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NEW TRENDS IN EDUCATION AS THE ASPECT OF DIGITAL TECHNOLOGIES

Konstantin Ordov
D.Sc. (Economics), Professor, Plekhanov Russian University of Economics, Moscow, Russia.

Ainur Madiyarova
Ph. D. (Law), associate Professor, al-Farabi Kazakh National University, Almaty, Kazakhstan.

Valeriy Ermilov
Ph. D., associate Professor, Financial University under the Government of the Russian Federation, Moscow.

Nataliya Tovma
Ph. D., associate Professor, al-Farabi Kazakh National University, Almaty, Kazakhstan.

Meiramkul Murzagulova
Researcher, al-Farabi Kazakh National University, Almaty, Kazakhstan

ABSTRACT

Innovations in education is the new approach of high- tech technologies, as the new way of development in the digitalized area. The article proves that digital technologies are relevant and widely used in various areas of society: management, economic relations, science and education. But digitalization of the educational process is of particular importance, since education can be considered the basis for the development of the economy and the achievement of the planned strategic goals. Today, important transformation processes are taking place in the field of education: electronic textbooks, Internet portals, databases of information needs are spreading, systems of online courses and distance learning are actively developing. A smart education system is being introduced, which involves providing access to content around the world, building learning in an interactive environment. It has been established that the digitalization of education identifies risks and problems that require solutions.

Keywords: Innovation, know-how, creativity, digitalization, model of optimization technology, steam trends, Gamification in education.

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1. INTRODUCTION

In the modern world, the level of a country's socio-economic development is largely determined by the ability to generate new knowledge and implement it in high technology. Education is the new priority, which contributes to improving the competitiveness of national economies in the context of increasing globalization. Nowadays, there are many approaches, which will influence on the trends in the education sphere. Digitalization means that there are will be special technics in the education management and it will be the central factor in the growth of production and labor productivity. As the world economy evolves, the innovation process is also evolving. Globalization has led to a dramatic expansion of enterprise access to information and new markets. It also caused an increase in international competition and the emergence of new organizational forms for managing global supply chains. Stable dynamics of the technological development of the country is impossible without ensuring the effective application of digital solutions in innovation. As the world becomes increasingly digital, digital platforms become an important tool for intersectoral transformation, as they increase the efficiency of the digital ecosystem; help establish high-speed and reliable communications, support the process of joint creation of products and services by organizations from different countries and time zones.

For bank stability, determination of the competition in the financial sector and the condition of the economy is likely to play a key role. Researchers in their studies have mainly tended to carry out their assessment by using cross country variables at the international level. In this study research has been provided for banks within the country where the mode of competition and market services are organized at a national level.[11] Also the results of our study suggest a non-linear relationship between bank competition and stability. Given the evidence of a non-linear relationship between bank competition and stability, there is a need of implications from outsight regulators or authorities in the country. In an environment where regulation is consistently shaped by the economy, competition will not decrease stability. Considering the evidence mentioned above, one may conclude that elements of the regulatory framework impacting either competition or stability, are necessary in order to avoid negative consequences of competition for stability. Stability can be enhanced by changes in regulation. Competition needs to be kept at a moderate level. Too low level or too high level competition can both lead to higher bank risks, therefore bigger financial instability in the banking sector. [1, 23] Education in this direction is not the exception.

At present, digitalization in education sphere is a strategic development priority in many countries. Emerging economies play a key role to develop this sector of economy, because education stays always in the priority. In terms of profitability, this sphere ranks second in the world after medicine sector. The President of the Republic of Kazakhstan, N. Nazarbayev, in his traditional annual Address to the Nation of Kazakhstan on October 5, 2018, " In higher education, the requirements for the quality of training in educational institutions will be increased." [2], noted the importance of introducing innovation methods in higher education sphere. "Higher education is the guarantor of high qualified nation" - instructed the Head of State.

