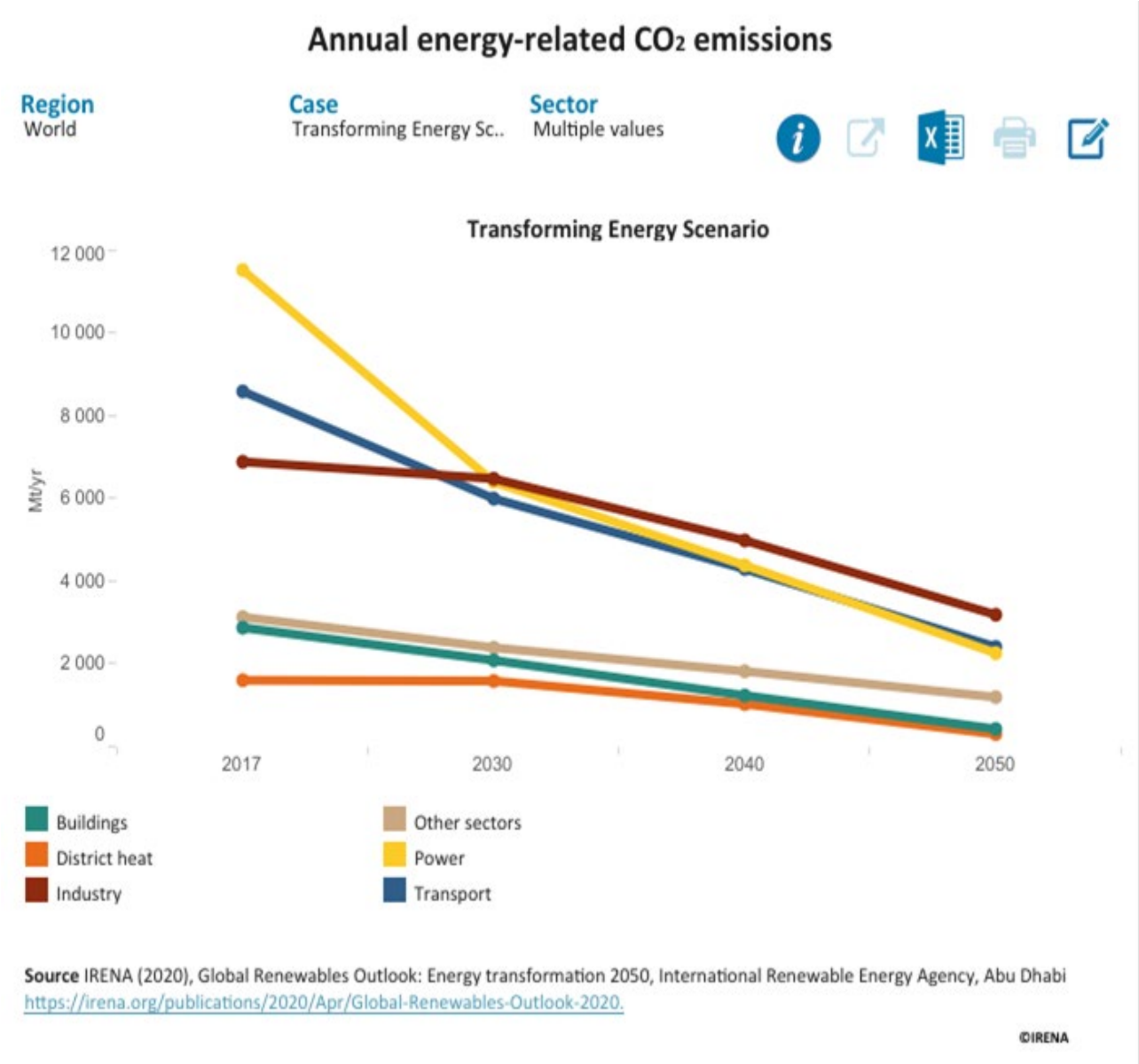

Fig. 8. The annual energy-related CO_2 emissions by sector by year for transforming energy scenario to 2050 in the world
(Source: author's research results with using database IRENA)

Fig. 9 provides information on the annual energy-related CO2 emissions by sector (and total) by year for transforming energy scenario to 2050 in the world**.**

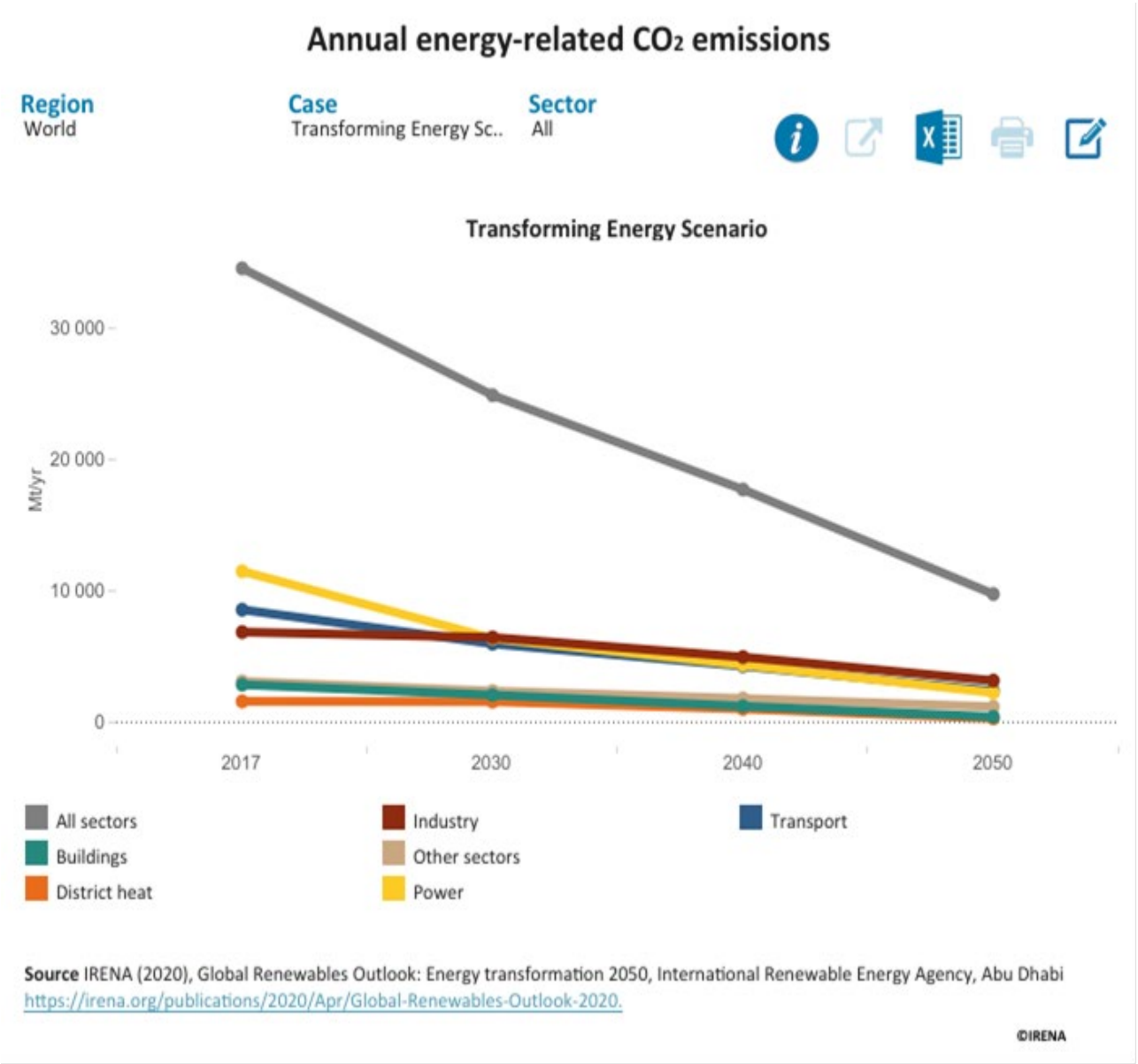

Fig. 9. The annual energy-related CO_2 emissions by sector (and total) by year for transforming energy scenario to 2050 in the world.
(Source: author's research results with using database IRENA)

Fig. 10 provides information of the annual energy-related CO2 emissions by sector and by year for planned and transforming energy scenario to 2050 in the world.

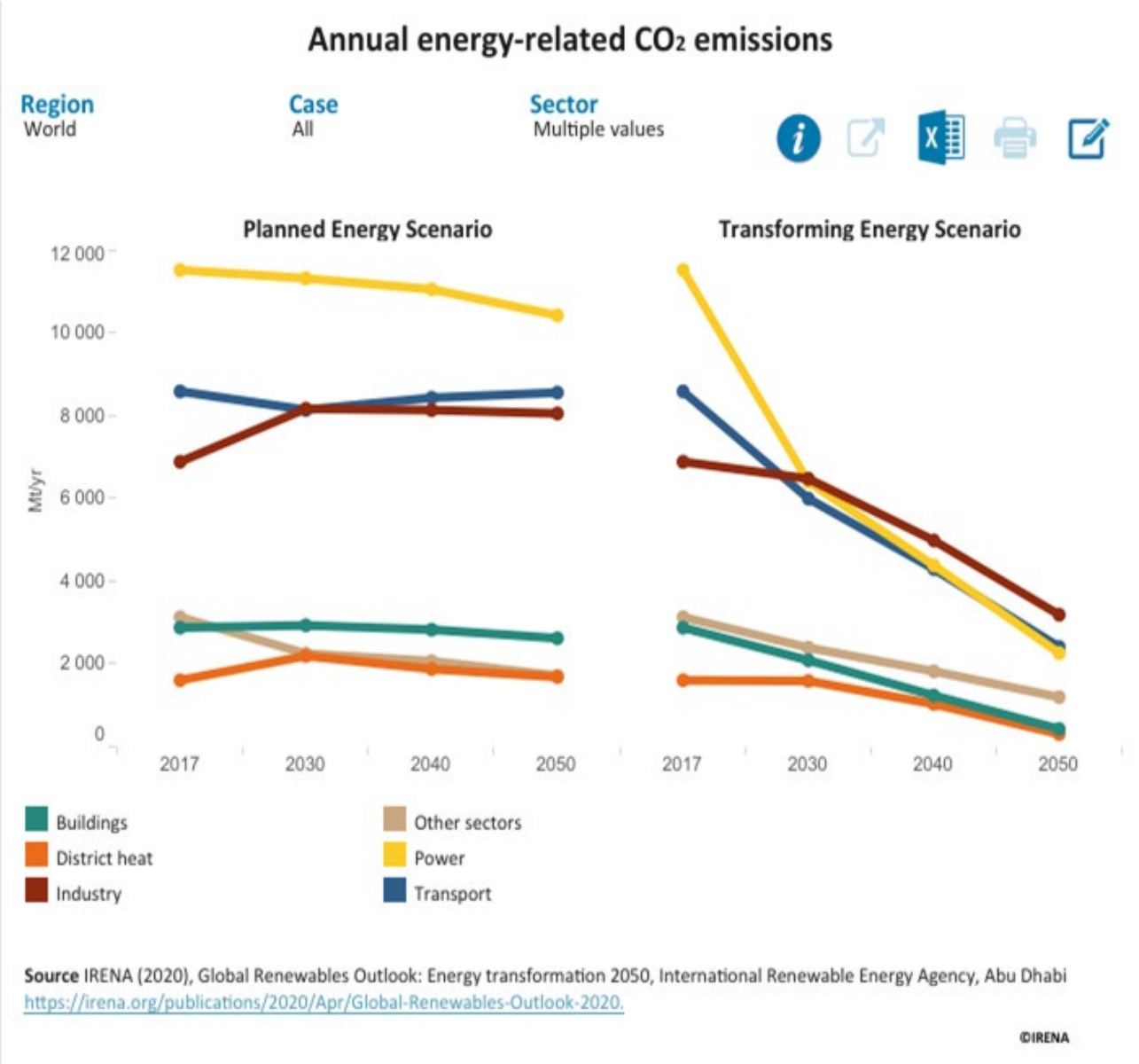

Fig. 10. The annual energy-related CO_2 emissions by sector and by year for planned and transforming energy scenario to 2050 in the world
(Source: author's research results with using database IRENA)

Fig. 11 provides information of the annual energy-related CO2 emissions by sector by year for planned energy scenario to 2050 in EU-28

