

PERCEPTION OF INNOVATIONS BY PUBLIC ENTERPRISES IN KAZAKHSTAN

Karlygash Mukhtarova, Al-Farabi Kazakh National University
Gaukhar Yesbolganova, Al-Farabi Kazakh National University

ABSTRACT

In most developed countries shift to innovative development started in the post-war years and continues now. As for Kazakhstan innovation became issue of interest in last 20 years. Therefore the country has long way in developing infrastructure for innovations and its promotion among different companies. In this article authors tried to disclose a perception of innovation by public enterprises using different methods of research such as phenomenological research, analysis, comparison and synthesis, correlation matrix, descriptive statistics. Data for this research was collected from official documents of investigated in five enterprises. These documents are: integrated annual report for 2016, development strategy of the joint-stock companies, innovation and technology strategy. Through the study it was discovered that some companies pay more attention to features referred to innovative process itself more than preceding elements and infrastructure. Driver for innovative development is government through the use of such tools as laws, regulations and strategies. Overall study showed that companies perceive innovation as modernization and reconstruction.

Keywords: Innovations, Public Enterprises, Joint-Stock Companies, Technology Strategy.

INTRODUCTION

A lot of works dedicated to innovations explain them as drivers that can establish a competitive edge and generate economic growth (Cooke & Leydesdorff, 2006; Pancholi et al., 2014). The importance of appliance, introduction and generation of innovations in the modern world is unconditional. This can be evidenced through data from a survey conducted by PwC among 246 CEOs working around the world. According to this survey 64% of CEO claim that innovation and operational efficiency are equally important for the success of the company and 11% agree that innovation has a greater impact on the successful operation of the company telecommunications (Jaruzelski et al., 2015). Such focus on innovation is motivated by the increasing competition in both domestic and global markets, generated by rapidly changing technologies, which in turn may swiftly erode the valuation in the market place of current products and associated services (Bower & Christensen, 1995; Karlsson & Tavassoli, 2016). According to Pradhan et al. (2016) long-term economic growth for Eurozone economies' scale helps to remain globally competitive.

In Global Innovation Economy Survey conducted in Cornell University, INSEAD and WIPO (2017) were mentioned that main areas where innovation is generated in the world are healthcare and information technology. Switzerland, whose main innovation sphere is pharmaceuticals, holds the first place for 7 consecutive years among other countries. Kazakhstan stands on 78th position and the most innovative area, according to the official statistics, is

manufacturing industry. At present, the solution to the problem of achieving economic growth in Kazakhstan is closely connected with development of the innovation sphere.

The perception of innovation in Kazakhstan over a longer period of time differed from the European one, which caused a backlog in innovative development of the country. In the XVIII on the west, took place industrial revolution, which served as an impetus to the development of science and production while Kazakhstan during same period undergo the process of formation of Kazakh khanate.

Nowadays among the republics of Central Asia, Kazakhstan represents a distinct geographical, geopolitical, cultural and historical entity (Sultangalieva & Werth, 2015). By the end of the twentieth century Kazakhstan gained its independence and still innovations were not taken seriously as in foreign countries. For example, during 1991 the first web site was created at CERN labs, HP introduced first color image scanner and in April Intel launched the Intel i486SX chip, bringing a lower-cost processor to the PC market. At the same time Kazakhstan only began its formation as a state with developing industry for the production and primary processing of mineral resources. Therefore economy was resource-oriented. Government of Republic of Kazakhstan started to promote innovative development from introduction of “Strategy of industrial-innovative development” in 2003. The result of this strategy was the formation of the institutional framework and the main elements of the national innovation system. After this document more programs, laws and strategies involving innovation development were released. For example with establishment of «Concept about transition of the Republic of Kazakhstan to sustainable development for 2007-2024» in 2006 was launched the process of transformation from resource-oriented to sustainable economy. Thus, such programs demonstrate that driver of innovations in Kazakhstan is government, but implementers are enterprises. This raises a question: how enterprises perceive innovations, as perception is a key process that determines the interpretation and implementation of innovation. From this question originates following area for investigation: what they consider novelty, how important innovations to enterprises and process of implementation.

