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Digital Transformations to Improve the Work and Distribution of the State Scholarships Programs

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Abstract

Purpose – Based on the analysis of Kazakhstan's experience of digital transformation, this study suggests a concept for digital solution to optimize organizational process, create trust networking between the center of state scholarships programs and recipients. In addition, the authors contribute to the current discussions of an effective digital transformation of state services.

Research design, data, and methodology – Policy analysis is based on the combination of both primary and secondary materials collected during a Policy Research Project conducted in Kazakhstan in 2017. It involved semi-structured interviews with the state scholarship' recipients, ICT experts and findings from academic articles.

Results – Findings are represented via Policy Development Matrix – a table with three options (status quo, partial change, total change) to deal with policy challenges. Authors suggest a concept for digital solution following the Customer Relationship Management (CRM) principles for optimizing core business processes, communication and networking strategies of the state scholarships program.

Conclusions – At the time when digitalization becomes trending for states, the transformation of the state education policy is inevitable. The rapid development of digital technologies creates new opportunities for a single integration platform with key principles of Smart Remote Management in the state scholarships programs.

Keywords: Digital Transformation, Digital Solution, Smart Remote Management, State Policy, State Service, State Scholarship, Bolashak International Scholarship Program, Kazakhstan.

JEL classifications: I28, J24, H52, O33, O38.

1. Introduction

Currently, many countries are facing global economic challenges. More nations plan to reach top leading world countries in the 21st century. A key factor for success can be a gradual digital transformation and development of ICT technologies. It becomes obvious that the global transition to digital technologies will lead to the transformation of different states' sectors. In fact, digitization will transform the state services, production chains and mind-sets of people.

Therefore, many countries, including Kazakhstan, are

rapidly adapting new approaches to introduce new technologies within the state. Government program "Digital Kazakhstan" for 2018-2022 was accepted in December 2017 to create conditions for transition to digital economy of the state in the medium and long terms.

Not only economy will be a subject to digital transformations. Education is no exception when it comes to digital changes, which has been transforming under the influence of new learning technology and Internet. There are a set of opportunities for children and adults, who want to continue their education or learn new skills. More users have access to Internet and use technological tools such as computers, tablets and mobile phones. To utilize full potential from these digital benefits, Kazakhstan's education system must change and become more flexible for innovation implementations.

The Bolashak program is Kazakhstan's national proud. This international scholarship project was established on November 5, 1993 to prevent brain drain from Kazakhstan after the dissolution of the Soviet Union. This project offered

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the opportunity for talented young people to receive free international education abroad with the subsequent mandatory working in Kazakhstan. The main task of this scholarships program was to train qualified personnel, to increase of economic potential and to distribution competitive reforms throughout Kazakhstan.

Similar scholarships programs carried out in Thailand, Korea, China, the United Arab Emirates and others. In the post-Soviet space, the Bolashak scholarships program first appeared in Kazakhstan. Further, the program "Personnel of the 21st Century" created in Kyrgyzstan (1995), the program of the "Umid" foundation opened in Uzbekistan (1997), the state program of scholarships formed in Azerbaijan (2007).

The transformation of scholarships programs in the conditions of digital world becomes inevitable. The rapid development of digital technologies creates new opportunities for policy improvements. The purpose of this article is to contribute to the current discussions of an effective digital transformation of state services. It examines Kazakhstan's experience of optimizing state scholarship implementation in the conditions of digital transformation. The approach presents a digital solution based on trust networking between the center of state scholarships programs and recipients. It argues that implementation of the Customer Relationship Management (CRM) should contribute towards the productive operations of the Bolashak scholarship program, simplify communication, as well as to facilitate networking among members at all levels of interaction.

This problem is related to the need to reduce bureaucracy, and the need to obtain reliable data with sufficient speed to make operational decisions. Solving these problems will be possible through the development of new methods, frameworks and approaches to optimize the work of government projects.

