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Digital transformation of preparation of the future: Specialists in the economic industry in conditions of dual professional education

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Abstract

The article is devoted to the current problem of today, which has acquired special significance in the context of building an information society. It is shown that Ukraine recognises the value of progress in the digitalisation of economic transformations. Creating a digital infrastructure of the economic sector requires the formation of future professionals' digital competence in the educational space. Perspectives of digital technology are defined as the search of content according to interests; meeting the individual needs of pace and the level of professional growth requirements for the modern specialist; the constant modernisation of the style and forms of economic culture; and the connection of economic

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and educational spheres. It is concluded that Ukraine has all the conditions for transformation processes of digitalisation of economic professional education, which will bring the economy to a high technological level of development. Digital dual vocational education, with one of the most important factors of economic growth and formation of a new competent and competitive professional in the economic sector, is defined. The subjects of digital interaction in the conditions of dual professional education of future specialists of the economic branch are identified and characterised. Further research considering the expediency of educational and economic clusters of professional training of future experts of the economic branch is also defined.

Keywords: Transformational reformations, digitalisation, dual professional education, digital competence, future economic specialist, business, HEI.

1. Introduction

Transformation is always a challenge; it is work and faith combined in one common goal. Only the synergy of politicians, government officials, the public and business will be able to support such structural changes and transformations that will allow us all to live, study, work, relax and do business in a 'digital' world directly involved in its creation and use.

Informatisation of the society requires a rapid transition to training in the field of economy of Ukraine, which requires a new high-quality level of its digitalisation. That is, the digital economy makes additional demands on the qualifications of specialists and masters. The main resource is digital knowledge and the key resource of development is individuals Bilokon (2009).

Innovations are constantly being introduced in the modern space of human activity, which requires the improvement of their knowledge, skills, competencies and professionalism in both their own and related areas of the economic sector. Automation of production processes requires a specialist with professional competencies, development of creativity, communication, teamwork in finding new solutions - mastering digital competencies and the ability to critically evaluate the proposed information as a matter of reliability in terms of its logical construction.

As learning contexts become more and more enriched by e-learning and mobile technologies, e-learning research can offer more key areas of educational practice.

Prospects for the development of economic education in Ukraine and the objective reality of the modern world indicate the relevance of digitalisation of the training process: from digital innovative technologies to the formation of digital competence of future professionals in the economy.

The development of the education system, its structure and components must meet the scientific, technological and social goals and directions of development of both society and informatisation. A significant component of informatisation of society is the informatisation of education (Lapina, 2011).

The Digital Agenda of Ukraine (2020) (agenda from the English programme, plan; timetable) states that: 'Rapid and profound consequences of the transition to 'digital' will be possible only when the 'digital' transformation becomes the basis of Ukrainian society, business and government institutions, will become a habitual and everyday phenomenon, will become our DNA, our key agenda on the path to prosperity, will become the basis of Ukraine's prosperity (Lapina, 2011).

To this end, in recent years in Ukraine, important steps have been taken in providing educational institutions (EI) with personal computers, introducing digital technologies in the educational process and forming a new attitude of teachers to their application in practice.

2. Analysis of basic research and publications

Important research in the theory of e-learning, globalisation and informatisation and the use of ICT in educational activities was carried out by Ukrainian scientists (Bakhmat, Dudka & Liubarets, 2018; Kartashova, 2012; Kuybida, Karpenko & Namestnik, 2018; Liubarets, 2019). The research of scientists was permeated with problems of transformational reformations in the digitalisation of education and the economy of Ukraine. The analysis of the works revealed a rather critical attitude to the issues of professional training for the economic sector. Analysis of the research related to the development, exchange and reuse of educational activities has offered to suggest digital tools that educators can use in the training of future professionals in the economic field. The purpose of digitalisation of education is to design a single information and educational environment and expand the set of tools and methods in everyday use. The importance of this type of research due to the growing role of digitalisation of education has meant the choice of goal.

3. Purpose of the article

This study aimed to reveal the role of transformational reformations in digitalisation processes of professional training of future specialists for the economic sector.

4. Presenting the main material

The concept of development of the digital economy and society of Ukraine for 2018-2020 (2018) noted the need for ‘harmonisation with European and global scientific initiatives’, namely ‘the integration of Ukrainian science into the European research space will provide opportunities for advanced scientific ideas, participation in interdisciplinary projects focused on promising ideas, technologies and innovations’.

