DEVELOPMENT OF AN INNOVATION MANAGER'S COMPETENCY PROFILE

Gulnur Amirova, L.N. Gumilyov Eurasian National University
Nurlan Kurmanov, L.N. Gumilyov Eurasian National University
Elmira Uteubayeva, Academician E.A. Buketov Karaganda State University
Tashikul Mashirova, M. Auezov South Kazakhstan State University
Rimma Satkanova, Kazakh University of Economics, Finance and International Trade
Aiganym Kokenova, International Humanitarian Technical University

ABSTRACT

The article suggests an approach to the formation of the innovation manager's competency profile. We have conducted a study within some reasonable bounds. Innovation manager's competencies are considered at the level of PhD doctorate educational programs in "Management" and "Innovation Management." In addition to academic, scientific, educational activities, the future researcher is also expected to be planning to engage in innovation activities. The article sorts innovation manager's competencies by content uniformity and differentiates them into groups: 1) Intellectual abilities and critical thinking; 2) Personal performance; 3) Communication, interpersonal and intercultural interaction; 4) Research management; 5) Digital competencies and openness. Using the method of focus testing, we have assessed the importance and the required training level for innovation manager's competencies. Based on the results of the study, we have formed the innovation manager's competency profile, which consists of three groups: basic, key and additional competencies. We have concluded that in the framework of the continuing education concept, the state, educational institutions and the young researcher himself need to take an active part in the development of the innovation activity manager's basic and key competencies. Additional competencies should be the responsibility of the young researcher himself, striving to continuously maintain his level of competitiveness in the labor market. The developed competency profile of the innovation manager is useful for future research when assessing the maturity level of competencies among doctoral students and for making adjustments to their training program.

Keywords: Innovative Personnel, Innovative Activity, Research, Competence, Innovation Activity Manager, Research Competencies, Innovation Manager's Competency Profile.

JEL Classifications: A2, M1.

INTRODUCTION

Training and development of innovative personnel must meet the needs of the modern labor market, which is broader than the scientific and academic fields. Many countries attach great importance to innovation, run state projects and programs to support and stimulate innovation, give an important role to the development of innovative personnel competencies in the education system. However, Kazakhstan is still experiencing an acute problem of the demand for innovative personnel, which can be explained by the fact that company managers do not know how to rationally organize their work in order to derive maximum benefit. The entrepreneurial community still does not seem to be ready to accept innovatively active university graduates due to the lack of scientific, technical and innovative activity results ready for implementation in production. In our opinion, overcoming the existing negative phenomena is possible only with a sufficient number and level of training of young innovators and innovation managers. Currently, Kazakhstan needs more innovation research managers able to work not only in science and education, but also in various sectors of the economy and society, industry, business, the public sector, NGOs, etc. The industry is looking for young innovation researching managers who are flexible, creative, communicative, entrepreneurial, and possess good language, intercultural, and social skills. Therefore, we should consider the quality of research and managerial work in a wider social context than before, and include in the assessment system the *"wider application"* skills and competencies (general professional and personal), the ones acquired in one context (i.e. research), but may be useful in another (i.e. employment in innovative entrepreneurship).

Thus, in modern conditions, the important tasks of ensuring the innovation development of the economy are as follows:

- Forming a list of the innovation manager competencies and their differentiation into groups.

- Assessment of the required maturity and importance level of the innovation manager competencies.

- Development of the innovation manager's competency profile in the framework of the competency-based approach and the concept of continuing education.

The article discusses the competencies of a young researcher, a student of the *"Management"* and *"Innovation Management"* educational programs at the PhD doctorate level. In addition to scientific, scientific, educational and pedagogical activities, the future young researcher is expected to also want to engage in innovative activities. These include the following: the innovation's commercial potential assessment; operational planning and organization of work on innovation management; management of all stages of the innovation project; work with partners in the innovation market; control over the introduction of measures to promote innovation on the market.

LITERATURE REVIEW

Here we briefly describe the most famous competency models in the context of innovation management.