In this article, section 2 discusses relevant literature. Section 3 sets out the methods of scientific research. Section 3 presents an analysis and estimation results. And Section 4 is a concluding part.

2. Literature Review

One of the important features of the modernization of education in Kazakhstan is the development of mobility of students, undergraduates and doctoral students. Over the past decade, opportunities for internships in foreign universities and other organizations, participation in various international projects have expanded. However, as practice shows, the Bolashak program focused mainly on their organizational side in the preparation of foreign internships. The problems of psychological and cultural nature are not solved.

Preparation for effective intercultural communication through the use of digital technologies is one of the most important tasks of modern education. Intercultural

competence is multifaceted, and in this research, we propose to focus on digital transformations and their impact on communication.

It is trending now to discuss digital technologies, digital world, electronic economics and its analogues. These concepts are interchangeable and mean almost the same thing in theory. In future, the digital economics can be a new tool, which will initiate broad opportunities for all spheres of life, including science (fundamental and applied science). Therefore, it is very important to understand how to digitize various structural elements, and this question arises in many countries, including Kazakhstan.

Innovative and digital technologies allow managing individuals, which involved in transactions due to interaction with any large scale and closer contact with business entities and government structures (Cardona et al., 2013; Panshin, 2017). The result is formed economy based on network services, i.e. digital or electronic economics (Negroponte, 1996; Katz & Koutroumpis, 2013; Varian, 2016).

Negroponte (1996) presented the electronic economy as a transition from the movement of atoms to the movement of bits. This concept is associated with the intensive development of IT and the beginning of the process of digitalization of society, which based on fourth industrial revolution.

Varian (2016) proposed five directions, which digital technologies will transform economic activities: data collection and analysis; personalization and customization; experimentation and continuous development; innovations in contracting; coordination and communication tools. He believed that the institutions that use these five areas will be able to better serve the global market for their products and services.

Innovation has defined as the successful implementation of creative ideas within an organization (Amabile, 1983). One of the important features of innovation is that it should be useful and contribute to development. These arguments argue that innovation is different from invention. Diffusion of innovations is a process by which an innovation transmitted through distribution of information by channels (Kireyeva et al., 2018).

Yudina and Tushkanova (2018) defined "digitalization" in two terms:

- 1) The creation and distribution of digital platforms at different levels of the economy, which can be solve various problems and decisions;
- 2) In the case of changing the nature of industrial or economic relations based on the use of machine algorithms.

Tapscott analyzed trends in the change of transaction costs. Based on such analysis he formulates a number of hypotheses about the transition of business to new media resources (Tapscott, 1995). The most important conclusion that based on theoretical analysis is the ability to move

sectors of the economy from the traditional format to media social platforms. In addition, about the benefits of using digital platform based on networking and switching costs produce effects (Williamson, 1975; Shapiro & Varian, 1999). These direct and indirect networking effects cause continuously increasing returns (Arthur, 1996). All these actions to increase the attraction of a network, and its scale. As a result, more users want to connect in such network, and it will in create different direct and indirect networking effects.

Today, most arguments in favor of creativity and innovations are made in general terms. These statements have proved that it is inherently useful for everyone to have narrower instrumental terms that link him to the economy (Prentice, 2000). More arguments are made to the manifestation of creativity among young people through the use of new technologies, from mobile phones to digital applications. The government policy is reflect the priority of ICT in education and culture (Sharp & Le Metais, 2000)

Some scientific studies are devoted to the transforming nature of the digital economy and the changes occurring through electronic communications (Kelly et al., 2010; Pookulangara & Koesler, 2011; Zhuravleva, 2012). Chi (2011) defined social media sites as a connection between brands and consumers, offering a personal channel and currency for user centered networking and social interaction. Kaplan and Haenlein (2010) showed the social media platforms as a group of Internet based applications, which distributed on the ideological and technological foundations. This allow the creation and exchange of user generated content. Thus, social communications is increased the competence of a special nature based on knowledge and skills (Sorokina & Rogova, 2012). These abilities to carry out communication by creating a common meaning for the communicants of what is happening and to achieve a positive result.

