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Innovative Technologies Against the COVID-19's Challenge: Education Issues

Hans-Christian Brauweiler[1], Aida Yerimpasheva[2]

[1]*WHZ Zwickau University of Applied Sciences, Zwickau, Germany*
[2]*Al-Farabi Kazakh National University, Almaty, Kazakhstan*

Abstract

The paper intends to consider the role of technologies to overcome the COVID-19's challenges in higher education. On investigating, it has been found that the digital strategies utilizing innovative technologies help students to adapt to pandemic consequences. This study enlightens the various technologies that assist education in diverse aspects to outlive against COVID-19. The technological shift that happened during the pandemic and its influence on society is discussed. Besides the considered innovation technologies, this paper also deals with changes that have taken place in the education system of Kazakhstan in pandemic circumstances. Alongside our suggested solution for further educational process issues is also presented. A detailed review of the literature is done on COVID-19, digital technologies in education, blended learning using appropriate keywords on SCOPUS, Springer, Science Direct, and Google Scholar. Some relevant sites and blogs are also taken into account to get insights. We have identified technologies used in Kazakhstan that play an important role now. There have been chosen exploratory and conclusive research design. Fifty-nine students provided qualitative responses; ninety-eight students and graduates participated in the quantitative survey. The results of the study have shown students' increased awareness concerning blended learning. The scientific novelty lies in the description of the experience gained by higher schools during the quarantine. We believe that in the

future, blended learning should be used largely. The innovations in the learning process cover two areas. The first is related to the software used. It is like the creation of a virtual university that facilitates communication between students and teachers. The second area correlates with content, without which any innovation will fail.

Keywords: Artificial Intelligence (AI), Digital technology, COVID-19, blended learning, tertiary institutions.

Introduction

The problem of innovative development is reflected in the works of many economists. Austrian economist Josef Schumpeter (1934), in his book 'Theory of Economic Development' viewed innovation as changes in technology and management and the use of resources. The German scientist G. Mensch tried to show a correlation between the economic growth rate and the cycles of essential innovations (Mensch, 1983). A turn towards a strategy of increasing the competitiveness and sustainability in all systems by using a new type of resources, namely the results of intellectual activity, has taken place against a growing shortage of material resources, an extensive path of development, and deterioration in the environmental situation. Not coincidentally, in recent years, service companies have emerged among the world's leaders, and the volume of sales of science-intensive products in the world market has exceeded trillions of dollars. It is important to note that science, education, and defense in highly developed countries belong to state budgets' strategic part. According to Vida, I., Spaller, E., & Vasa, L. (2020) digital solutions help entrepreneurs and businesses to "reconsider their business models which can be more competitive, sustainable, and better connected to other sectors of the economy".

Innovation is a self-regulated process, and its driving forces are the desire to get super-profits. The only concern is a risk degree. The process will proceed spontaneously only when the first reason is stronger than the second one. That is

why in the USA, Germany, France, Japan, and other developed countries, innovative activity is encouraged by preferential funding, venture capital, taxation, and depreciation politics.

Digitization and Industry 4.0 approaches increase companies' level of competitiveness if it is used to create new levers of competitive advantage and "technological advancement make people rethink the present and future activities" (Brauweiler et al., 2020).

One of the critical problems is to organize interaction between science and production. International experience of innovative activity testifies to the variety of forms and methods used in the R&D field. The peculiarity of the present moment is that the quarantine measures do not allow doing business in the old way. Even absolute skeptics decide to digitalize, urgently rebuild processes, products, and communications. Innovative solutions help to adapt to new realities. Yerimpasheva & Balgabayeva state that "reality is transformed under the influence of global megatrends" as urbanization, digital technologies, and customer behaviors (Yerimpasheva & Balgabayeva, 2020).

However, the COVID-19 pandemic "has severely disrupted the education and training" of all students (Upadhyaya, Jain, Iyengar, Patralekh & AbhishekVaish, 2020). In higher education, where distance learning, in most cases, took the form of translation of recorded lectures and working with online platforms, some universities have been suspended due to the lack of IT infrastructure for both students and teachers (UN | Education during Covid-19, 2021).

There has been a "sudden shift of the educational, economic, business, clinical care, and many other activities to the online domain" (Haghani, Bliemer, Goerlandt & Li, 2020). The new "antivirus-enabled paradigm" requires "advanced technology" and "a tool to quicken the pace of digital transformation" (Megahed & Ghoneim, 2020). Digital transformation is "a process that aims to improve an entity by triggering significant changes to its properties through combinations of

information, computing, communication, and connectivity technologies" (Vial, 2019).

In a short time, governments had to respond to shocks in education systems and find new ways to tackle the education crisis, and develop a set of solutions. The UN recommended focusing efforts on the following points:

- Tackling knowledge loss, preventing dropout, and developing skills;
- Removing barriers to the Internet;
- Improving the quality of data and monitoring tools in the field of education;

Increasing the level of consistency and flexibility concerning different levels and types of education and training (UN | Education during Covid-19, 2021).

During the COVID-19 crisis, higher education is undergoing an incredible transformation. On the other hand, online learning sharply identifies problem areas, so-called 'bottlenecks,' exacerbating social inequality, uneven access to the Internet, and the lack of a sufficient number of qualified professionals who can teach at a distance. At the same time, there are optimistic reports on distance education in China and other Asian countries (Altbach & de Wit, 2020). The article describes the case of Kazakhstan, in particular, how the al Farabi Kazakh National University (KazNU) faced the higher education crisis.

Literature Review

The COVID-19 pandemic poses enormous challenges to humanity. In the 20th century, the impetus for scientific and technological progress was the Second World War; now, the coronavirus gives an impetus to development (Kurenev, 2020). The "digital revolution that has developed in recent years may be accelerated as a consequence of the COVID-19" (Poch et al., 2020).

The coronavirus pandemic has changed all areas of our lives. We all have to rebuild it, find new non-standard solutions, and learn to exist in new realities. It is needed

to link different types of technologies properly. Companies, universities, governments, and people are increasingly using digital technology (DT) to cope with the pandemic's effects. These are mobile technologies, the Internet of Things, telecommunication networks (5G), big data analytics, artificial intelligence (AI), blockchain technology. Many authors are inclined to believe that the digital technologies adopted in the strategic decisions making process can lead to increased competitiveness and can help to overcome the consequences of pandemic (Papadopoulos, Baltas & Balta, 2020; Nadikattu, 2020; Chettri, Debnath & Devi, 2020; Agosto & Giudici, 2020). Technological advancements in AI "can prove beneficial in the COVID-19 scenario" (Mohanty, Harun AI Rashid, Mridul, Mohanty & Swayamsiddha, 2020).

Singh et al. (2020) have described the innovative technology of the Internet of Things (IoT) used during the quarantine. The fourth industrial revolution has started with the applications of advanced manufacturing and digital information technologies (Javaid et al., 2020). Industry 4.0 as an intelligent system includes a flexible production line, AI, IoT, and other digital technologies. According to Iivari, Sharma & Ventä-Olkkonen (2020), the COVID-19 pandemic has forced education "suddenly and abruptly" to engage in new Information and Communication Technologies (ICTs).

Vaishya, Javaid, Khan & Haleem (2020) have proved that "the involvement of AI reduces complexity and time taken." Many authors agree that AI is used to reduce workers' workload (Allam et al., 2020; Pirouz et al., 2020; Vigil Martín, 2020; Mulenga & Marbán, 2020; Ting et al., 2020).

Madurai Elavarasan & Pugazhendhi (2020) have conceptualized the aspects of technology utilization "to provide a helping hand in an epidemic state of affairs." Besides, they state that the "government should deploy tech-based solutions" because the technology is a "weapon in this war against the unexpected" and "technologies, management and governance are key factors" in facing pandemic consequences (Madurai Elavarasan & Pugazhendhi, 2020).

Digital health systems are "well suited to provide novel solutions" to the "public health emergency" (Kapoor et al., 2020). New technologies and telemedicine have come to aid doctors and have been used in the advanced stage. COVID-19 response in East Asia has shown extensive use of emerging technologies (Big data, AI, drone, 5G, robotics, automated vehicle, blockchain) linked to medical ones (Shaw, Kim & Hua, 2020). On the other hand, it has been initiated a "different work culture" in many countries: teleworking, online meetings, and classes, online education for schoolchildren is becoming evident. Thus, a life-style change takes place, "which may have relatively longer socio-psychological and behavioral implications" (Shaw, Kim & Hua, 2020). However, the pandemic only sped up the change, as blended learning started in international educational programs long ago (Klenner et al., 2017). The pandemic also seems to be a "constructive disruptor, giving an opportunity for restructuring the present conventional, classroom-based educational system" (Rajhans, Memon, Patil & Goyal, 2020). Although using "technologies like AI and blockchain may be financially challenging for small retail stores" (Kumar, Raut, Narwane & Narkhede, 2020).

Beaunoyer, Dupéré & Guitton have investigated how the pandemic can "potentiate digital inequalities and how digital inequalities potentiate vulnerability to COVID-19" (Beaunoyer et al., 2020). Because children of today "are not equally equipped for their technology" so schools and education "should undergo an extensive digital transformation to be able to meet the needs of the young generation and their digitalized future" (Iivari, Sharma & Ventä-Olkkonen, 2020). Blended learning in the context of pandemic COVID-19 is "suddenly paramount to education," and internationally, there is a "move towards blended learning in major tertiary institutions" (Jowsey, Foster, Cooper-Ioelu & Jacobs, 2020). Farahani, Laeer, Farahani, Schwender & Laven, (2020) demonstrated that a "blended learning approach with e-learning can improve students'... consultations and communication skills".

Methodology

A detailed review of the literature has been done on COVID-19 and digital technology using appropriate keywords on SCOPUS, Springer, Science Direct, and Google Scholar. We have carried out qualitative and quantitative methods of research. Students of al Farabi Kazakh National University were surveyed who faced quarantine consequences, which affected the learning process. The spring semester of 2019-2020 academic year consisted of the following elements: five weeks of offline and ten weeks of online learning, exams, final attestation, and defense of a thesis. The online surveys were organized via Google forms. Surveys were administered as exploratory and conclusive research and included open-ended and close-ended questions. Fifty-nine students provided open-ended responses that then were analyzed. Such topics have been identified from the open-ended responses: (i) Satisfaction from online semester; (ii) Used software/technologies; (iii) quality of Internet provided; and (iv) Academic honesty. The raised topics helped to identify students' perceptions concerning learning design. The number of respondents who participated in quantitative research was ninety-eight students and graduates. The study has shown that students increased their skills in using new software and awareness of the importance of blended learning in the studying process.

Findings and Discussion

Digital technologies in the 21st century are developing at a crazy pace, creating a genuinely new world. The modern world is as new as it is unpredictable, and the situation with the COVID-19 pandemic is the best confirmation of this. Things that seemed not very important one year ago are now playing a crucial role.

In the first survey among 59 respondents, we used open-ended questions. Students from the fifth week of the spring semester of the 2019-2020 academic year began to study remotely from home. The main programs for use were Zoom, Google Meet, and Microsoft Teams. Passing exams at KazNU was carried out depending

on the educational program and faculty. Simultaneously, communication outside the classroom was carried out through the university's Intranet, WhatsApp, E-mail, and phone. The final exams were organized via Zoom, Microsoft Teams, Univer system (university's platform), LSD Moodle, and Oqylyq.kz. Sixty-three percent of respondents consider the exams passed without problems. Thirty-seven percent of the respondents faced difficulties such as unstable Internet connection, lack of Internet, and problems with the software chosen for the exam. At the same time, 91% of respondents are satisfied with the learning outcomes, while 57% answered that they are ready to continue their studies in the same format, 20% prefer traditional offline format, and 23% find it challenging to answer. It is interesting to note that 85% of the respondents said they are ready to switch to blended learning. Of these, 62% prioritize the spare time that they might have.

The study results provided by Jowsey et al. (2020) suggest that "blended learning can positively influence and impact the achievements of students, especially when utilized to manage and support distance education". They have highlighted conditions for successful blended learning. They are:

- Active engagement,
- Valuing students' feeling,
- Learning supports (phone/internet, hardware, and software),
- Family support, and
- Teacher communication.

We decided to take advantage of this study's results and use the listed conditions for successful blended learning to compile a questionnaire to survey students of KazNU. Additional criteria for successful blended learning have been added to the questionnaire. The survey's purpose was to determine what conditions matter to be a successful student, whether they differ from the listed ones. Also, we wanted to know whether students consider blended learning as an excellent educational opportunity. The results of the survey are presented in exhibit 1.

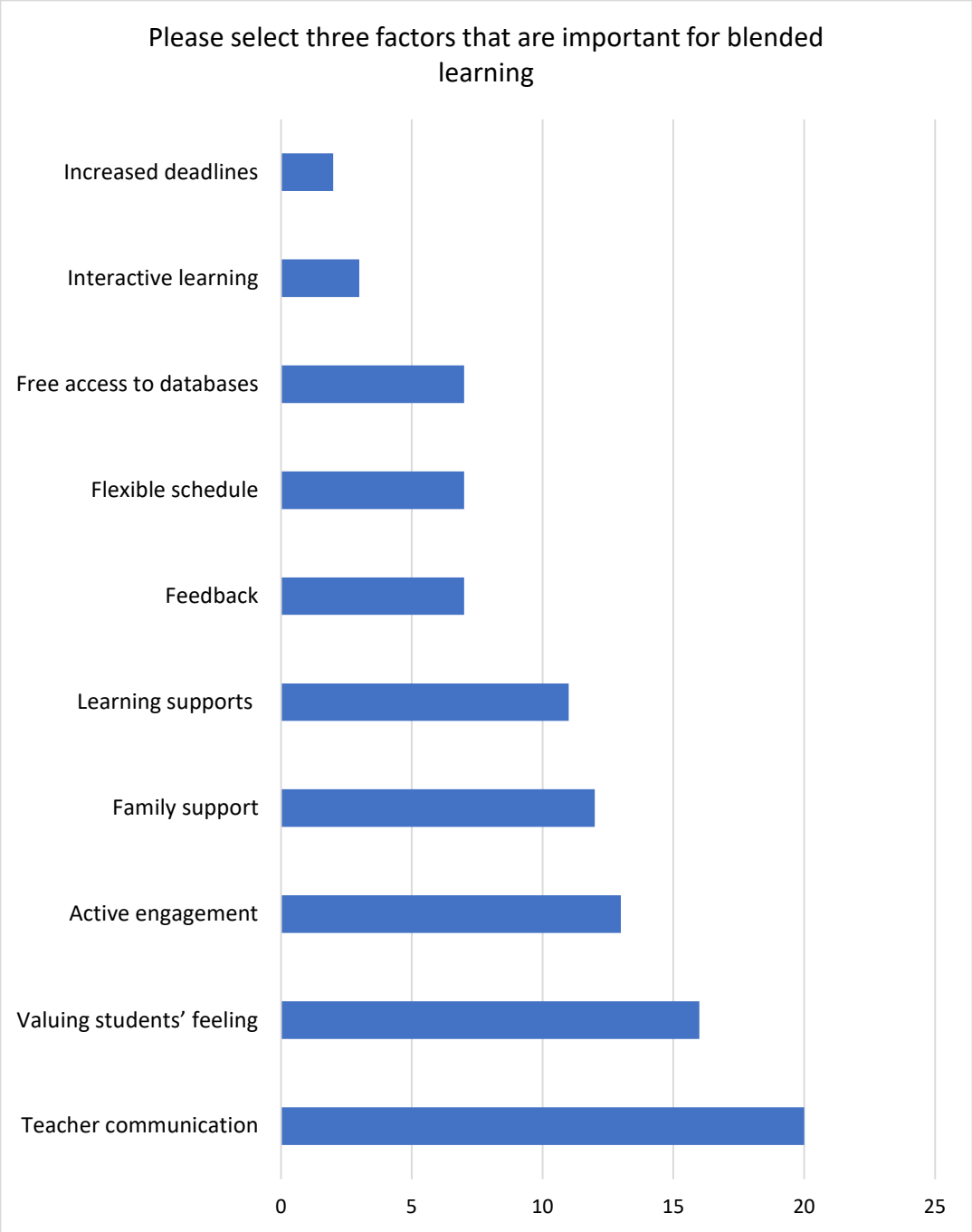

Figure 1. Conditions for successful blended learning

The highest preferences of respondents were distributed between such criteria as Teacher communication (20%), Valuing students' feelings (16%), and Active engagement (13%).