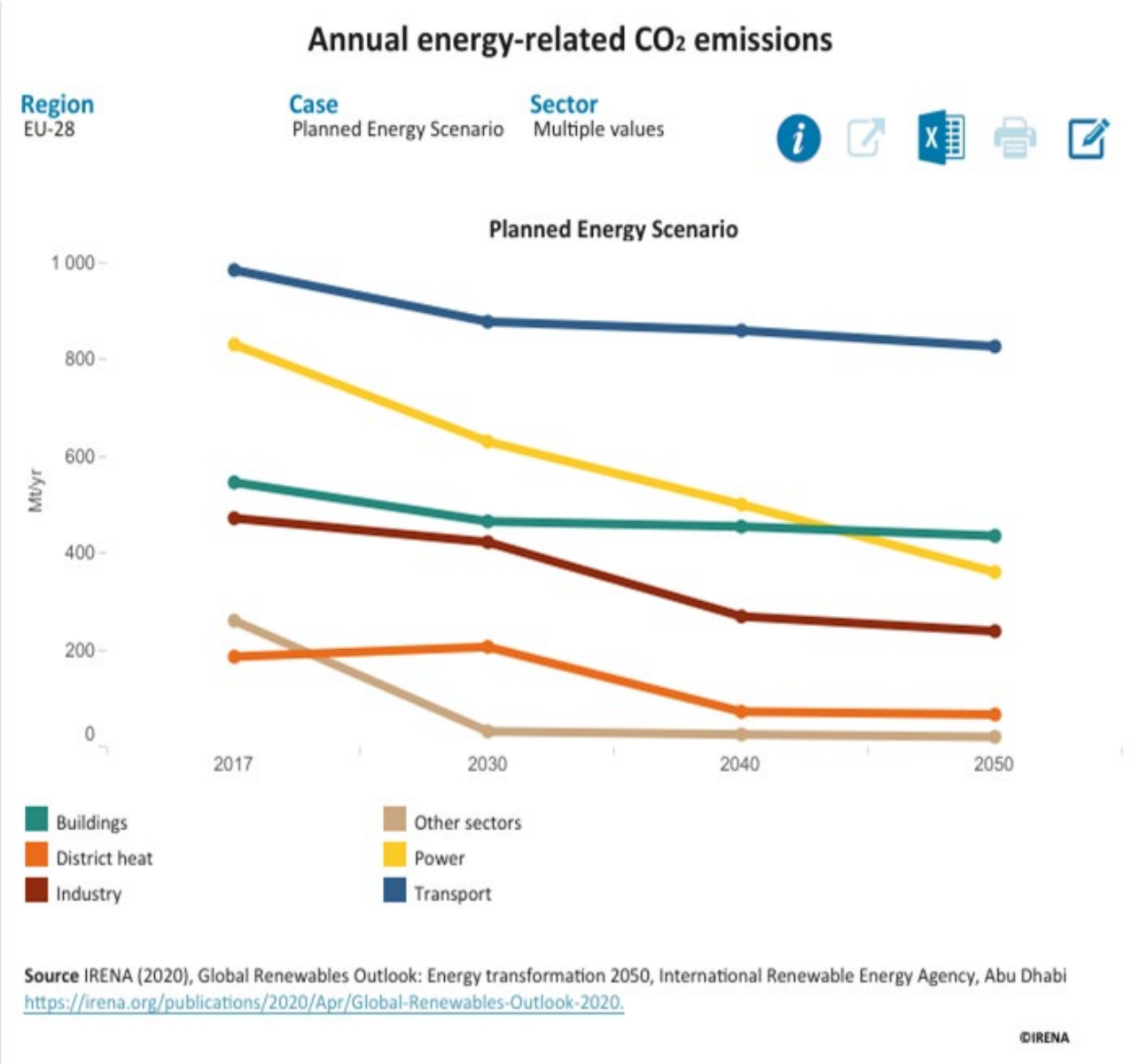

Fig. 11. The annual energy-related CO_2 emissions by sector by year for planned energy scenario to 2050 in EU-28 (Source: author's research results with using database IRENA)

Fig. 12 provides information of the annual energy-related CO2 emissions by sector by year for transforming energy scenario to 2050 in EU-**28.**

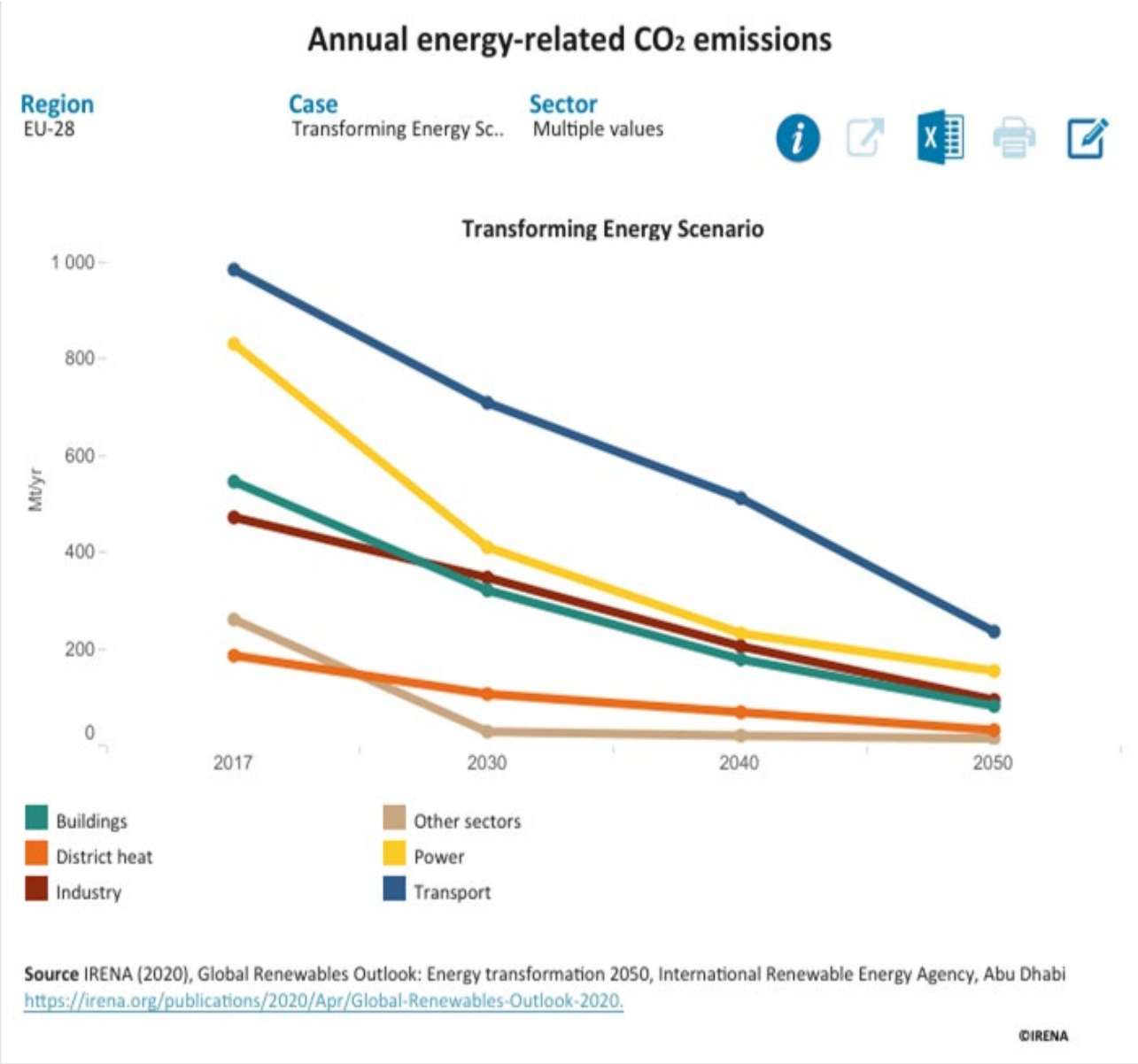

Fig. 12. The annual energy-related CO_2 emissions by sector by year for transforming energy scenario to 2050 in EU-28 (Source: author's research results with using database IRENA)

Fig. 13 provides information of the annual energy-related CO2 emissions by sector (and total) by year for planned energy scenario to 2050 in EU-28**.**

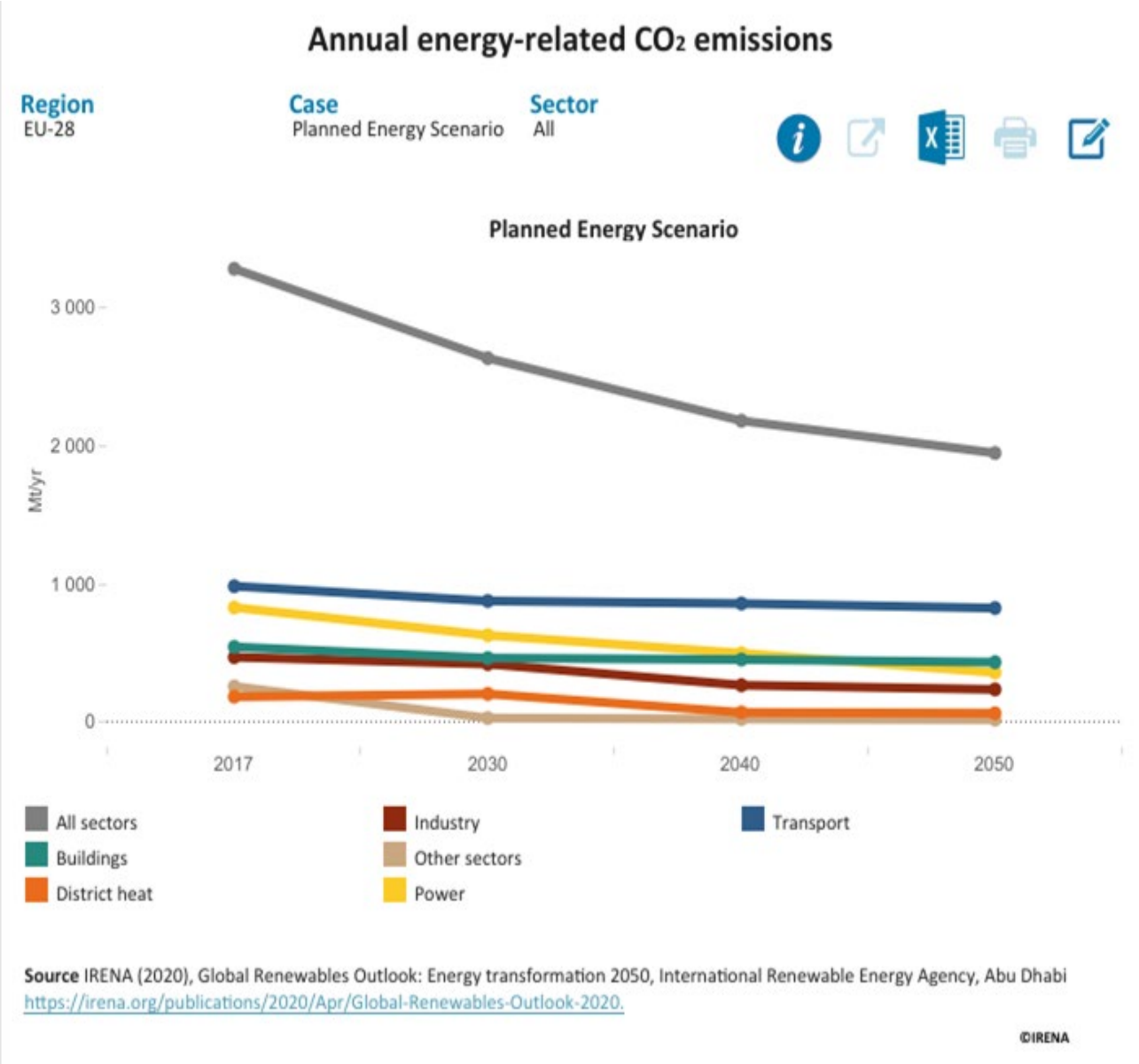

Fig. 13. The annual energy-related CO_2 emissions by sector (and total) by year for planned energy scenario to 2050 in EU-28
(Source: author's research results with using database IRENA)

Fig. 14 provides information of the annual energy-related CO2 emissions by sector (and total) by year for transforming energy scenario to 2050 in EU-28.

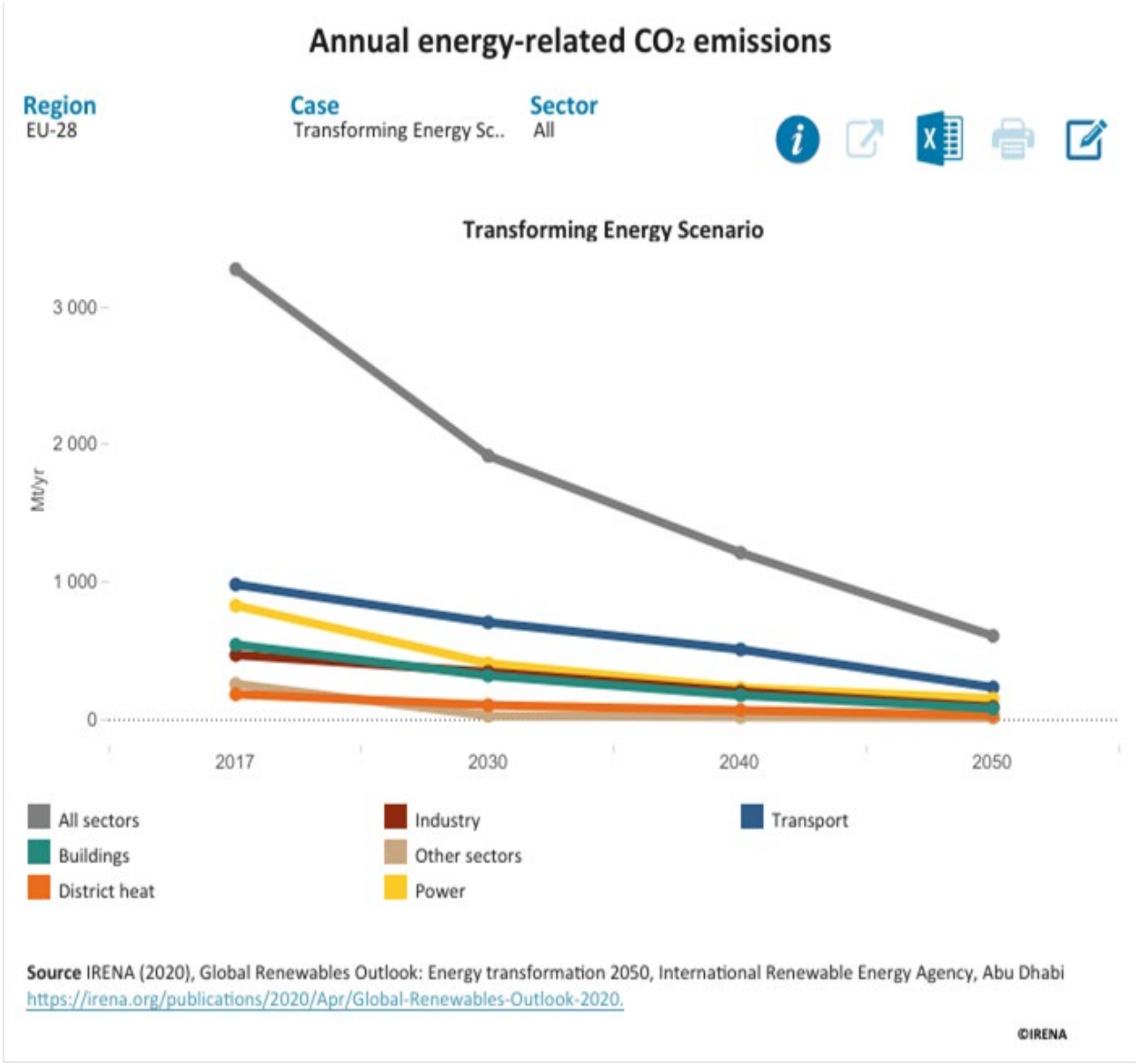

Fig. 14. The annual energy-related CO_2 emissions by sector (and total) by year for transforming energy scenario to 2050 in EU-28
(Source: author's research results with using database IRENA)

Fig. 15 provides information of the annual energy-related CO2 emissions by sector and by year for planned and transforming energy scenario to 2050 in EU-28.