Analysts at the World Economic Forum have identified the top 10 key skills necessary for successful work in the Industry 4.0 conditions: *"(1) complex problem solving; (2) critical thinking; (3) creativity; (4) people management; (5) cooperating with others; (6) emotional*

intelligence; (7) judgment and decision making; (8) service orientation; (9) negotiation; (10) cognitive flexibility" (Gray, 2016). It is noted that after 5 years, more than 1/3 of the competencies currently considered important shall change.

The list of universal competencies is grouped by analysts of The Boston Consulting Group in the report *"Russia 2025: Resetting the Talent Balance"* (Butenko et al., 2017) as follows:

1. Cognitive skills: self-development, self-discipline, achieving results, solving non-standard tasks, managerial skills, adaptability.

2. Socio-behavioral skills: communication, interpersonal skills, interculturalism.

3. Digital skills: building systems, managing information.

In 2016, the World Bank has released a report *"Digital Dividends"* (World Bank Group, 2016) on the world development, in which *"the skills demanded in the modern economy are combined into three groups"*: (1) Cognitive, (2) Social and behavioral, (3) Technical.

We are concluding that the skills of the 21st century shall be concentrated on such areas of life as critical thinking and problem solving, creativity and entrepreneurship, innovation and the digital economy.

We have also conducted a detailed analysis of the competencies of a young researcher before receiving a PhD in the European qualification system: Dublin descriptors (Curaj et al., 2015), European framework for research career (European commission, 2011), British framework for the development of researchers (Vitae, 2011), a framework for researchers of the Forum of European Science Foundation member organizations (Scholz et al., 2010), a framework for a research career in the League of European Research Universities members (Boulton, 2011), Salzburg Principles for the Training of Scientific Personnel (European University Association, 2010).

The literature analysis conclusion is that research competencies begin to form only at the magistracy level and develop at the doctorate (graduate school) level. Considerable attention in the European system of qualifications is given to the so-called *"wide application"* skills and competencies: general professional and personal ones. These skills include communication and presentation skills, writing, project and time management, human resource management, financial resource management, teamwork, risk management, etc.

The analysis of the literature (Logosha et al., 2019; Bondar et al, 2019; Sumawidjaja et al., 2019; Markina et al., 2019; Dobina et al., 2019; Kurmanov et al., 2019; Kurmanov et al., 2016) has made it possible to carry out a detailed division of the innovation manager competencies taking into account their relationship in the context of continuing education:

1. Intellectual abilities and critical thinking (necessary for innovation) including information base, cognitive abilities, creative thinking and potential.

2. Personal performance (professional qualities allowing to be an effective innovation manager), including personal qualities, self-management, professional development and career growth.

3. Communication, interpersonal and intercultural interaction (knowledge of standards, requirements for professionalism in the research), including written and speaking skills, teamwork, professional behavioral norms, stress management, etc. We shall also include the following competencies in this group: abilities and skills of pedagogical activity, development of educational and methodological support for the educational process.

4. Research management: innovation management, dissemination of research results, leadership qualities and management monitoring and examination of scientific projects.

A number of scientific papers (Dimov, 2017; Waychal, 2016; Esaulova et al., 2015) describe the *"model of innovative behaviour"* linked to the following groups of competencies:

1. Basic ones, which are formed in the process of vocational training;

2. Functional ones, which are formed in the process of practical activities at the workplace;

3. Innovative competencies, such as creativity, training and development, entrepreneurial spirit, cooperation, a positive perception of innovation.

The proposed approach is based on the process of formation of innovative competencies in the context of employee's development (Esaulova et al., 2015), which, from our point of view, is positive in the formation of the competency model of an innovation manager since, according to many researchers (Lai et al., 2016; Kurmanov et al., 2013; Marchant & McGrew, 1999), attributes of innovative behavior cannot appear immediately and in the right amount.