At the beginning of 2018, the following definitions were introduced into the scientific arena of the Ukrainian economic sector:

- digital transformations - changes in the nature of man, his thinking, life and management caused by the use of digital technologies;
- digitalisation - the process of introducing digital technologies to improve the lives of man, society and the state;
- digital governance - service-oriented organisation of the system of public governance (management) based on digital technologies (Kuybida et al., 2018, p.9).

The digital economy produces transformational processes of economic relationships in the digital format.

‘Digitalisation’ should be seen as a tool and not as an end in itself. With a systemic state approach, ‘digital’ technologies will significantly stimulate the development of an open information society as one of the essential factors in the development of democracy in Ukraine, increasing productivity, economic growth, job creation and improving the quality of life of Ukrainian citizens. ‘Digitalisation’ of Ukraine should require new forms of solidarity, partnership and cooperation, which will increase the economic effect, intensify business activities, tax revenues, GDP growth, recovery of the monetary system, the inflow of new investments etc (Liubarets, 2019).

The rapid development of digital technologies requires the interdependence of the socio-economic potential of the state and the generally accepted in the world community indicator of the rating of the development of information and telecommunications technologies. This is confirmed by the example of all developed and developing countries (Sweden, Finland, USA, Japan, Singapore, Taiwan, Israel, etc.), where the priority development of ICT has ensured their stable economic growth. Ukraine is almost an outsider in this ranking and ranks 71st out of 143, according to the World Economic Forum (Networked Readiness Index, 2015).

Based on the analysed documents on the creation of ‘digital’ spaces in Europe and the world, the basic principles of ‘digitalisation’ of Ukraine are formulated below. Adherence to these principles will be crucial for the creation, implementation and enjoyment of the benefits of ‘digital technology’.

Digital technologies meet the needs of each participant in the educational process and are adaptable to changes in transformational reformations in the environment (Liubarets, 2019) by the following:

- searching for content according to interests;
- meeting individual needs of pace and level;
- constantly modernising the style and forms of economic culture;
- connecting educational and professional activity.

Digital technologies are a paradigm shift with specific and multiple influences on the nature of knowledge in society and, consequently, on the nature of the educational environment.

To ensure effective participation of various priority areas of Ukraine's economy in the European research and innovation space, it is important to develop its own scientific and digital infrastructure.

The development of scientific and educational digital infrastructure for the economy is also crucial for ensuring open access to scientific data and knowledge, further commercialisation of research and creation of innovations, products and services (The concept of development of the digital economy and society of Ukraine for 2018-2020, 2018).

Ukraine recognises the value of using digital technology transformations in the educational space. Significant progress in the implementation of personalised education, an increase in those wishing to continue and obtain a new higher education, the links between education and the labour market, lifelong learning and others are of great value to communities.

The strategic changes taking place in EI and organisations in digital technologies require the improvement of our current systems that support education.

Digital transformation will become the basis of life of the society, business and government agencies of Ukraine, provided the transition to 'digital'(Digital Agenda of Ukraine, 2020). Digital literacy (or digital competence) is recognised by the EU as one of the keys to a full life and human activity, so the Law on Education stipulates that the formation of information and communication competence is mandatory.

The main directions of digitalisation of education aim at the following:

- creation of educational resources and digital platforms with the support of interactive and multimedia content for general access of participants of EI, in particular tools of automation of the main processes of work of EI;
- development and implementation of innovative computer, multimedia and computer-oriented learning tools and equipment for creating a digital educational environment (such as multimedia classes, research STEM centres of laboratories, inclusive classes and blended learning classes);
- organisation of broadband Internet access for participants of the educational process in classrooms and auditoriums in the EI of all levels;
- development of distance education using cognitive and multimedia technologies (The concept of development of the digital economy and society of Ukraine for 2018-2020, 2018).

Social and cultural transformations in the era of digital information and communication mean the information and educational environment in a new context of continuous professional development. The continuity of the educational process of educational organisations requires integration into a single network, which provides an opportunity to cross traditional institutional sectors and even national boundaries.

Economics today is understood as a future economic paradigm, a higher level of development of national economies. This term means structural changes in the economy, the emergence of new production systems, the growth of technology and the importance of human capital, as well as changes in economic conditions associated with informatisation and intellectualisation.