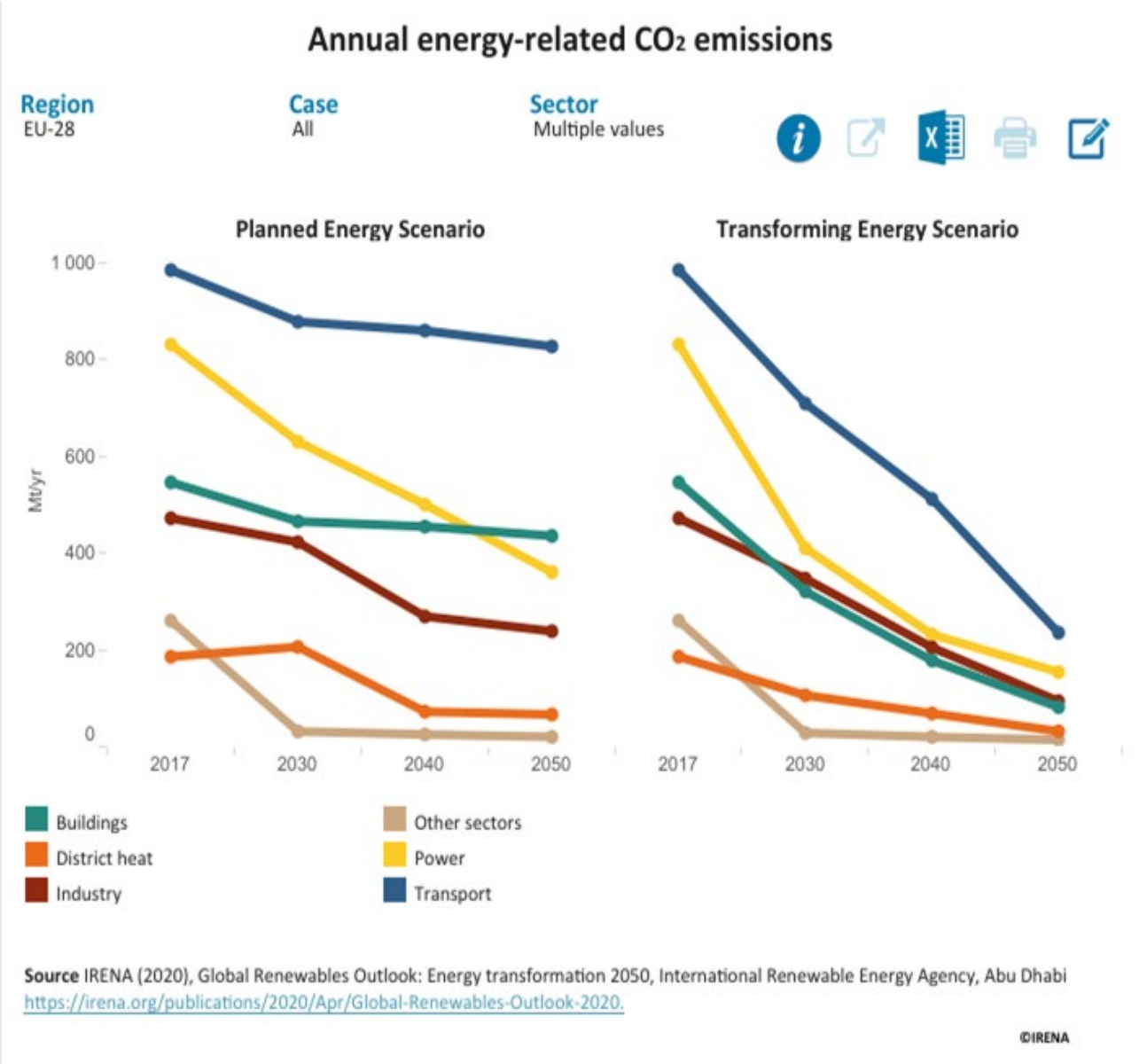

Fig. 15. The annual energy-related CO2 emissions by sector and by year for planned and transforming energy scenario to 2050 in EU-28
(Source: author's research results with using database IRENA)

2 Analysis the trends of transforming the energy sector of Ukraine with using renewable energy sources in the concept of Sustainable Development in the perspective to 2050

In Figs. 16 – 28 shows the criteria for energy, economic and environmental efficiency of innovative technologies for the use of renewable energy sources in Ukraine, which analysed in order to conduct a comprehensive assessment of the effectiveness of energy and resource-saving, environmentally friendly and cost-effective innovative technologies in the concept of Sustainable Development in the perspective to 2050.

The results of research, shown in Figs. 16 – 28, were obtained by the author wuth using a database IRENA.

The scenario of the transformation of the energy system of the World and the European Union in the perspective to 2050, analyzed in Chapter 1, in combination with an additional deeper perspective on reducing carbon dioxide emissions provides a sustainable, environmentally friendly and climate-friendly basis for stable long-term economic development. According to research ("IRENA", 2021), this perspective will reduce global emissions carbon dioxide (CO2) associated with energy production by 70% by 2050. More than 90% of this reduction will be achieved through renewable energy sources and measures to increase energy efficiency.

According to research ("IRENA", 2021), the ultimate global climate target will be zero emissions. This perspective also looks at ways to reduce CO2 emissions from 2050 to zero energy balance and possibly even zero. Hydrogen and synthetic fuels, direct electrification, modern biofuels and carbon reduction measures gas will be critical along with innovative business models, structural changes and behavioral adaptation.

Fig. 16 displays data by employment figures in the renewable energy sector of Ukraine for different renewable technologies.

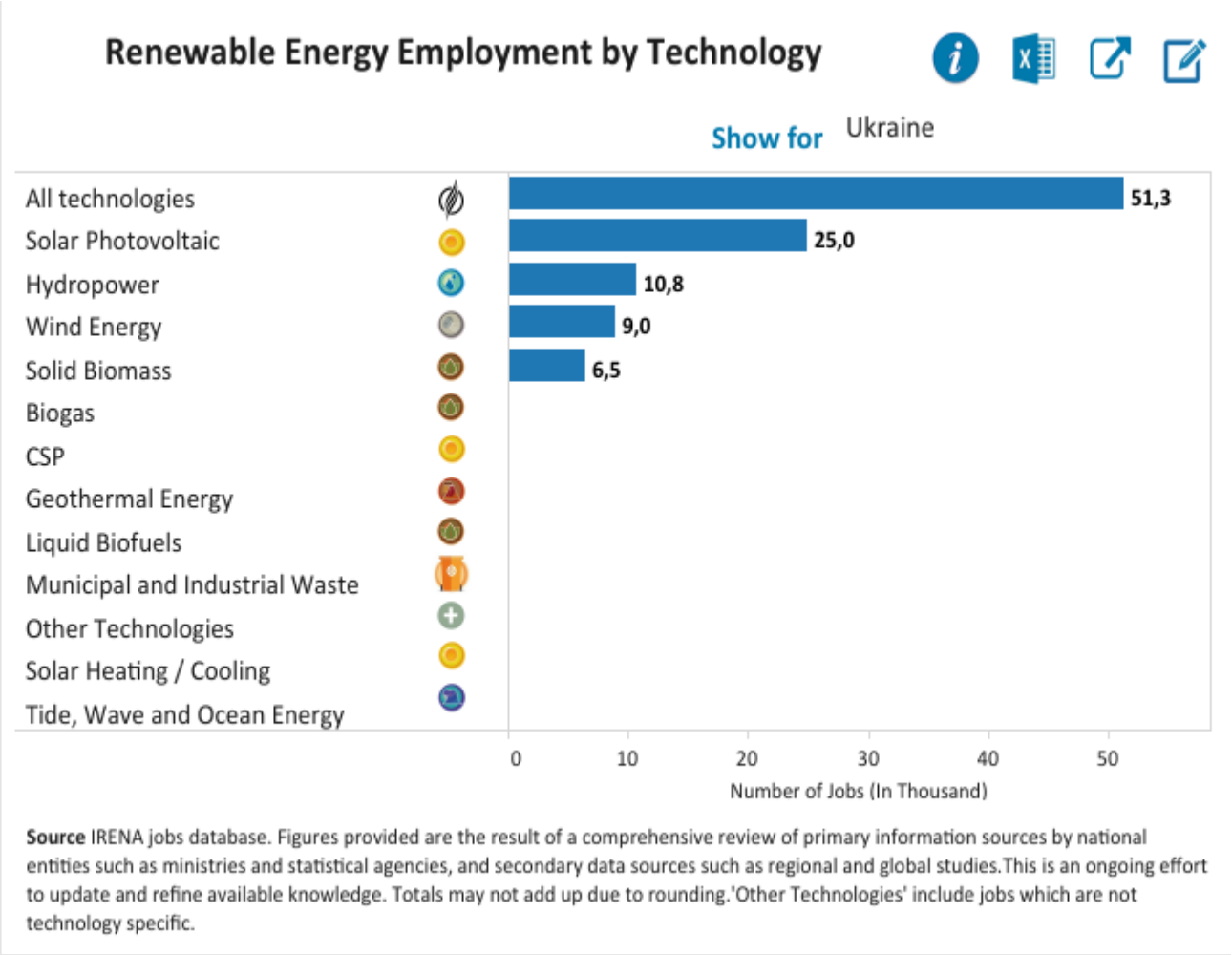

Fig. 16. Data by employment figures in the renewable energy sector of Ukraine for different renewable technologies
(Source: author's research results with using database IRENA)

Fig. 17 displays information on renewable electricity generation in Ukraine for different renewable technologies in 2015-2018.

Fig. 18 displays information of installed capacity in Ukraine for different renewable technologies in 2016-2020.