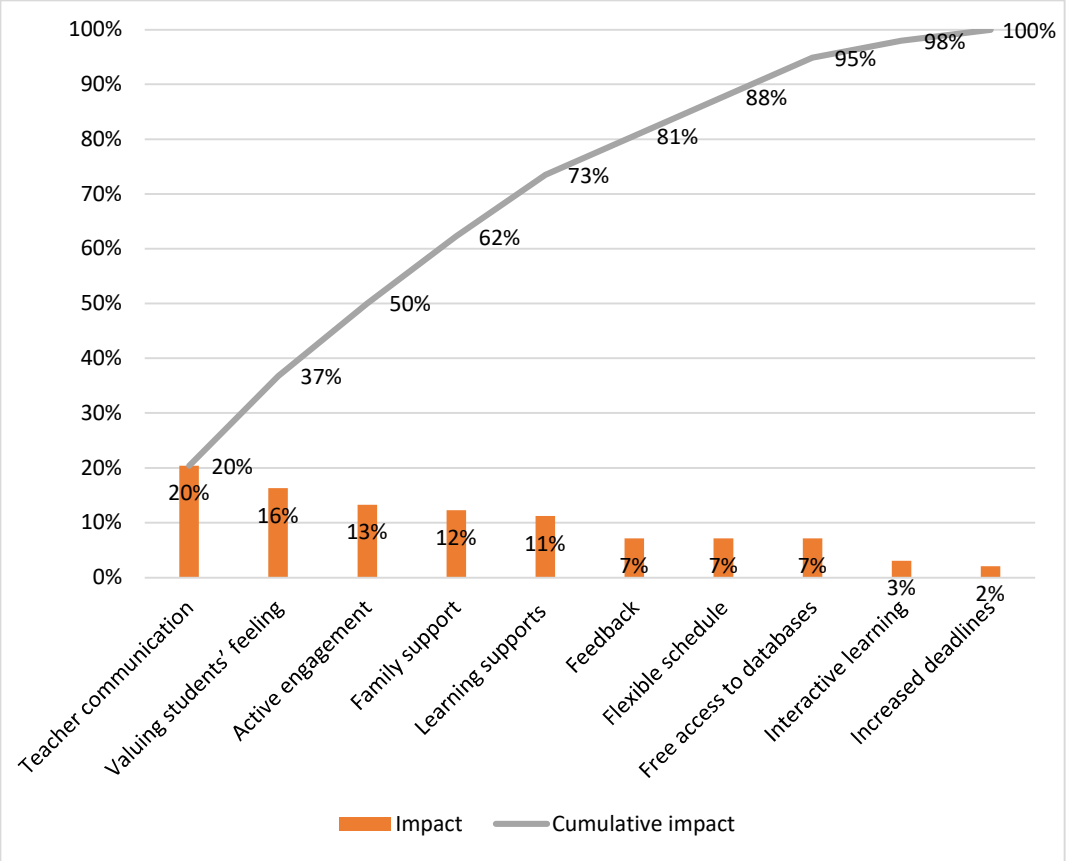

Figure 2. Pareto diagram based on the results of a survey of 98 KazNU students

According to the 80/20 Rule, the following criteria are required for successful blended learning:

- Teacher communication
- Valuing students' feeling
- Active engagement
- Family support
- Learning supports
- Feedback.

As can be seen from the diagram, KazNU students' preferences are somewhat different from those listed in the study by Jowsey et al. (2020).

The coronavirus pandemic has changed the world forever. Experts note that the politics and state structure of countries, their economies, and all other spheres of people's life will change. It is also about the education system. The latter, like other industries, was not ready to operate under quarantine conditions and now has to adapt to new realities and challenges in a short time.

The Professor Stephen Lamb, a director of the Centre for International Research on Education Systems at Victoria University in Melbourne who led the study on online learning because of the COVID-19 pandemic stated "Unequal internet access and access to a computer are just the tip of the iceberg of the challenges some students face" (Maslen, 2020). IT specialists at universities around the world "have been in crisis mode and have generally done a remarkable job migrating many courses and programmes online" (Altbach & de Wit, 2020).

The COVID-19 pandemic has launched a widespread digital transformation in society. The pandemic has forced people to make an incredible digital leap in everyday life. Traditional education has turned to distance learning. The coronavirus pandemic has had a significant impact on education around the world. To date, educational institutions, students, and teachers have been forced to turn to distance learning in a short time. In mid-March 2020, the Ministry of Education and Science, together with IT companies and educational institutions, carried out a colossal work. A project office was created, where the world experience (USA, Mongolia, Russia, and other neighboring countries) was studied. To switch to a new studying format, online pieces of training and webinars were conducted. Around a hundred civil universities have been transferred to the distance learning system. Higher educational institutions switched to online education on March 16. The universities turned out to be the most prepared since they had the entire necessary infrastructure.

The advantages of using new technologies in education are apparent. Distance learning problems have always been of interest to Kazakhstani universities. Some courses have already been organized in an online format, as in Al Farabi KazNU. Experts point out the importance of blended learning, which consists of learning

elements provided offline and online. This type of education will be prevalent because of its flexibility and changing epidemiological situation.

The Oqylyq.kz distance learning and proctoring system include a large amount of necessary functionality when organizing distance learning.

The startup «Oqylyq.kz» have been represented by three young Kazakhstani entrepreneurs - Ersultan Yermanov, Eduard Zaukarnaev, and Anuar Kagarov. Oqylyq.kz provides a flexible set of tools for testing knowledge using a proctoring system. There is a certainty that principles of academic integrity are not violated. Thanks to proctoring, control is carried out using a microphone, webcam, screen recording, machine vision, and the automated algorithm that recognizes suspicious patterns of a student's behavior and signals the teacher.

Another undoubted advantage of the Oqylyq.kz project is that the system entirely operates on servers located on the territory of the Republic of Kazakhstan, which gives additional data security. The Oqylyq.kz team has implemented several projects with a total value of more than 20 million tenges, including final exams at KazNU, entrance exams to physics and mathematics schools in Almaty, and math Olympiads, which is more than 30,000 online exams.

Implications

The COVID-19 pandemic has negatively affected all systems, and the situation requires extraordinary measures, primarily related to the digitalization of all areas. According to experts, the coronavirus pandemic has exacerbated existing problems in education. However, those institutions that had paid sufficient attention to new technologies and innovations before the pandemic were less affected. Sufficient digitalization of universities' educational process makes it possible to overcome the pandemic's consequences and stay afloat painlessly.

Conclusion

- Digital solutions help to "reconsider … business models which can be more competitive, sustainable, and better connected to other sectors of the economy" (Vida, Spaller, Vasa, 2020).
- The COVID-19 pandemic "has severely disrupted the education and training" of all students (Upadhyaya et al., 2020). There has been a "sudden shift of the educational, economic, business, clinical care, and many other activities to the online domain" (Haghani et al., 2020).
- The new "antivirus-enabled paradigm" requires "advanced technology" and "a tool to quicken the pace of digital transformation" (Megahed & Ghoneim, 2020).
- The "digital revolution that has developed in recent years may be accelerated as a consequence of the COVID-19" (Poch et al., 2020).
- The coronavirus pandemic has changed all areas of our lives. We all have to rebuild it, find new non-standard solutions, and learn to exist in new realities. It is needed to link different types of technologies appropriately. Companies, universities, governments, and people are increasingly using digital technology (DT) to cope with the pandemic's effects.
- Many authors are inclined to believe that the digital technologies adopted in the strategic decisions making process can lead to increased competitiveness and can help to overcome the consequences of pandemic (Papadopoulos, Baltas & Balta, 2020; Nadikattu, 2020; Chettri, Debnath & Devi, 2020; Agosto & Giudici, 2020; Nadikattu, 2020).
- AI is used to reduce the workload of healthcare workers (Allam et al., 2020; Pirouz et al., 2020; Vigil Martín, 2020; Mulenga & Marbán, 2020; Ting et al., 2020) and technologies are one of the crucial factors in facing pandemic consequences (Madurai Elavarasan & Pugazhendhi, 2020).
- New technologies and telemedicine have come to aid doctors and have been used in the advanced stage. COVID-19 response in East Asia has shown extensive use of emerging technologies (Big data, AI, drone, 5G, robotics, automated vehicle, blockchain) linked to medical ones (Shaw, Kim & Hua, 2020).
- It has been initiated a "different work culture" in many countries: Tele-working,

online meetings, and classes, online education for schoolchildren are becoming evident. Thus, a life-style change takes place, "which may have relatively longer socio-psychological and behavioral implications" (Shaw, Kim & Hua, 2020).

- The pandemic seems to be a "constructive disruptor," allowing restructuring the present conventional, classroom-based educational system" (Rajhans et al., 2020).
- The pandemic can "potentiate digital inequalities and how digital inequalities potentiate vulnerability to COVID-19" (Beaunoyer et al., 2020).
- Blended learning in the context of pandemic COVID-19 is "suddenly paramount to education" and internationally, there is "move towards blended learning in major tertiary institutions" (Jowsey et al., 2020).
- "Blended learning approach with e-learning can improve students'… consultations and communication skills" (Farahani et al.,2020).
- Two online surveys were administered as exploratory and conclusive research and included open-ended and close-ended questions. The study has shown that students have increased awareness of the importance of blended learning in the studying process.
- The results of study have highlighted conditions for successful blended learning. They are Teacher communication, Valuing students' feelings, Active engagement, Family support, Learning supports, and Feedback. The results are almost overlapping with the study results provided by Jowsey et al. (2020).
- The platforms as Zoom, Google Meet, and Microsoft Teams have become very popular among students and teachers. Startup Oqylyq.kz has proved its worth.
- Thirty-seven percent of the respondents faced difficulties such as unstable internet connection, lack of internet, problems with the software chosen for the exam. Furthermore, here, questions arise for Internet providers.

Limitations / Further Research.

Further research on effectively used learning tools is needed based on the 2020-2021 academic year results.

References

1. Agosto, A., & Giudici, P. (2020). COVID-19 contagion and digital finance. Digital Finance. doi: 10.1007/s42521-020-00021-3
2. Allam, Z., Dey, G., & Jones, D. (2020). Artificial Intelligence (AI) Provided Early Detection of the Coronavirus (COVID-19) in China and Will Influence Future Urban Health Policy Internationally. AI, 1(2), 156-165. doi: 10.3390/ai1020009
3. Altbach, P., & de Wit, H. (2020). Are we at a transformative moment for online learning? University World News. Retrieved from https://www.universityworldnews.com /post.php?story=20200504161024165
4. Beaunoyer, E., Dupéré, S., & Guitton, M. (2020). COVID-19 and digital inequalities: Reciprocal impacts and mitigation strategies. Computers in Human Behavior, 111, 106424. doi: 10.1016/j.chb.2020.106424
5. Brauweiler, H., Kurchenkov, V., Abilov, S., & Zirkler, B. (2020). Digitalization and Industry 4.0: Economic and Societal Development (1st ed.). Berlin: Springer Gabler, Wiesbaden
6. Chettri, S., Debnath, D., & Devi, P. (2020). Leveraging Digital Tools and Technologies to Alleviate COVID-19 Pandemic. SSRN Electronic Journal. doi: 10.2139/ssrn.3626092
7. UN (2021) Education during Covid-19 and beyond. Retrieved 13 March 2021, from https://www.un.org/sites/un2.un.org/files/policy_brief_-_education_during_covid-19_and_beyond_russian.pdf
8. Farahani, I., Laeer, S., Farahani, S., Schwender, H., & Laven, A. (2020). Blended learning: Improving the diabetes mellitus counseling skills of German pharmacy students. Currents in Pharmacy Teaching and Learning, 12(8), 963-974. doi: 10.1016/j.cptl.2020.04.016
9. Haghani, M., Bliemer, M., Goerlandt, F., & Li, J. (2020). The scientific literature on Coronaviruses, COVID-19 and its associated safety-related research dimensions: A scientometric analysis and scoping review. Safety Science, 129, 104806. doi: 10.1016/j.ssci.2020.104806
10. Iivari, N., Sharma, S., & Ventä-Olkkonen, L. (2020). Digital transformation of everyday life – How COVID-19 pandemic transformed the basic education of

the young generation and why information management research should care? International Journal of Information Management, 102183. doi: 10.1016/j.ijinfomgt.2020.102183

11. Javaid, M., Haleem, A., Vaishya, R., Bahl, S., Suman, R., & Vaish, A. (2020). Industry 4.0 technologies and their applications in fighting COVID-19 pandemic. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 14(4), 419-422. doi: 10.1016/j.dsx.2020.04.032
12. Jowsey, T., Foster, G., Cooper-Ioelu, P., & Jacobs, S. (2020). Blended learning via distance in pre-registration nursing education: A scoping review. Nurse Education in Practice, 44, 102775. doi: 10.1016/j.nepr.2020.102775
13. Kapoor, A., Guha, S., Kanti Das, M., Goswami, K., & Yadav, R. (2020). Digital healthcare: The only solution for better healthcare during COVID-19 pandemic? Indian Heart Journal, 72(2), 61-64. doi: 10.1016/j.ihj.2020.04.001
14. Klenner, M., Grimm, F., & Brauweiler, H.-Ch. (2017). Flipped Classroom Educational Methods in International Distant Learning Projects. In International Conference on Education. Delhi: Delhi University.
15. Kumar, M., Raut, D., Narwane, D., & Narkhede, D. (2020). Applications of industry 4.0 to overcome the COVID-19 operational challenges. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 14(5), 1283-1289. doi: 10.1016/j.dsx.2020.07.010
16. Kurenev, G. (2020). Kak pandemiya povliyala na cifrovye tekhnologii? Retrieved 27 July 2020, from http://kabar.kg/news/kak-pandemiia-povliiala-na-tcifrovye-tekhnologii/
17. Madurai Elavarasan, R., & Pugazhendhi, R. (2020). Restructured society and environment: A review on potential technological strategies to control the COVID-19 pandemic. Science of the Total Environment, 725, 138858. doi: 10.1016/j.scitotenv.2020.138858
18. Maslen, G. (2020). COVID-19 – Online leads to student performance decline. University World News. Retrieved from https://www.universityworldnews.com/post.php?story= 20200504161024165
19. Megahed, N., & Ghoneim, E. (2020). Antivirus-built environment: Lessons learned from Covid-19 pandemic. Sustainable Cities and Society, 61, 102350.

doi: 10.1016/j.scs.2020.102350

20. Mohanty, S., Harun Al Rashid, M., Mridul, M., Mohanty, C., & Swayamsiddha, S. (2020). Application of Artificial Intelligence in COVID-19 drug repurposing. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 14(5), 1027-1031. doi: 10.1016/j.dsx.2020.06.068
21. Mulenga, E., & Marbán, J. (2020). Is COVID-19 the Gateway for Digital Learning in Mathematics Education? Contemporary Educational Technology, 12(2), ep269. doi: 10.30935/cedtech/7949
22. Nadikattu, R. (2020). Information Technologies: Rebooting the World Activities during COVID-19. SSRN Electronic Journal. doi: 10.2139/ssrn.3622733
23. Papadopoulos, T., Baltas, K., & Balta, M. (2020). The use of digital technologies by small and medium enterprises during COVID-19: Implications for theory and practice. International Journal of Information Management, 102192. doi: 10.1016/j.ijinfomgt.2020.102192
24. Pirouz, B., Shaffiee Haghshenas, S., Shaffiee Haghshenas, S., & Piro, P. (2020). Investigating a Serious Challenge in the Sustainable Development Process: Analysis of Confirmed cases of COVID-19 (New Type of Coronavirus) Through a Binary Classification Using Artificial Intelligence and Regression Analysis. Sustainability, 12(6), 2427. doi: 10.3390/su12062427
25. Poch, M., Garrido-Baserba, M., Corominas, L., Perelló-Moragues, A., Monclús, H., & Cermerón-Romero, M. et al. (2020). When the fourth water and digital revolution encountered COVID-19. Science of the Total Environment, 744, 140980. doi: 10.1016/j.scitotenv.2020.140980
26. Rajhans, V., Memon, U., Patil, V., & Goyal, A. (2020). Impact of COVID-19 on academic activities and way forward in Indian Optometry. Journal of Optometry. doi: 10.1016/j.optom.2020.06.002
27. Schumpeter, J. (1934). Theory of Economic Development (3rd ed.). Harvard Economic Studies.
28. Mensch, G. (1983). Stalemate in technology (3rd ed.). Cambridge, Mass: Ballinger.
29. Shaw, R., Kim, Y., & Hua, J. (2020). Governance, technology and citizen behavior in pandemic: Lessons from COVID-19 in East Asia. Progress in

Disaster Science, 6, 100090. doi: 10.1016/j.pdisas.2020.100090

30. Singh, R., Javaid, M., Haleem, A., & Suman, R. (2020). Internet of things (IoT) applications to fight against COVID-19 pandemic. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 14(4), 521-524. doi: 10.1016/j.dsx.2020.04.041
31. Ting, D., Carin, L., Dzau, V., & Wong, T. (2020). Digital technology and COVID-19. Nature Medicine, 26(4), 459-461. doi: 10.1038/s41591-020-0824-5
32. Upadhyaya, G., Jain, V., Iyengar, K., Patralekh, M., & AbhishekVaish. (2020). Impact of COVID-19 on post-graduate orthopaedic training in Delhi-NCR. Journal of Clinical Orthopaedics and Trauma. doi: 10.1016/j.jcot.2020.07.018
33. Vaishya, R., Javaid, M., Khan, I., & Haleem, A. (2020). Artificial Intelligence (AI) applications for COVID-19 pandemic. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 14(4), 337-339. doi: 10.1016/j.dsx.2020.04.012
34. Vial, G. (2019). Understanding digital transformation: A review and a research agenda. The Journal of Strategic Information Systems, 28(2), 118-144. doi: 10.1016/j.jsis.2019.01.003
35. Vigil Martín, E. (2020). Digital Technology in the Covid-19 Pandemic. Clinical Immunology and Immunotherapy, 6(1), 1-3. doi: 10.24966/ciit-8844/1000020
36. Vida, I., Spaller, E., & Vasa, L. (2020). Potential effects of Finance 4.0 on the employment in East Africa. Economy and Sociology 2020 NO. 2, (2020. 2), 29-42. https://doi.org/10.36004/nier.es.2020.2-03
37. Yerimpasheva, A., & Balgabayeva, Z. (2020). Data-driven marketing as a part of a business strategy of Kazakhstani franchise companies. In Digitalization and Industry 4.0: Economic and Societal Development (pp. 333-347). Berlin: Springer Gabler, Wiesbaden.