Other works highlight innovation manager's competency models in the form of a hierarchically ordered list that combines various groups of "hard" skills (related to information technology and entrepreneurship) and *"soft"* skills (related to cognitive and socio-behavioral characteristics) with their subsequent refinement.

Innovation manager's digital competencies need to be treated separately taking into account directions of science development pertinent at this stage, and strategic tasks set in state programs and strategies for digital transformation of society. Considering the European *"Open Science"* project (Ramjoué, 2015), special competencies should also be included: interaction with civil society, use of online resources in research.

Thus, the composition of the innovation manager competencies is quite diverse and extensive. An attempt to assess the level of formation and develop all competencies at the same time shall most likely lead to the thin spread of resources with poor results. In this regard, it seems appropriate to sort the competencies according to the content uniformity and differentiate them into groups:

1. Intellectual abilities and critical thinking.

2. Personal performance.

3. Communication, interpersonal and intercultural interaction.

4. Research management; 5) Digital competencies and openness.

METHODS

The results of a sociological survey have informed the study. The survey questionnaire included questions to identify respondents' parametric characteristics: gender, age, education level, scope of activity. The questionnaire also included questions designed to assess the importance and required level of preparation of a specific competence for innovation activity. The important stages in assessing relevance of the innovation manager's competencies are as follows:

•   Sorting competencies by content uniformity and their differentiation into groups.

•   Selection of experts and the formation of expert groups.

•   Development of a sociological survey questionnaire.

•   Interviewing respondents.

- Processing and analysis of the survey results.

- Building a profile of innovation manager's competencies.

- The sociological survey questionnaire included the following parameters:

- A list of competencies.

- A scale for respondents to assess the importance and required level of competency training (Table 1).

Table 1
A SCALE FOR ASSESSING THE REQUIRED LEVEL OF TRAINING AND THE IMPORTANCE OF COMPETENCIES

Training level	Grading scale	Importance	Grading scale	Competency relevance
Advanced	8.6 to 10.0	Critical	8.6 to 10.0	Basic competencies
Above average	7.6 to 8.5	Important	7.6 to 8.5	Key competencies
Average	5.1 to 7.5	Medium level	5.1 to 7.5	Additional competencies
Below average	2.6 to 5.0	Not very important	2.6 to 5.0	Low relevance competencies
Entry	0 to 2.5	Not important at all	0 to 2.5	

Table 1 lists methodological developments within the framework of our research project *"Modern mechanisms of innovation management in the development of entrepreneurship of the Republic of Kazakhstan"* (Kirdasinova & Kurmanov, 2019). We have also tested the scale for assessing the required training level and the importance of competencies in previously published paper: (Kurmanov et al, 2020). This scale shall aid us in assessing the innovation manager's required level of training and competency importance.

An article by Bartolomé et al. (2018) examines 21 digital competencies, based on which they give a description of the digital competency profile of an office worker and an entrepreneur linked to the following competency groups: Essential, Transversal, Complementary, and low relevance competencies. The methodological approach proposed by Bartolomé et al. (2018) is based on the process of creating digital competencies in the context of employee development, which, in our opinion, is positive when forming an innovation manager's competency profile, since again, in our opinion, attributes of innovative behavior cannot appear immediately and in the right amount.

RESULTS AND DISCUSSION

Assessment of the importance and the required level of preparation of the innovation manager's competencies was conducted on the basis of a survey of 74 Kazakhstan entrepreneurs and science and education representatives. The purpose of the study is to identify the degree of importance of the proposed competence for innovation and the required level of its formation among young researching managers. A sociological survey took place from November 1, 2019 to December 1, 2019 in the cities of Nur-Sultan and Shymkent. 62% (or 46 respondents) of the survey participants were male, 38% (or 28 respondents) were female. The average age was 39 years.