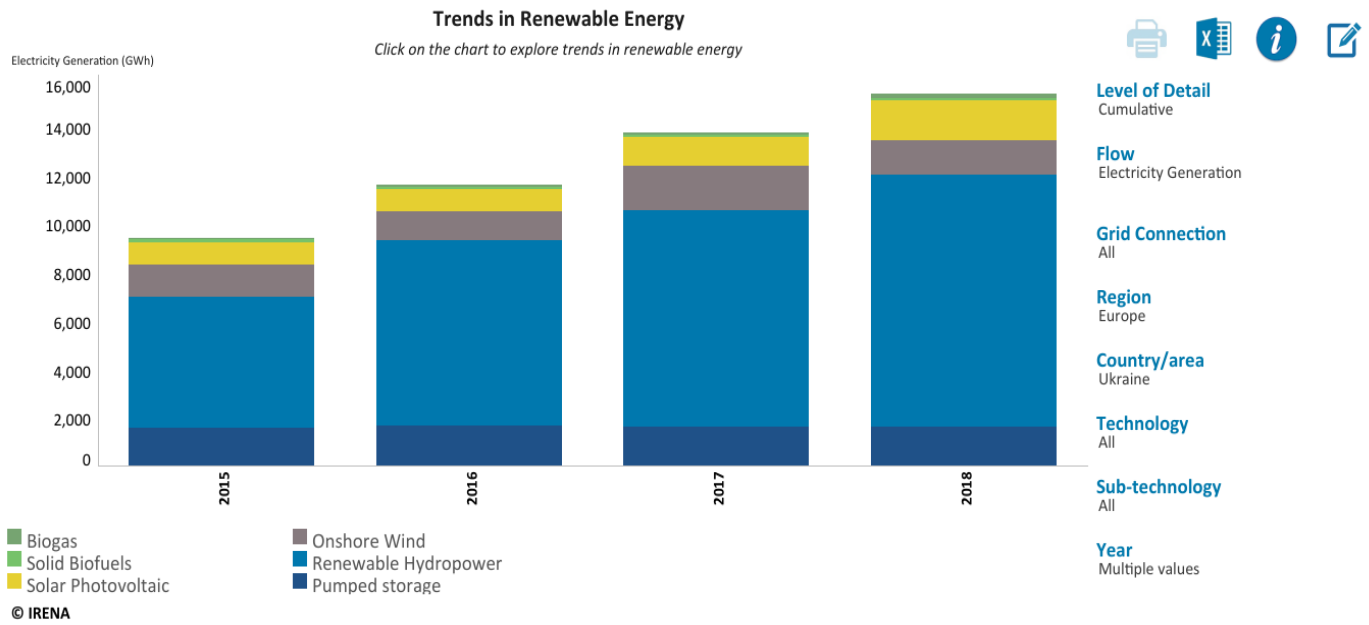

Fig. 17. Information on renewable electricity generation in Ukraine for different renewable technologies in 2015-2018
(Source: author's research results with using database IRENA)

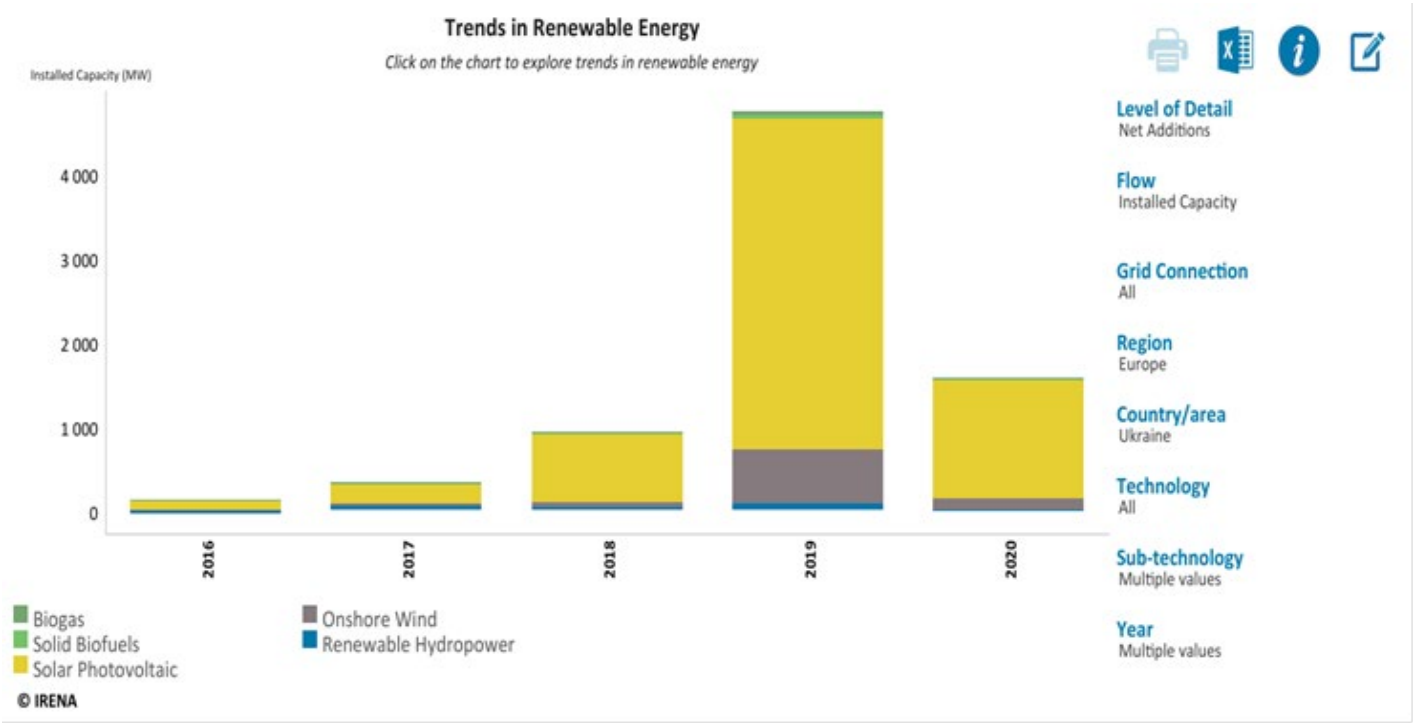

Fig. 18. Information of installed capacity in Ukraine for different renewable technologies in 2016-2020
(Source: author's research results with using database IRENA)

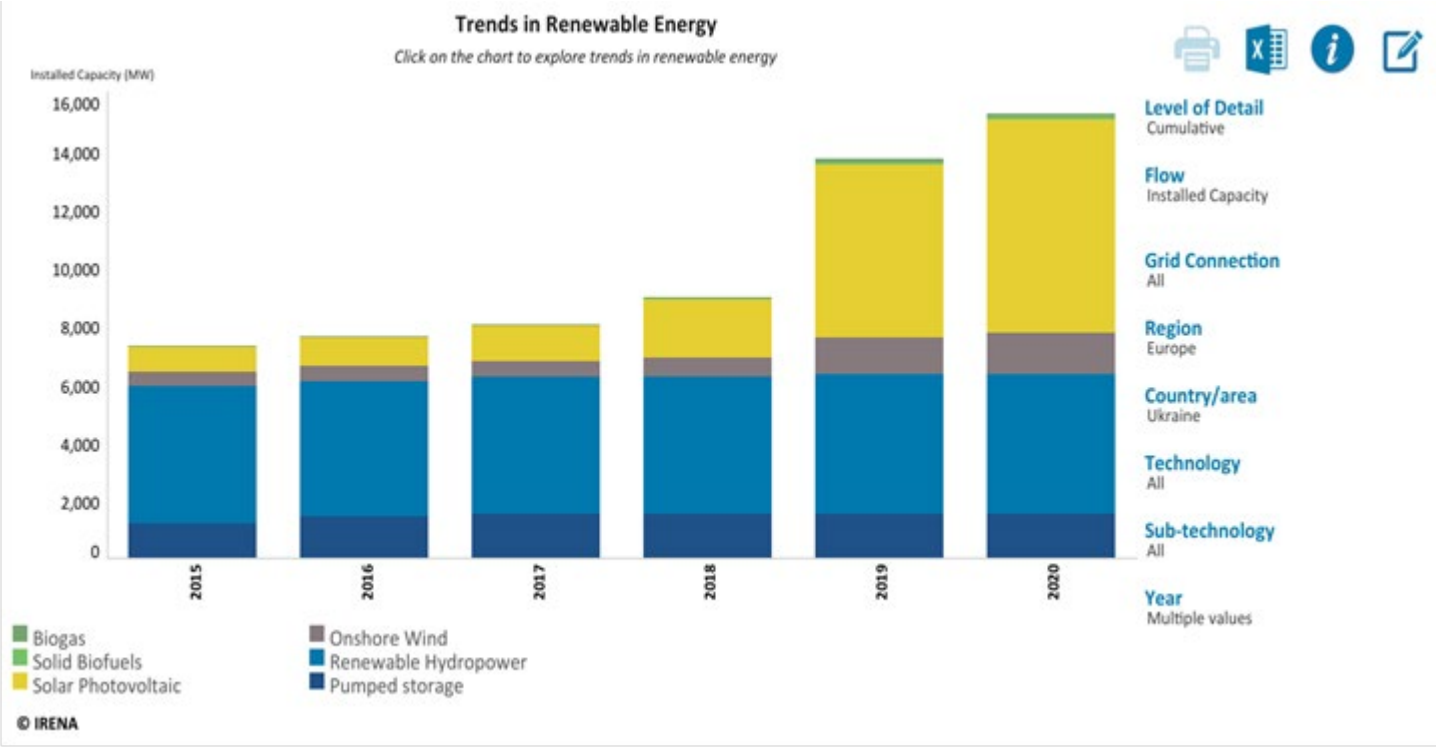

Fig. 19. Information of total installed capacity in Ukraine for different renewable technologies in 2015-2020
(Source: author's research results with using database IRENA)

Fig. 19 displays information of total installed capacity in Ukraine for different renewable technologies in 2015-2020. Fig. 20 displays the country roadmap of Ukraine by REmap to renewable energy (an overview of the total final energy consumption by sector (TFEC), electrical capacity and energy demand by sector) for the reference case and REmap case to 2030 in Ukraine. Fig. 21 displays information of total installed capacity in Ukraine for wind renewable technology in 2016-2020. Fig. 22 displays information of total installed capacity in Ukraine for biogas and solid biofuels renewable technologies in 2015-2020. Figs. 24 – 28 estimates the greenhouse gas emissions avoided in Ukraine due to a renewable electricity generation in a given year compared to various fossil fuel generation scenarios.

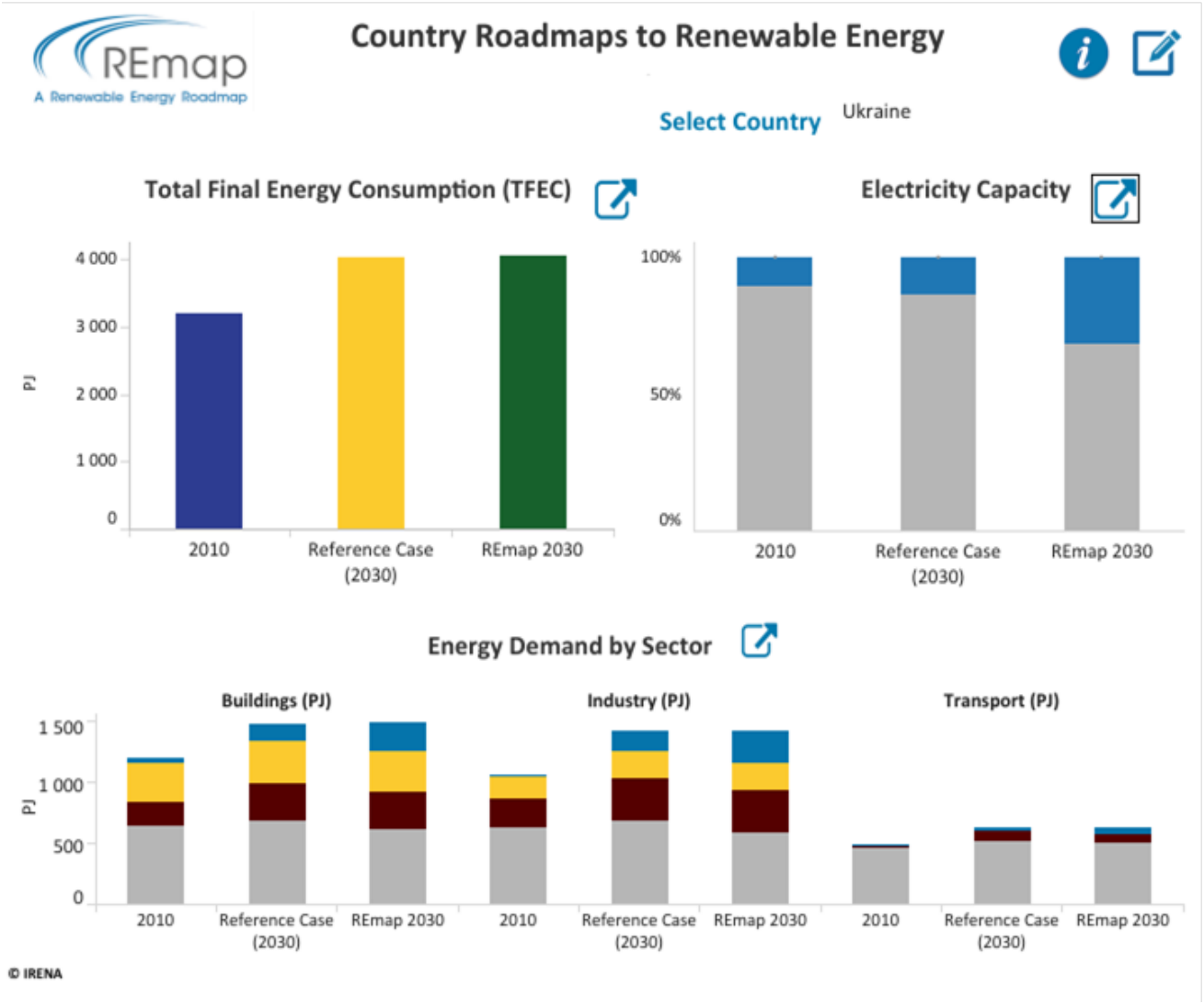

Fig. 20. The country roadmap of Ukraine by REmap to renewable energy (an overview of the total final energy consumption by sector (TFEC), electrical capacity and energy demand by sector) for the reference case and REmap case to 2030 in Ukraine (Source: author's research results with using database IRENA)