The main purpose of my research is study of structural changes in the public enterprises of Kazakhstan during the process of introduction of innovations. This aim puts forward the following problems of study: determination of general trends for all innovation processes in the studied public enterprises of Kazakhstan, identification of correlations between elements of innovative activity and reveal the impact of government policy on development of innovations at the enterprises towards the perception of innovation processes among these organizations.

In the theory there is an understanding of the need to develop innovative climate since institutions are oriented on innovative development of Kazakhstan, implementation of the restructuring of the economic system on the basis of increasing the share of industries with high added value, raising the level of innovativeness of traditional sectors of the economy, helping to improve the competitiveness of Kazakhstan's economy as a whole. Whereas on practice is essential to establish mechanism of economic stimulation of enterprises, improve the market for innovative products enterprises by placing them in a state procurement order.

Solution of these problems is represented in a phenomenological study carried out on the basis of official documents of the considered enterprises that helped to identify trends of special features of innovative activity on enterprises, use systematic method to determine the interaction of elements of a correlation analysis of innovation activity of public enterprises.

LITERATURE OVERVIEW

Austrian economist Joseph Schumpeter can be named as one of the founders of the formation of theoretical foundations on the study of innovations (Schumpeter, 1982). Nowadays description of this term can be found in the works of different scientists, though is no common approach to its definition. Researchers refer to "innovation" as the process of creating a new product or method; introduction of researched results; factor of transformation; application of new knowledge; modification of certain production processes (Rios, McConnell & Brue, 2013; Samuelson, 1951; Kianto, Sáenz & Aramburu, 2017; Kondratiev, 1989; Twiss, 1986). Nevertheless the main feature of these research works understands of innovations through the prism of perception by individual scholars. However in this article it is important to turn our attention to perception of innovation by enterprises. (Efron, 1969) defined perception as a "man's primary form of cognitive contact with the world around him". Whereas the process of perception of innovations by organizations is mediator between changes, needed transformations and the result.

Importance of innovative development on enterprises is investigated by a lot of scholars (Bhuiyan, 2011; Daniel & Prajogo, 2016; Herrmann et al., 2007; Maidique et al., 1984), but question of interest for this article is how enterprises perceive innovations. This subject is rarely studied, but interesting are the works of (Andersson et al., 2011; Aslan et al., 2016; Depeige & Sindakis, 2015; Doran & Ryan, 2012; Iorgulescu & Răvar, 2013; Kelly et al., 2017; Yigitcanlar et al., 2017). In our study we investigated perception of innovations by national enterprises owed by government that by definition of (Dube & Danescu, 2011) refers to public enterprises "agencies that deliver public programs, goods or services, but operate independently of government and often have their own sources of revenue in addition to direct public funding. They also may compete in private markets and may make profits. However, in most cases the government is the major shareholder and these enterprises partly follow the acts and regulations that govern the core government".

Problems of management on public enterprises operating in the innovation-based economy were reflected in the works (Amosov, 2012; Arundel & Huber, 2013; Cáceres et al., 2011; Lendel et al., 2015; Smith et al., 2011).

Issues related to the development of national innovation systems, formation of innovative economy are considered widely in the works of (Abalkin et al., 2007; Egbetokun et al., 2017; Jang et al., 2016). Importance of human recourses in particular the innovative potential, of enterprise employees was studied by (Amabile, 1988; Oldham & Cummings, 1996; Searle & Ball, 2003; Wolf, 1994).

A lot of works are dedicated to innovational activity and economic growth (Agénor & Neanidis, 2015; Hanel, 2003; Pece et al., 2015). The connection between government and innovations, their mutual influence was investigated in the works of (Scupola & Zanfei, 2016; Bekniyazova et al., 2016; Mukhtarova et al., 2013; Satpayeva, 2017; Shakirtkhanov, 2017; Shakirtkhanov, 2017; Toxanova et al., 2017).

RESEARCH CONTEXT AND METHODOLOGY

The study was designed as phenomenological research by using descriptive statistics. Data was collected from official integrated annual report for 2016, development strategy of the joint-stock companies, innovation and technology strategy, if present. Authors of this article, using checklist as a tool, examined all official documents. All mentioned aspects connected to

innovative activity in these documents were marked by number 1 for covered or 0 for omitted. After that, checklist was transferred to SPSS statistic program. In this program was created a table of frequencies in order to see the percentage of features that all five companies consider necessary to have. At the time of the research our sample consisted of total 12 official documents of investigated 5 public enterprises. Cronbach's alpha equals 0.801 that indicate its reliability for research. Further correlation analysis was conducted based on some significant frequencies. This correlation matrix was used in order to see relationship of most innovation related aspects and their mutual relation on each other.