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Features of Influence of Opinion Leaders on Consumers

Aizhana Maldynova

University of International Business, Kazakhstan

Abstract

With the advent and active development, social networks have gained the attention of a million audience. Now it is difficult to imagine a person who does not have a profile in at least one social network. The use of social media has become a daily routine: some use sites and applications to maintain existing social connections, others - to find people with similar interests, views, activities or other motivating factors (Sturienė, 2019).

The purpose of this study is to establish the factors that influence the level of perception of the message by the audience in social networks.

In this work, a quantitative research method is used. The relationships were established using correlation analysis. To analyze the data obtained, the SmartPLS software was used, which makes it possible to highlight the characteristics that have the greatest impact on the manifestation of initiative behavior.

The novelty of the research lies in the fact that for the first time the factors influencing the level of perception of messages from Kazakhstani opinion leaders by the audience in social networks were studied.

The results of this study are of high theoretical significance, as they can be used in teaching disciplines such as Internet marketing, digital marketing, consumer behavior and strategic marketing.

In addition, this study is notable for its practical benefits, since the conclusions drawn contribute to the formation of a competent online marketing strategy in the enterprise.

Key words: internet marketing, influencer, social media marketing (SMM), opinion maker, message comprehension level

Introduction

Major social media and internet resources before previous generation technologies include facilitating the exchange of information between people.

During the period of using Internet 2.0, users more often express their opinions in social media, with the help of reviews, blogs. This led to the fact that the mutual influence of that on each other is increasing. Karpushenko (2020) cited Winter and Neubaum that the influence of interpersonal communication on purchasing behavior has a greater effect than the direct influence of the media. The researchers argue that among the members of the community of communities there are people who have a great influence on the opinions of the members of their community. Now even the brightest stars of show business are losing to such a phenomenon as bloggers. Today, it is not necessary to make a global discovery or break Olympic records to attract a multi-million audience of fans. Dozens of ordinary people every day step on the path of gaining fame in social networks. It is these people who have a strong influence on their audience and the public in principle, they set fashion and trends, and a new direction is formed on the market (Kovalenko, 2019).

To test hypotheses, it is necessary to define 2 types of variables: dependent and independent.

- Dependent variable - a phenomenon that is explained by some other. In this case, the level of perception of the message of opinion leaders by their audience serves as an independent variable. The independent variable is causal or explanatory. In this study, the independent variables are: the level of audience trust in the opinion leader, the effectiveness of the opinion leader's audience, and the creative freedom

of the opinion leader.

These variables explain the relationship between the level of trust in the opinion leader and the level of perception of the message by the audience. Covey put forward the idea that in the concept of trust, the formation of the competence of the influencer himself plays an important role in the perception of the message from opinion leaders. Trust is measured using three factors: recommendations, testimonials, and comments.

American psychologist D. Myers proposes to consider the level of effectiveness of the audience itself as the basis for the effectiveness of the perception of the message by the target audience. Audience performance research becomes an important element in influencing influencers. Audience performance is measured by three factors: influencer audience, brand audience, and audience values.

According to S. Zak and M. Hasprova (2020) influencers have earned popularity through individuality. It is important not to restrict their creative freedom. As the authors note in their work, what the audience needs, according to marketers, will not always find a response from it, since bloggers work with their audience all day long and know what it will react to and what will push it away.

Unlike classic display and contextual advertising, native placement shows the greatest results in influencer marketing. The absence of a flashy call to action and a personal recommendation from a blogger does not look like direct advertising, which is more effective than classic promotion. Influencer's level of creative freedom can be measured using factors: control, creativity and content.

In Kazakhstan, the outgrowth of work with opinion leaders began to take shape in 2008-2009. In 2008, the first domestic blogging platform Yvision was launched, and the cooperation of domestic PR specialists with bloggers took off, they began to be invited to events, to give products for review. Around 2012-2013, PR people began to invite to events not only bloggers who have their own blog, but also those who do not have a blog, but have a certain audience on Facebook. And since 2014/15, opinion leaders have appeared on Instagram.

For example, in the US, promoting products through influencers earns brands $ 5.2 for every dollar spent. Kazakhstan also demonstrates a similar trend - brands will spend more and more budgets on opinion leaders, and, most likely, companies will cut budgets from television and outdoor advertising and send more and more to influencer marketing. However, the main problem that exists is the problem of perception of messages from opinion leaders by the target audience, that is, it is a matter of correct perception, not distorted. To do this, it is necessary to study the issues of trust of the target audience in the opinion leader, issues of audience effectiveness, as well as the problems of controlling and providing creative freedom to opinion leaders when promoting products to the market.

In order to test the hypotheses put forward in the framework of this thesis, the SMART PLS software version 3 was used.

In preparation for the study, the following research questions are built:

- How do consumers feel about influencers?
- How do influencers influence consumers?
- What is the level of consumer confidence in opinion leaders?
- How effective is the influencer's audience?
- Is creative freedom of opinion leaders important when promoting a product?
- What is the level of perception of messages from opinion leaders by the target audience?

The postulated hypotheses developed for this study are based on previous research in influencer marketing, psychology, strategic management, internet marketing.

The market forces to study the relationship between the level of trust in the opinion leader and the level of perception of the message by the audience. Research by Levesque and Pons (2020) in the field of the concept of trust showed that an important role in the perception of a message from opinion leaders is the formation of the competence of the opinion leader himself, that is, the level of trust in him from the audience. Seth Godin in Trust Marketing notes that trust can be measured using three factors: recommendations, testimonials and comments. Following this

rationale, a hypothesis is formulated: "The higher the level of trust in the opinion leader, the higher the level of perception of the message by the audience."

Kay (2020) in her research proved that the effectiveness of the target audience's perception of the message is based on the level of effectiveness of the audience itself. It is necessary to study the effectiveness of the audience, to measure its level according to the study is possible using three factors: the audience of the opinion leader, the audience of the brand and the value of the audience. Thus, the second hypothesis was formulated: "The higher the level of audience efficiency, the higher the level of perception of the message by the target audience."

Individuality is essential in shaping opinion leaders. So, according to S. Zak and Hasprova (2020) should not limit the creative freedom of opinion leaders. According to the results of the study, the requirements for content when promoting a product do not always reflect the realities of the influencer audience. It is necessary not to limit creative freedom and give the opportunity to independently choose promotion tools. The personal expert opinion of the opinion leader in the field of forming the message content is highly effective. Influencer's level of creative freedom is measured based on several factors: control, creativity, and content. Based on this rationale, the third hypothesis is postulated: "The higher the level of creative freedom of the opinion leader, the higher the level of perception of the message by the audience."

With the advent of the Internet and social networks, the spread of the term "opinion leader" is gaining momentum every year. Now even the brightest stars of show business are losing to such a phenomenon as bloggers. Today, it is not necessary to make a global discovery or break Olympic records to attract a multi-million audience of fans. Tens and hundreds of ordinary people every day step on the path of gaining fame in social networks. It is these people who have a strong influence on their audience and the public, in principle, they set fashion and trends, forming a new direction in the market).

Thus, opinion leaders are a fairly new developing tool for brand promotion, which during the period of its formation in the advertising market has already become

quite successful and has acquired impressive development prospects. Brand promotion in the field of trade among the target audience is carried out using various tools in the areas of public relations and advertising, including such method as online promotion with the help of influencers. Brand promotion among opinion leaders has a number of features that must be taken into account when choosing this tool to increase the audience's knowledge about the object of promotion. First of all, such is the human factor - variability and inconstancy in decisions and agreements (Zitkiene et al., 2021). Also, it is important that bloggers, like no other tool, pay attention to the quality of the presented product, as well as honesty in work on the part of the customer.

Literature Review

In order to conduct this study, the collection and analysis of secondary and primary information was carried out. To collect primary information, a quantitative marketing method was used: a survey. Cook and Campbell argue that polling as a research method is the only one that tests statistical significance and thus establishes a correlation between the alleged causes and consequences of the phenomenon.

The main purpose of the data collection tool was to collect the necessary data to test the hypotheses of the study.

To achieve the goal and objectives of the research, Popper's theory (the theory of scientific explanation) was applied, which also affects the research strategy itself. To explain the cause-and-effect relationships, the "Deductive-nomological" model was used. Since marketing is an organizational and management science that relies on assumptions rather than deterministic rules, the study was subordinated to Hempel's theory, which provides a deductive statistical explanation.

The article "Transformation of Internet Advertising in Social Networks in the Era of Digital Globalization" is devoted to the features and possibilities of Internet marketing in social networks. The article provides a rating of opinion leaders in

various social networks. In the context of opinion leaders as a promotion channel, it is interesting that this channel is included in one of the rules for conducting campaigns in social networks: working with the level of trust in the opinion leader, in the audience relevant to the brand.

Nowadays, opinion leaders' features are defined as a promotion channel and it is needed to study the effectiveness of the audience, ways to influence the effectiveness.

In the article "Hidden Marketing and Native Advertising", Karpushenko (2020) describes the advantages and features of native advertising, which in fact is advertising from influencers. The definition of native advertising is given, the necessity of freedom of creativity of the opinion leader is proved to achieve the maximum level of nativeness.

It is believed that the history of social media began relatively recently, with the emergence of social networks such as Facebook and MySpace. It is important to understand that the doctrine of social media as a channel of interaction between people originated more than 50 years ago.

Rapoport (2020) began to study the phenomenon of a social network and algorithms for their construction, as well as the interaction of people within social groups with each other. The scientist laid the foundation for the study of the scientific social network, its construction and building relationships.

From the point of view of science, a social network is a kind of social structure that includes groups of nodes that are social objects. Social objects are topics around which people come together in groups. Social networks consist of one activity - the exchange of information. When an interaction occurs between two users or between two social groups, that is, the exchange of information, a social network is created.

The term "social network" was first described in 1954 and had nothing to do with the Internet. According to Brewer, Barnes and Sauer (2011), a social network is a

social structure that includes individuals or groups associated with one type of activity, common interests, friendship or relationships.

It is a kind of structure of familiar people, divided into different groups, where each person forms a group of classmates, colleagues or friends around him. The scientist in his writings resorted to using sociograms, which were developed in the 30s of the 20th century. Sociograms are diagrams in which people are depicted as separate points, and the connections between these people are represented by lines. The method for determining roles in a team is based on this approach and is called “sociometry” (Moreno, 1932).

Neyaskin (2010) in his work "The Impact of Social Media on Business Communications" noted that social media is usually referred to as those Internet sites that have the ability to publish information, exchange it and discuss it by a wide audience of users. These types of sites do not require special knowledge and skills from the Internet user.

The only thing he encounters before getting free access to the site is registration, in which he needs to specify his personal email address, username and choose a password. By the size of the audience that social media gathers, they are not inferior to traditional media. Social media users have the opportunity to create their own content and provide feedback, but most prefer to take a passive attitude. An important feature of social media is the ability to change or add content, which cannot be done with traditional media.

Norman and Nielsen (2010) examined the feedback phenomenon and defined it by the formula "90-9-1", which divides users by activity. Thus, 90% of users of Internet communities are passive observers, 9% periodically demonstrate some kind of activity, and only 1% is the most active. This phenomenon is called “participation inequality”.

Methodology

As emphasized earlier, there is very little empirical data on the level of perception of messages by the target audience of influencers. Also, there is not enough data on the level of trust in opinion leaders, on the effectiveness of the audience and the need to provide creative freedom.

Thus, the purpose of the survey is to study the interaction of opinion leaders with the target audience.

To test and test hypotheses, a quantitative marketing research was carried out through a survey using a questionnaire.

Marketing research is the collection, analysis and interpretation of data related to a specific market situation.

A survey is a method of conducting high-quality marketing research, which is based on contacting a certain group of people (sample) to find out their opinion and point of view on a certain product or behavior algorithm in certain purchasing situations.

There are several types of surveys. The choice of the survey method depends on the complexity of the research topic.

Measurements become the basis for filling out the questionnaire. Measurement is the process of determining a quantitative measure or value for a characteristic. Several scales are used for measurement: distance, description, order, starting point.

Each highlighted characteristic of the level of trust, effective audience, creative freedom was expressed in a number of statements of the questionnaire, assessing the degree of their compliance with the analyzed enterprise on a 5-point scale. For this study, the Likert scale was used . According to this scale, the respondent rates the degree of agreement or disagreement with the judgment from “strongly agree” to “completely disagree”.

During the analysis of literary sources, the following hypotheses were formed:

H1: "The higher the level of trust in the opinion leader, the higher the level of perception of the message by the audience."

H2: "The higher the level of audience effectiveness, the higher the level of perception of the message by the target audience."

H3: "The higher the level of creative freedom of the opinion leader, the higher the level of perception of the message by the audience."

These hypotheses are tested using dependent and independent variables. The variables are interconnected. A dependent variable is a phenomenon that can be explained by some other phenomenon. The true, causal, or explanatory variable is independent.

In this study, the following variables were applied:

- "independent" - perception;
- "addicted": level of trust, effective audience, creative freedom.

To study the factors affecting the perception of the message by the audience, an expert survey was conducted using the questionnaire method. The survey was based on the “snowball” method, and 30 experts took part in it. All factors were divided into three categories: trust level, effective audience, and creative freedom. The factors proposed to the experts directly or indirectly fall into the above categories. The snowball method was used to increase the number of respondents. Based on the results of the questionnaire, the factors that determine the dependent variables were identified. These factors are discussed below.

To test hypothesis H1: “the higher the level of trust in the opinion leader, the higher the level of perception of the message by the audience”, an analysis of the dependence of the level of trust in the opinion leader and the level of message perception, variables Y and X1, will be carried out.

In the course of an expert survey, three groups of indicators were identified that most fully describe the components of building trust in an opinion leader among the Internet user audience. Experts identify the three most important factors by which the level of trust is measured:

1. Recommendations;

2. Reviews;
3. Comments.

The recommendations that influencers give on their blogs should be organic. The audience trusts when an opinion leader has tried a recommended product or service on himself and he likes it. Recommendations that are of an advertising nature are not properly perceived by subscribers and provoke a negative reaction.

When researching a product advertised by a blogger, users pay attention to product reviews. User recommendations can be compared to a marketing tool like word of mouth. It is important for the consumer to know what customers who have experience of consuming a product or service think. If the opinion leader's recommendation and the feedback on the product they offer match, then the level of trust increases.

Since today users of social networks are aware of such a phenomenon as “cheating subscribers”, not all opinion leaders with an audience of many thousands cause the audience's favor. Now it is important for potential consumers to whom an advertising campaign is directed that the influencer is close to his subscribers. This is determined by the "live" audience. Comments and likes from genuine users not only define an influencer as a true one, but also raise their posts to the "top".

To test hypothesis H2: "The higher the audience efficiency level, the higher the level of perception of the message by the target audience." the analysis of the dependence of the effective audience and the level of perception of the message, the relationship of the variables Y and X2 will be carried out.

Factors that determine the explanatory variable "efficiency":

1. The audience of the opinion leader;
2. Brand audience;
3. Values of audiences.

The audience of the opinion leader, as noted above, must be active and lively. Usually, the audience of a particular blogger is similar in geographic and demographic indicators, preferences and values. Thus, the audience of the

influencer is considered segmented and suitable for influencing it with marketing tools without prior in-depth study.

Brand audience is a specific segment to which communications are directed. It is important here that the audience of the brand does not resonate with the audience of the chosen influencer. Perhaps the brand's audience is not familiar with the influencer who advertises the product, but in this case, when conducting an advertising campaign, the brand's audience will not be outraged and will loyally accept this kind of promotion.