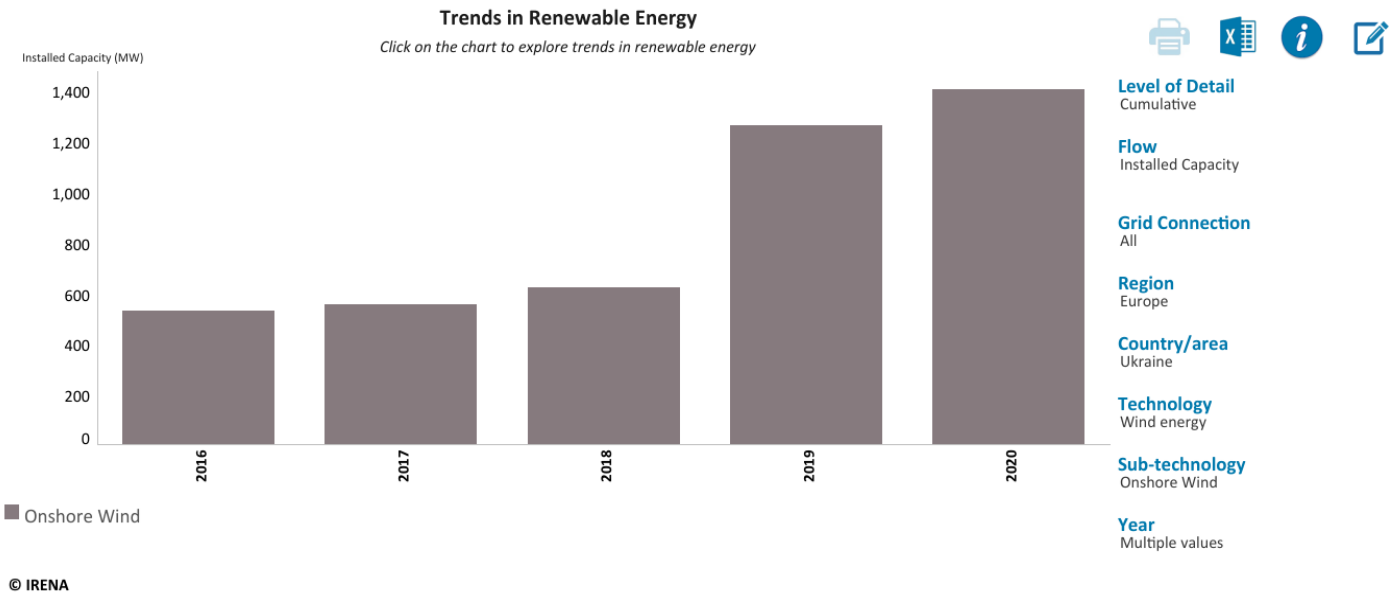

Fig. 21. Information of total installed capacity in Ukraine for wind renewable technology in 2016-2020
(Source: author's research results with using database IRENA)

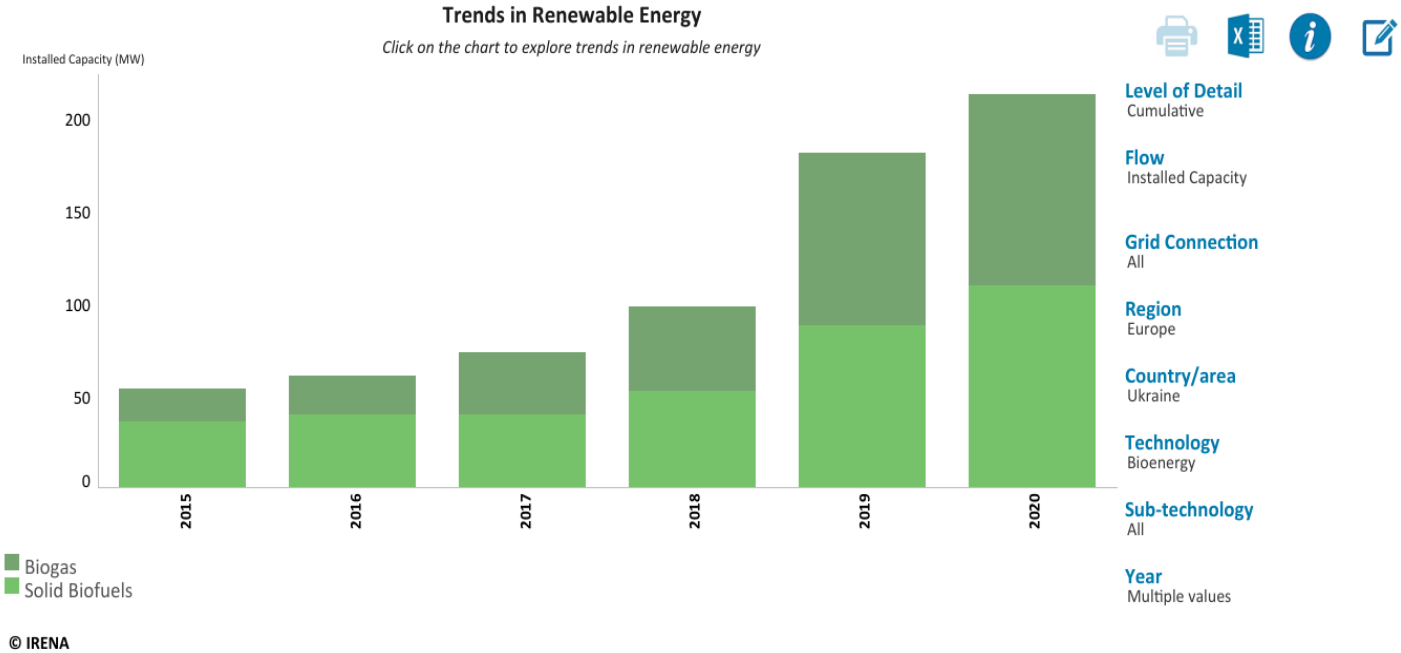

Fig. 22. Information of total installed capacity in Ukraine for biogas and solid biofuels renewable technologies in 2015-2020
(Source: author's research results with using database IRENA)

Fig. 23 displays information of total installed capacity in Ukraine for solar photovoltaic renewable technology in 2016-2020.

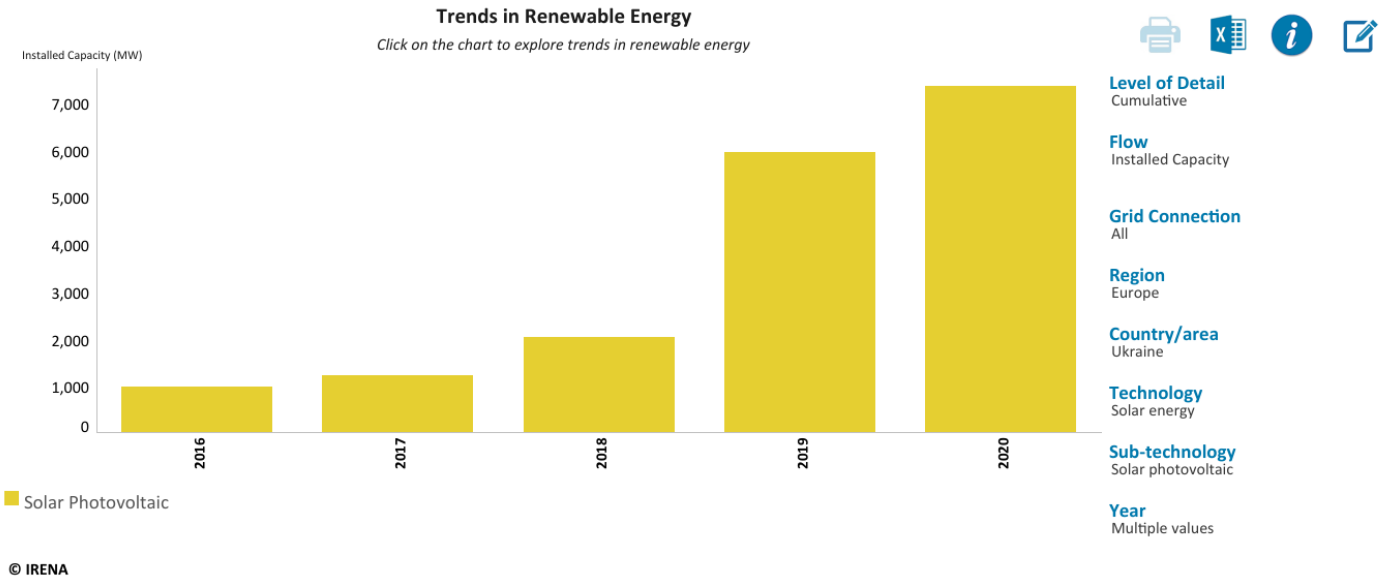

Fig. 23. Information of total installed capacity in Ukraine for solar photovoltaic renewable technology in 2016-2020.
(Source: author's research results with using database IRENA)

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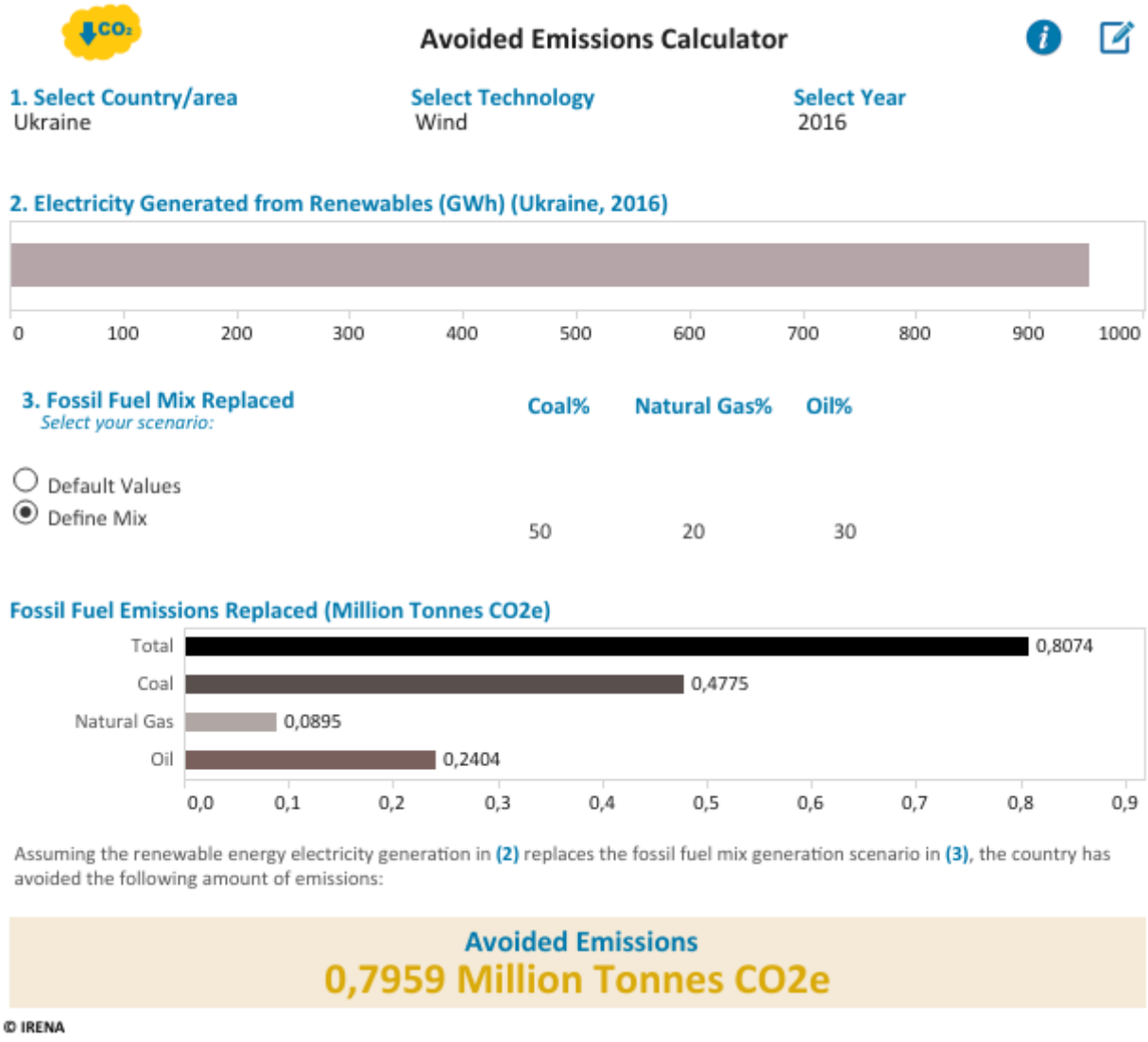

Fig. 24. Greenhouse gas emissions avoided in Ukraine due to a renewable (wind) electricity generation in 2016 compared to various fossil fuel generation scenarios (Source: author's research results with using database IRENA)