Of course, increasing the role of digitalisation in science and education, because the modern economist's digital competence implies a high level of socio-economic, civic, personal and moral

culture and consciousness, means the need for a high level of economic education and readiness for transformational transformations in the digital economy and the world. Ukraine is on the important path of the country's transformation processes of digitalisation of economic education, which requires full development in the mass and professional consciousness of the elements of digital economic and entrepreneurial culture of modern nature. This is an extremely relevant conceptual, theoretical, philosophical and ideological analysis of the development in our country of economic education and culture in society, as the main means of forming the worldview of the modern entrepreneur.

In today's digitalised world, the future specialist in any field of economics needs to have digital competence at a sufficiently high level of economic education, economic culture and consciousness, especially those who have chosen their professional self-realisation in the field of entrepreneurship. The socio-economic sphere of life of the social system in the global information world dominates over others, which requires an appropriate orientation of the specialist in the professional sociocultural space and the formation of a certain level of digital competence and readiness for transformational transformations in the economy.

The life of the individual takes place in the social space, where he, as a subject, is characterised, in particular, by forms of inclusion in economic activity. The development of subjectivity in the process of economic socialisation determines the formation of human socio-economic attitudes, orientations to certain economic values, professional knowledge and skills and other psychological qualities acquired by the individual in preparation for economic activity. As the success of economic socialisation depends on human activity in the economic sphere, its self-realisation occurs throughout life. The relevance of the study of the formation of socio-economic attitudes is determined by the need to disclose the role of the subject in the process of economic socialisation of the individual, which will enhance the development of the subject, depending on the success of self-realisation in the economic sphere (Bilokon, 2009).

Economic socialisation should be especially active and effective for future professionals who are purposefully focused on self-realisation within the framework of certain reforms of digital activity. One of the key, fundamental structural elements of the socialisation of digitalisation, including economic, in the modern world is the system of education and culture, the qualitative and quantitative indicators of which largely depend on the international competitiveness of the national economy, as well as its internal stability and progressiveness transformative changes.

The issue of digital socio-economic education is especially relevant for future professionals in the economic field of transformational societies, which have not formed a value-oriented, world view phenomenological, national, cultural foundation for becoming an enterprising person in its modern civilised sense. In this regard, the system of economic education faces complex tasks at the state level of digitalisation of the economy.

Deep socio-economic changes in the world, i.e., the transition to a market economy, pose an important educational problem to modern society - to form the economic culture of the future specialist, which will contribute to the formation of digital competence. Professional training of future specialists in the economic field for life and self-realisation in the financial and economic environment of the modern universe appears as a professional necessity and as a means of forming world view value, moral and ethical principles of the modern Ukrainian entrepreneur.

The transition to a market economy, which requires profound socio-economic changes in the state, raises an important educational problem of forming a culture of future professionals, which affects the formation of the content of their training to enter the professional environment under new conditions of digitalisation (Kovalenko, 2011).

Thus, the Ukrainian educational community and the general public today are faced with important tasks to create appropriate conditions for the implementation of transformational transformations in

the digitalisation of educational and sociocultural socialisation of future professionals in the complex economic conditions of the modern global information world.

In this aspect, there is an important problem that requires conceptual and theoretical analysis, namely how urgent is the need for general vocational and economic education of future professionals as a subject of market relations. The answer to this question, in our opinion, can only be unambiguous because by the will of historical destiny we find ourselves in a socio-economic situation where the digital economy dictates its modern requirements, which affect the formation of the worldview.

The transformation of the economy into a digital format requires development at the national level of effective mechanisms for the formation of new worldview-axiological, professional-intellectual and creative-innovative foundations of socio-economic and entrepreneurial mentality of the future specialist.

Possession of digital competence will ensure the appropriate level of adaptation in the rapidly changing conditions of professional activity. Therefore, future professionals in the economic field need to have knowledge of general economic education, to have the ability to adapt to the digital environment and to be ready for non-standard conditions of professional activity. In addition, in our opinion, in a rapidly changing world, especially in its financial and economic dimension, there is a constant need to enrich their digital competence through lifelong learning.

A necessary condition for modern economic education, both general and professional, is the formation of professional digital competence of future professionals in the economic field, necessary for comprehensive self-realisation in the context of globalisation of information and innovation trends. At the same time, such education should not only be highly specialised, but should also be a generalised worldview and a personal, formative character.