Audience values determine the success of an ad campaign. As with user behavior, audience values must match. That is, given the same demographic, geographic and socio-economic indicators, there is no guarantee that the brand's audience will harmoniously exist with the opinion leader's audience. It is important that during the "influx" of new users who subscribed to the brand's account after advertising with the influencer, a "war" does not start between the two audiences.

To test hypothesis H3: “The higher the level of creative freedom of the opinion leader, the higher the level of perception of the message by the audience”, an analysis of the relationship between the creative freedom of the opinion leader and the level of perception of the message by the audience, the relationship of variables Y and X3 will be carried out. Creative freedom, according to the survey results, is determined by the following factors:

1. Control;
2. Creativity;
3. Content.

Building tight constraints on how an influencer works can affect their work. It is important not to control the blogger, as he needs creative freedom in creating quality material. When the advertiser is in control of the entire work process, there is a possibility of conflict and unproductive work.

To natively embed ads in influencer content, the creative and creative intent must match the content of the account. This reduces the risk of the audience not accepting the information.

Each highlighted characteristic of the level of trust, effective audience, creative freedom was expressed in a number of statements of the questionnaire, assessing the degree of their compliance with the analyzed enterprise on a 5-point scale.

SmartPLS software allows you to highlight the characteristics that have the greatest impact on the manifestation of initiative behavior using PLS analysis. This analysis allows further development of recommendations for improving the model of interaction between the brand and the influencer.

Findings and Discussion

In order to better understand the features of the influence of opinion leaders on the consumer, it is necessary to identify in which social networks the respondents spend their time.

According to the results of this question, the leading position is occupied by the social network Instagram. 89% of respondents have a personal or corporate account on this resource. The second most popular social network is Facebook, but this platform has a more business focus.

The author investigated the factors by which users subscribe to influencer profiles.

Despite the fact that there is a tendency for blindness to long texts and speed reading, respondents are more likely to turn to informative text. 75% of people believe that a blogger's profile should contain informative text. The second place is taken by beautiful photos. 59 people prefer to follow bloggers' photos. Video content was preferred by 52% of people. These results fell short of expectations as there is a trend towards video preference today. But,

Next, we found out whether the opinion of popular people on social networks influences the choice of respondents.

The opinion of the respondents was divided. 21% of respondents agreed that influencers have influence. This fact is denied by 32% of the respondents. 39% are sometimes influenced. Thus, the supportive respondents include those who answered positively and those who are sometimes influenced. Ultimately, 58% are influenced by influencers. This question belongs to the "recommendation" factor. The result of this question is confirmed by the expert analysis, which concerned the level of trust.Internal consistency of the characteristics describing these factors was verified using the Cronbach Alpha coefficient (Amirrudin, Nasution and Supahar, 2020). The results allowed us to find out to what extent the grouped statements reflect each selected characteristic of message perception by the audience (Cronbach's Coefficient Alpha) (Table 1).

Table 1. Values of Cronbach's Alpha coefficients for explanatory variables

Variables	Cronbach's Alpha
Perception	1,000
Creative freedom	0,771
Trust level	0,826
Effective audience	0,832
Note: compiled by the author based on the analysis	

Cronbach's alpha can take values from $-\infty$ to 1, but only positive values lend themselves to interpretation. If the coefficient is less than 0.9 - the value is very good, less than 0.8 - good, less than 0.7 - sufficient, less than 0.6 - doubtful. If the coefficient takes on the value 1, then the test items are completely identical.

The obtained values of the Cronbach Alpha coefficient for all characteristics vary from 0.771 to 1 and may indicate the internal reliability of the instrument.

There is a relationship between the variables, and they do affect the dependent variable, perception. Thus, further study of the factors makes sense and allows you to get results that determine the truth of the hypotheses. SmartPLS software allows you to evaluate the relationship of factors, determines the truth of hypotheses in digital terms. PLS analysis in the SmartPLS package was carried out on the basis of the results obtained in the course of a survey of experts from advertising agencies.

Further, Figure 1 shows the variables, factors influencing these variables and their level of interrelation.

Figure 1. Results of PLS analysis in the SmartPLS package

Note: compiled by the author based on PLS analysis

The coefficient of determination for the model with a constant takes values from 0 to 1. The closer the coefficient value to 1, the stronger the dependence. When evaluating regression models, this is interpreted as fitting the model to the data. For acceptable models, it is assumed that the coefficient of determination should be at least 50%. Models with a coefficient of determination above 80% can be considered quite good (the coefficient of correlation exceeds 90%). Equality of the coefficient of determination to one means that the explained variable is exactly described by the considered model.

The value of the coefficient of determination R2 for the endogenous variable "perception" is equal to 0.512 and indicates that more than 51% of the variance of this construction can be explained by the developed model.

The effect of the test can be seen in the following table:

Table 2. Bootstraping results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
creative freedom > Perception	0,114	0,116	0,048	2,400	0,017
trust level > Perception	0,108	0,110	0,059	1,836	0,067
effective audience > Perception	0,577	0,577	0,047	12,188	0,001
Note: compiled by the author based on the analysis					

Hypothesis H1 assumed that the higher the level of the audience's trust in the opinion leader, the higher the level of perception of the message conveyed to them. The results show that the relationship between trust and ad perception is not significant, with very small effect sizes (p = 0.067). Consequently, hypothesis H1 has not been confirmed.

The H2 hypothesis assumed that the higher the audience efficiency, the higher the level of message perception. Based on the results obtained: p <0.001, it can be concluded that the relationship indicated in the hypothesis is confirmed.

Hypothesis H3 assumed that the higher the creative freedom when interacting with the opinion leader, the higher the level of perception of the message by the audience. Based on the results obtained: p <0.001, it can be concluded that the relationship indicated in the hypothesis is confirmed.

The unconfirmed hypothesis H1 is of scientific interest; the reasons for the absence of the relationship between the two variables need to be further investigated.

Influencer recommendations can generate negative reactions if the recommendation is not the blogger's true opinion of the product. That is, advertising can be carried out in free form, on behalf of the opinion leader, but at the same time, he will be completely unfamiliar with what he is promoting. In such

a situation, the brand needs to be allowed to familiarize itself with the product. Leave the influencer for full review. In order to fully disclose the advantages and disadvantages of the advertised product, the influencer must try it on himself.

The audience of the brand, like the audience of the influencer, must be active and correspond to the same interests. Subscribers of a company that advertises a product through an influencer should not conflict with blogger subscribers.

Implications

A blogger with an audience of many thousands is already familiar to his subscribers: they know his preferences, emotional portrait and behavior habits. In this regard, the audience will easily appreciate the sincerity of the influencer. If the blogger does not inspire confidence, subscribers will be negatively disposed towards both the blogger and the brand. In this regard, the brand must take responsibility for its choice and accept that the influencer not only can but also must express his sincere impression of the product, which can be both positive and negative. The brand needs to "allow" the influencer to give honest feedback. In this case, if the product is really bad, it will improve it so that consumers are satisfied.

If we talk about the customer, the feedback from other customers related to working with influencers can also influence the choice of the right one. Here it is worth paying attention to the conscientiousness of the work and adherence to deadlines. If the company had difficulties in work, communication and advertising did not find the expected response and coverage, then it is worth considering working with an opinion leader.

The hypothesis about the level of trust was not confirmed, since it is more subjective in nature, however, the risks can be minimized if we conduct an honest policy in relation to the audience. If a brand is conscientious not only in the production of a product or service, but also in its promotion, then the audience will be more supportive, despite the presence of some negative comments.

An effective audience affects an advertising campaign positively when both the influencer's audience and the audience of the brand itself are involved. You need to work with famous people whose followers are interested in the brand's products. For example, a well-known blogger who talks about politics, music, or animals will definitely not help in promoting mascara.

Conclusion

At the moment, opinion leaders are quite an interesting subject for research in the marketing field. More and more publications are trying to immerse themselves in the environment of blogging and promoting goods or services with the help of influencers, and to identify its principles and laws.

Many organizations make friends with certain people, it can be periodic, but constant cooperation or ambassadorship (Muravejko and Lazarev, 2020). Both types are beneficial for both bloggers and organizations – both parties know what to expect from the other, whether it is possible to count on being binding. But achieving this level of partnership is not easy at all. The result that delivers efficiency requires hard work from the company.

First of all, it is necessary to show and prove to the influencer that the offered product or service is of high quality and will not play a cruel joke, it is also worth influencing his impression of the brand itself – not only demanding advertising, but also maintaining positive emotions, giving gifts and providing various bonuses.

There are several key factors in working with bloggers. The most important is the respect and loyalty of subscribers. It is very important how the audience is ready to unquestioningly trust the leader and follow his recommendations. The higher the loyalty, the more likely it is that people, among many other products and services, will choose what the leader advised them.

The second, no less important factor is personal relationships. If a blogger and a company have misunderstandings or a conflict with the company, they would rather refuse a profitable offer than go against their principles.

And the third principle is the internal connections of bloggers. Influencers are people too, especially as described above, one of their distinguishing features is that they have many connections.

However, even if you succeeded in attracting a blogger, you should think in advance about his retention. After all, the human factor plays a significant role here – if at first a person works with a brand out of interest, then it must be warmed up so that the chosen candidate does not go over to competitors. Therefore, it is worth deciding in advance on the tools that the brand will use to strengthen the relationship.

Limitations/Further Research

During the testing of hypotheses, the postulated hypothesis H1: “The higher the level of trust in the opinion leader, the higher the level of perception of the message by the audience” was not confirmed. The reasons for the lack of relationship between the variables "Level of trust in the opinion leader" and the variable "level of perception of the message by the audience" is of scientific interest. In the future, it is planned to conduct a qualitative research using in-depth interviews among market experts in order to study these reasons.

References

1. Amirrudin, M., Nasution, K. & Supahar, S. (2020). Effect of Variability on Cronbach Alpha Reliability in Research Practice. Jurnal Matematika, Statistika dan Komputasi. 17, 223-230. DOI: 10.20956/jmsk.v17i2.11655.
2. Brewer, N., Barnes, J. & Sauer, J. (2011). The effects of peripheral message cues on clinicians' judgments about clients' psychological status. The British journal of clinical psychology. 50, 67-83. DOI: 10.1348/014466510X494097.
3. Karpushenko, P. (2020). Innovative approaches in marketing practice. Marketing in Russia and abroad. 6, 78-82.

4. Kay, Samantha & Mulcahy, Rory & Parkinson, Joy. (2020). When less is more: the impact of macro and micro social media influencers' disclosure. Journal of Marketing Management. 36. 1-31. DOI: 10.1080/0267257X.2020.1718740.
5. Kovalenko, A. (2019). Development of a classification internet marketing technologies on the basis of internet marketing in-formational flow analysis. Drukerovskij vestnik. 273-286. DOI: 10.17213/2312-6469-2019-1-273-286.
6. Levesque, N. and Pons, F. (2020). The Human Brand: A systematic literature review and research agenda. Journal of Customer Behaviour. 19, 143-174. DOI: 10.1362/147539220X15929906305242.
7. Moreno, J. L. The first Book of Group Psychotherapy. N.Y. Beacon. 1932.
8. Muravejko, A. and Lazarev, I. (2020). Principles of SMM in social networks. Trends in the development of science and education. DOI: 10.18411/lj-11-2020-08.
9. Nejaskin, G.N. Vlijanie social'nyh media na biznes-kommunikacii (2010). Диалогические коммуникации в бизнесе: материалы интернет-конференции [Dialogicheskie kommunikacii v biznese: materialy internet-konferencii]. Retrieved from http://ecsocman.hse.ru/text/33378753
10. Norman, D., Nielsen, J. (2010). Gestural interfaces: a step backward in usability. Interactions. 17. 46-49.
11. Rapoport, A. (2020). Editorial: Technologization of Global Citizenship Education as Response to Challenges of Globalization. Research in Social Sciences and Technology. 5. i-vii. 10.46303/ressat.05.01.ed.
12. Sturienė, U. (2019). Internet marketing tools. Vilnius University Open Series. 67-74. DOI: 10.15388/OpenSeries.2019.18406.
13. Žák, Š and Hasprová, M. (2020). The role of influencers in the consumer decision-making process. SHS Web of Conferences. DOI: 74. 03014. 10.1051/shsconf/20207403014.
14. Zitkiene, R., Gircys, V., Žitkė, M. & Bartuseviciene, I. (2021). Model of Impact of Social Networks on Internet Marketing of Enterprises. SHS Web of Conferences. DOI: 10.1051/shsconf/20219209020.

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Regularization of Predictors of GDP and Individual Sectors of the Economy of the Republic of Kazakhstan

Amanbay Assylbekov[1], Bayan Assylbekova[1], Roland Giese[2]

[1]*Narxoz University, Almaty, Kazakhstan*

[2]*Hochschule Zittau- Görlitz, Germany*

Abstract

The purpose of the study is to identify new, alternative directions for the development of GDP and individual industries in the Republic of Kazakhstan.

Methodology - Applying a limited number of predictors and using obvious patterns, it is possible to build statistically significant models of economic development in a country or region. In the case of Kazakhstan, such models have shown their practical failure. This study proposes an alternative approach aimed at covering as many predictors as possible and abandoning a priori theories and judgments.

In practical terms, the compression (regularization) of predictor set was carried out using the LASSO method (least absolute shrinkage and selection operator). The statistical significance of the selected predictors was investigated using the least squares method. The models were improved using the backward elimination method.

Models of development of GDP, stock market and civil aviation of the Republic of Kazakhstan have been built. The research data frame consists of 8 blocks: socio-demographic indicators, living standards, labor market and wages, prices, national economy, real sector of the economy, trade, financial system, as well as data on the capitalization of the Kazakhstan Stock Exchange.

Novelty (value) of the research - models have been developed for working with high-dimensional data, which are features of developing countries.

Results of the study - according to the results of the study, the stock market index turned out to be sensitive to a wide range of social and macroeconomic indicators: population growth, unemployment, poverty, inflation, investment, devaluation. Our conclusion: the development of the stock market does not require any specific financial measures, it is necessary to deal with the economy as a whole. The volumes of transactions in corporate securities do not have stable external predictors. The main indicators of the republic's civil aviation have stable external predictors. Passenger turnover, passenger dispatch directly depend on: unemployment rate, wages, GDP per capita, various types of services and products, money supply. There are no external predictors for a separate type of aviation work - cargo transportation. Consequently, positive results can be obtained by reforming this particular segment of services.

Key words: gross domestic product (GDP), LASSO, reverse stepwise exclusion method, high-dimensional data, Kazakhstan Stock Exchange (KASE), intellectual capital, money supply

Introduction

Applying a limited number of predictors and using explicit, obvious patterns, it is possible to build statistically significant models of economic development of a particular region or country. In the case of Kazakhstan's GDP, these include: the growth of the oil industry (according to the classification, it is included in the mining industry), the exchange rate of the national currency, and time trends - autocorrelation. At the same time, the regulation of the economy on the basis of such prerequisites has shown its practical inconsistency. The long-term focus on the development of all new oil fields ended in nothing. Numerous interventions by the National Bank of the Republic of Kazakhstan aimed at stabilizing the national

currency are yielding very modest results. The implementation of many innovative projects also did not produce a tangible effect in terms of GDP growth.

This study proposes an alternative approach aimed at covering as many predictors as possible and abandoning a priori theories and judgments. In our approach, the emphasis has shifted from statistically significant models to models that are practically more consistent.

The economies of developing, emerging countries have a number of features that must be taken into account when studying them. Following the recommendations and requirements of international organizations, developing countries keep records in a relatively large number of areas (signs). In this regard, there is not much difference between developing and developed countries. On the other hand, the number of observations for each characteristic is limited in developing countries. The main reasons are the limited historical lifetime and gradual convergence with international standards. Thus, there is a need for correct interpretation of high-dimensional data.

Literature review: The theoretical basis of the study

In the context of the role that the financial system plays in a country's economic growth, Schumpeter (1935) argues that well-functioning banks help accelerate economic growth by identifying financing for entrepreneurs with the best chance of successfully supporting innovative production processes. According to research by Demirguk-Kunt and Maksimovich (1996), stock trading conveys information about the company's prospects for potential investors and lenders. According to Levin (1991), the stock market contributes to economic growth due to the ability to trade by the owners of companies without disrupting the production processes occurring within the companies and providing agents with the opportunity to diversify their portfolios. In addition, Greenwood and Smith (1997) argued that a well-developed stock market can reduce the cost of mobilizing savings and thereby encourage investment in most productive technologies.