Data on Public Enterprises

All these companies were formed by Decree of the Government of the Republic of Kazakhstan. JSC "National Company KazMunayGas" and JSC "National Atomic Company Kazatomprom" represent enterprises dealing with natural resources and both of these companies entered global market with own products. JSC "National Company KazMunayGas" deals with oil and gas, JSC "National Atomic Company Kazatomprom" operates in industry (uranium ore, metals), JSC "NC Kazakhstan Temir Zhol" (JSC "NC KTZ") has a holding structure based on ensuring the functional integrity and manageability of the railway industry in the transportation process. JSC "Kazakhstan Electricity Grid Operating Company" (JSC "KEGOC") and JSC "Samruk-Energo" belong to electric power industry. All these companies now undergo program of company "National Welfare Fund Samruk-Kazyna" on business transformation. The program covers three areas: increasing the value of portfolio companies, changing the structure of the portfolio and the Fund's approach to investment, redistributing authority and responsibility in the management system of the Fund and its portfolio companies (Program of transformation, 2014). "Transformational change comes from the desire of the organization to achieve its strategic objectives" (Franklin, 2011).

Perception of innovation by enterprises is measured through aspects that belong to firms that innovate. "Broadly innovation not only includes development of new products and services, but also new operating practices, processes, managerial tactics and even business strategies. It may not always be a process of creating, rather a process of building, improving and adapting" (Youtie, 2003). Individuals, whom we term 'innovators', invent, champion and facilitate projects through the implementation process (Sim et al., 2007).

RESULTS

Table 1
FREQUENCIES OF MENTIONED FEATURES IN THE DOCUMENTS

Features	N		Mean	Median	Mode	Std. Deviation
	Valid	Missing				
Definition of Innovation	5	0	0.40	0.00	0	0.548
Having features of invention	5	0	0.040	0.00	0	0.548
Providing added value	5	0	0.800	1.000	1.0	0.4472
Achievement of strategic goals	5	0	0.40	0.00	0	0.548
New method, technology for this company, but known and used outside of KZ	5	0	1.00	1.00	1	0.000
Invented in the company	5	0	0.20	0.00	0	0.447

Patents	5	0	0.40	0.00	0	0.548
Resource saving	5	0	0.40	0.00	0	0.548
Innovation Process	5	0	0.80	1.00	1	0.447
Search for financial support	5	0	0.40	0.00	0	0.548
Innovation management	5	0	0.20	0.00	0	0.447
Implementation stage	5	0	0.20	0.00	0	0.447
Product development	5	0	0.20	0.00	0	0.447
Innovation project	5	0	0.60	1.00	1	0.548
Organizational Culture and Structure	5	0	1.00	1.00	1	0.000
Innovation Strategy:	5	0	0.40	0.00	0	0.548
created on the basis of company strategy documents	5	0	1.000	1.000	1.0	0.0000
created with inclusion of government program	5	0	0.600	1.000	1.0	0.5477
created on the basis of low	5	0	0.400	0.000	0.0	0.5477
has analysis of innovative development of the company	5	0	0.200	0.000	0.0	0.4472
Scientific research institute/laboratory	5	0	0.40	0.00	0	0.548
Committee on innovative development:	5	0	0.600	1.000	1.0	0.5477
conducts technical assessment	5	0	0.200	0.000	0.0	0.4472
create programs for production work	5	0	0.40	0.00	0	0.548
monitor of information	5	0	0.60	1.00	1	0.548
Use of connections with universities and researchers	5	0	0.60	1.00	1	0.548
Cooperation with technological advanced companies	5	0	0.60	1.00	1	0.548
R&D	5	0	0.60	1.00	1	0.548
Training	5	0	0.20	0.00	0	0.447
Innovation management of personal	5	0	0.20	0.00	0.0	0.447
External motivation	5	0	0.60	1.00	1	0.548
Internal motivation	5	0	0.40	0.00	0	0.548