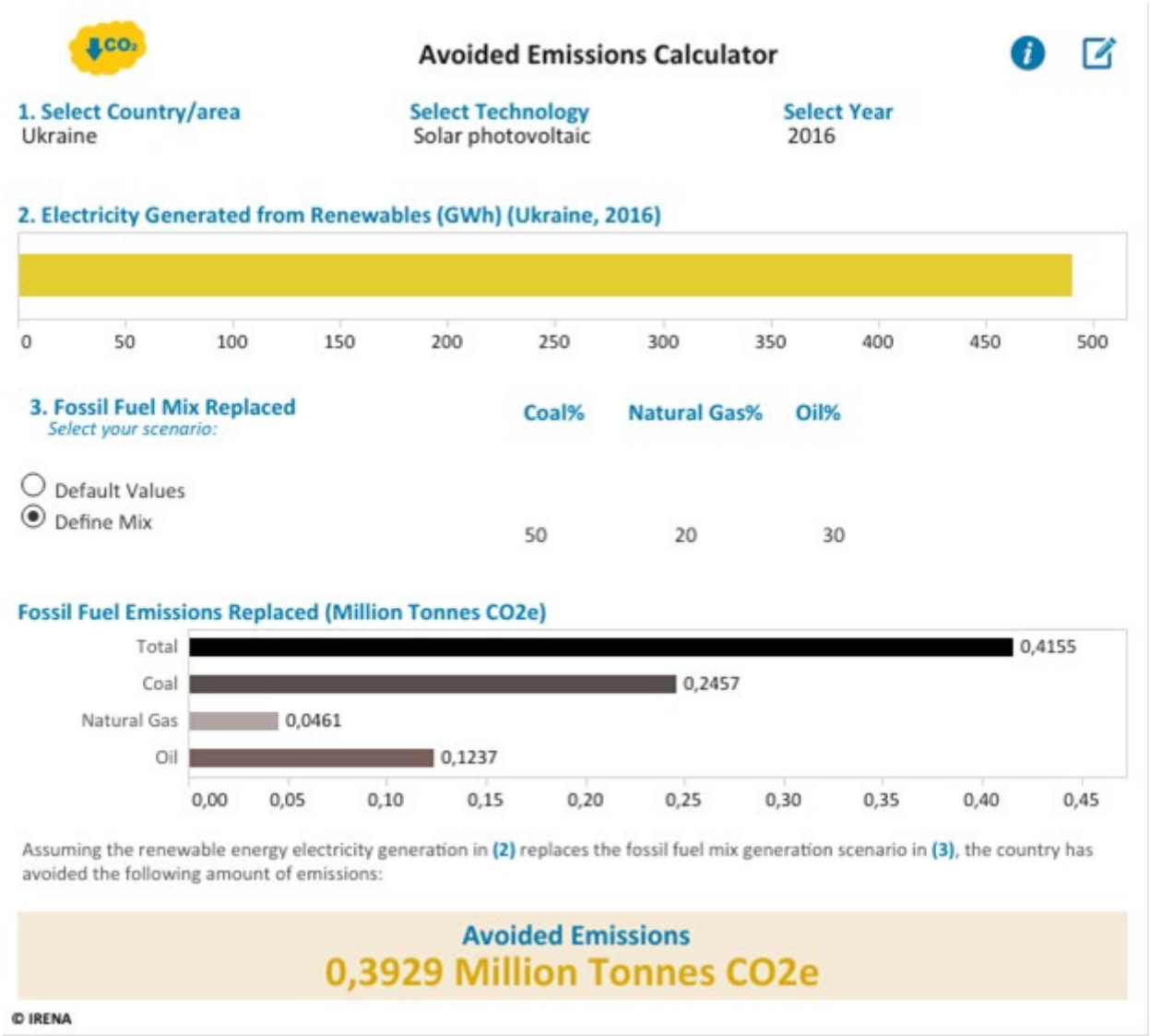

Fig. 25 Greenhouse gas emissions avoided in Ukraine due to a renewable (solar photovoltaic) electricity generation in 2016 compared to various fossil fuel generation scenarios (Source: author's research results with using database IRENA)

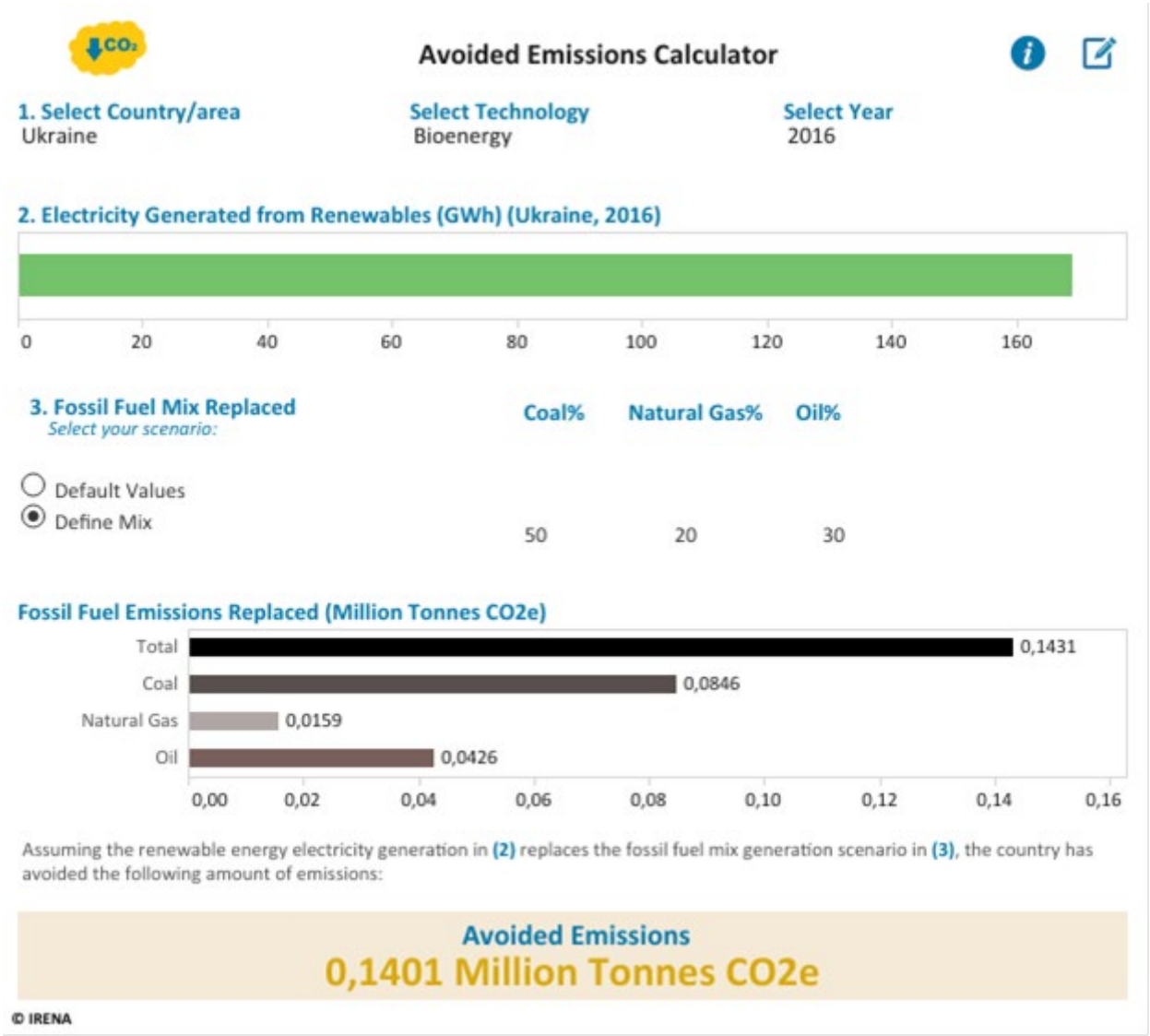

Fig. 26 Greenhouse gas emissions avoided in Ukraine due to a renewable (bioenergy) electricity generation in 2016 compared to various fossil fuel generation scenarios (Source: author's research results with using database IRENA)

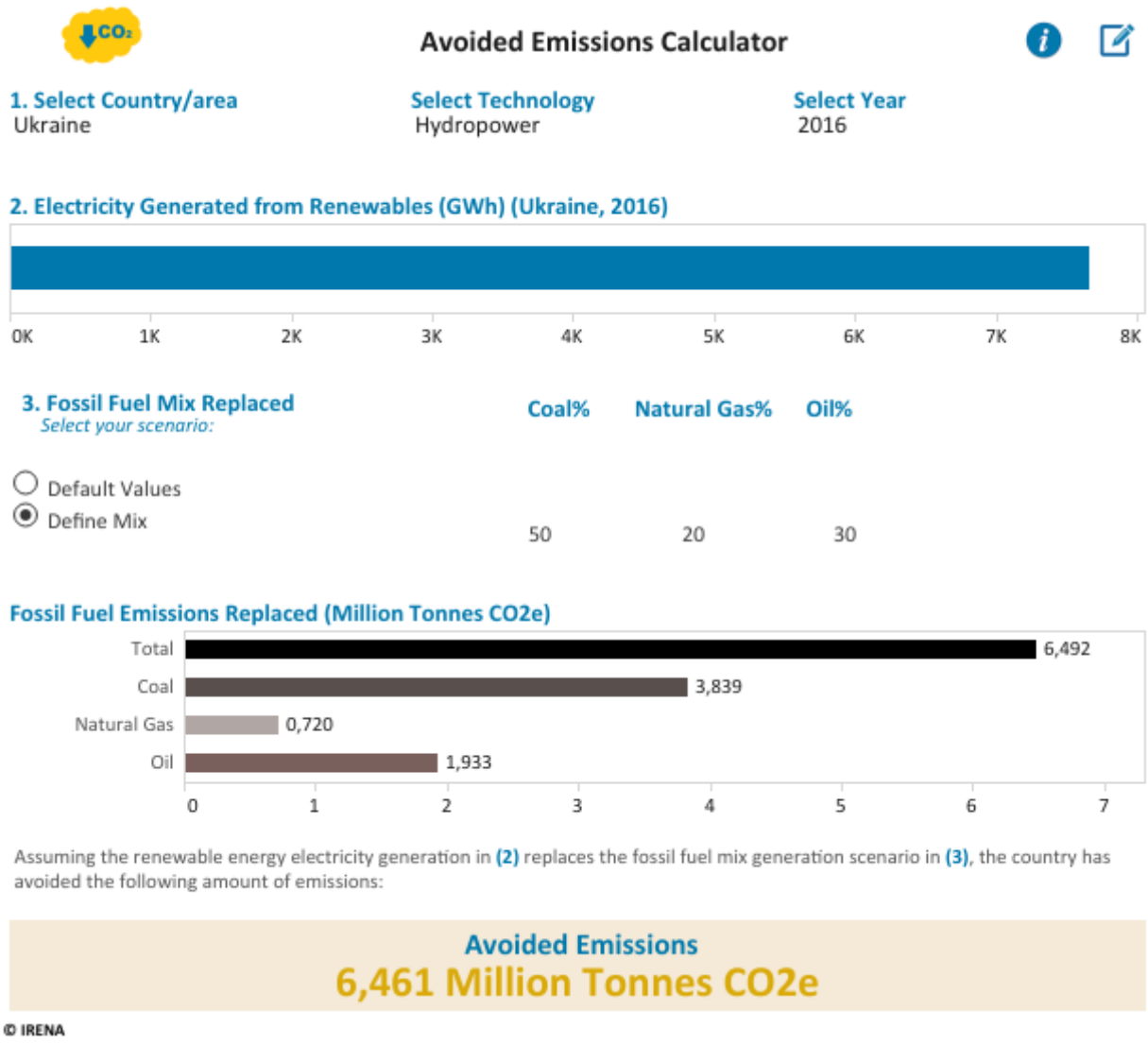

Fig. 27 Greenhouse gas emissions avoided in Ukraine due to a renewable (hydropower) electricity generation in 2016 compared to various fossil fuel generation scenarios (Source: author's research results with using database IRENA)

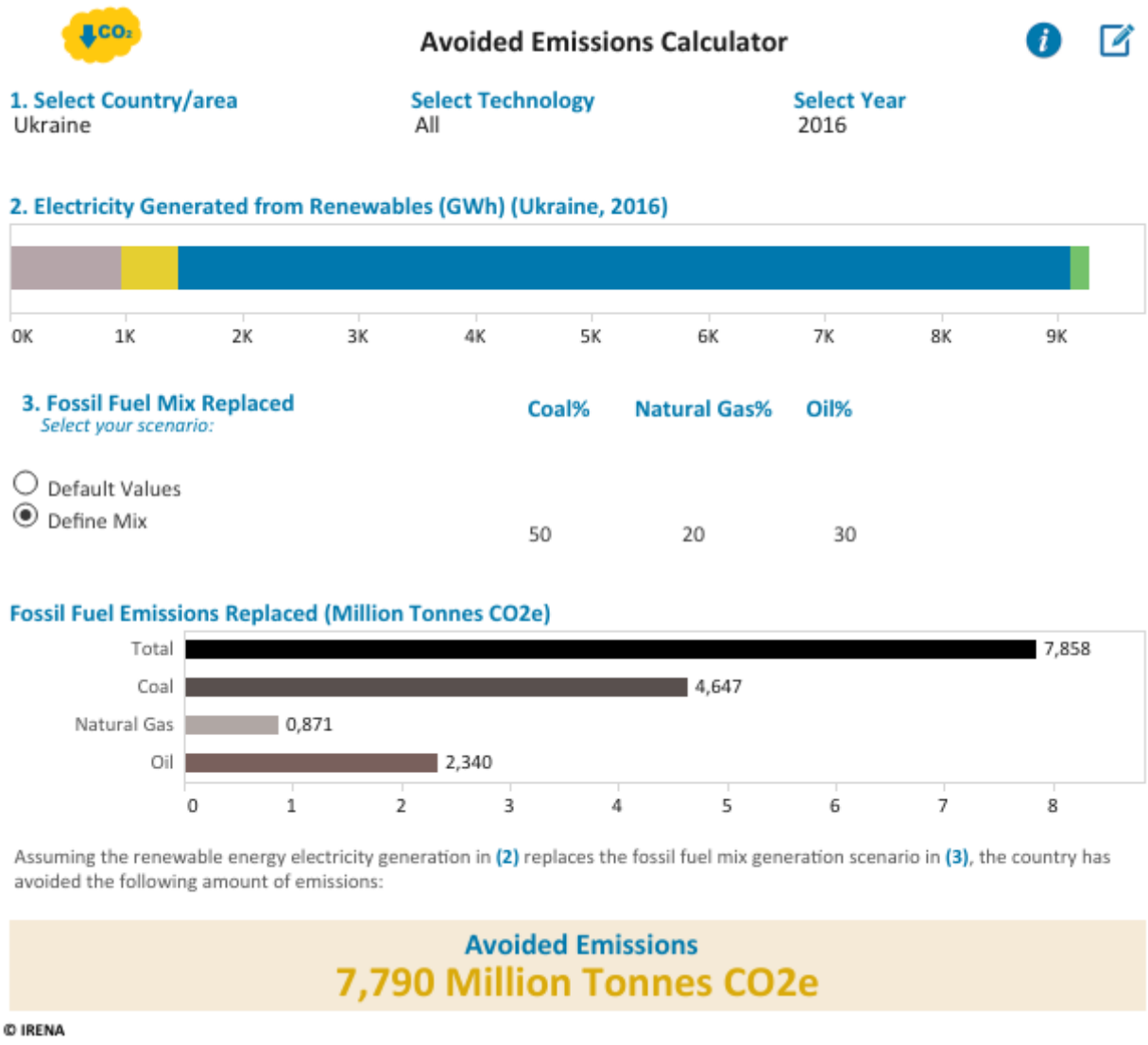

Fig. 28 Greenhouse gas emissions avoided in Ukraine due to a renewable (wind, solar photovoltaic, bioenergy and hydropower) electricity generation in 2016 compared to various fossil fuel generation scenarios (Source: author's research results with using database IRENA)

Conclusions.