The relationship between stock market development and economic growth has been a persistent problem in empirical research. Singh Tariqa et al. (2010) examined the random relationship between index returns, employment, exchange rate, GDP, inflation, and money supply for Taiwan. Empirical research results showed that the exchange rate and GDP seemed to influence the returns of all portfolios, while the inflation rate, the exchange rate and the money supply were negatively associated with the return on portfolios of large and medium-sized companies. Tripathi and Kumar (2014) found a positive correlation between stock returns and inflation, GDP growth, exchange rate and money supply in the BRICS countries (BRICS - Brazil, Russia, India, China, South Africa). Muhammad Aamir Ali (2014) argues that GDP per capita is highly dependent on the development of the stock market. His research is based on data from the economies of Asia - India, Pakistan, and China for the period from 1991 to 2011. According to the research results, the capitalization of the stock market has a positive effect on GDP. Kuttner and Mosser (2002) show a positive correlation between real GDP growth and US interest rates between 1950 and 2000. Lee and Werner (2018), comparing the economic performance of the United States, Great Britain with the economies of Germany and Japan, found that nominal GDP growth is positively correlated with short-term and long-term rates in all four countries. Masood and Hardaker (2012) developed an endogenous growth model for 42 countries and stated that the correlation between stock market development and economic growth in emerging economies is positive.

The aviation industry is an important part of the social economy, while at the same time it plays a vital role in terms of the mechanism of economic development. The relationship between civil aviation and economic growth has become the focus of both the industrial field and research subjects. Kalayci and Yazici (2016) examined the impact of US exports and GDP on civil aviation through the introduction of econometric models. As a result, the impact of both export volume and GDP on civil aviation was determined for the period from 1980 to 2012, where there is a long-term relationship between the variables. In addition, it was found that the volume of US GDP exports have a decisive influence on civil aviation. Dobrushkes, Lennert and Van Hamm (2011) stated that the level of the economy in terms of

decision-making power, trade volume, tourism, main distance from the air market and GDP are fundamental components of air travel in major European regions.

Thus, the analysis of a large number of countries reveals a statistically significant relationship between financial development and the development of the real sector of the economy. It seems to us that the analysis for a single country is more valuable in the applied aspect.

Methodology

Data

For greater objectivity, the number of features (variables) to be analyzed, in our opinion, should be as large as possible. A priori, the subjective selection of features, biased to the author's point of view, was not performed. Relative to the time horizon; statistically, the more observations, the more reliable the research results.

The work covers up to 209 variables describing the development of the republic's economy over 15 years, from 2003 to 2017. Only in 2003, the data on the capitalization of the Kazakhstan Stock Exchange (KASE) began to be published, which explains the time interval of observations.

Our database is based on indicators of socio-economic development of Kazakhstan - 193 variables, consisting of 8 main blocks: socio-demographic indicators, standard of living, labor market and wages, prices, national economy, real sector of the economy, trade, financial system.

The financial block includes data on the state, republican and local budgets in the context of revenues, costs, deficits; foreign direct investment, average annual US dollar exchange rate[1].

[1] Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan [Electronic resource]. URL: http://stat.gov.kz/ (Date of access: 12/05/2018)

We supplemented the data on the financial system with the following indicators of the National Bank of the Republic of Kazakhstan[2]:

- monetary base (reserve money), Mo (cash in circulation), M3 (money supply), household deposits, loans to the economy, current account, capital account balance, financial account (excluding reserve assets of the NBK).

KASE contains the following indicators[3]:

- KASE capitalization on securities of corporate issuers,
- volume of deals on KASE with government securities,
- volume of deals on KASE with corporate securities, mln. tenge.

Four out of seven Kazakhstani companies included in the KASE index are represented by their own securities and on the London Stock Exchange. These are KAZ Minerals, Halyk Bank, Kcell, Kazakhtelecom. Therefore, the daily dynamics of the Kazakhstani index is significantly tied to the FTSE100. Yearly weighted average indices of KASE and FTSE100 are calculated by us according to information on the websites of KASE and https://ru.investing.com/ and are included in the table.

For the civil aviation of Kazakhstan, the following variables were available to us:

- passenger turnover of public air transport,
- transportation of passengers by public air transport,
- freight turnover of public air transport

Methods

The most common research method when there are responses (supervised learning) is the ordinary least squares method (OLS) and its various modifications and improvements.

[2] National Bank of the Republic of Kazakhstan [Electronic resource]. URL: https://nationalbank.kz/(Access date: 12/20/2018)

[3] Current state of the securities market of the Republic of Kazakhstan National Bank of the Republic of Kazakhstan, Department of the securities market. [Electronic resource]. URL: https://nationalbank.kz//(Access date: 02.20.2019)

In general terms, the procedure of the least squares method consists of finding such parameters that minimize the expression:

$$\underbrace{min}_{a_0,a_j} T = \sum_{i=1}^{n}(y_i - \hat{y})^2 \quad (1)$$

where,

$i = \overline{1,n}$ – observation index

y_i – true values of the variable Y (response),

$\hat{y}_i$ - predicted values of the variable Y, constructed according to the estimated parameters a_0, a_j:

$$\hat{y} = a_0 + \sum_{j=1}^{k} a_j * x_j \quad (2)$$

With all the prevalence of OLS and its modifications, it has application restrictions that we consider necessary to note.

We have built an OLS model for the development of the economy of Kazakhstan. A limited number of main predictors were used, and obvious patterns were considered. The dominant place in Kazakhstan's GDP is occupied by oil production and the development of minerals. Taking into account the time trend of GDP, we also included in the model, as a predictor, GDP for the previous period. The exchange rate of the US dollar against the national currency, the tenge, was also considered. Kazakhstan's GDP in this and all subsequent models was measured in US dollars. The regression output is shown below.

The characteristics of the model indicate its statistical significance. At the same time, the regulation of the economy based on such prerequisites has shown its practical inconsistency. The long-term focus on the development of all new oil fields ended in nothing. Numerous interventions by the National Bank of the Republic of Kazakhstan aimed at stabilizing the national currency are yielding very modest

results. The initiation of many innovative projects also did not produce a tangible effect in terms of GDP growth.

Table 1. Modeling GDP using OLS

```
Call:
lm(formula = y ~ x)

Residuals:
   Min     1Q Median     3Q    Max
-13150  -5463    695   3500  13399

Coefficients:
                      Estimate Std. Error t value Pr(>|t|)
(Intercept)             137133       2223  61.690 2.51e-15 ***
xmining.industry         43676       4799   9.102 1.88e-06 ***
xTenge.US.dollar.rate   -20251       2713  -7.465 1.25e-05 ***
xGDP.previous.period     31272       4493   6.960 2.39e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 8609 on 11 degrees of freedom
Multiple R-squared:  0.9863,    Adjusted R-squared:  0.9825
F-statistic: 263.2 on 3 and 11 DF,  p-value: 1.611e-10
```

In our study, we applied the proposed alternative approach aimed at covering as many predictors as possible. In our approach, the emphasis has shifted from statistically significant models to models that are practically more consistent. The practical problems of direct application of OLS are followed by theoretical problems. When the number of trials n, significantly exceeds the number of features p, i.e. n p, the OLS has satisfactory characteristics in terms of both bias and variance (James et al., 2013). But if the excess is insignificant, then noticeable variance can occur, which in turn will lead to the fact that the results obtained on the training data cannot be applied to new (test) data. In the case when $n < p$, the variance tends to infinity and the OLS cannot be used. In our case $209 > p > 200$ and $n = 15$, hence p >> n. Therefore, we can a priori assert that in our study, an attempt to apply OLS and multivariate linear regression will be incorrect and the results will not be statistically significant.

Another, no less important problem of multicollinearity, which is present in our data, also cannot be solved using the least squares method.

To solve these issues, more advanced and modern methods of data mining are used.

Data mining (DM) is the process of detecting patterns in large data sets using methods at the intersection of machine learning, statistics and database systems (Chakrabarti et al.,2006; Hastie et al., 2005).

The actual task of the DM is a semi-automatic or automatic analysis of large volumes of data to extract previously unknown interesting models, such as groups of data records (cluster analysis), unusual records (detection of anomalies) and dependencies (analysis of association rules, serial mining).

In our opinion, the LASSO (least absolute shrinkage and selection operator) method can equally well be used for both regularizing predictors and DM.

Unlike OLS, the expression minimized in LASSO is

$$\underbrace{min}_{a_0,a_j} LR = \sum_{i=1}^{n}(y_i - \hat{y})^2 + \lambda * \sum_{j=1}^{k}|a_j| \qquad (3)$$

Where, λ is a hyperparameter.

As a result of this minimization, most of the unimportant coefficients degenerate to zero, and the most relevant remain.

Penalized regression, especially LASSO, can help researchers interested in predicting outcomes by choosing a subset of variables that minimize prediction error.

There are several other variable selection methods that have traditionally been used to build models, but their usefulness is more limited in the context of large *p*. For example:

1) *Best subset selection* includes testing each combination of variables and choosing the best model based on a set of variables that gives the best values of R^2, *AIC*, *BIC*, *AUC*, standard error, etc. The number of models to be tested, is 2^p, which can be a computational load as the number of predictors increases. For example, in our case, when $p \approx 200$, there are a total of $1606938044258990 \cdot 10^{16}$ possible models that need to be compared.

2) *Forward selection* builds a prediction model, starting with an empty model, and then adding variables one at a time, checking the improvement that each variable adds to the fit of the model, and stopping the process when additional variables are not related to fitting the model. The maximum number of models that need to be tested is $1 + p(p+1) / 2$. Thus, if $p \approx 200$, then it is necessary to compare up to 20101 models.

3) *Backward elimination* creates a prediction model, starting with a model with all the variables included, then deleting the variables one at a time, checking the improvement in deleting each variable to match the model, and stopping the process as soon as deleting additional variables does not improve model fit. The number of models that need to be tested is $1 + p(p+1) / 2$. As in the case of forward selection, in our case it is necessary to compare up to 20101 models.

A penalized regression can select and predict variables in the Big Data environment more efficiently and effectively than these and other methods. LASSO is based on minimizing the standard error, which is based on balancing the bias and variance, to build the most accurate and stable model.

At the end of the review of methods, we would like to note that today there are more advanced DM methods than LASSO. These include deep learning with neural networks (Goodfellow, 2015). Deep learning is widely used in finance (Heaton et al., 2017; Ding et al., 2015; Fischer and Krauss, 2018). We do not use deep learning due to the lack of available observations for training the neural network. The structure of our data belongs to the class of large dimension, when the number of features significantly exceeds the number of observations. In defense of our approach, we can note that the regularization procedure is an integral part of deep learning.

Findings and Discussion

Model - Regularization of GDP Predictors

The LASSO method is available in most of the modern platforms and languages: Python, R, SPSS, Stata, etc. We have implemented our model in the R language, because it is an open, free resource, there is a ready-made glmnet library (package) from Trevor Hasti suitable for LASSO and ridge regression. For ease of use, we used the RStudio interface. As of today, several manuals have been published on R in Russian (Robert et al., 2014; Mastitsky et al., 2014)

Our first model is designed to regularize the predictors of the GDP of the Republic of Kazakhstan in US dollars. Below is the program code of our model.

```
install.packages("glmnet")
library(glmnet)
install.packages("Matrix")
library(Matrix)
KASE_data = read.csv("Путь к файлу/Файл.csv")
X = model.matrix(KASE_data$ВВП.млн..долларов.США~.-1,KASE_data)
X_scaled = scale(X)
y = KASE_data$ВВП млн долларов США
fit.lasso = glmnet(X_scaled, y)
plot(fit.lasso, xvar='lambda', label=TRUE)
cv.lasso = cv.glmnet(X_scaled, y,nfolds = 5)
plot(cv.lasso)
coef(cv.lasso)
bestlam = cv.lasso$lambda.min
fit.lasso = glmnet(X_scaled, y, alpha = 1, lambda = bestlam)
coef(fit.lasso)
lasso.pred=predict(fit.lasso, s=bestlam, newx = X_scaled)
mean((lasso.pred - y)^2)
```

As a result of modeling, we obtained the following GDP predictors, with the corresponding coefficients (Table 2):

Table 2. Modeling GDP using LASSO

Predictor name	Reductions	Coefficient
Share of registered unemployed in the labor force	Unemployed labor	-6651.6
Youth unemployment rate 15-24 years	Youth unemployment	-14667.2

World price for Brent crude oil, USD	Brent	1221.6
Manufacture of other vehicles	Other vehicles	20582.0
Price index of imported goods	Price imported	-219.1
Number of places in commissioned preschool organizations	Preschool organizations	1844.8

The mining industry, according to the classification of the Committee on Statistics, includes oil production. The resulting model does not include any of the indicators we assumed. Nevertheless, it seems to us more useful predictively; oil production is more primary than GDPT, and the price of oil is higher than the national currency rate. The LASSO method, in this context, has successfully completed the DM task.

To pick the optimal value the hyperparameter λ we perform a grid search and report cross-validated MSE for each value of the hyperparameter λ from the grid. The results (obtained by the plot(cv.lasso) command) are shown in Figure 1.

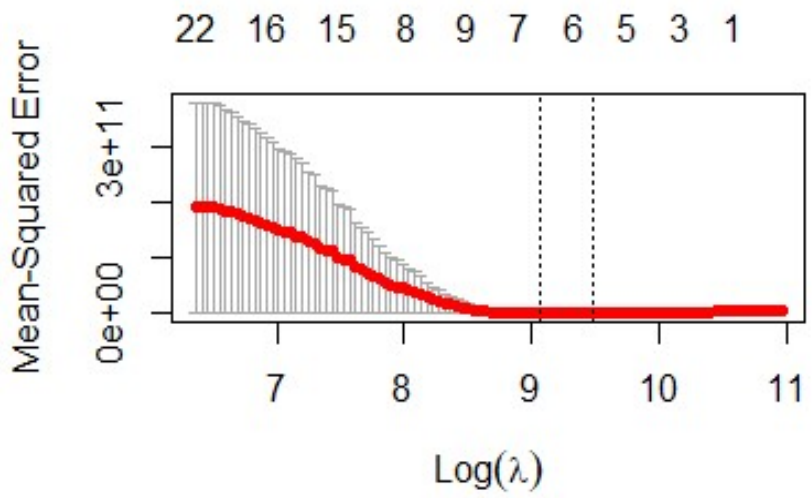

Figure 1. MSE plot by GDP model

The coefficients were obtained under the condition that the hyperparameter λ is equal to the smallest value at the smallest MSE. In the figure, the position is indicated by a left dashed vertical line. If such a condition is not set in the program

code, then we get a list of coefficients for larger λ (right dashed vertical line). In this case, the composition of the predictors may change. The predictor compression procedure is shown in Figure 2.

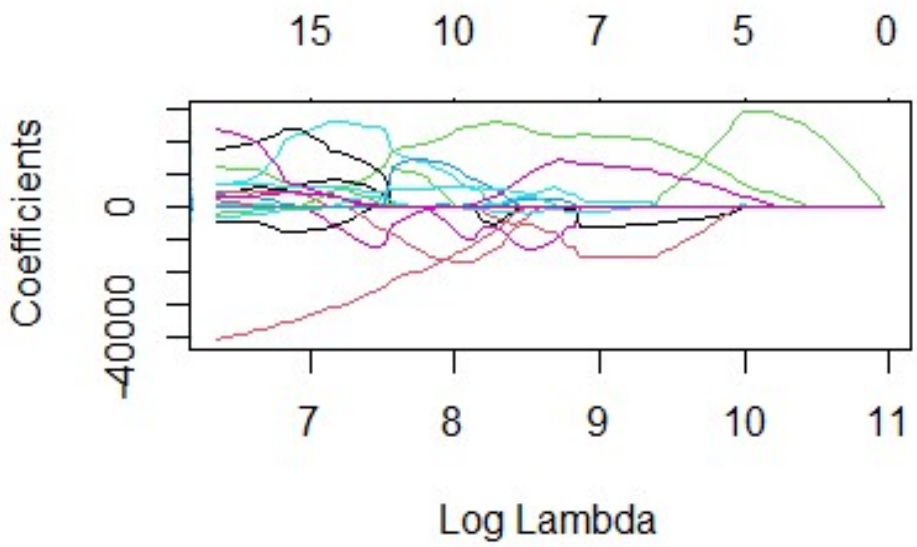

Figure 2. Regularization of GDP model predictors

At the next stage of modeling, we checked the statistical significance of the predictors obtained. For this, the OLS was used. The program code is shown below.

```
GDP_data=read.csv("("Путь к файлу/Файл.csv")")
x=model.matrix(GDP_data$ ВВП млн долларов США ~.-
1,GDP_data)
x=scale(x)
y = GDP_data$ ВВП млн долларов США
lm(y~x)
summary(lm(y~x))
```

Below are the results of checking the statistical significance of the predictors obtained (Table 3).