On Table 1 in the section on “Definition of innovation” most frequent mentioned features are “New method, technology for this company, but known and used outside of KZ» and “Providing added value» because mean is 100% and 80% respectively. Aspects as «Having features of invention», «Achievement of strategic goals»; «Patents» and «Resource is saving» are less likely to be mentioned in documents. 40% out of 100% companies have clear and written definition of innovation, which can be explained by existence and use of “Innovative technological strategy” in JSC “NC KazMunayGas and JSC “KEGOC”. According to “Innovative technological strategy” they perceive innovation as product, technological and management novelty. “Patents” has meant of 40% represented it companies JSC “NC KazMunayGas” and JSC “NAC Kazatomprom” as they pay attention to patents. For example in 2016, JSC “NAC Kazatomprom” filed 6 applications for patents on inventions, received 7 protection documents for an invention. 40% of mean in “Resource saving» can be interpreted as introduction of first built on the territory of the CIS energy accumulating system by JSC “Samruk-Energo” and implementation of high-tech innovation projects on renewable energy by JSC “NAC Kazatomprom”.

Regarding «innovation process» mean is 80% and this can be explained by several reasons, first is that JSC “NC KazMunayGas” has outlined scientific and innovation infrastructure in the face of LLP “KazMunaiGas research and development institute of production and drilling technologies” and Joint-Stock Company “Scientific and technical center of KazTransOil”. Both

of these organizations are involved in innovation management, it is their task to monitor implementation stage, develop new products, initiate innovative projects and development its documentation. Second this company has a lot of connections with universities, researchers and cooperates with technological advanced companies. Other participants such as JSC “NAC Kazatomprom” and JSC “NC KTZ” pay attention to innovation process in the form of creating innovative projects. These companies conduct different competitions among works on innovative ideas and best of them are realized in the form of innovative projects. For instance in the report of JSC “NAC Kazatomprom” was mentioned that “within the framework of the financial incentive system, exists the policy of rewarding employees for innovative ideas, exemplary fulfillment of important tasks, continuous and impeccable work and other merits is also being implemented.” Thus it was affected in sub-area of «Innovation project» as its mean equals 60 percent. Fewest mentioned features are «Innovation management», «Implementation stage», «Product development» each has 20% so are less likely to be perceived as necessary aspects related to innovation management.

Next aspect that we consider important to have is organizational culture because “innovative activity is influenced by individual motivation, organizational culture and the magnitude of the challenge for employees” (Mehmet et al., 2017) Organizational culture enables and supports the successful implementation of the strategy. A lot of managers do recognize that the importance of adaptability; implementation and application of strategies depend on the organizational culture. (Jelenc et al., 2016). In Table 1 organizational culture and structure is widespread among all investigated companies with mean of 100%. The reason for is strong corporation culture of single stakeholder the “National Welfare Fund Samruk-Kazyna”.

Yet, without individual level capacity, it is not possible to develop an organizational culture conducive to “first to market, with the right product, at the right price” mentality. Thinking strategically and acting entrepreneurially at the individual level are the foundation of the firm being able to think strategically and act entrepreneurially. (Jelenc & Pisapia, 2016). Public enterprises reflect its individual level capacity through own strategy. Strategy of innovative development of the organization represents an enlarged plan for its behavior in the field of innovation, ensuring the achievement of the objectives of the operation in the relevant strategic management area. It shows what kind of the innovative activities of the organization should have, how this activity should be intense and what kind of innovations should be predominant. Important in the creation of innovative development strategy is formulation of objectives of innovation process, defining phases and timing of implementation, evaluation of the results in the form of specific practical purposes, the shortening of the introduction of new products. All investigated companies from Table 1 have written strategy, but innovation strategy as a separate document exists in 40% of respondents namely in JSC “NC KazMunayGas” and JSC “KEGOC”. During research it was discovered strategic documents were developed on the basis of governments programs, strategic documents and with inclusion of low regulations. Although it should be noted that only 20% of respondents conduct analysis of company development and structures strategy in accordance with from its results.