Certain scientists have showed that the digital technologies can be used during the learning situation with context-aware ubiquitous learning (Chu et al., 2010). Further, the impact of the Internet of Things to the concept on advanced technology learning is discussed (Zhang, 2012). In addition, some researchers discussed about the importance in technology enhanced learning environments (Steinkuehler & Squire, 2009). They described principles, which should be address to users, which prefer learning based on using digital platforms.

The concepts of learning have changed, and suggest the current creative discourse also includes:

- Changes in the economic and political fields;
- Acting as a possible mechanism for the empowerment of individuals in institutions and organizations;
- Possibility of development through creativity in teach (Craft et al., 2007).

We should conclude that the literature review of research on the use of new technologies and their impact on learning

covered the results of research by many scientists. The review based not on the territorial principle (country of publication), but on the problem-thematic (focus and conceptual framework of study).

The research question of this study is aimed to improve the technology of learning and the use of the digital economy. Research analysis shows that aspects of the digital economy have a positive effect on learning using technology. The penetration of digital transformation in each industry could significantly improve efficiency and manageability. The positive result of the introduction of digital technologies is obvious. There are attractive conditions and reduced barriers.

Today, the rapid development of international programs, we propose to consider one of the problems unfairly relegated to the background of the opened mobility opportunities. It is necessary to form intercultural competence of training based on effective interaction and improvement of the level of trust. It is difficult to overestimate the importance of new approaches for successful study abroad. The system of digital development of Kazakhstan should change and become more flexible to new approaches.

In the world of digital technology, it is very important to support the mobility of students, undergraduates and doctoral students. Therefore, it is necessary to develop new approaches to improve the work and distribution of the state scholarships based on digital transformations.

Thus, the current system of many state scholarships projects is a formal nature and an oversight function. As a result, the program does not provide for real responsibility for the achievement of the goals set by Bolashak scholarship program. This problem is related to the need to reduce bureaucracy, and the need to obtain reliable data with sufficient speed to make operational decisions. Solving these problems will be possible through the development of new methods, frameworks and approaches to optimize the work of government projects.

3. Methods and Materials

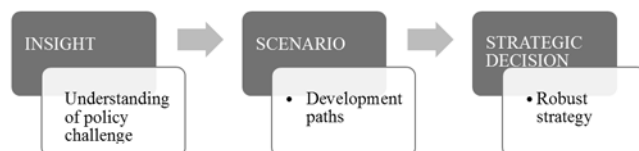
Policy study as a field of Policy science was employed for understanding public policy and developing an evidence-based policy argument for policy-making process. Brooks (1989, p.16) explains policy as "the broad framework of ideas and values within which decisions are taken and action, or inaction, is pursued by governments in relation to some issue or problem". The purpose of the policy study is to provide a comprehensive and persuasive argument justifying the policy recommendations presented in the paper and therefore, to act as a decision-making tool and a call to action for the target audience (Young & Quinn, 2002). Such approach was adapted with purpose to:

- a) Gain a detailed understanding of the Bolashak as a state education policy with primary focus on its stakeholders, beneficiaries, structures and management;
- b) Propose recommendations for the effective policy-making process;
- c) Influence current expert thinking on the policy challenge.

The issue-driven analysis was based on the combination of both primary and secondary materials collected within the framework of a public policy research conducted in Kazakhstan in 2017. Primary materials were collected by means of semi-structured interviews conducted in Almaty and Astana cities with Bolashak stipend holders/graduates of the program (10 respondents), management of Bolashak program (4 respondents), Information and Communications Technology (ICT) experts (2 respondents) as well as policy advisers (5 respondents). The interviews consisted of open-ended questions. The researchers used a convenience sample “available to the researcher by virtue of its accessibility”, as well as “snowball” sampling (also called “network” sampling) relying mostly on academic and professional communities of Kazakhstan. All respondents were guaranteed to be anonymous, contributors’ names and positions were removed.