Digital Technology Practices affect not only equipment innovations learning process, but also modernizing research activity. The most important thing is that the key higher

educational institutions appeared not only understand mania, but also the actual digital transformation. The mention of the educational process itself development and conduct of admission applicants for training in new programs of higher education and quality improvement understanding of already acting positively rewarded programs. In particular, for the hospitality industry, the Internet makes a significant contribution to maximizing the dissemination of information about the products and services offered. The Internet greatly facilitates the information process. [3]

Today we can talk about that digital technology is a unique mechanism for the diverse development of modern a small higher education institution. Creation the opportunity for a quick exchange of experience and knowledge, adapting online learning, developing development of digital libraries and digital cameras, the range of subjects is expanding, unique information that is she was only available for narrow circle experts and scientists. Thanks to digital technology, we can confidently talk about globalization of the scientific world and active development of academic mobility. Certainly, in conditions of unprecedented modernization modern university owes adapt to save their unique competitive qualities and competitive advantages societies, competently build their strategy development, areas of expert development current and research model development.

A promising direction of integration higher education institutions in international educational space is attraction of foreign experts and students the opening of international campuses gain academic mobility programs for scientists and trainees. USA, Great Britain, Canada and Australia are currently in leading positions in this ranking; the top ten also include the Germany, Switzerland, Austria, Italy, Japan and China. In addition, Kazakhstan according to the statistic database for the 3 last years took better position than other Asian countries.

Domestic expenses on research and development in 2017 amounted to 68.9 billion tenge, which is 3.4% higher than the previous year. Of the total amount of the budget accounted for 52.2%. A positive point was the increase in the structure of financing by 14% of the costs of applied research and by 1.4% - for experimental development, which respectively were 40.9 and 17.2 billion tenge. [3]

2. LITERATURE REVIEW

The study of the theory and practice of digitalization is based on the works of Watkins M., Maxwell, L., & McCain, T. A., Dewey, J. ,Hazeeva V.K., Hawkins, D. E., & Goldblatt J. J. , Backman, K. F. Jones, C. Moscardo, G. Sharpley, R., & Stone, P. R. Yeoman, I., Robertson, M., McMahon-Beattie, U., Backer, E., & Smith, K. A. Robinson, R., Andersson, T., & Vujicic, S. Lee, K. H., & Scott, N. Chen, K. H., Kelly, C, Heung, V. C., & Kucukusta, D. Issues of socio-economic effectiveness are highlighted in the works of Battour, M., & Ismail, M. N. , Mohsin, A., Ramli, N., & Alkhulayfi, B. A. , Riley, R., Baker, D., & Van Doren, C. S. , Su, H. J., Huang, Y. A., Brodowsky, G., & Kim, H. J., Mukhtarova K.S, Kupeshova S.T., Ziyadin S.T., Doszhan R.D., Bexultanov A, Dulambayeva R., there were specific aspects in the article of researchers Ziyadin&Kabasheva, they wrote that Kazakhstan's content- an indicator of the level of technological and industrial-innovative development of Kazakhstan, which is a share of the value of Kazakh goods, services and labor used in the implementation of the enterprise in the territory of the Republic of Kazakhstan. The description discusses the need for the development of local content in terms of innovative development of the national economy of Kazakhstan; innovation development processes in the economy of Kazakhstan, how innovations structures are concentrating on the diversification in the economic area, how it modernized and increased every year. [4] Their article discusses the need for the development of local content in terms of innovative development of the national economy of