Significant feature that indicates innovation development is the existence of scientific research institute/laboratory or connections with equal organizations and it was mentioned in total of 40% of all examined documents. From documents we find out that only JSC “NC KazMunayGas” and JSC “NAC Kazatomprom” have scientific research institute/laboratory operating in the structure of these companies while other participants have special committee on innovative development. For example it was mentioned that under their supervision, undergo

such works as information monitoring, technical assessment and formation of programs for production work and R&D (mean 60%). Rest of the participants has special committee on innovative development that responsible for innovative projects, ideas and implementation.

Following aspects are training and innovative management of personal with mean only 20% in each. Documents of JSC “NAC Kazatomprom” and JSC “KEGOC” covered development of human resources in the direction of innovative development. For instance in the official annual report for 2016 of JSC “NAC Kazatomprom” it was stated that company launched new system of ERP Human Capital Management. Company is determined to automate human resources management processes and this will allow maintain data on employees more efficient.

Another aspect that we considered important to investigate is what these companies stimulate to introduce innovations. They all public enterprises, some of them do not have domestic competitors, overall profit is high and they can always get additional subsidiaries from the government. Sekova et al. (2013) defined motivation as a dynamic and psychological process, in which relations between subjects (internal motivation) and environment (external attributes of motivation) create a tension and the focusing of actions, which after the decision-making process, lead towards the target. However from Table 1 it is understandable that mostly external factors drives companies to choose introduction of innovation and this can be highlighted in sentences from report of JSC “NC KazMunayGas” that is ‘in accordance with the State Program on Industrial and Innovative Development of the Republic of Kazakhstan, investment projects on modernization and reconstruction are implemented at three oil refineries of the republic’. Therefore driver of innovations is government policy.

<p>Table 2 CORRELATION MATRIX OF VARIABLES</p>						
Independent variable	Spearman's rho	Definition of Innovation	Innovation Process	Innovation management	Innovation project	Innovation Strategy
Definition of Innovation	Correlation Coefficient	1.000	-0.612	0.612	-0.167	1.000**
	Sig. (2-tailed)		0.272	0.272	0.789	
Innovation Process	Correlation Coefficient	-0.612	1.000	0.250	0.612	-0.612
	Sig. (2-tailed)	0.272		0.685	0.272	0.272
Innovation management	Correlation Coefficient	0.612	0.250	1.000	0.408	0.612
	Sig. (2-tailed)	0.272	0.685		0.495	0.272
Innovation project	Correlation Coefficient	-0.167	0.612	0.408	1.000	-0.167
	Sig. (2-tailed)	0.789	0.272	0.495		0.789
Innovation Strategy	Correlation Coefficient	1.000**	-0.612	0.612	-0.167	1.000
	Sig. (2-tailed)		0.272	0.272	0.789	

Notes: **Correlation is significant at the 0.01 level (2-tailed).

Table 2 summarizes the correlation coefficients between variables that has higher mean in Table 1. In the process of correlation analysis, a moderate positive correlation of high significance was revealed between definition of innovation in strategic documents and innovative management, $r\text{-Spearman}=0.612$. Therefore this emphasize if companies will have distinctive definition of innovation among all strategic documents, than overall level of

innovation management will rise. Notwithstanding is moderate negative correlation with innovation process $r=-0.612$ and negative correlation with innovation project $r=-0.167$. In turn, innovation management is positively correlated with the innovation process and project

Moderate negative correlation has innovation process with definition of innovation and innovation strategy. This implies that whether or not companies pay attention to description of innovation or its strategy it is not a barrier for ongoing innovation process. In the other hand moderate positive correlation with innovation project ($r=0.612$) seems to suggest that growth any of these two features will affect one another. Independent variable innovation management has positive correlation with all features presented in Table 2. Therefore companies with structured innovation management tend to innovate more.

Noteworthy is moderate negative correlation of innovation strategy with innovation process and innovation project. It is almost representing current situation among all companies in Kazakhstan that apply innovations in industries without detailed written innovation strategy.

CONCLUSION AND RECOMMENDATION

In most developed countries shift to innovative development started in the post-war years and continues now. As for Kazakhstan innovation became issue of interest in last 20 years. Therefore it is necessary to increase the pace and quality of economic development by concentrating resources and efforts of the state, enterprises and businesses through strengthening priorities for solving pointed issues and building an innovation development strategy. The introduction of innovations will allow companies to function effectively in already developed areas and to open new opportunities for entering international markets. Innovation will transform the management mechanism at both the state and corporate levels. They create the basis for reducing the time management cycle, analyzing information, open possibilities of new combinations of control objects.