Table 2
INNOVATION MANAGER COMPETENCIES: AVERAGE VALUES OF ASSESSMENTS OF THEIR IMPORTANCE AND LEVEL OF REQUIRED TRAINING

Competency group	#	Competencies and skills	Assessment	
			Importance	Training level
Intellectual abilities and critical thinking	1.1	Search, processing and analysis of information	9.4	9.7
	1.2	Setting and solving problems	9.6	9.6
	1.3	Subject knowledge	9.8	9.8
	1.4	Ability to see opportunities	8.8	8.6
	1.5	Analytical skills	9.6	9.6
	1.6	Creativity	8.4	8.4
	1.7	Critical thinking	9.2	9.3
	1.8	Evaluation of own scientific achievements	9	9.1
	1.9	Academic literacy	8.8	8.8
Personal performance	2.1	Self-reflection and self-development	7.7	7.8
	2.2	Professional and career development	8.2	8.2
	2.3	Curiosity	7.2	7
	2.4	Initiative and perseverance	6.8	7
	2.5	Responsibility and risk-taking	8.3	8.1
	2.6	Perception of criticism and feedback	8.1	7.8
	2.7	Time-management	7.9	8.1
	2.8	Protection of health and well-being	5.5	5.8
Communication, interpersonal and intercultural interaction	3.1	Writing and negotiation skills	8.8	9.2
	3.2	Presentation skills	7.8	7.9
	3.3	Teamwork	7.9	8.4
	3.4	Openness	8.2	8
	3.5	Cross-functional and cross-disciplinary interaction	7.6	7.6
	3.6	Foreign languages and cultures	6.8	7.2
	3.7	Commitment to ethical standards and research values	8.2	8.6
	3.8	Stress management	5.4	5.8
	3.9	Teaching skills	5.2	5.3
	3.10	Development of educational and methodological support for the educational process	4.4	4.6
	3.11	Social responsibility	5.8	6.2
Research management	4.1	Planning and scientific research	8.1	8.5
	4.2	Testing of scientific research	7.8	7.7
	4.3	Dissemination of research results	7.6	7.8
	4.4	Ensuring the implementation of scientific research	8.9	8.8
	4.5	Using innovation	9.2	9.5
	4.6	Leadership in research	7.9	8.1
	4.7	Project management	9.5	9.6
	4.8	Resource management	8.9	9.3
	4.9	Monitoring and review of scientific papers	5.8	5.9
	4.10	Organization of students' scientific-research work	5.2	5.5
Digital competencies and openness	5.1	Information literacy	8.2	8.4
	5.2	Copyright and licenses	8.5	8.4
	5.3	Programming	4.1	4.2
	5.4	Solution of technical problems	4.2	4.4
	5.5	Using online resources in research	8.4	8.5
	5.6	Interaction with civil society	5	5.6
	5.7	Online security	5.7	6.2

The interviewed respondents had a higher education and at least PhD degree, and 3 years of practical experience in such positions as: the head of the project office, the head of the transformation office, the head of the digital technology office, the head of the scientific and technical programs department, the head of the commercialization department, the head of the department of innovation and patent service, head of the department, professor, associate professor of the department at the university.

In the process of analyzing the results, we have calculated average values of assessments of the importance and level of required training for each proposed competency. Having processed the results of the focus group, we have obtained the data presented in table 2.

Based on table 2, we can conclude that in each group of competencies there are competencies of different levels of importance for the innovation manager and the corresponding requirements for their training level. The most important competencies include intellectual abilities and critical thinking, while the least important ones are digital competencies and openness.

The list of competencies presented in table 2 is a working tool for forming the innovation manager's competency profile, which can be used for the development of industry and professional standards, and in the system of postgraduate education for the development of educational and methodological support for the educational process.

Thus, the literature analysis has made it possible to identify the composition of the innovation manager's competencies, sorting them by content homogeneity, and further evaluating their importance and the level of required training.