Kazakhstan. Professors in their research mentioned that the current stage in the formation of Kazakhstan's market economy requires the creation of an innovation policy system. In the conditions of globalization of world goods and services markets, when interdependence and interaction between different spheres of social life and activity enhanced, innovation is the foundation of the qualitative transformation of the productive capacity of the country, the process of intellectualization of the economy and raise of living standards. [5] There were specific aspects in the article of researchers Ziyadin S., Koryagina E., Grigoryan T., Tovma N., Ismail G. They researched digitalization processes in economy. The development of technologies in the field of processing and transmission of information is reflected in the innovation and network approaches, in which developed the category of "cluster", "ecosystem", "collaboration", "collaborative consumption", etc.[6] As other researchers – Bexultanov A., Dulambayeva R., Ziyadin S. paid attention to examining the relationship between professional development, self-efficacy and audit quality in order to develop practical recommendations for improving efficiency in the economic processes in the whole. [7] How innovations in education as the digitalized aspect influence on economic processes in the whole, how issues and challenges related to the transition of Kazakhstan's economy to industrial-innovative development, including the main causes for low innovation activities of enterprises, and peculiarities of the development of an effective mechanism to finance innovation activities and to strengthen the country's intellectual capital, mentioned in their research Mukhtarova K.S, Kupeshova S.T., Ziyadin S.T., Doszhan R.D. [8] In this connection, there is a contradiction: on the one hand, a large number of digitalization in education processes are held annually in the Republic of Kazakhstan, including the world level, but the effectiveness of these measures is not assessed in view of the lack of a methodological basis.

The use of digital platforms in the so-called "digital factories" is revolutionizing the ways of technology commercialization. Trading platforms based on digital platforms transform not only the market of services, but also scientific and technical activities. The use of digital technologies to develop national innovation potential and to commercialize knowledge has influenced policy and financial institutions around the world, especially in Northern Europe, in countries such as Sweden and Finland. The key elements of this approach are the systematic support of knowledge transfer, PPPs and the organization of cooperation in the scientific, technical and industrial sectors, relying on the state as an intermediary in using network platforms. All social movements reflected intellectually in controversies [9].

In this connection, there is an increasing need for the development of a network platform covering the components, tools for implementing the research projects developed in practice, and the directions for their practical use.

3. THEORETICAL FRAMEWORK

3.1. Digitalization in education sphere

In the context of globalization of modern of the scientific world, we undoubtedly must speak on the establishment and testing of expert activities centers of digitalization together with regional and Kazakhstan companies. Attention must be directed to the development of processing and testing of teaching and learning complexes, training simulators, and simulators, virtual laboratories for in-depth teachings of mathematics, computer science, financial mathematics and digital economics. The development of digital higher education reference must be accompanied monitoring the needs of the modern production market, the introduction and the digitalization of educational programs of all levels in accordance with the requirements for key- digitalization competences for each level of education, ensuring their

continuity. Speaking of digitalization of higher education institutions, we mean not only IT universities. Digitalization should fundamentally touch all universities: economic, legal, natural, scientific. Emphasis on the availability of the knowledge of the IT-technologies, an economist and a lawyer - skills in digitalization will allow Kazakhstan education at a qualitatively new high level. As technology transforms the means for creating and exchanging information, the challenges to copyright carry serious implications for education. [10].

Kazakhstan is having a rich education base, but it is still on the developing process. For example, as we can mention Nazarbayev University as characterized by an inadequate level of education development. In June 2015, the first graduation ceremony was held at Nazarbayev University. 380 bachelors and 142 undergraduates received NU diplomas. In September 2015, the Nazarbayev University School of Medicine was opened with the first admission of students for the Doctor of Medicine program (M.D.)

December 24, 2015, in accordance with Article 3 of the Law of the Republic of Kazakhstan dated February 18, 2011 "On Science" [2], Decree of the President of the Republic of Kazakhstan dated December 7, 2010 No. 1118 "On Approval of the State Program for the Development of Education of the Republic of Kazakhstan for 2011–2020" [2] The Government of the Republic of Kazakhstan of the autonomous organization of education "Nazarbayev University" was granted the status of a research university, and also approved the Program of development of the research university of the autonomous organization of education "Nazarbayev University" for 2016-2020.

In June 2016, the second edition took place. 443 bachelor and 178 undergraduates received NU diplomas.