In the conditions of globalisation of digital tendencies and creation of a system of education during life, the problem of formation of competent experts of economic branch, formation of personal potential in public, public-political and professional activity acquires paramount importance. Thus, there is a need for rethinking and theoretical and methodological justification of the process of formation of digital competence of future professionals, in particular the economic profile (Lavrenko, 2011).

Constant transformational changes in the digital economy encourage the scientific community of the Ukrainian education system to make extraordinary efforts to ensure methodological, educational, competence-forming, worldview and value unity in teaching economic disciplines as future professionals.

Lapina (2011) emphasises: ‘the need in the new socio-cultural economic conditions of Ukraine for the orientation of education in the economic field on the formation of professional competence, readiness for business success’.

Thus, general and vocational economic education today for any society, especially transformational, is a key factor in ensuring its progressive development in the context of global trends. This, in turn, highlights the problem of diversification of forms, methods and organisational regimes of digitisation of educational services in the field of economics and academic disciplines.

In countries with a developed form of market economy, economic education and training, science is a necessary condition and a mandatory component of the functioning of the national socio-economic system. The high level of digital economic education and culture is ensured by the presence of modern economic reality and developed economic education, while in transformational societies, in particular in Ukraine, these two elements are in their infancy.

Constant changes in the market economy raise an urgent problem of our time – the formation of students’ readiness to adapt to a socio-economic life. This problem can be solved only if students develop digital competence, which will ensure adaptation in any field and situational realities of their

chosen professional activity. The peculiarities of the modern adaptation process in Ukraine are due not only to the profound transformation of the whole society, radical change of ownership, formation and development of market relations that determine qualitative changes in socio-economic behaviour, but also to a high degree of economic instability.

Thus, the digitalisation of Ukraine's economic system directly depends on whether the Ukrainian educational community will be able to develop adequate mechanisms for instilling in future professionals a high level of digital competence and entrepreneurial culture of the modern type. At the same time, real economic processes, of course, affect the economic socialisation of future professionals and the level of their socio-economic digital professional competence.

The digitalisation of the country's economy has led to significant prospects in the life of the Ukrainian people, reassessment and renewal of all areas of its activities, including science, education and culture. One of the main directions of such renewal is the search for new means of forming qualified specialists for all industries and, first of all, specialists in economics, who will be able in the near future to organise and implement such economic and social transformations that will allow Ukraine to become one with the developed European states.

At the present stage, HEI training economists must even more carefully solve the urgent tasks of further improving their training, focus their efforts on improving the content of education, introduction of new, more effective methods, forms and means of organising education and the formation of future specialists of active creative attitude to economic activity. The urgent increase in the requirements for the training of future professionals for the economic sector, who will be responsible to the people for the recognition of the state in the civilised world, is dictated by time itself (Lapina, 2011).

Hence, there is an urgent need for world view value, scientific-methodical, instrumental-innovative colour digitisation of the professional economic education in the country, as well as the formation of appropriate digital competence of future economists, who in turn need leading theoretical developments in business in digitalisation of the economy and global development.

The survey of freelance graduates in the field of training 051 'Economics' (National Pedagogical University named after M. P. Drahomanov, Lviv National University named after Ivan Franko, National Academy of Management of Culture and Arts, National University 'Chernihiv Collegium' named after Taras Shevchenko, South Ukrainian KD Ushinsky National Pedagogical University, Vasyl Stefanyk Precarpathian National University, Sumy State University), showed the following general shortcomings of modern Ukrainian economic education:

- lack of long-term traditions of studying economic bases in Ukraine;
- detachment from the real needs of economic activity of Ukraine;
- insufficient level of digital competence formation for the industry;
- failure to take into account the modern requirements of the labour market in the training of specialists in the economic field;
- inconsistency with the world level of training in the vast majority of free economic zones.

As we can see, in the field of modern economic education, there are still many dysfunctional and contradictory phenomena, the fundamental reasons for which are both insufficient digital formation of the Ukrainian economic education and the inconsistency of real objective forms of economic and business reality of Ukraine to market and economic realities, which focus on Western economic education and science, as well as entrepreneurial innovation and professional business sphere.