Overall conducted study showed that companies perceive innovation as modernization and reconstruction making emphasis on innovation process and connections with scientific research institutions. Throughout the research it become visible that companies are less motivated in additional trainings for personal, most of the companies are willing to hire ready-made professionals than to educate human resources that they already have.

Therefore the country has long way in developing infrastructure for innovations and its promotion among different companies.

Study also highlighted orientation of enterprises to use methods and technologies produced in developed countries. Nowadays it is safer to use technology that proved its reliability, besides it can return investments faster. Moreover the process of integration of innovation can take time, require specific resources and is risky. Even our government took course on innovative development and created strategies, Kazakhstan enterprises still shape innovative behavior. This is due to the fact that most of the companies in the country and investigated ones originally were not innovation oriented. In the condition of planned economy and restriction of the USSR, completion and global market bypassed Kazakh Soviet Socialist Republic. Situation becomes to change in the 1990s with Kazakhstan's independence and the beginning of socioeconomic reforms and political changes.

Nowadays innovation activity is became one of the main focused subjects for government policies and practices. Thus inclusion of innovative development into law regulations and strategies began from 2000's furthermore initiating enterprise interest in it. In this study our aim was to illuminate perception of innovation by national enterprises, so participants represent

companies owned by the joint-stock company "National Welfare Fund Samruk-Kazyna", the only shareholder of which is the Government of the Republic of Kazakhstan. We believe that better understanding leads to successful realization of innovative ideas in different areas. Therefore it was important to identify how enterprises understand innovative development through features that they consider reasonable to cover in their official documents.

REFERENCES

- Abalkin, L.I., Abramova, M.A. & Alekseev, A.I. (2007). *Nacional'naja jekonomika*. Moscow, Jekonomist publishing.
- Agénor, P.R. & Neanidis, K.C. (2015). Innovation, public capital and growth. *Journal of Macroeconomics*, 44, 252-275.
- Amabile, T.M. (1988). A model of creativity and innovation in organisations. In B.M. Staw & L.L. Cummings (Eds.), *Research in Organizational Behavior* (pp. 123-167). Jai Press, Greenwich.
- Amosov A.I. (2012). *O scenarij modernizacii i innovacionnogo razvitija promyshlennosti Rossii*. Moscow, Institut jekonomiki RAN publishing.
- Andersson, J., Bengtsson, F., Ekman, J., Lindberg, E., Waldehorn, C. & Nilsson, F. (2011). *Perception of innovation in companies-measuring the mindset of tangible and intangible innovation in companies*. In Technology Management Conference (ITMC), IEEE International.
- Arundel, A. & Huber, D. (2013). From too little to too much innovation? Issues in measuring innovation in the public sector. *Structural Change and Economic Dynamics*, 27, 146-159.
- Aslan, A.E., Duman, B., Dunya, S.E.N., Duran, C. & Atarbay, S. (2016). A pilot study on the perception of innovation and entrepreneurship. *Eurasian Journal of Educational Research*, 16(64).
- Bekniyazova, D.S., Akishev, A., Kaliyev, I., Shamshudinova, G.T. & Altybassarova, M.A. (2016). Innovations as Drivers of stable growth of the Kazakh economy through state policy in area of eco-innovations implementation. *International Journal of Energy Economics and Policy*, 6(3).
- Bhuiyan, N. (2011). A framework for successful new product development. *Journal of Industrial Engineering and Management*, 4(4), 746-770.
- Bower, J.L. & Christensen, C.M. (1996). Disruptive technologies: Catching the wave. *The Journal of Product Innovation Management*, 1(13), 75-76.
- Cáceres, R., Guzmán, J. & Rekowski, M. (2011). Firms as source of variety in innovation: Influence of size and sector. *International Entrepreneurship and Management Journal*, 7(3), 357.
- Cooke, P. & Leydesdorff, L. (2006). Regional development in the knowledge-based economy: The construction of advantage. *The journal of technology Transfer*, 31(1), 5-15.
- Depeige, A. & Sindakis, S. (2015). *Current practices and perceived innovation enablers and barriers: The role of workers' competences: An exploratory field study in a knowledge-intensive firm in Thailand*. The Entrepreneurial Rise in Southeast Asia: Palgrave Macmillan US.
- Doran, J. & Ryan, G. (2012). Regulation and firm perception, eco-innovation and firm performance. *European Journal of Innovation Management*, 15(4), 421-441.
- Dube, S. & Danescu, D. (2011). *Supplemental guidance: Public sector definition*. The Institute of Internal Auditors-Global, Altamonte Springs, USA.
- Dutta, S., Lanvin, B. & Wunsch-Vincent, S. (2017). *The global innovation index 2017: Innovation feeding the world*.
- Egbetokun, A., Oluwadare, A.J., Ajao, B.F. & Jegede, O.O. (2017). Innovation systems research: An agenda for developing countries. *Journal of Open Innovation: Technology, Market and Complexity*, 3(1), 25.
- Efron, R. (1969). What is perception? *Boston studies in the philosophy of science*, 4, 137-173.
- Franklin, M. (2011). *Managing business transformation: A practical guide*. IT Governance Ltd.
- Hanel, P. (2003). *Impact of government support programs on innovation by Canadian manufacturing firms*. Centre interuniversitaire de recherche sur la science et la technologie.
- Herrmann, A., Gassmann, O. & Eisert, U. (2007). An empirical study of the antecedents for radical product innovations and capabilities for transformation. *Journal of Engineering and Technology Management*, 24(1), 92-120.
- Iorgulescu, M.C. & Răvar, A.S. (2013). Measuring managers' perception of innovation in the Romanian hospitality industry. *Procedia Economics and Finance*, 6, 512-522.
- Jaruzelski, B., Schwartz, K. & Staack, V. (2015). Innovation's new world order. *strategy+business*, 81.