Secondary materials were gathered from multiple sources at various time points during 2017-2018. It included the examination of content in Russian, English and Kazakh languages from official websites of the JSC “Center for International Programs” (CIP), Bolashak Alumni Relations Office (BARO) and Bolashak Association. Researchers also critically assessed and synthesized findings from academic articles, publications in media and statements by officials of the country.

Finally, the policy analysis matrix represents as table with three policy development options with criteria to deal with policy challenges: status quo, partial change, total change. The rationale behind this scenario-method is that scenario analysis allows policy makers and stakeholders to comprehend a bigger picture of policy problem, become proactive, working specifically on their rationally chosen option. However, the researchers recognized possible shortcomings of the scenario-method, mainly due to its abstractedness and hypothetical character, which is neglected in decision-making process.



Source: compiled by the authors

Figure 1: Analytical process.

The next section of the article presents a matrix with

three policy development options.

4. Analysis and Results

4.1. Policy Development Options

JSC “Center for International Programs” (CIP) acts as an administrator of the program. It is responsible for tracking the performance of contractual obligations that scholarship graduates have upon their return to Kazakhstan. After the graduate meets all obligations under the contract (mandatory return to work of a scholarship holder in the territory of Kazakhstan for 3/5 years), CIP confirms the performance of contractual obligations and releases an encumbrance on collateralized property.

Interviews with alumni of the Bolashak program conducted in Astana and Almaty cities revealed that graduates are critical towards current alumni relations work emphasizing the need for more partnership relationships between CIP and Bolashak scholarship holders (current and graduates of the program). They have underlined problems related to mandatory return to work and lack of proper employment opportunities in Kazakhstan; fixed period for labor repayment and timely removal of encumbrances on collateralized property.

As a result of scenario-method, Table 1 presents Status quo (Option 1) and two alternative options for possible policy changes in the Bolashak program: digital transformation of CIP (Option 2) and complete redesign/transformation of the program (Option 3). Comparison of the three options was based on the following criteria: effectiveness; acceptability and feasibility from a political point of view; budget expenditures.

4.2. Recommendations Issues

Authors suggested Option 2 (Partial change) as an optimal solution, which implied improvement of the Bolashak program through digital technology application. Recognizing the important role of CIP as an administrator of the program, it was advised to rethink and redefine CIP business processes, integrate a digital solution for improving customized interaction with scholarship holders (current and graduates of the program). Through automation, digital technology allows to simplify and speed up processes by eliminating the delays associated with the human factor. Simplifying and fast-tracking processes also reduce operating costs and improve employee efficiency. Implementation of the recommended option requires budget expenditures, which can be covered by funding within the state program “Digital Kazakhstan”. Thus, from a political point of view, such initiative is particularly relevant. The window of opportunity for policy development is in place.

Table 1: The Policy Development Matrix

	Option 1 Status quo	Option 2 Partial change	Option 3 Total change
General features	To maintain Bolashak program implementation as it is; CIP acts as an administrator of the program; same approach and tools for interaction with scholarship holders (current and graduates of the program) are used for it.	This implies rethinking and redefining of CIP business processes by means of digital solution to improve interaction with scholarship holders (current and graduates of the program).	A shift of priority from the Bolashak program to the development of the internal potential of education in the country within the framework of internationalization of the Kazakhstan education. The launch of branches of Nazarbayev Universities and Nazarbayev Intellectual Schools in the regions of Kazakhstan.
Effectiveness	High risks of new program failures and criticism from scholarship holders (current and graduates of the program) as well as public.	Reducing the human factor in servicing as a cause of failures in the implementation of the program. Restoration of image of the Bolashak program and its graduates among the public. Popularization of digital technologies in the framework of digital transformation.	Development of the state educational program on creation of "world class" personnel in Kazakhstan. Dissemination of the experience of Nazarbayev University in the system of higher education of the country.
Acceptability and feasibility from a political point of view	Follow the pre-established course of development of the Bolashak program for 2016-2020.	Digitalization is an important area of Kazakhstan's Third Stage of Modernization. "Digital Kazakhstan" program: "Transition to the digital state" and "Evolution of the human capital assets".	N.Nazarbayev's initiative to development of the state educational program on creation of "world class" personnel in Kazakhstan. Dissemination of the experience of Nazarbayev University.
Budget expenditures	Base financing within the framework of CIP activities.	Funding within the state program "Digital Kazakhstan".	Requires significant budgetary expenditures.