It is education that is the driving force in the conduct and training of future professionals for the innovative realities of the transformation processes of the economy and the formation of digital competence. It is economic education in the country today that is tasked with building the capacity and readiness for transformational modern digital transformations.

To prepare professionals in the economic field for the digital format, it is necessary to introduce dual vocational education. It is under such conditions that the electronic format of interaction of participants in the educational process of the national Pedagogical University named after M.P. Drahomanov, and various enterprises of the Association of Hotel Associations and Hotels of Cities of Ukraine, Express Line Company, LLC, ‘Universal Educational Space ‘ACCENT’ and SO ‘School of Young Leaders of Civil Society’. Therefore, the participants of the dual educational environment are business, future specialist (student) and HEI (Table 1).

Table 1. Construction of a digital interaction matrix for dual professional education of future specialists in the economic field

Subjects of dual education	Business	Institution of higher education	Future specialist in the economic field
Business	G2G	G2B	G2C
Institution of higher education	G2B	B2B	B2C
Future specialist in the economic field	G2C	C2B	C2C

The digital economy involves interaction (data exchange) between participants in online processes. Dual professional training of economic professionals is carried out through the activities of entities and is revealed through a matrix of digital educational space, where the digital interaction of dual professional training takes place between business representatives, future economic professionals and free economic education. Subjects and directions of digital interaction of participants of dual vocational education are given in Table 2.

Table 2. Digital interaction of subjects of dual vocational education

Subjects	Directions of digital interaction
Institution of higher education B2B -Institution of higher education	Interaction of educational structures in the information educational environment, provision of educational and information services
Institution of higher education B2C -Future specialist in the economic field	e-Commerce through online stores, providing electronic business services to consumers: distribution of advertising; creating opportunities for information retrieval and access; transmission and storage of information; placement of information at the request of another person; transmission of information at the request of a person or sending commercial electronic messages
Future specialist in the economic field C2C - Future specialist in the economic field	Electronic interaction of future specialists in the economic field among themselves: self-education, participation in conferences, forums and exchange of business information

In addition to the connection of future economic professionals with free economic education, dual vocational education forms an information space for business and future economic professionals (G2C), business and free economic education, respectively (G2B), which in turn transform the format of the entire information and educational environment of the dual education of future specialist in the economic field (G2G). Areas of cooperation and subjects of such relationships are presented in Table 3.

Table 3. Digital interaction of free economic entities and future economic professionals with business

Subjects	Directions of digital interaction
Business G2B -Institution of higher education	Digital information interaction of higher education institutions and business representatives: electronic registration, electronic identification; electronic

Business (G2C)-Future specialist in the economic field	laboratories: electronic services, electronic system of appeals, etc. Digital information interaction future specialists of the economic branch: electronic information processing system; online participation in the discussion of bills, provision of services and information of the enterprise online, access to information of the enterprise
Future specialist in the economic field C2C -Future specialist in the economic field	Online communication and exchange of information between all subjects of dual education; participation in a single information and communication platform of the enterprise; international exchange of information

Thus, the analysis of the interaction of the subjects of professional training of future specialists in the economic field in the context of dual professional education in the digital space shows a reduction in costs (time, financial and adaptation) of business entities and entrepreneurs and citizens. This has an impact on increasing their competitiveness in the economic sector through the digital adaptation of the digital space of dual vocational education.

The recently adopted strategic development documents in Ukraine envisage measures aimed at creating the necessary conditions for the development of the digital economy and the formation of the information society. At the same time, digital technologies are constantly being improved and integrated into global networks. Vocational education of future professionals in the economic field is integrated into various digital forms and technologies, which in turn requires research on this issue. Therefore, today the issue of forming and implementing a strategy for the development of dual education of future professionals in the economic field and its digitisation is an important area of both research and practical focus on adaptation in professional activities. It is digital vocational education that involves the digital transformation of all spheres of life, giving them significant economic and social effects:

- growth of the national economy,
- raising the standard of living and saving free time of the population,
- increasing in the number of jobs,
- improving the quality of relationships and interaction between business entities, HEI and future professionals in the economic field.

Summarising the above, we can conclude that today digital dual vocational education is one of the most important factors of economic growth and the formation of a new competent and competitive professional in the economic field. In the future, we consider it appropriate to consider the feasibility of educational and economic clusters of professional training of future professionals in the economic field.

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