Figure 1 illustrates the results of assessing the importance and level of required training of innovation manager's competencies.
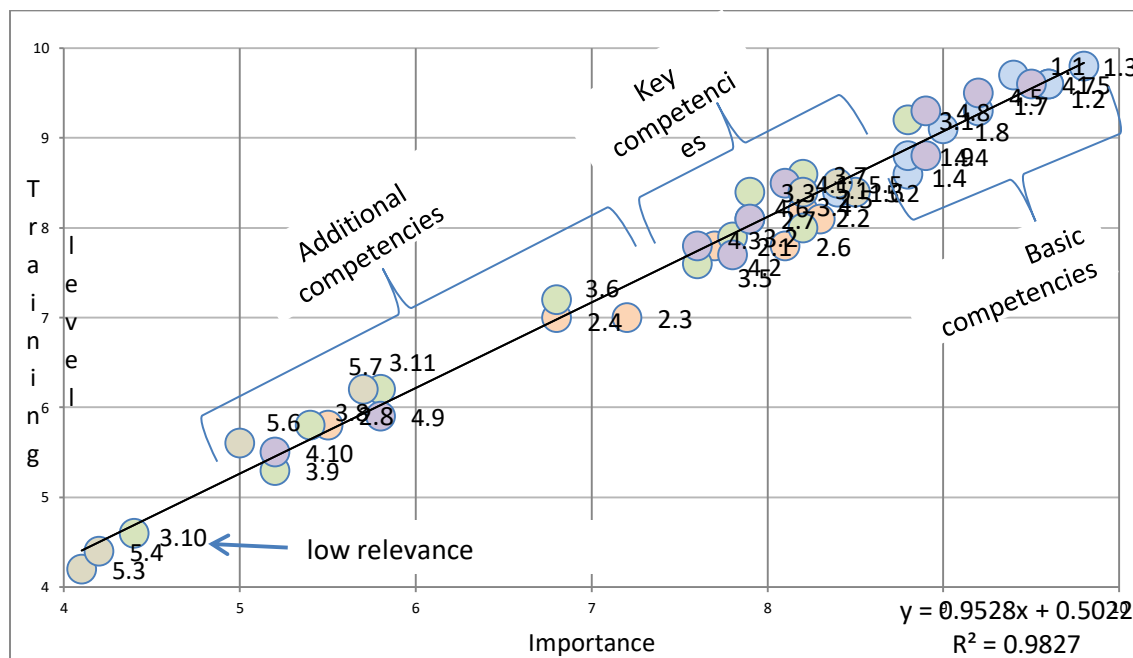
FIGURE 1
RESULTS OF ASSESSMENT OF THE IMPORTANCE AND LEVEL OF REQUIRED TRAINING OF INNOVATION MANAGER'S COMPETENCIES

Figure 1 shows a graphical representation of the distribution of innovation manager's competencies in four groups: basic, key, additional ones and those of low relevance. Further analysis of Figure 1 lets us conclude that there is a high communication tightness ($R2 = 98$) between the level of training and the competency importance of innovation management.

Then, by expertise, we have formed the innovation manager competency profile with relevant competencies (Table 3).

<table>
<tr><td colspan="2">Table 3
INNOVATION MANAGER COMPETENCY PROFILE</td></tr>
<tr><td>Competency relevance</td><td>Competencies</td></tr>
<tr><td>Basic competencies</td><td>Search, processing and analysis of information; Setting and solving problems; Subject knowledge; Ability to see opportunities; Analytical skills; Critical thinking; Evaluation of own scientific achievements; Academic literacy; Writing and negotiation skills; Ensuring the implementation of scientific research; Using innovations; Project management; Resource management.</td></tr>
<tr><td>Key competencies</td><td>Self-reflection and self-development; Professional and career development; Creativity; Responsibility and risk-taking; Perception of criticism and feedback; Time management; Presentation skills; Teamwork; Openness; Cross-functional and cross-disciplinary interaction; Commitment to ethical standards and values of research activities; Planning and implementation of research; Testing of research; Leadership in research; Dissemination of research results; Information literacy; Copyright and licenses; Use of online resources in research.</td></tr>
<tr><td>Additional competencies</td><td>Curiosity; Initiative and perseverance; Protection of health and well-being; Foreign languages and cultures; stress Management; pedagogical Skills; Social responsibility; Monitoring and examination of scientific works; Organization of research work of students; Interaction with civil society; Security in the network.</td></tr>
</table>

RECOMMENDATIONS

The competence profile of innovation managers consists of three groups: basic, key and additional competencies. In this sense, we agree with a number of scholars (Hendarman & Cantner, 2018; Yashin et al., 2018; Esaulova et al., 2015) that the most reasoned and vivid form of presenting a competence profile is an ordered list that combines groups of *"hard"* and *"soft"* competencies.