Table 3. Modeling GDP using LASSO and OLS.

```
Call:
lm(formula = y ~ x)

Residuals:
   Min     1Q Median     3Q    Max
-57581  -4095   2788   8489  24927

Coefficients:
                         Estimate Std. Error t value Pr(>|t|)
(Intercept)                137133       6380  21.496 2.31e-08 ***
xBrent                      16553      11706   1.414    0.195
xOther.vehicles             23999      16373   1.466    0.181
xYouth.unemployment        -14291      35128  -0.407    0.695
xUnemployed.labor           -7643      28022  -0.273    0.792
xPrice.imported             -5055      12025  -0.420    0.685
xPreschool.organizations     3040      26042   0.117    0.910
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 24710 on 8 degrees of freedom
Multiple R-squared:  0.9177,    Adjusted R-squared:  0.856
F-statistic: 14.87 on 6 and 8 DF,  p-value: 0.0006008
```

The model was improved by the method of backward elimination. The results are shown below (Table 4).

Table 4. Modeling GDP using LASSO, OLS and backward elimination.

```
Call:
lm(formula = y ~ x)

Residuals:
   Min     1Q Median     3Q    Max
-57202  -3069   2652   6510  34866

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)           137133       5596  24.504 5.99e-11 ***
xBrent                 18280       8117   2.252   0.0457 *
xOther.vehicles        23932       9694   2.469   0.0312 *
xYouth.unemployment   -27068       9543  -2.836   0.0162 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 21680 on 11 degrees of freedom
Multiple R-squared:  0.9129,    Adjusted R-squared:  0.8892
F-statistic: 38.43 on 3 and 11 DF,  p-value: 4.016e-06
```

As a result of modeling, we obtained three statistically significant predictors of GDP in US dollars: the cost of Brent crude, the production of other vehicles, and the youth unemployment rate.

Today, according to the model, despite numerous state industrialization programs, Kazakhstan has a strictly oriented raw material economy. This is indicated by the dependence of GDP on oil prices. The model did not include the production of motor vehicles, which is the focus of the business community and the state. Without going beyond our research, we can assume that the production of other vehicles has a positive effect on the foreign trade balance and the tenge exchange rate. The appearance of youth unemployment in the GDP model has far-reaching implications. And above all, to the outflow of intellectual capital from the country.

Stock Market Modeling Results

In the stock market, we obtained analytical dependencies in terms of capitalization, index, and trading volume. KASE capitalization - CAPITAL, is expressed by the following dependence:

$$CAPITAL = 10548338.2 + 4005296.6\ MonBase + 190912.7 DepPop, \quad (4)$$

Where MonBase - monetary base (reserve money), DepPop - deposits of the population. The results of applying the *plot(cv.lasso)* function according to the KASE capitalization model are presented in Fig. 3.

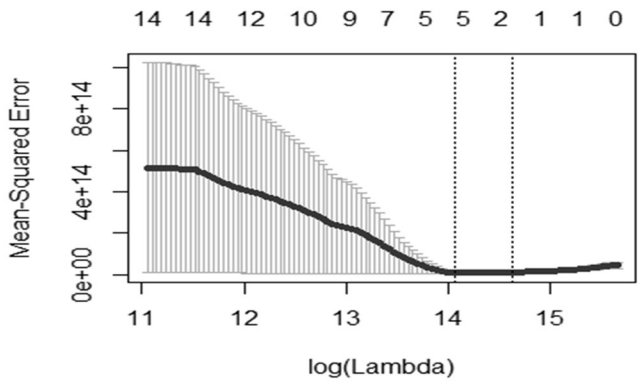

Figure 3. Mean square error of KASE capitalization model

In terms of interpretation, the resulting model is clear and transparent. But it copes very mediocre with the second purpose of modeling – predictive ability. The standard error of the capitalization model is about $6*10^{12}$. The problem may be with

the accounting methodology. The National Bank of the Republic of Kazakhstan in the capitalization includes, along with the value of shares, the value of corporate bonds. The results of applying *plot(fit.lasso, xvar = 'lambda', label = TRUE, col = "black")* according to the KASE capitalization model are presented in Fig. 4.

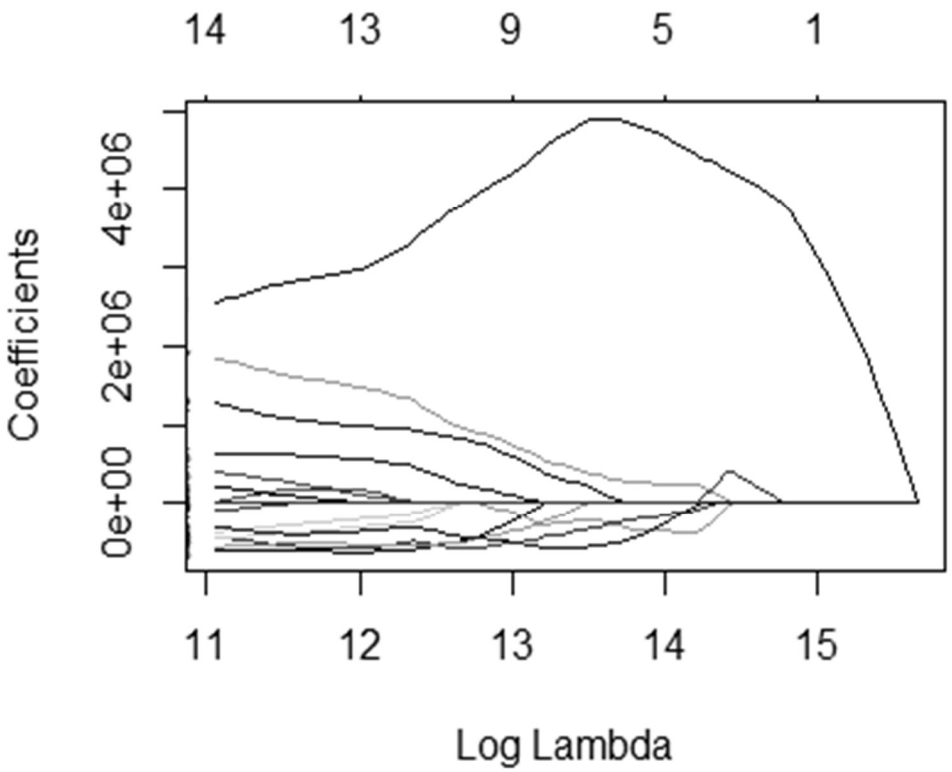

Figure 4. Regularization of KASE capitalization model predictors

Checking the predictors showed that the contributions of the population are not statistically significant: Std. Error = 1594735, t-value = 0.886, Pr (> | t |) = 0.39311. After improving the model by step-by-step elimination and inclusion of predictors, the final model looks like this (Table 5):

Table 5. KASE capitalization model

```
Call:
lm(formula = y ~ x)

Residuals:
     Min       1Q   Median       3Q      Max
-1852611  -816277   -69085   327748  3156812

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    10548338     390091   27.04 4.03e-12 ***
xMonetary.base  7022266     433217   16.21 1.60e-09 ***
xBrent         -1356179     433217   -3.13  0.00868 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1511000 on 12 degrees of freedom
Multiple R-squared:  0.9577,    Adjusted R-squared:  0.9506
F-statistic: 135.7 on 2 and 12 DF,  p-value: 5.763e-09
```

It should be noted that the inclusion in the model of such predictors as GDP, national currency rate, etc., led to a deterioration of the model.

The dynamics of the movement of the KASE - INDEX is determined by the following predictors and relevant coefficients:

$$\text{INDEX} = 1201.8 + 285.94LBud + 266.88ConPrice + 99.9BuildPrices + 19.74TariffServices + 249.82FTSE + 195.43Employee + 164.35Invest + 129.93Population + 101.44Rate\ \$ + 64.33Migr - 61.15ProzhitMin - 38.31unemployed + 20.91Scott, \quad (5)$$

Where *LBud* - Local budget, budget deficit (surplus), *ConPrice* - Consumer price index, percent of the previous year, *BuildPrices* - Price index of construction, as a percentage of the previous year, *TariffServices* - Index of tariffs for services, as a percentage of the previous year, FTSE - The average annual stock index of the London Stock Exchange, *Employee* - Self-employed workers, as a percentage of the previous year, Invest - Investments in fixed assets, Population - Population, percentage of the previous year, Rate $ - Average annual exchange first the US dollar, *Migr* - migration balance of all flows, ProzhitMin - The share of the population with incomes below the subsistence minimum, the *unemployed* - the unemployed as a percentage of the previous year, *Scott* - The number of head of cattle. The KASE index MSE chart is presented in Fig. 5. Unlike previous models,

the minimum MSE is achieved with the number of predictors equal to 13. With further compression, with an increase in lambda and a decrease in the number of predictors, the model error and its variability increase. The index is very sensitive along with the predictors themselves to the derivatives of the predictors. This applies to price indices, population growth rates, self-employed, unemployed. Such a structure of the model ensures its maximum predictability; the standard error of the model is 1880.92.

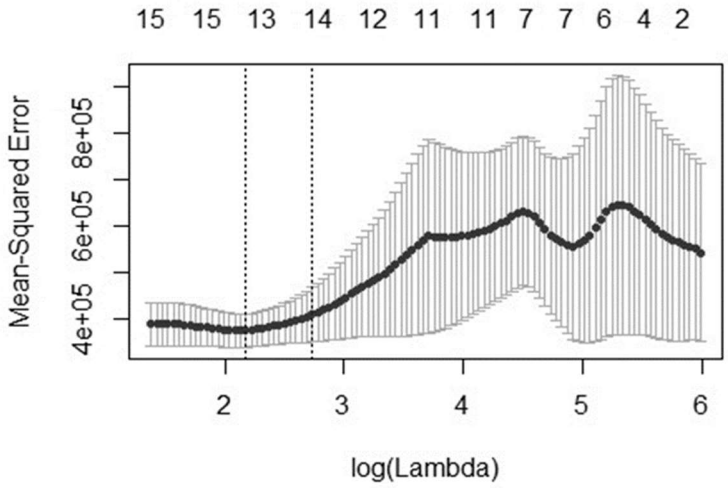

Figure 5. MSE chart of the KASE index model

After checking the predictors for statistical significance, the following were excluded: FTSE, Unemployed, Livestock and LiveMin. An interesting phenomenon: we made several attempts to include the FTSE in the final model, all of which led to a deterioration in its significance. This is despite the fact that the influence of the FTSE on the intraday movement of the INDEX is obvious. For the most part, this connection is carried out through the shares of Kazakhstani companies, which are simultaneously traded on both sites. It turns out, in the long term, the influence of developed stock markets on developing ones, compared to the influence of local predictors, is not so significant. As a result, we got the following model (Table 6):

Table 6. Model of the KASE index

```
Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         1201.81      26.81  44.827 1.04e-07 ***
xConsumer.price      484.16      47.09  10.282  0.00015 ***
xPrice.construction  144.64      50.58   2.860  0.03543 *
xTariffs.services    149.96      45.33   3.308  0.02129 *
xEmployee            563.08     115.25   4.886  0.00453 **
xInvestments         651.20      83.96   7.756  0.00057 ***
xPopulation          145.44      54.41   2.673  0.04418 *
xTenge.US.dollar     335.15      62.27   5.382  0.00299 **
xMigration.balance   201.52      41.89   4.811  0.00484 **
xLocal.budget        242.44      81.58   2.972  0.03110 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 103.8 on 5 degrees of freedom
Multiple R-squared:  0.9918,    Adjusted R-squared:  0.9772
F-statistic: 67.54 on 9 and 5 DF,  p-value: 0.0001097
```

The KASE index has shown great sensitivity to investments in fixed assets. Inflation, characterized by price indices and growth in tariffs for services, has an equally significant impact on the index. Investors timely reflect the devaluation of the national currency in the share price.

From year to year, there is a steady increase in the deficit of local budgets, which negatively affects the stock market index. The problem may lie both in inter-budgetary relations, excessive centralization, and in the unprofitableness of local budgets themselves. Solving the problems of local budgets can most beneficially influence the development of the stock exchange.

The inclusion in the index of the growth rate of the number of self-employed workers, in our opinion, speaks of the role of these indicators in the economy. Today, the self-employed population is a growth driver.

Separately, it is worth considering the effect of the migration balance. Since 2012 there is a negative balance of migration in the whole country. Every year, this trend intensifies. In 2018, 41.9 thousand people left the country (a year earlier - 37.7 thousand people), and 12.7 thousand people arrived (a year earlier - 15.6 thousand people)[4]

[4] Where Kazakhstanis most often go - research. [Electronic resource]. URL: https://www.zakon.kz/4981777-kuda-chashche-vsego-uezzhayut.html (Date of access: 20.08.2019)

In the first half of 2019, many more people left Kazakhstan than arrived. 20.1 thousand people left - 16.9% more than in the same period last year (17.2 thousand people). In turn, only 5.6 thousand people arrived in Kazakhstan this year - 11.3% less than the same period a year earlier (6.4 thousand people).

Most often they leave for Russia, Belarus, Germany, the USA, Israel and Canada. They come from Uzbekistan, China, Mongolia, Iran and Georgia. Since there is no information on the competencies of departing and arriving, judging by the recipient countries and their migration policies, we can assume that those who depart are specialists who were not needed by the economy of Kazakhstan. There is a depletion of the country's intellectual capital.

The only predictor affecting the volume of trading in corporate shares and bonds to some extent was the KASE index. At the same time, the standard error of the model turned out to be too large, of the order of $2.74*10^{12}$. In our opinion, this situation is explained by the fact that the bulk of the deals on KASE with corporate securities, recently, is conducted in the repo sector (Assylbekov and Assylbekova, 2018). Stock market participants are largely concerned about the increase in short-term liquidity.

Civil Aviation Modeling Results

As a result of modeling, we obtained a linear regression of passenger traffic **(revenue passenger-kilometres)** in civil aviation with 11 predictors. The standard error of the model is 170136.9. The MSE graph of the passenger turnover model in civil aviation is shown in Fig. 6. As can be seen from the figure, the number of regressors decreases with increasing lambda and, in the limit, can be brought to unity. But, in this case, the MSE and its variance begin to grow.

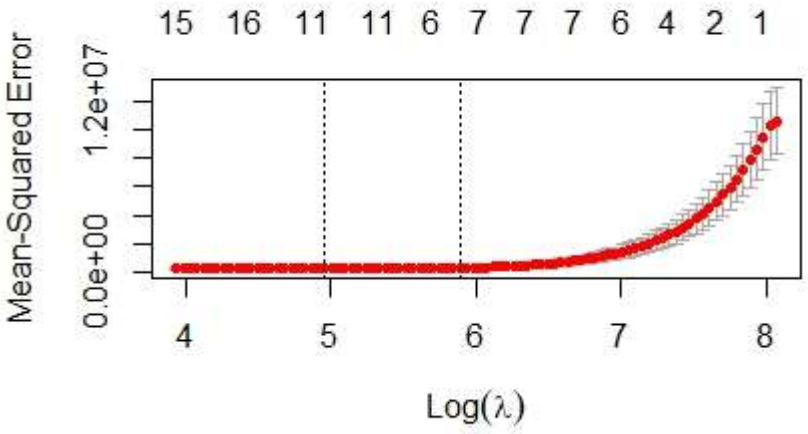

Figure 6. MSE graph of passenger traffic model

After checking the predictors for statistical significance, a model with 5 factors was obtained (Table 7)

Table 7. Model of passenger traffic in civil aviation of the Republic of Kazakhstan

```
Coefficients:
                          Estimate Std. Error t value Pr(>|t|)
(Intercept)                7104.44      34.39 206.604  < 2e-16 ***
xYouth.unemployment       -1564.32     290.49  -5.385 0.000442 ***
xnon.metallic.products     1104.35     151.03   7.312 4.51e-05 ***
xM3                       -1952.37     598.92  -3.260 0.009841 **
xPublic.deposits           1795.07     445.40   4.030 0.002972 **
xGross.agricultural.output  948.20     206.48   4.592 0.001305 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 133.2 on 9 degrees of freedom
Multiple R-squared:  0.999,     Adjusted R-squared:  0.9984
F-statistic:  1770 on 5 and 9 DF,  p-value: 3.507e-13
```

where: Youth unemployment - the youth unemployment rate of 15-28 years, non-metallic products - production of other non-metallic mineral products, M3 - Broad money, Public deposits - Public deposits at the end of the year.

As a result of modeling, we also obtained a linear regression of passenger transportation in civil aviation with 13 predictors. The standard error of the model is 75971.48. The MSE graph of the model of transported passengers in civil aviation

is shown in Fig. 7. We see that the schedule of transported passengers is similar to the schedule of passenger turnover.