- Jelenc, L. & Pisapia, J. (2016). Building bridges between entrepreneurship and strategic thinking. In *Neostrategic Management* (pp. 75-93). Springer International Publishing.
- Jelenc, L. & Raguz, I.V. (2016). Past and future: Neostrategic management. In *Neostrategic Management* (pp. 1-13). Springer International Publishing.
- Jang, Y., Ko, Y. & Kim, S.Y. (2016). Cultural correlates of national innovative capacity: A cross-national analysis of national culture and innovation rates. *Journal of Open Innovation: Technology, Market and Complexity*, 2(1), 23.
- Karlsson, C. & Tavassoli, S. (2016). Innovation strategies of firms: What strategies and why? *The Journal of Technology Transfer*, 41(6), 1483-1506.
- Kelly, P., Hegarty, J., Barry, J., Dyer, K.R. & Horgan, A. (2017). A systematic review of the relationship between staff perceptions of organizational readiness to change and the process of innovation adoption in substance misuse treatment programs. *Journal of Substance Abuse Treatment*.
- Kianto, A., Sáenz, J. & Aramburu, N. (2017). Knowledge-based human resource management practices, intellectual capital and innovation. *Journal of Business Research*, 81, 11-20.
- Kondratiev, N.D. (1989). *Problems of economic dynamics*. Moscow: Economics.
- Lendel, V., Hittmár, Š. & Latka, M. (2015). Application of management of innovation processes in enterprises: Management approach, problems and recommendations. *Procedia Economics and Finance*, 34, 410-416.
- Maidique, M.A. & Zirger, B.J. (1984). A study of success and failure in product innovation: The case of the US electronics industry. *IEEE Transactions on engineering management*, 4, 192-203.
- Mehmet A.D. & David B.A. (2017). Conditions for innovation in public sector organizations. *Research Policy*, 46(9), 1681-1691.
- Mukhtarova, K. & Myltykbayeva, A. (2013). Management of regional economies in Kazakhstan, in terms of innovation development. *World Applied Sciences Journal*, 25(11), 1595-1599.
- Oldham, G.R. & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy Of Management Journal*, 39, 607-634.
- Organisation for Economic Co-Operation and Development (2005). *Oslo manual: Guidelines for collecting and interpreting innovation data*. Paris, France: OECD Publishing.
- Pancholi, S., Yigitcanlar, T. & Guaralda, M. (2014). Urban knowledge and innovation spaces: Concepts, conditions and contexts. *Asia Pacific Journal of Innovation and Entrepreneurship*, 8(1), 15-38.
- Pancholi, S., Yigitcanlar, T. & Guaralda, M. (2015). Place making facilitators of knowledge and innovation spaces: Insights from European best practices. *International Journal of Knowledge-Based Development*, 6(3), 215-240.
- Pece, A.M., Simona, O.E.O. & Salisteanu, F. (2015). Innovation and economic growth: An empirical analysis for CEE countries. *Procedia Economics and Finance*, 26, 461-467.
- Pradhan, R.P., Arvin, M.B., Hall, J.H. & Nair, M. (2016). Innovation, financial development and economic growth in Eurozone countries. *Applied Economics Letters*, 23(16), 1141-1144.
- Program of transformation of "National Welfare Fund Samruk-Kazyna" (2014).
- Prajogo, D.I. (2016). The strategic fit between innovation strategies and business environment in delivering business performance. *International Journal of Production Economics*, 171, 241-249.
- Rios, M.C., McConnell, C.R. & Brue, S.L. (2013). *Economics: Principles, problems and policies*. McGraw-Hill.
- Sagieva, R.K. & Zhuparova, A.S. (2012). Management of innovation processes in terms of development of national economy of Kazakhstan. *Procedia-Social and Behavioral Sciences*, 65, 88-93.
- Samuelson, P.A. (1951). *Economics-an introductory analysis*. McGraw-Hill Book Company; New York; London; Toronto.
- Satpayeva, Z.T. (2017). State and prospects of development of Kazakhstan innovative infrastructure. *European Research Studies Journal*, 20(2), 123-148.
- Shakirtkhanov, B.R. (2017). Problems and prospects of the development of the national innovation system in Kazakhstan. *International Journal of Applied Business and Economic Research*, 15(8), 103-115.
- Searle, R.H. & Ball, K.S. (2003). Supporting innovation through HR policy: Evidence from the UK. *Creativity and Innovation Management*, 12(1), 50-62.
- Sekova, M., Durian, J., Kucharova-Mackayova, V., Minarova, M. & Theodoulides, L. (2013). *People in organization and organizational culture*. Management II. Banská Bystrica. Matej Bel University Press.
- Schumpeter, J.A. (1982). *The theory of economic development: An inquiry into profits, capital, credit, interest and the business cycle*. Transaction Publishers.
- Scupola, A. & Zanfei, A. (2016). Governance and innovation in public sector services: The case of the digital library. *Government Information Quarterly*, 33(2), 237-249.