The investigation presents an approach aimed at assessing trends in the transforming the energy sector of Ukraine in the future until 2050, using renewable energy sources in the concept of Sustainable Development, with taking into account the trends of transforming the energy sectors of World and European Union in the perspective to 2050.

Our research is aimed at: analysing of the trends of transforming the energy sectors of the world, the European Union and Ukraine and identifying the benefits of using renewable energy sources in the concept of Sustainable Development in the perspective to 2050, assessment of prospects for the application of innovative technologies based on renewable energy sources in the concept of Sustainable Development.

A number of criteria for energy, economic and environmental efficiency of innovative technologies for the use of renewable energy sources are analysed in order to conduct a

comprehensive assessment of the effectiveness of energy and resource-saving, environmentally friendly and cost-effective innovative technologies in the concept of Sustainable Development in the perspective to 2050.

This approach allows providing a reasonable definition of prospects for the use of energy and resource-saving, environmentally friendly and cost-effective innovative technologies for the use of renewable energy sources in the concept of sustainable development to increase energy, economic efficiency and environmental security of Ukraine's energy sector in the perspective to 2050.

According to research ("IRENA", 2021), this perspective will reduce global emissions carbon dioxide (CO_2) associated with energy production by 70% by 2050. More than 90% of this reduction will be achieved through renewable energy sources and measures to increase energy efficiency. According to research ("IRENA", 2021), the ultimate global climate target will be zero emissions. This perspective also looks at ways to reduce CO_2 emissions from 2050 to zero energy balance and possibly even zero. Hydrogen and synthetic fuels, direct electrification, modern biofuels and carbon reduction measures gas will be critical along with innovative business models, structural changes and behavioral adaptation.

It is determined, that in Ukraine, the percentage of usage of renewable energy and biofuels is 3…4 times lower than in the EU. This indicates the need to increase the share of non-traditional and renewable energy sources in the fuel and energy sector and in the energy sector of Ukraine.

The application of the methods of Sustainable Development and sustainable energy in order to increase the level of energy-economic efficiency of the energy sector of Ukraine with using of renewable energy sources in the perspective to 2050 is presented in given paper.

The justification of the application of the methods of green logistics and sustainable development for the analysis of perspectives of application of innovative technologies is presented in the research (Ostapenko, Savina, et al, 2020).

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COMPROMISE OF INTERESTS AS A BASIS FOR ENSURING THE IMPLEMENTATION OF A COUNTRY'S FISCAL POLICIES AIMED AT SUSTAINABLE DEVELOPMENT

Abstract. *The paper considers the country's fiscal policy through the prism of one of the dominant concepts of the modern economy - the concept of sustainable development. The authors present the matrices of interests of participants in budgetary and tax relations, built on the principles of sustainable economic development, reducing social inequality and overcoming poverty, as well as promoting environmental governance. Only under such conditions would a country have the prerequisites for sustainable development, national interests would be fully realized and the interests of future generations would be protected. With a view to the strategic development of the country the economic recovery towards a new institutional and technological solution to accelerate the goals of sustainable development would benefit from a realignment of fiscal policy parameters to the interests of future generations in order to meet current challenges. The implementation of an inclusive approach to the formulation of a country's fiscal policy is limited to procedures to promote the achievement of sustainable development goals, such policies are less vulnerable to risk situations and more stable and predictable in results.*

Events in recent years have proved that the State, in particular the fiscal policies of individual countries, are not always able to fully meet the challenges of the present, mitigate risks and ensure sustainable development. For example, a retrospective analysis of Ukraine's fiscal policy can demonstrate that every big challenge, crisis, has led to substantial changes in the country's fiscal policy or in the accumulation of financial resources (introduction of new taxes or charges, increase of key taxes etc.) or budget allocation («manual» redistribution of financing, increase of financing by individual lines from other part, sequester of expenditure part of current budget, etc.). But in the twenty-first century, fiscal policy must focus on ensuring sustainable economic development, reducing social inequality and overcoming poverty, and to promote environmental management. Only under such conditions would a country have the prerequisites for sustainable development, national interests would be fully realized and the interests of future generations would be protected.

The concept of sustainable development has become one of the dominant concepts in the modern economy. Under the Political Declaration, UN Member States have joined in the development of effective measures to accelerate the implementation of the Sustainable

Development Goals (17 SDGs), the initiation of an inclusive process of adapting the Goals by taking into account the specificities of national development in key growth vectors, Social justice and environmental management. The introduction of an inclusive approach in the management of the social and economic development of the country begins with the adaptation of foreign experience in the application of «best practices» of the European Union. Examining taxonomic detail and structural proportions in an inclusive approach requires effective methods at different levels of government. In this context, we believe that the need to formulate the country's fiscal policy in order to promote the goals of sustainable development and to take into account the interests of all stakeholders in fiscal relations is growing significantly.

In the light of ensuring the realization of the 17 sustainable development goals, the country's fiscal policy needs strong resources and instruments (fig. 1). Public revenue policy instruments, in particular the tax system, support sustainable development goals such as: a) industrial and infrastructure development, promotion of innovation (SDG 9); b) decent work and economic growth (SDG 8); c) agricultural development (SDG 2); d) natural resource management and environmental protection (SDG 6, 7, 12-15) [1]. On the other hand, public expenditure policies create the conditions for overcoming poverty (SDG 1) and hunger (SDG 2), reducing inequality (SDG 10) and gender inequality (SDG 5), providing quality education (SDG 4) and health care (SDG 3), enabling sustainable cities and communities (SDG 11), environmental protection (SDG 6, 7, 13-15), partnerships (SDG 17), peace, justice and strong institutions (SDG 16) [1].

But it should be noted that in the process of implementation, fiscal policy is presented as a set of interrelated institutional elements characterized by certain tax interests and financial needs, and in which each lower level is a composite or higher level basis [2], [8]. The interests and needs of individual participants in fiscal relations may be shared (with the same objective) or different (against each other).

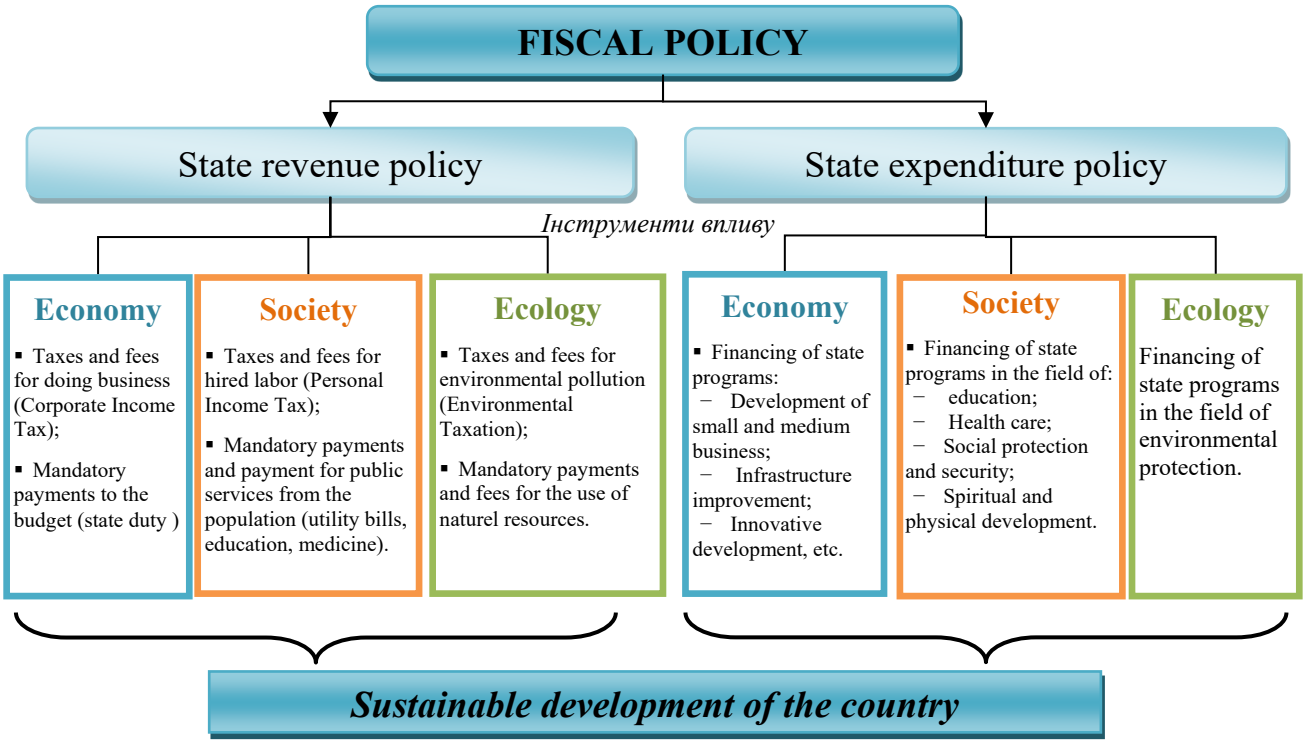

Fig. 1. The role of fiscal policy in ensuring sustainable development of the country
Source: author's development

Therefore, in order to contribute to the sustainable development of the country by providing a favourable tax environment for the development of the economy and by accumulating sufficient revenues from budgets at various levels to finance development programmes and measures. There is a need for coherence and a compromise between the divergent and conflicting interests of the subjects of fiscal relations.

The process of balancing fiscal interests should include a comfortable combination of all the elements of the fiscal framework, based on an optimal mix and search for the best possible linkages between them. It must also be borne in mind that compromise does not only imply the acceptance, in whole or in part, of the new conditions and objectives of the system of fiscal relations, but also some concessions on the part of the actors in the relationship as to how to achieve the common objective. Therefore, it can be argued that the more contradictions in fiscal relations are eliminated and the rather financial needs are eliminated by seeking a compromise and balancing the interests of all participants in the relationship, The greater the degree to which a country's fiscal policy is geared towards achieving sustainable development.

Looking separately at the economic component of sustainable development, the tax system is a key instrument for the influence of fiscal policy in this area. Thus, by establishing optimal (modern and sustainable) key tax collection parameters (Corporate Income Tax, Personal Income Tax, Environmental Taxes, est.) It is possible to achieve business creation.It will be conducive to the intensification of entrepreneurial activity, the attraction of investment, the expansion of foreign economic activity, the stimulation of the development of innovative types of products and the introduction of resource-saving technologies in all spheres of the economy. But the solution to this problem requires, first of all, the optimum level of tax pressure on economic agents and the satisfaction of their interests in improving the competitiveness and financial security of their activities. In this regard, we fully agree with the opinion of Yu. Ivanov and A. Yeshkov [3] that the establishment of the optimal level and conditions of taxation, By balancing the interests of all tax stakeholders and creating an effective incentive system for taxpayers, the whole system of fiscal relations will become more sustainable.

With regard to the role of public expenditure policy in the realization of the economic dimension of sustainable development, the promotion of business infrastructure is a key element in the compromise of all fiscal stakeholders, The establishment of partnerships and dialogue between the State, local governments and business representatives, as well as the representation of representatives of the business community in the formulation of State-wide economic policy.

In summary, we propose that a matrix of the interests of tax stakeholders be developed to promote sustainable development goals (table 1).

The main objective of the modern economic development of developing countries is the establishment of a post-industrial society based on innovative production lines, which is changing not only the structure of the economy but also the role and position of the individual in the economy, It provides the starting point for the formation and accumulation of social capital, showing communicative, intellectual and creative possibilities. Taking into account the needs of each individual in society, the foundation of an inclusive society is being laid. This is the core content of the second pillar of sustainable development - social development.

Table 1. Matrix of interests of participants of budgetary and tax relations (business component).