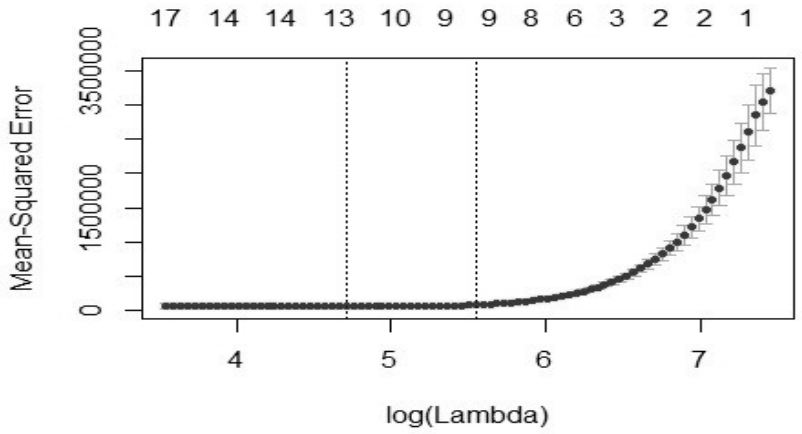

Figure 7. Graph of MSE model of transported passengers.

After checking the predictors for statistical significance, a model with 6 factors was obtained (Table 8). Unlike the previous model, it takes into account the output of the manufacturing industry as a percentage of 1991.

Table 8. Model of transportation of passengers of civil aviation of the Republic of Kazakhstan

```
Coefficients:
                           Estimate Std. Error t value Pr(>|t|)
(Intercept)                 3691.62      14.38 256.806  < 2e-16 ***
xYouth.unemployment         -703.74     128.46  -5.478 0.000589 ***
xnon.metallic.products       364.84      73.83   4.942 0.001132 **
xM3                         -978.60     252.39  -3.877 0.004692 **
xPublic.deposits            1078.58     190.13   5.673 0.000469 ***
xGross.agricultural.output   449.43      86.78   5.179 0.000844 ***
xManufacturing.industry      240.51      84.58   2.844 0.021693 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 55.67 on 8 degrees of freedom
Multiple R-squared:  0.9994,    Adjusted R-squared:  0.999
F-statistic:  2418 on 6 and 8 DF,  p-value: 1.384e-12
```

The Broad money at the end of the year - M3, as in the previous model, is considered with a negative weight, and deposits of the population - with a positive weight.

Based on the results of modeling cargo turnover, we can conclude that in this case the object has no predictors, since the standard error is a significant amount, in the order of $3.38 * 10^8$ with high variance, and which do not decrease with compression. The transport of goods in Kazakhstan's civil aviation is independent of most external social, economic and financial predictors. Rather, it is subjective, due to the internal problems of the industry's development. Our additional correlation analysis confirms this hypothesis.

Conclusion

Before proceeding to the conclusions, we would like to make two notes, limitations. Firstly, the research was conducted in a developing economy and in the border stock market. Secondly, the identified predictors are external in relation to the objects of study.

The history of the development of the economy of Kazakhstan has clearly shown that statistically significant models and economically sound models are not the same thing.

Our research has led to the following conclusions. Application of the LASSO method is necessary and useful for the purpose of data mining, identifying external predictors of the development of various sectors of the economy, detecting hidden dependencies, regularizing models. In this regard, in our opinion, LASSO has advantages over OLS.

Our models, with the exception of the stock market models, include, with negative weights, youth unemployment. This predictor has a dominant economic character.

All of our models, without exception, have proven to be immune to the influence of the mining industry. Its inclusion in the model led to a deterioration in overall results, and the predictor itself turned out to be statistically insignificant. It turns out that the industry works only for itself.

An increase in the money supply negatively affects the performance of certain sectors of the economy. The increase in the money supply has a positive effect only on the capitalization of the stock market. This partially confirms the opinion that pumping money into the economy only leads to the emergence of financial bubbles. More general research is needed to draw more general conclusions. Preliminarily, it can be assumed that the constant assistance of the state to the banking sector, by increasing liquidity, is ill-founded. At the same time, household deposits are good indicators for the growth of industries. Such results require adjustments to the existing economic policy of the state. Moving on to particular conclusions, we note the following.

The KASE index model turned out to be more useful in terms of predictive value. It has the smallest standard error of all models and includes the largest number of predictors. The stock market index turned out to be sensitive to a wide range of social and macroeconomic indicators: population growth, unemployment, inflation, investment, devaluation. Our opinion: the development of the stock market does not require any specific financial measures; it is necessary to deal with the economy as a whole. The volume model of trading in corporate securities turned out to be the least represented both in predictability and in interpretability.

From this perspective, the LASSO method performs well as a trigger; the absence of positive results contributes to the generation and testing of new hypotheses of an intra-systemic nature. This suggests that the causes are subjective, internal and / or not included in our many predictors. In our study, these may be the prevalence of repo transactions in the market, real low (negative) profitability of the stock and bond sector, etc.

The analysis of modeling patterns in civil aviation showed the stability of the standard error of the model with the growth of a hyperparameter (lambda). The patterns of the stock market model, on the contrary, indicate its sensitivity to its changes. We believe that in this case, we can make a generalization, and talk about greater stability of the real sectors of the economy in relation to the financial one.

This assumption is supported by the small variability of the composition of predictors when modeling various aspects of the real sector.

LASSO modeling in civil aviation has revealed stable links between the industry and per capita income in various forms, the development of individual industries, and the money supply. Passenger and passenger transportation models are representative of both predictability and interpretability.

Transportation of goods in the civil aviation of Kazakhstan does not depend on most external social, economic and financial predictors. Rather, it is subjective in nature, due to internal problems in the development of the industry. The task of the aviation community is to establish and eliminate the causes of such an imbalance in development.

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References

1. Ali MA, Amir N. Stock Market Development and Economic Growth: Evidence from India, Pakistan, China, Malaysia and Singapore. International Journal of Economics Finance and Management Sciences. 2014; 2: 220-226
2. Assylbekov A.P., Assylbekova B.S. Investment Risks of Frontier and Emerging Stock Markets // Central Asian Economic Rewiew. - 2018. -. No. 5-6 (123). - S. 117-129

3. Beck, T., & Levine, R. (2004). Stock markets, banks, and growth: Panel evidence. *Journal of Banking & Finance*, *28*(3), 423-442.
4. Chakrabarti, S., Ester, M., Fayyad, U., Gehrke, J., Han, J., Morishita, S., ... & Wang, W. (2006). Data mining curriculum: A proposal (Version 1.0). Intensive Working Group of ACM SIGKDD Curriculum Committee, 140.
5. Dobruszkes, F., Lennert, M., & Van Hamme, G. (2011). An Analysis of the Determinants of Air Traffic Volume for European Metropolitan Areas. Journal of Transport Geography,19(4),755-762. http://dx.doi.org/10.1016/j.jtrangeo.2010.09.003
6. Demirgüç-Kunt, A., & Maksimovic, V. (1996). Stock market development and financing choices of firms. *The World Bank Economic Review*, *10*(2), 341-369.
7. Ding, X., Zhang, Y., Liu, T., &Duan, J. (2015, June). Deep learning for event-driven stock prediction. In Twenty-fourth international joint conference on artificial intelligence, 2327-2333
8. Fischer T., Krauss C. Deep learning with long short-term memory networks for financial market predictions //European Journal of Operational Research. – 2018. – Т. 270. – №. 2. – С. 654-669.
9. Garcia, V.F., & Liu, L. (1999). Macroeconomic determinants of stock market development. Journal of Applied Economics, 11(1), 29–59.
10. Goodfellow, I. J., Erhan, D., Carrier, P. L., Courville, A., Mirza, M., Hamner, B., ... & Zhou, Y. (2015). Challenges in representation learning: A report on three machine learning contests. *Neural Networks*, *64*, 59-63.
11. Greenwood, J., & Smith, B. D. (1997). Financial markets in development, and the development of financial markets. *Journal of Economic dynamics and control*, *21*(1), 145-181.
12. Hastie, T., Tibshirani, R., Friedman, J., & Franklin, J. (2005). The elements of statistical learning: data mining, inference and prediction. The Mathematical Intelligencer, 27(2), 83-85.
13. Heaton, J. B., Polson, N. G., & Witte, J. H. (2017). Deep learning for finance: deep portfolios. Applied Stochastic Models in Business and Industry, 33(1), 3-12.

14. James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). An introduction to statistical learning (Vol. 112, p. 18). New York: springer.
15. Kalayci, S., & Yazici, S. (2016). The Impact of Export Volume and GDP on USA's Civil Aviation in between 1980-2012. International Journal of Economics and Finance, 8(1), 229-235.
16. Kuttner, K. N., & Mosser, P. C. (2002). The monetary transmission mechanism: some answers and further questions. Economic Policy Review, 8(1).
17. Lee, K. S., & Werner, R. A. (2018). Reconsidering monetary policy: An empirical examination of the relationship between interest rates and nominal GDP growth in the US, UK, Germany and Japan. Ecological Economics, 146, 26-34.
18. Levine, R. (1991). Stock markets, growth, and tax policy. *The Journal of Finance*, *46*(4), 1445-1465.
19. Masoud, N., & Hardaker, G. (2012). The impact of financial development on economic growth: Empirical analysis of emerging market countries. Studies in Economics and Finance, 29(3), 148–173.
20. Naceur, S.B., & Ghazouani, S. (2007). Stock markets, banks, and economic growth: Empirical evidence from the MENA region. Research in International Business and Finance, 21(2), 297–315.
21. Odhiambo, N.(2010). Stock market development and economic growth in South Africa: An ARDL-bounds testing approach. A paper presented at the Annual American Business Research Conference, Las Vegas, Nevada, USA, 8
22. Schumpeter, J. A. (1935). A theorist's comment on the current business cycle. *Journal of the American Statistical Association*, *30*(189), 167-168.
23. Singh, Dharmendra (2010), Causal Relationship Between Macro-Economic Variables and Stock Market: A Case Study for India, Pakistan Journal of Social Sciences, Vol. 3(2), pp. 263-274.
24. Tripathi, V. and Kumar, A., 2014. Relationship between Inflation and stock returns-evidence from BRICS markets using panel cointegration test, International Journal of Accounting and financial reporting, 4 (2), pp. 647-658.

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Impacts of Visa Policy on Inbound Tourism in Kazakhstan

Akbota Abdrakhman

University of International Business, Almaty, Kazakhstan

Abstract

Every destination in the world tries to create affordable conditions for tourists to get the maximum benefit from international tourism and one of these conditions is accessibility, which refers to the visa policy of a country. An effective and appropriate visa policy makes travel destinations more attractive and easily accessible to visit. This research focuses on the visa policy of Central Asian country – the Republic of Kazakhstan and reveals several problems related to it, such as lack of information on the visa application process, especially on e-visa, raw systemized visa and migration portal, a long list of visa-needed countries, plenty of refusals in invitation letters by Migration Police and existence of huge visa restrictions for some countries. The current visa policy makes the Republic of Kazakhstan less open to foreigners and less competitive among other countries.

Based on a literature review on visa policy and its effects on the economy and tourism sector in a destination and by using comparative analysis of visa policies of two Central Asian countries – Kazakhstan and Uzbekistan, several problems that affect inbound tourism, as well as recommendations for improvement of visa policy for Kazakh government are discussed in this research.

Key words: visa policy, visa restrictions, visa facilitation, visa liberalization, destination competitiveness, destination perception, inbound tourism, Kazakhstan.

Introduction

Tourism is one of the largest economic sectors in the world and to fully take benefits that it provides to a country, it is necessary to create conditions that make the country competitive, and the most important of these conditions should be the possibility of visiting it without any difficulty (World Tourism Organization, 2013). There is no doubt, that an effective and appropriate visa policy makes travel destinations more attractive and easily accessible to visit.

The Republic of Kazakhstan (Kazakhstan or RK), the world's ninth-largest country, got its independence in 1991 and since then several changes occurred in visa policies. The country provides for foreigners different types of visas and visa regimes, such as visa-free, single and multiple entries, visa on arrival and the latest one – electronic visa (e-visa), which was introduced on January 1, 2019. Single and multiple-entry tourist visas are issued based on invitation letters by the tourist organization of Kazakhstan.

Problem identification

The latest UNWTO's global visa openness report (2018) revealed Kazakhstan as one of the least open countries in the world, illustrating the existence of huge visa restrictions in the country. Citizens of approximately 135 countries need to get a visa to travel to Kazakhstan (Ministry of Foreign Affairs, 2020a). The newly introduced e-visa and the official visa and migration portal do not operate fully and are still barebone. Visa applications and invitation letters are still paper-based. As statistics show, refusals in invitation letters reach 30-40%, including for the so-called favorable tourists, although the migration police do not give a reason for the refusal (Albekova, 2018).

A long list of visa-needed countries and all the above-mentioned issues make Kazakhstan a less competitive tourist destination among other countries. Our research reveals problems in lack of adequate visa policies in the former Soviet

Socialist Republic – Kazakhstan, its unwillingness to open its border to other nationals and mismatch standards of IATA.

Research Purpose and Questions

The purpose of this work is to explore the effects of visa policy on the development of inbound tourism and destination competitiveness in Kazakhstan.

The goals of this work are to identify the impacts of visa policy on tourism in Kazakhstan and on the competitiveness of the destination, analyze current issues and suggest recommendations for the government.

The following questions are needed to be answered to reach the goals:

1) How does visa policy affect inbound tourism in Kazakhstan?
    a. What kind of issues are faced by the Kazakh visa policy?
    b. How does visa policy affect the competitiveness of Kazakhstan as a tourist destination?
    c. What are the measures that the Kazakh government can implement to improve its visa policy?

Background

Overview

Kazakhstan is the ninth-largest in the world and the largest Central Asian country. A member of the United Nations and other international unions and cooperation, it is officially a democratic, secular, unitary, constitutional republic with a diverse cultural heritage (Parliament of the Republic of Kazakhstan, 1995). The most developed Central Asian country's economy mostly relies on the oil and gas industry, being the largest oil producer in Central Asia, with the 12th-highest proven crude oil reserves in the world (IEA, 2020). According to the World Bank (n.

d.), Kazakhstan's status has grown from lower-middle-income to upper-middle-income in less than two decades.

Home for more than 130 nationalities (Embassy of the Republic of Kazakhstan, n. d.), Kazakhstan attracts foreign tourists with its fascinating nature, sceneries, and landscapes, as well as its diverse and unique cultures and traditions. According to the WTTC (2020), the contribution of travel and tourism to the GDP for Kazakhstan was 5.2% and the industry accounted for 4.9% of total employment in 2019. For the nine months of 2019, about 6.4 million foreign tourists visited Kazakhstan, which is less than the previous year for 5.4% according to the SC of the MNE of the RK and FinReview.info (2020). The government plans to increase the contribution of the travel and tourism industry to the national economy up to 8% by 2025 (SC of the MNE of the RK & FinReview.info, 2020).

Historical background and current state of visa policy in Kazakhstan

Kazakhstan got its independence in 1991 and since then several changes occurred in visa policies. By 2004 residents of about 28 countries had an opportunity to travel to Kazakhstan without an invitation letter (UNWTO, 2005). In order to attract foreign investors, in 2015, Kazakhstan also canceled the visa regime for citizens of 19 countries.

On the eve of EXPO 2017 in Astana, as well as the Winter Universiade in Almaty, in order to create the most favorable conditions for foreign guests and attract investors, the Ministry of Foreign Affairs continued to work to further facilitate the visa regime and improve the efficiency of migration control and security. The procedure was simplified for issuing single business, private, as well as single and double-entry tourist visas for citizens of 48 economically developed countries (Kazinform, 2016). From January 1, 2017, citizens of 45 states are exempted from the need to obtain visas and registration when visiting Kazakhstan for up to 30 days, while citizens of Russia, Belarus and Kyrgyzstan are exempted from registration within 30 days from the date of crossing the border (Kazinform, 2016).

From mid-January and early April, until the end of 2018, 72-hour visa-free transit was introduced for citizens of the People's Republic of China and India, traveling via Almaty and Astana to Moscow, Tbilisi, Bishkek, London and Paris.

Currently, Kazakhstan provides for foreigners different types of visas and visa rules, such as visa-free, single entry, multiple entries, visa on arrival, visa with an invitation letter and the latest one – e-visa. Residents of 73 countries can travel to Kazakhstan without a visa, including 19 countries, with which Kazakhstan has agreements on visa-free entry on civilian passports (Ministry of Foreign Affairs, 2020a).

Single, double and multiple-entry tourist visas are issued based on invitation letters by the tourist organization of the Republic of Kazakhstan, which has a license to carry out tour operator, travel agent activities, tourism instructor services, and visa support from the Ministry of Foreign Affairs of the Republic of Kazakhstan. However, citizens of 48 countries may receive a tourist visa based on a personal appeal to the consular offices of the Republic of Kazakhstan abroad without an invitation letter.

Citizens of countries, where there is no embassy or consulate of the Republic of Kazakhstan, can apply for visas on arrival at the international airports of Kazakhstan based on invitation letters from local tourist organizations.