Actually new technologies in digitalization area changes another sectors too. The primary objectives are to guarantee the production of sufficient food and to ensure a fair standard of living for people engaged in agriculture sector. For example, this technology helps us to use new products more effectively than on previous time.

3.2. Mobile solutions

The most notable technological trend in today's education industry is the emergence of solutions for mobile devices. Mobile solutions have changed the approach to "provisioning". Unwavering, it would seem, the position where we can take online courses, cramps the digital format of receipts on the screens of smartphones and tablets. The advantages of this format are many: useful technology, economy of time, and, take the entity to the best libraries in the world. This happens with the help of CRM-systems. The user does not need to have a printout materials, it is enough to attach the screen of the mobile device copy all needed information. Then the code is checked with the database of CRM-system, and with a positive result, the visitor goes to the whole education process. Modern mobile applications also allow you to keep a record of visitors in the CMS-system, and integrate into social networks. The organizer, using these applications, is no longer tied to his workplace; he can monitor the progress of the project from any device at hand.

Mobile apps help to improve:

- social networking
- group or targeted messages
- organization of meetings and conferences, establishing business contacts
- group work
- integrated gamification

- self-study during the process
- use of social networks

Mobile applications carry a lot of opportunities, as we can mention about the trends in education sphere, they are:

- Adaptive education;
- Micro education;
- Chat bots
- VR;
- Videocontent;
- Gamification;
- Steam education;
- Peer-to – peer.

Can be two-way-with the permission of the participant, the application transmits contact information, profile from the social network, information about meeting and conference halls, and much more.

Speaking about the communication between the lecturer and the student, the most commonly used information is via e-mail. It is worth paying attention to such trends as the use of short text messaging (SMS) service using special Internet platforms, communication via Internet messengers, as well as communication through social networks. With the help of SMS there is always an opportunity to inform participants about changes in the plan, to remind about the conference or an important program.

3.2.1. Adaptive education

Adaptive learning is one of the "favorite" trends of online learning. And the reason is clear: more and more online schools are entering the market, competition is becoming tougher, and students of online courses choose those that provide unique, personalized content. Plus adaptive systems in that they allow you to adapt to the individual needs of students, but at the same time can be scaled. The advantage of adaptive learning in online education is that the system offers the student the next lesson based on how he studied the previous one. The listener in this system can skip the material, if he is already familiar with it, evaluate it as too easy or too complex, which also affects this individual educational trajectory.

3.2.2. Micro education

In 2018, many educational companies appreciated the benefits of micro-learning. They make it a popular solution for both business and corporate training:

- ease of implementation;
- shorter format causes less resistance for students;
- students can go through the modules several times and easily find the desired fragment;
- the possibility of using different formats (video, game, quiz, infographics).

3.2.3. Chat bots

Chat bots from fashionable chips in online learning are becoming a full-fledged trend. More and more companies use chat bots or voice bots for individual student follow-up. Artificial intelligence can predict a student's behavior, help him find the necessary content, deal with a

difficult task, and cope with resistance to learning. In many solutions, the chatbot "work" in technical support.

3.2.4. VR

Virtual and augmented reality very quickly gaining popularity, because with their help you can diversify educational content, superimposing graphics and images.

Elements of virtual reality are used to learn safety, learn the right skills, etc. Large companies invest in training courses that introduce the VR component in courses for children and people with special needs.

3.2.5. Videocontent

Training videos are one of the most popular formats. Assessing how much time people spend watching videos from YouTube, organizations are increasingly introducing video content into training. In this case, both mini-lectures from experts and humorous videos are used.

3.2.6. Gamification

Learning based on games has become a popular trend of online education, because it allows students to keep their attention longer and take their interests into account into account.

In 2019, we expect an even greater penetration of gaming technology into the world of online learning, but it is worth remembering that the game for the game is unlikely to help solve business problems. Market experts advise, when introducing gamification, to think about the economic indicators that you plan to improve with its help.