Basic competencies are the most important ones, without them effective young manager and researcher's innovation activity appears impossible. According to the survey results, we have complemented this group of competencies with those of utmost importance for future researchers and which require them to have an advanced level of training. These include: Search, processing and analysis of information; Setting and solving problems; Subject knowledge; Ability to see opportunities; Analytical skills; Critical thinking; Evaluation of own scientific achievements; Academic literacy; Writing and negotiation skills; Ensuring the implementation of scientific research; Using innovations; Project management; Resource management.

Key competencies are those that have a high level of importance for innovation activity and require young researchers to have a training level above average. This group includes: Self-reflection and self-development; Professional and career development; Creativity; Responsibility and risk-taking; Perception of criticism and feedback; Time management; Presentation skills; Teamwork; Openness; Cross-functional and cross-disciplinary interaction; Commitment to ethical standards and values of research activities; Planning and implementation of research;

Testing of research; Leadership in research; Dissemination of research results; Information literacy; Copyright and licenses; Use of online resources in research.

We believe that the state, educational institutions and the young researcher himself should take an active part in the development of basic and key competencies of future innovation managers within the framework of the continuing education concept (Dimov, 2017; Esaulova et al., 2015).

Additional competencies are a group of competencies that improve the profile of researchers, but they are not of primary importance for conducting innovation activities. This group of competencies also has an average value for the level of training. This group includes: Curiosity; Initiative and perseverance; Protection of health and well-being; Foreign languages and cultures; stress Management; pedagogical Skills; Social responsibility; Monitoring and examination of scientific works; Organization of research work of students; Interaction with civil society; Security in the network.

In modern conditions, young researchers must take responsibility for maintaining the level of their competencies and choose the means to achieve their goals. We believe that additional competencies formed in the education system should be the young researcher's own responsibility if he or she seeks to continuously maintain the level of their competitiveness in the labor market.

We can also observe the fourth group, the low relevance competencies (development of educational and methodological support for the educational process; programming; solving technical problems). We propose to exclude them from the innovation manager's competency profile.

CONCLUSION

The list of competencies of an innovation manager can be presented in the form of an ordered list with sorting the competencies by their content homogeneity and highlighting the following groups: 1) Intellectual abilities and critical thinking; 2) Personal performance; 3) Communication, interpersonal and intercultural interaction; 4) Research management; 5) Digital competencies and openness.

The research results have helped us develop an innovation manager's competency profile, which consists of three groups: basic, key and additional competencies.

The state, educational institutions, and the young researchers themselves should take an active part in developing the basic and key competencies of the innovation manager within the framework of the continuing education concept.

Additional competencies should be the young researcher's own responsibility if he or she seeks to continuously maintain the level of their competitiveness in the labor market.

The developed innovation manager's competency profile is useful for future research in assessing the level of formation of doctoral students' competencies in the educational programs *"Management"* and *"Innovation management"* and making adjustments to their training program.

The sphere of formal and non-formal education is a key platform for training innovative personnel. In this regard, for the formation and development of competencies for future innovation managers, it is necessary to introduce new approaches in the education system, change the methods and technologies of training taking into account the proposed innovation manager's competence profile.

ACKNOWLEDGMENT

REFERENCES

Bartolomé, J., de Soria, I.M., Jakobsone, M., Fernández, A., Ruseva, G., Koutoudis, P., Merrigan, D., & Vaquero, M. (2018). *Developing a digital competence assessment and accreditation platform for digital profiles.* Proceedings of the 12th International Technology, Education and Development Conference (INTED), 5-7.