	State	Taxpayers	Population of the country (society)
State (government)	▪ increase in the country's GDP; ▪ increase of the revenue part of the country's budget; ▪ reducing the number of low-income people.	▪ Optimization of the level of the tax burden (TP) – increase of the revenue of the country's budget in net income tax (G).	▪ decrease in the number of low-income sections of the population (G) – increase in the income level of the country's population (S).
Taxpayers	▪ increase in the country's GDP (G) – maximization of profits (TP).	profit maximization by optimizing taxation and costs	▪ decrease in the price level (S) – increase in the purchasing power of the population (TP).
Population of the country (society)	▪ reduction of the social burden on the expenditure part of the country's budget (G) – reduction of tax pressure on individuals – entrepreneurs and reduction of deductions from the income of employees (S).	▪ reduction of labor costs (TP) - increase the level of wages (S).	▪ increasing the income level of the population; ▪ lower prices.

Source: author's development

One of the central aspects of social capital formation is the stipulation that innate social capital is developed through conscious socially oriented investment. The latter includes practical-oriented education, quality education for productive purposes, the development of entrepreneurial skills among future professionals and the development of dual education; Promotion of health and prevention of occupational diseases, promotion of corporate culture and freedom of conscience, etc. Moreover, the key condition is that investment in social capital is the way out of poverty in a country, and investment in social capital in industrial enterprises: A step towards capacity building and industrial development drivers. Qualitative improvements in social indicators can be identified at different stages of the development of social capital, namely: household income and growth rates; social sectors; minimum social guarantees, which ensure a low level of social indicators; incomes and expenditures of the population and their structure; access to education and health services, etc. One of the key indicators of the level of investment in social capital is public spending in medicine and education to ensure the development of social capital.

The formation of a set of tax instruments with appropriate administrative influences within a coherent system for the management of the country's social and economic development should be based solely on inclusion in social interests. With a view to achieving the development of social capital and increasing the rate of social reproductionUkraine's economic potential to reconcile the interests of various sectors of society will gradually make it possible to move the national economy towards a sustainable development model.

The financial stimulation and support for the development of social capital in the country is supported by the social expenditures of the State budget. The social expenditures of the budget are aimed at social welfare and social protection, health care, spiritual and physical development and the financing of education. Social expenditure is provided through tax payments.

The income part of the State budget from social taxes (personal income tax, single social contribution and military tax). The level of social spending depends on the effectiveness of social policy in the country for the development of social capital. The model of performance and impact of financial provision for the development of social capital should be viewed from the perspective of social interests, ensured by social investment.

The matrix of interests of participants in fiscal relations arising from the payment of social taxes and the use of budgetary resources in the fields of education, health, social protection and social security, shown below (table 2).

The third pillar of sustainable development is environmental protection, the promotion of resource-saving production, recycling and emission reductions. One of the levers of the State's environmental and economic influence on the business environment is the environmental tax, which is present in the taxation system of any country in the world and whose functions In addition to fiscal measures, the aim is to stimulate the environmental behaviour of economic agents by complying with emission standards for the rational use of natural resources and thereby reducing the exogenous burden on the environment [4].

Table 2. Social Development Interest Matrix

	State	**Taxpayers**	**Population of the country (society)**
State (government)	▪ increase in the revenue side of the country's budget; ▪ reduction of the social burden on the expenditure part of the country's budget	▪ optimization of the tax burden (TP) – increase in revenues to the revenue part of the country's budget in the amount of payment of the single social contribution and personal income tax (G)	▪ reduction of social inequality (S) – reduction of budget expenditures on social insurance and security (G)
Taxpayers	▪ development of the tax system taking into account the requirements of inclusive development of the country (G) – reduction of the number and rates of taxation, simplification of the tax system (TP).	profit maximization by optimizing the taxation of wages and social costs of social insurance and security parity of insured persons, employers and the state	▪ Reduction of the amount of the poor (TP) – insurance against accident and occupational disease, temporary incapacity for work, temporary incapacity for work, maternity benefit, unemployment benefit, health insurance, etc. (S);
Population of the country (society)	▪ reduction of the social burden on the expenditure part of the country budget (G) – obtaining affordable public services for education and health care (S).	▪ reduction of expenditures on social security and protection, rehabilitation of workers (TP) – labor protection and social protection of workers (S).	▪ poverty reduction; ▪ preservation of social justice.

Source: author's development

Today, the system of environmental taxation in an overwhelming number of countries is constructed in such a way that its elements cover all the «environmental» goals of sustainable development (SDG 6, 7, 12 – 15). For example, according to Art. 240.1. 240 Tax Code of Ukraine environmental tax payers are persons who, during their economic activity, emit: 1) pollutants into the atmosphere from stationary pollution sources; 2) discharges of pollutants directly into water bodies; 3) disposal of waste (other than the placement of individual types (classes) of waste as secondary raw material located in the territories (facilities) of economic entities) 4) the generation of radioactive wastes (including those already accumulated) 5) the temporary storage of radioactive wastes by their producers beyond the special licensing period [5].

One of the key ways of achieving a compromise between the interests of the parties to the environmentalFiscal relations are the establishment of a direct relationship between the amount of tax deductions and the degree of negative impact on the environment and natural resources resulting from the activities of economic entities [6, 808]. It is important that the amount of the environmental tax be higher than the cost of environmental protection, because only then will the motivation of economic entities to invest in the realization of resource-saving technologies and the reduction of negative impact on the environment, thereby achieving a clearly defined environmental goal, correspond to the concept of sustainable development.

Table 3. Matrix of interests of participants in fiscal relations in the context of achieving environmental goals of sustainable development

	State	Taxpayers	Population of the country (society)
State	▪ increase of the revenue part of the country's budget; ▪ reducing the social burden on the expenditure side of the country's budget	▪ optimization of the level of tax burden (TP) – an increase in revenues to the revenue side of the country's budget in the amount of environmental tax (G).	▪ reduction of the number of diseases among the population (S) – reduction of budget expenditures on health care (G).
Taxpayers	▪ modernization of the country's tax system taking into account world standards and requirements and development trends (G) – reduction of the number and rates of taxation, simplification of the tax system (TP).	profit maximization by optimizing taxation and costs for resource-saving and cleaning technologies	▪ reduction of harmful emissions, rational use of nature and preservation of the environment (S) – saving financial resources on the introduction of the latest technologies, equipment, etc., if it does not lead to increased profits (TP).
Population of the country (society)	▪ reducing the social burden on the expenditure side of the country's budget (G) – reducing the cost of treatment and rehabilitation (S).	▪ reduction of health care costs and rehabilitation of workers (TP) – labor protection and social protection of workers (S).	▪ reducing the number of diseases among the population; ▪ environmental protection and rational use of nature.

Source: author's development

It should also be noted that the effectiveness of environmental taxation in the context of promoting sustainable development depends not only on the level of the tax rate but also on the distribution of accumulated financial resources through the expenditure of budgets at various levels. In the context of balancing the interests of all fiscal stakeholders to achieve the environmental goal of sustainable development, public expenditure policies should include targeted use of funds,

received in the form of environmental taxes and credited to the income part of the State or local budgets, namely to finance environmental problems and compensation of losses caused by the society as a result of «non-ecological» activity of economic entities. For example, in Sweden and the United Kingdom, some environmental taxes are introduced by the definition of a direct duty on the part of the State to channel revenues from environmental taxes on the reduction of Personal Income Tax and Social Security Tax [7, c. 60].

The matrix of interests of participants in fiscal relations arising from the payment of environmental taxes and the use of budgetary resources in the field of environmental protection is given below (Table 3).

In order to formalize the interests of the fiscal players in tables 1, 2 and 3 and to determine the degree of balance between them in order to achieve sustainable development goals, an index system has been developed:

$$\mathbf{I}_{(G)} = \frac{\text{Budget revenues (incom, social, environmental taxes)}}{\text{Budget expenses for economy, social and environmental protection}} \quad \textbf{(1)}$$

$$\mathbf{I}_{(TP)} = \frac{\textit{Tax payments}}{\text{Budget expenses for infrastructure moderniztion and } \textit{SME}} \quad \textbf{(2)}$$

$$\mathbf{I}_{(S)} = \frac{\text{Budget expenses for social sphere (protection, education, health, sport)}}{\textit{Personal Income Tax and Social Security Taxes}} \quad \textbf{(3)}$$

$$\mathbf{I}_{(FPSD)} = \mathbf{I}_{(G)} \times \mathbf{I}_{(TP)} \times \mathbf{I}_{(S)} \quad \textbf{(4)}$$

Where $I_{(G)}$ – index of satisfaction of the interests of the state in the system of fiscal relations in the context of achieving the goals of sustainable development;

And $_{(TP)}$ – index of satisfaction of taxpayers' interests in the system of fiscal relations in the context of achieving sustainable development goals;

And $_{(S)}$ – index of satisfaction of the interests of the population of the country (society) in the system of fiscal relations in the context of achieving the goals of sustainable development;

And $_{(FPSD)}$ – integrated index of fiscal policy, which reflects the balance of interests of participants in fiscal relations in the context of achieving sustainable development goals.

If:

$0 < I_{(FPSD)} < 1$ – The fiscal policy of the country does not serve the interests of the majority of the participants in economic and social development and consequently does not create conditions for the sustainable development of the country;

$I_{(FPSD)} = 1$ – The fiscal policy of a country is balanced in the frequency with which a balance is struck between the interests of the participants in economic and social development in the context of achieving the objectives of sustainable development;

$I_{(СФП)} > 1$ – The country's fiscal policy contributes to sustainable development in all its components: economic, social and environmental.

The results of the calculation of the integrated index of fiscal policy, reflecting the balance of interests of participants in fiscal relations in the context of achieving sustainable development goals, according to data for Ukraine for 2016-2020, are shown in table 4.

Table 4. Integrated index of assistance to the fiscal policy of Ukraine to achieve the goals of sustainable development for 2016-2020

Index	Year					Absolute deviation, %				
	2016	2017	2018	2019	2020	2017-2016	2018-2017	2019-2018	2020-2019	2020-2016
Index of interests of the state ($I_{(G)}$)	0,73	0,62	0,64	0,70	0,71	-0,11	0,02	0,06	0,01	-0,03
Index of public interests ($I_{(S)}$)	1,37	1,61	1,56	1,43	1,42	0,24	-0,05	-0,13	-0,01	0,05
Taxpayers' interest index ($I_{(TP)}$)	0,95	0,78	0,72	0,64	0,61	-0,17	-0,05	-0,09	-0,03	-0,34
Integrated index of fiscal policy focused on sustainable development	*0,95*	*0,78*	*0,72*	*0,64*	*0,61*	*-0,17*	*-0,05*	*-0,09*	*-0,03*	*-0,34*

Source : calculated using data of the State Statistics Service of Ukraine

Well, in Ukraine, the general scheme of satisfaction of interests and distribution of benefits among participants in fiscal relations in the context of ensuring the achievement of sustainable development goals is as follows, which is shown in Fig. 2.

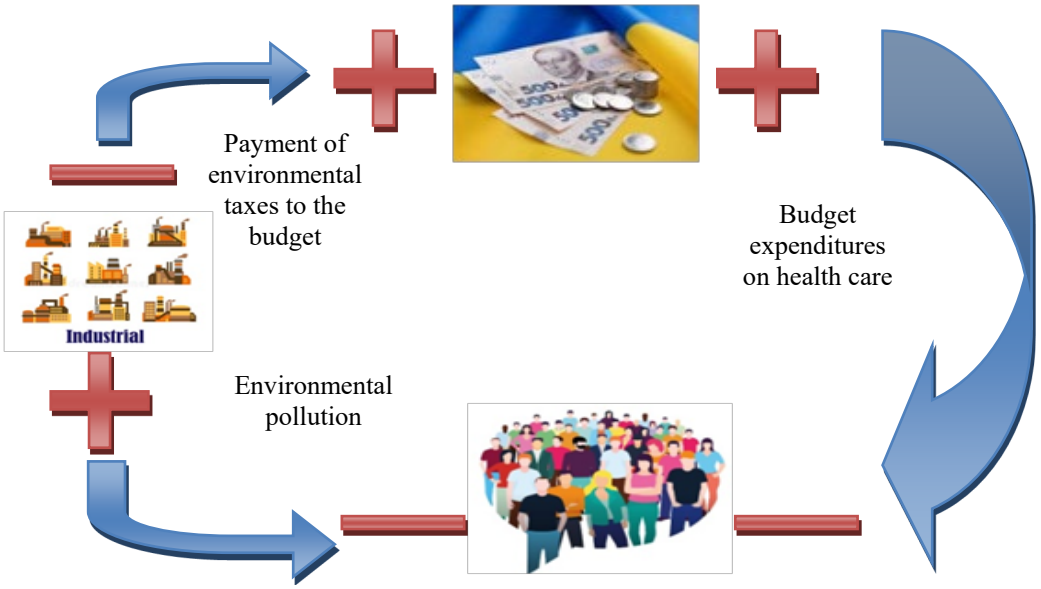

Fig. 2. Scheme of satisfaction of interests and distribution of the received benefits between participants of fiscal relations in the context of maintenance of achievement of the purposes of sustainable development in Ukraine

Source: author's development

Conclusions.

With a view to the strategic development of the country the economic recovery towards a new institutional and technological solution to accelerate the goals of sustainable development would benefit from a realignment of fiscal policy parameters to the interests of future generations in order to meet current challenges. The implementation of an inclusive approach to the formulation of a country's fiscal policy is limited to procedures to promote the achievement of sustainable development goals, such policies are less vulnerable to risk situations and more stable and predictable in results.

With regard to the need to satisfy the interests and to achieve the optimum measurement of benefits among the participants in fiscal relations, it is important to achieve a compromise by implementing an inclusive approach in the governance of the country in the context of ensuring the achievement of sustainable development goals.

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