3.2.7. Steam education

All these tasks are easily solved by project training, the most integrated and viable form of which STEAM is. Its advantages should be called a close relationship with the real world, the presence of a challenge for students, a high proportion of motivation and encouragement to cooperate children unlike each other. But what to say: the implementation of an interesting and well-formulated project is, finally, really fun! Combining STEAM-learning with trends such as BYOD, an inverted class, gamification gives even more opportunities to create non-trivial and very interesting tasks and to consolidate the working groups that carry them out.

3.2.8. Peer-to – peer

It is becoming increasingly popular learning, which includes the joint work of students. The methodology includes project-based learning, as well as student interaction in various channels (forums, chat rooms, etc.).

New technologies that are already being implemented in our modern world will have more directions to grow up. Today we can talk about that digital technology is a unique mechanism for the diverse development of modern a small higher education institution. Creation the opportunity for a quick exchange of experience and knowledge, adapting online learning, developing development of digital libraries and digital cameras, the range of subjects is expanding, unique information that she was only available for narrow circle experts and scientists. Thanks to digital technology, we can confidently talk about globalization of the scientific world and active development of academic mobility.

Certainly, in conditions of unprecedented modernization modern university owes adapt to save their unique competitive qualities and competitive advantages societies, competently build their strategy development, areas of expert development current and research model development.

4. DATA DESCRIPTIONS AND ANALYSIS

4.1. The Kazakhstan education sphere: An overview (digital aspect)

In the structure of the economy of Kazakhstan is increasing every year the share of the mining industry, leading to it so ne-sided development and reduce the overall competitiveness of Kazakhstan's economy. However, the mining industry would be a consumer of the products and services of enterprises belonging to other sectors of the economy and, thus, contribute to macroeconomic stability, economic modernization and social well-being of the people of Kazakhstan. Kazakhstan's content- an indicator of the level of technological and industrial-innovative development of Kazakhstan, which is a share of the value of Kazakh goods, services and labor used in the implementation of the enterprise in the territory of the Republic of Kazakhstan. The description discusses the need for the development of local content in terms of innovative development of the national economy of Kazakhstan.

It is sufficient to consider the dynamics of new trends in education sphere in 2019 (Table 1).

Table 1 The amount in % of quality VR and STEAM in Kazakhstan

Duration	VR	Steam education
2016	15	13
2017	18	15
2018	20	17

Based on Table 1 the amount in % of quality VR and STEAM, it can be concluded that the main proportion is how this two directions grow up during three last years. There are the percentage base how VR become more popular in education sphere in 2018. (Fig. 1)