Source: compiled by authors

These are the recommendations for key stakeholders:

1. *"Smart Remote Management" for CIP* – development and implementation of a single integration platform with adaptation of key principles of Customer Relationship Management (CRM) also known as the customer-focused approach with direct interaction and feedback. This can solve the need for more partnership relationships between CIP and Bolashak scholarship holders (current and graduates of the program).



Source: compiled by authors

Figure 2: Schematic model of CRM

2. *Digital update for Bolashak scholarships program* – digital technologies offer an opportunity to control and use all forms of digital channels and points of contact. The key factor is speed and efficiency.

Table 2: List of digital technologies

Implemented to-date	Digital trends
Web-sites	Electronic document flow
Social media	Mobile application
Blogs	Big Data
	Open Data
	Blockchain
	Artificial intelligence
	API

3. *Training / retraining of relevant personnel and competencies* – facilitate high-impact training and development programs to retain the right employees and attracts new ones: ICT personnel, Software Engineers, Crisis-management and Communication analysts to identify vulnerability and prevent potential crisis situations during the work and distribution of the state Scholarship.

4. *Cybersecurity measures* – attention should be paid to the prospects of strengthening cybersecurity by integrating new technologies of "smart remote management" into a single coordination center (data center) for security reasons.

5. Conclusions

This research marks a starting point for further research in the field of an effective digital transformation of state

services. The authors conclude with two perspectives: the 1st is addressed to the academic community – that there should be always an opportunity for cross-disciplinary collaboration of scientific studies and technological developments. Overflow of knowledge and more agile reciprocity should be the focus for putting digital solutions into everyday practice for continuous problem solving. The 2nd reaches the practitioners – a digital solution to improve the work and distribution of state scholarships based on Kazakhstan's experience. The recommendations have a potential for applications in other countries, which plan to initiate state scholarship programs. Based on these research findings of this paper, the practical implications listed below:

Firstly, the most important conclusion that based on theoretical analysis is the ability to move state sectors of from the traditional format to digital platforms. Some researchers noted that the benefits of using digital platform are related to networking and switching costs produce effects. Certain scientific studies devoted to the transforming nature of the digital economy and the changes occurring through electronic communications. In education sector, it is crucial to support the mobility of students, undergraduates and doctoral students by means of state scholarship programs.

Secondly, the authors proposed an optimal policy option for improvement of the Bolashak scholarship program in Kazakhstan. This scenario offered a CRM model to achieve efficiency in the implementation of the scholarship program. Main elements included the redefinition of technologies and business processes for improving the working environment, as well as for direct personalized interaction of the scholarship center with graduates. Through automation and digitization, this process facilitates simplifying and increasing business processes by eliminating delays associated with human factors. Simplifying and speeding up processes reduces operational costs and increases employee efficiency.

Thirdly, even though digital solutions are high-priced and time-sapping projects for developing states, the process of converting traditional approaches of state services must be accelerated. The implementation of the key principles of Smart Remote Management within state sectors will cultivate digital culture among citizens.

Fourthly, it can be assumed that changes in national stereotypes are required to a lesser extent in other countries, which in comparison with Kazakhstan, are more economically developed and have a higher level of politeness and goodwill of everyday communication. The main problems of education in Kazakhstan that the systems of state programs do not meet modern challenges. This problem indicate the need to create an integrated methodological system to optimize the work of the Bolashak program in order to effectively interact and increase the level of trust.

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