- Sim, E.W., Griffin, A., Price, R.L. & Vojak, B.A. (2007). Exploring differences between inventors, champions, implementers and innovators in creating and developing new products in large, mature firms. *Creativity and Innovation Management*, 16, 422-436
- Smith, A., Courvisanos, J., Tuck, J. & McEachern, S. (2011). *Building innovation capacity: The role of human capital formation in enterprises-A review of the literature*. Occasional Paper: National Centre for Vocational Education Research (NCVER).
- Sultangalieva, G. & Werth, P.W. (2015). The place of Kazakhstan in the study of Central Asia. *Kritika: Explorations in Russian and Eurasian History*, 16(2), 345-358.
- Toxanova, A., Galiyeva, A., Muhamedzhanova, A., Baibusinova, G., Kulubekova, A. & Ashikbayeva, Z. (2017). Innovative entrepreneurship financing in the Republic of Kazakhstan. *Journal of Applied Economic Sciences*, 12(3), 875-892.
- Twiss, B.C. (1986). *Managing technological innovation*. Longman Publishing Group.
- Wolf, R.A. (1994) Organizational innovation: Review, critique and suggested research directions. *Journal of Management Studies*, 31(3), 405-431.
- Yigitcanlar, T., Sabatini-Marques, J., Da-Costa, E.M., Kamruzzaman, M. & Ioppolo, G. (2017). *Stimulating technological innovation through incentives: Perceptions of Australian and Brazilian firms*. Technological Forecasting and Social Change.
- Youtie, J. (2003). *Innovation earns*. Industrial Engineering.