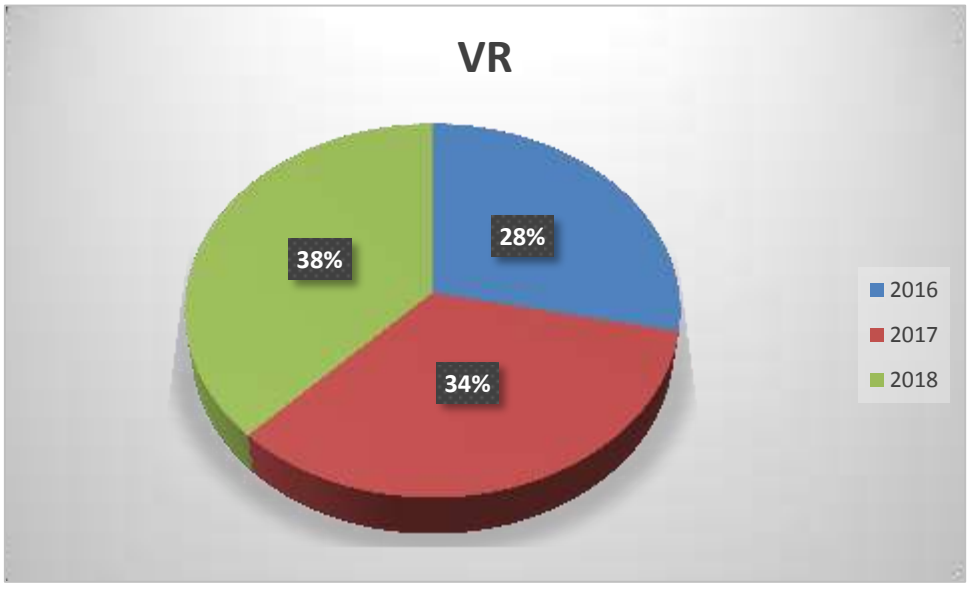

Figure 1 Percentage of using VR method in universities [compiled by the author]

The main goal is the progressive development of the digital ecosystem to achieve sustainable economic growth, improve the competitiveness of the economy and the nation, and improve the quality of life. According to Greenlight Insights polls, 71% of consumers consider promising and modern brand, which uses VR technology. And Racounter names 10 areas that in the near future introduce virtual reality: sports, urban planning, the underwater

world, engineering, psychological health, advertising, corporate events and meetings, tourism, security and an alternative lifestyle.

In 2016, the structure of the served users along professor staff and students: business and professional - 54,1%, scientific works - 45,6%, with other purposes - 0,3%, in 2013 the structure of the purposes looked as follows: business and professional - 60,0%, scientific works - 33,7%. It is noteworthy that compared to foreign users is growing up since the last three years (51.7%). If we look at another statistics that on STEAM education the users have other view of using this technology (Fig. 2).

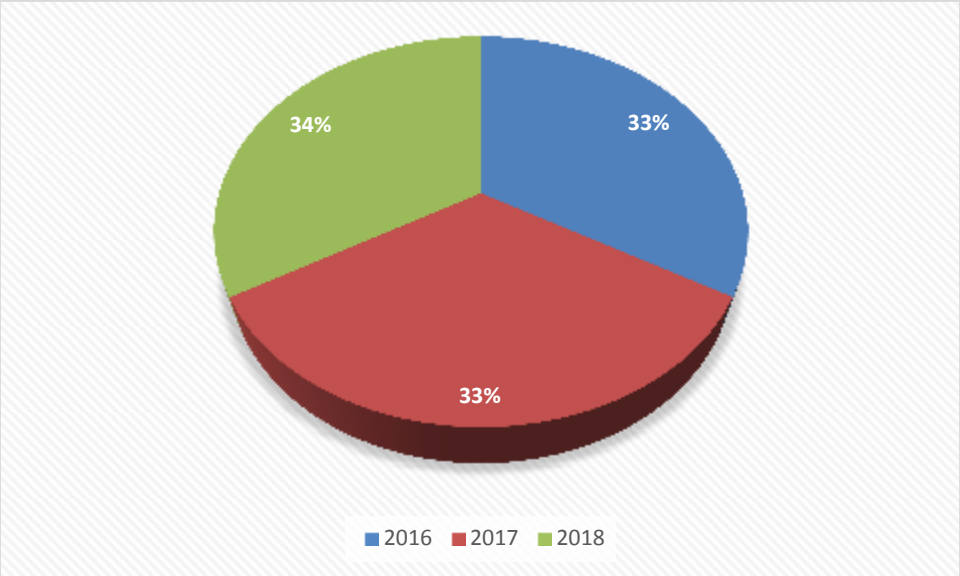

Figure 2 STEAM, income, % [compiled by the author]

Thus, digital technologies in education sphere in Kazakhstan relies mainly on the local population, as well as on business and professional skills of users (scientists. PPS, students and other categories of people, who want to up their knowledge). Analyzing the change in the main economic indicators, we can conclude that the potential of Kazakhstan in education sphere is not fully realized, since the development of the last decade. [17]

5. METHODOLOGY

Education in digital conditions is a part of the region's economy. Depending on the region, special qualities of it can be the main source of income. Digital technologies has organized many jobs, improved regional infrastructure and the popularity of the region [12]. Like any branch of economic activity, the education industry requires constant development. Moreover, development is impossible without research. In order to choose the development of digitalized education sphere can attract more users and than to grow up the economy of the Republic of Kazakhstan.