From January 1, 2019, a procedure for obtaining a single-entry visa for foreigners in electronic format is being introduced in Kazakhstan. E-visa (business, tourist and medical treatment) is issued based on a valid invitation letter from a Kazakh tour operator and foreigners can travel to Kazakhstan using a valid electronic visa only at checkpoints of the international airports of Astana and Almaty. List of countries, residents of which can apply for tourist e-visa, reaches 105, business and medical treatment – 18, according to the Ministry of Internal Affairs (2020b).

Literature review

The literature review covers several academic articles about visa policy and provides reasons for strict visa policies and their impacts on tourism around the world.

Visas are commonly utilized by governments to limit entry into their borders and raise income through charging a visa application fee (Duerrmeier, 2014). They perform three primary functions, such as border security, minimizing illegal migration and reciprocity (Duerrmeier, 2014, Neumayer 2010). However, Neumayer (2011) revealed that all terrorists of September 11, 2001, entered the US on valid visas.

Visa facilitation plays a central role in stimulating growth and job creation (World Tourism Organization, 2013). On the other hand, the opposite concept – visa restrictions negatively affect economy and tourism as it decreases bilateral trade and foreign investment, tourist inflows and receipts and increases tourists' intentions to travel to the visa-free destination (Czaika & Neumayer, 2017, Neumayer, 2010, McKay & Tekleselassie, 2018, Li & Song, 2013, Song et al, 2012).

In addition to visa facilitation, countries do also practice a "visa liberalization" policy in order to reduce barriers to trade and remain attractive. Visa liberalization is a policy of seeking to create new kinds of visas or to relax the conditions attached to existing visas to make it easier for defined categories of foreign nationals to obtain valid visas (Bromund, 2020). The most known visa liberalization policy is valid among Schengen Area Member States, where it was discovered an immediate increase in short-term travel to the countries of destination after the introduction of a new policy (European Migration Network, 2019).

Tourism demand is also strongly affected by visa regimes (Cheng, 2012) and the elimination of travel restrictions increases the demand for and freedom to travel (Siskin, 2004). Major tourist destinations do not impose visa restrictions on sending countries to remain attractive (Neumayer, 2005).

Studies identified determinants of tourist destination choices that discourage travel, which include connectivity, price, safety and visa requirements (San-Andres & Wirjo, 2015, McKay & Tekleselassie, 2018). Research reveals, that visa processing times and fees left participants with a negative perception of the destination (Duerrmeier, 2014). However, visa restrictions play a small part in discouraging visitors to visit Zimbabwe (Zengeni & Zengeni, 2012).

Artal-Tur et al. (2016) found that visa restrictions hold tourists traveling to developing countries, particularly to Eastern Europe, Central Asia, Africa and the Middle East. Countries with closed borders are associated with socialist philosophies, where they view outsiders with great suspicion (Anderson, 2000). Based on the literature review and Kazakhstan's location in Central Asia as a former Soviet Union country the analysis of the impact of the visa policy on the inbound tourism in Kazakhstan will be made in the following section.

Methodology

The research for this paper will be qualitative and include an in-depth analysis of secondary sources on visa policy impact on inbound tourism, meaning that ontological philosophy helps to understand the nature of visa policy and find ways to solve visa policy problems based on an interpretivism approach. Moreover, to identify visa policy issues and suggest recommendations, comparative analysis will be provided based on visa policies of two Central Asian countries – Kazakhstan and Uzbekistan. Findings from academic and industry sources will be synthesized to suggest recommendations for managing visa policy to develop inbound tourism in Kazakhstan.

Findings and Discussion

Based on the literature review the following three key areas of visa policy were identified:

- Visa restrictions,
- Visa facilitation,
- Visa liberalization.

Although there were several cases, where visa restrictions did not play an important role in attracting foreigners to a destination, in the case of Kazakhstan, the analysis has shown that it negatively affects the inbound tourism development in the country. On the other hand, visa facilitation policies make travel and pre-travel

preparation easier, and it was agreed that it positively affects inbound tourism in Kazakhstan. Moreover, although the UNWTO has suggested creating the unified visa for Central Asian countries before, it has not been introduced and even planned to create yet. Therefore, considering the positive impacts of visa liberalization on countries of destination, Kazakhstan is suggested to create one collaborating with Central Asian countries.

All these three key areas directly affect the visa application process. And, based on the literature review and the analysis of the historical background and current state of the visa policy in Kazakhstan, the following framework was constructed from this research by the author (Figure 1).

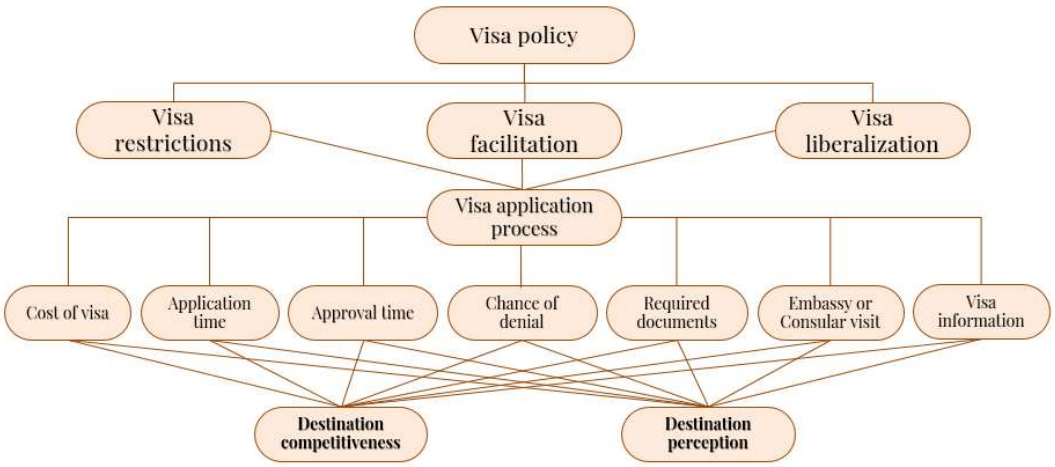

Figure 1. Impacts of visa policy on inbound tourism.

The framework consists of two dependent variables, such as destination competitiveness and perception, and several independent variables, which are parts of the visa application process. These independent variables relate to visa policy among visa facilitation, restrictions and liberalization.

While studying the Kazakh visa application process, it was identified several key problems, which are presented as parts of the process in the framework. These problems were studied by making a comparison with the neighboring country – Uzbekistan. Issues of Kazakh visa policy are:

1. High cost of a visa. Kazakh tourist visa fee is 60 USD, while in Uzbekistan, the tourist visa fee starts from 20 USD. While choosing a Central Asian destination, there is a possibility that some tourists might prefer Uzbekistan because of the lower cost of visa fee.
2. Long application and approval time. Standard Kazakh e-visa processing time is five working days, while there is an option to obtain Uzbek e-visa in two days. And the application does not always mean approval.
3. High chance of denial. As mentioned at the beginning of the research, there is a high indicator of refusal of invitation letters and consequently, it shortens the list of approved Kazakh visas. Although it might be done for security reasons, the fear of the invitation letter getting denied can also be a reason not to choose Kazakhstan as the next travel destination.
4. Required documents. In order to obtain Kazakh e-visa, it is required the same documents as for Uzbek e-visa and, in addition, – the invitation letter. This is inadequate and hard for tourists who travel solo or on their own without contacting the travel agent. And travel operators usually sell travel packages with the invitation letter, but not separately, therefore, the whole travel package might be expensive for solo travelers.
5. Limited entries/exits to/from Kazakhstan with e-visa. Foreigners can enter or exit the territory of Kazakhstan with e-visas only through airports of Nur-Sultan and Almaty, while it can be used in all airlines and all airports of Uzbekistan.
6. Lack of valid information. While doing this research it was revealed that the official websites of neither the Ministry of Foreign Affairs nor the Visa-migration portal of Kazakhstan do not properly provide necessary information about the visa to Kazakhstan. Official statistics are still missing and that makes the research more difficult.

Based on the analysis, the following recommendations are provided:

- Reduce the cost of tourist visa;
- Shorten the visa application and approval time;
- Increase the list of countries, whose citizens can obtain tourist visa without invitation letter;

- Increase the list of visa-free countries;
- Increase the number of airports of Kazakhstan where e-visa can be used;
- Introduce the unified visa for Central Asian countries;
- Create the NGO or Tourism Satellite Account (TSA) for obtaining valid information about travel and tourism in Kazakhstan.

The last recommendation is necessary not only for visa policy but for the whole tourism industry development in Kazakhstan generally.

Conclusion

This study answers all research questions about the impacts of visa policy on inbound tourism in Kazakhstan and identifies issues regarding visa application time, information and e-visa, that make Kazakhstan less attractive and competitive among other countries. The study concludes that the visa facilitation and liberalization policies positively affect the inbound tourism in Kazakhstan, while visa restrictions negatively affect Kazakhstan's destination competitiveness and perception. Based on current issues that are faced by the Kazakh government, new solutions and recommendations regarding visa policy are suggested for further implementation.

This study has limitations in understanding the potential effectiveness of recommendations, lack of knowledge on the appropriateness of recommendations due to inconsistent data on current tourism development and visa policy in Kazakhstan, as well as a comprehensive analytical methodology accompanied by primary research. This is an overview of existing research that may be applicable to assist Kazakhstan in managing visa policy and therefore relies heavily on academic sources rather than primary research to reach conclusions.

References

1. Albekova, A. (2018, August). Эксперты предлагают либерализовать визовый режим Казахстана. (Experts propose to liberalize the visa regime of

Kazakhstan). Retrieved from https://inbusiness.kz/ru/news/eksperty-predlagayut-liberalizovat-vizovyj-rezhim-kazahstana

2. Anderson, M. (2000). The Transformation of Border Control: A European Precedent. Queen's University, Belfast.
3. Artal-Tur, A., Pallardo-Lopez, V. J., & Requena-Silvente, F. (2016). Examining the impact of visa restrictions on international tourist flows using panel data. Estudios De Economia, 43(2), 265-279. Retrieved from http://proxygw.wrlc.org/login?url=https://search.proquest.com/docview/1943052154?accountid=11243
4. Bromund, T. (2020, January 10). The U.S. Should Pursue Visa Liberalization with the United Kingdom. The Heritage Foundation. Retrieved March 24, 2021 from https://www.heritage.org/europe/report/the-us-should-pursue-visa-liberalization-the-united-kingdom
5. Cheng, K. M. (2012). Tourism demand in Hong Kong: income, prices, and visa restrictions. Current Issues in Tourism, 15(3), 167-181. doi: 10.1080/13683500.2011.569011
6. Czaika, M., & Neumayer, E. (2017). Visa restriction and economic globalization. Applied Geography, 84, 75-82. doi: 10.1016/j.apgeog.2017.04.011.
7. Duerrmeier, R. M. (2014). Travel visa impacts on destination choice and perception. Worldwide Hospitality and Tourism Themes, 6(4), 305-316. doi: 10.1108/WHATT-01-2014-0001
8. Embassy of the Republic of Kazakhstan. (n. d.). About Kazakhstan. Ethnic groups. Retrieved March 22, 2021 from https://kazakhembus.com/about-kazakhstan/culture/ethnic-groups
9. European Migration Network. (2019, March). Impact of Visa Liberalization on Countries of Destination. Synthesis Report for the EMN Study.
10. IEA. (2020, April). Kazakhstan energy profile. Country report. Retrieved March 22, 2021 from https://www.iea.org/reports/kazakhstan-energy-profile
11. Kazinform. (2016, October 12). Полный список стран, граждане которых могут посещать Казахстан без визы с 2017 года. (List of countries whose citizens can visit Kazakhstan without a visa since 2017). Retrieved March 22,

2021 from https://www.inform.kz/ru/polnyy-spisok-stran-grazhdane-kotoryh-mogut-poseschat-kazahstan-bez-vizy-c-2017-goda_a2958248

12. Li, S., & Song, H. (2013). Economic Impacts of Visa Restrictions on Tourism: A Case of Two Events in China. Annals of Tourism Research, 43, 251–271. doi: 10.1016/j.annals.2013.07.007
13. McKay, A., & Tekleselassie, T. G. (2018). Tall paper walls: The political economy of visas and cross-border travel. The World Economy, 41, 2914-2933. doi: 10.1111/twec.12686.
14. Ministry of Foreign Affairs. (2020a, March 11). Visa regime of the Republic of Kazakhstan for foreign citizens. Retrieved March 22, 2021, from https://www.gov.kz/memleket/entities/mfa/press/article/details/6764?directionId=3053&lang=en
15. Ministry of Foreign Affairs. (2020b, March 11). E-visa of the Republic of Kazakhstan. Retrieved March 22, 2021, from https://www.gov.kz/memleket/entities/mfa/press/article/details/6720?directionId=3053&lang=en
16. Neumayer, E. (2005). Unequal Access to Foreign Spaces: How States Use Visa Restrictions to Regulate Mobility in a Globalized World. Blackwell Publishing, London.
17. Neumayer, N. (2010). Visa restrictions and bilateral travel. The Professional Geographer, 62(2), 1-11. doi: 10.1080/00330121003600835
18. Neumayer, N. (2011). On the detrimental impact of visa restrictions on bilateral trade and foreign direct investment. Applied Geography, 31, 901-907. doi:10.1016/j.apgeog.2011.01.009.
19. Parliament of the Republic of Kazakhstan. (1995). The Constitution of the Republic of Kazakhstan.
20. San Andres, E., & Wirjo, A. (2015). Trade, Inclusive Growth, and the Role of Policy. In: Key Trends and Developments Relating to Trade and Investment Measures and their Impact on the APEC Region.
21. SC of the MNE of the RK & FinReview.info. (2020, March 4). Profitability of the tourism sector may increase to 200 billion kzt per year. Retrieved March 22,

2021 from http://finreview.info/review/dohodnost-turisticheskogo-sektora-mozhet-uvelichitsja-do-200-mlrd-tenge-v-god/

22. Siskin, A. (2004). Visa Waiver Program. Congressional Research Services Report. Washington D.C.
23. Song, H., Gartner, W. C., & Tasci, A. (2012). Visa restrictions and their adverse economic and marketing Implications – Evidence from China. Tourism Management, 33, 397-412. doi:10.1016/j.tourman.2011.05.001
24. UNWTO. (2005). A Strategic Approach to Visa Facilitation in the Silk Road Countries. doi: 10.18111/9789284409242.
25. UNWTO. (2018). Visa Openness Report 2018. Retrieved from http://cf.cdn.unwto.org/sites/all/files/docpdf/2018visaopennessreport.pdf
26. World Bank. (n. d.). Where we work. Kazakhstan. Overview. Retrieved March 22, 2021 from https://www.worldbank.org/en/country/kazakhstan/overview#2
27. World Tourism Organization. (2013). Visa facilitation: Stimulating economic growth and development through tourism. UNWTO, Madrid. doi: https://doi.org/10.18111/9789284415175
28. Zengeni, N., & Zengeni, D. M. F. (2012). The impact of current visa regime policy on tourism recovery and development in Zimbabwe. International Journal of Development and Sustainability, 1(3), 1008-1025.

Information about the authors

1. **Hans-Christian Brauweiler**
   (Corresponding author)
   Doctor of economic sciences, professor, head of chair,
   Honorary doctor of Volgograd State University, Russia
   Honorary doctor and honorary professor of Kazakh American Free University,
   Ust-Kamenogorsk, Kazakhstan
   The «Accounting, Controlling and Audit» chair WHZ Zwickau University of Applied Sciences,
   Zwickau, Germany
   christian.brauweiler@fh-zwickau.de

2. **Aida Yerimpasheva**
   Candidate of economic sciences, associate professor of the "International relations and the world economy" chair, al-Farabi Kazakh National university, Almaty, Kazakhstan
   aida.zakirova@kaznu.kz

3. **Aizhana Maldynova,** PhD in Marketing
   (Corresponding author)
   Senior Lecturer, University of International Business, Almaty, Kazakhstan
   maldynova.a@uib.kz

4. **Amanbay Assylbekov**
   Candidate of economic sciences,
   Senior Lecturer, Scientific-Educational Department "Finance and Data Analytics"
   Narxoz University, Almaty
   amanfinmen@mail.ru

5. **Bayan Assylbekova**
   (Corresponding author)
   PhD doctoral student, Narxoz University, Almaty
   asylbayan@gmail.com

6. **Roland Giese**
   Doctor of Economics, Professor HS Zittau-Görlitz (Prof. Dr. oec. Dr. hc Finanz and Management Account, Fakultät Management and Cultur Science), Germany
   r.giese@hszg.de

7. **Akbota Abdrakhman,** Master of Tourism Administration
   (Corresponding author)
   Lecturer, University of International Business, Almaty, Kazakhstan
   akbota2395@gmail.com

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