In September 2018, the authors conducted a survey, in which 100 respondents from different age groups took part. The purpose of the study was to assess the opportunities for planning educated zones for users of these technologies. The technology for conducting the survey is as follows: the authors developed the structure of the questionnaire, which covered the following issues:

- What type of digital method in education is most interesting for you?
- What are the main criteria that are most important when choosing the best University?
- What types of digital models in education do you prefer?

It should be noted that this search study and most of the questions were of an open nature, which made it difficult to process the information collected.

With the help of social networks (Vkontakte, Odnoklassniki, Instagram, Facebook, My World, Twitter), 62.4% of those surveyed learn about diversifications, festivals, cultural diversifications, etc. Moreover, 27.7% of the surveyed learn about diversifications, festivals, cultural diversifications, etc. from the media (TV, Radio, Magazines, Republic newspapers, and another source).

The direction studied is interesting for residents and guests of the country and requires improvement. [11, 17, 18]

According of this the main direction of promoting this industry depends on economic and financial models. The risk, which contribute this position, described in the next analysis. The considered models will be reduced to the following mathematical formulations:

5.1. Model of financial function

$$S = BC\ \left(\frac{i}{m}; n * m; 0; -P\right), \quad \text{with restrictions:}$$

$$P = -PC\left(\frac{i}{m}; n * m; 0; S\right) \quad (1)$$

where:

Returns the future value of the contribution S based on compound interest with annual

interest rate i, if the contribution P is n years, and interest is calculated m times

in year. Here P - the number of funds invested in the bank, it is entered with the sign

$i = (n * m; 0; -P; S)$m - the average expected income for the j-th investment project;

5.2. Annual interest rate

Returns the annual interest rate under which the initial amount P is to be put, so that after n years to get the total amount of deposit S. Here P is the amount of money invested in the bank, it is entered with a minus sign:

$$n = OKRVVERK\ (KEPER\ (i\ /\ m;\ 0;\ -P;\ S);\ 1)\ /\ m$$

All three items are being performed at each iteration of the optimization method algorithm, and thus, a dynamic adjustment of the optimization process can be made. At each step of the algorithm, income is calculated as a function of demand and costs are calculated from the magnitude of production and the investment.

It should been noted that the disadvantage of the presented models is that they do not take into account the risk dynamics, if we consider the investment projects being implemented and additional investments in them.

6. CONCLUSION

Leadership skills would been established already in school. Leadership is one of the categories which plays the main role on the forming the key aspect of the education processes in the whole economy. [20] Digital technologies in the region will be successful due to: multi-purpose sharing of production capacities, lower costs, due to the rational, as well as the concentration of distribution networks, formation of channels of information, knowledge, technology and managerial expertise. [21]. Use economy model of R&D commercialization in practice can open up new opportunities for obtaining synergistic effect from its operation due to the optimal use of generalized resource, personnel, organizational, informational and other support within the framework of a unified strategy of innovative development of an

economic entity, region and country as a whole [22]. Strategies for the post-crisis development are offered taking into consideration the adequate management systems for risks, profitability, liquidity and capital. [23] Management in the education industry is a system of activities, the elements of which are various types of activities carried out by managing entities (organizing the provision of services, producting their components, acquiring it, which are distributed among various entities: authorities, management of tourist firms and associations, consumers) [14]. Digitalization is significantly ahead of the existing system of production requirements for the composition of professions engaged in the labor market. The digital economy requires that people have digital skills to benefit from it. At the same time, the current level of computer (digital) literacy of the population is 76.2%, and its growth is necessary in the coming years.

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