Bondar, I., Gumenyuk, T., Udris-Borodavko, N., & Penchuk, O. (2019). Entrepreneurship model for creation of designer competences in the process of professional training. *Journal of Entrepreneurship Education, 22*(6), 1-6.

Boulton, G. (2011). Harvesting talent: Strengthening research careers in Europe. *Procedia-Social and Behavioral Sciences, 13,* 3-34.

Butenko, V., Polunin, K., Kotov, I., Sycheva, E., Stepanenko, A., Zanina, E., & Topol'skaya, E. (2017). *Russia 2025: From cadres to talents.* Retrieved from http://d-russia.ru/wp-content/uploads/2017/11/Skills_Outline_web_tcm26-175469.pdf

Curaj, A., Matei, L., Pricopie, R., Salmi, J., & Scott, P. (2015). *The European higher education area: Between critical reflections and future policies.* Springer.

Dimov, D. (2017). Competency profile of the innovative enterprises. *Industry 4.0, 2*(3), 135-138.

Dobina, T., Haidukevych, K., Panchenko, S., & Petrova, I. (2019). Effectiveness analysis of entrepreneurship model of development qualities of future managers. *Journal of Entrepreneurship Education, 22*(3), 1-6.

Esaulova, I.A., Lin'kova, N.V., & Merkusheva, A.A. (2015). Innovative competencies as the basis for innovative behavior of employees of the organization. *Vestnik universiteta*, *5*, 330-335.

European commission. (2011). *Towards a European framework for research careers.* Retrieved from https://cdn5.euraxess.org/sites/default/files/policy_library/towards_a_european_framework_for_research_careers_final.pdf

European University Association. (2010). *Salzburg II Recommendations-European universities' achievements since 2005 in implementing the Salzburg Principles. European University Association.* Retrieved from https://eua.eu/downloads/publications/salzburg%20ii%20recommendations%202010.pdf

Gray, A. (2016). *The 10 skills you need to thrive in the Fourth Industrial Revolution.* In: World Economic Forum, 19.

Hendarman, A.F., & Cantner, U. (2018). Soft skills, hard skills, and individual innovativeness. *Eurasian Business Review, 8*(2), 139-169.

Kirdasinova, K.A., & Kurmanov, N.A. (2019). *Modern mechanisms of innovation management in the development of entrepreneurship of the Republic of Kazakhstan.* Interim report, 89.

Kurmanov, N., Aliev, U., & Suleimenov, Sh. (2019). Analysis of the efficiency of innovation management in the countries of the eurasian economic. *Polish Journal of Management Studies, 19*(1), 204-214.

Kurmanov, N., Aliyeva, Z., Kabdullina, G., & Mutaliyeva, L. (2020). Digital entrepreneurship competencies among students: Methodological aspects of the maturity level and development program making. *Journal of Entrepreneurship Education, 23*(2), 1-11.

Kurmanov, N., Tolysbayev, B., Aibossynova, D., & Parmanov, N. (2016). Innovative activity of small and medium-sized enterprises in Kazakhstan and factors of its development. *Economic Annals-XXI, 158* (2), 57-60.

Kurmanov, N.A., Zhumanova, B.K., & Kirichok, O.V. (2013) Business-Education in Kazakhstan: Opportunities and Development Strategy. *World Applied Sciences Journal, 21*(10), 1495-1501.

Lai, J., Lui, S.S., & Tsang, E.W. (2016). Intrafirm knowledge transfer and employee innovative behavior: The role of total and balanced knowledge flows. *Journal of Product Innovation Management, 33*(1), 90-103.

Logosha, R., Bondarenko, V., Samokhval, O., Pavelkiv, R., & Petrenko, O.B. (2019). Entrepreneurship education of future economists in the process of preparation. *Journal of Entrepreneurship Education, 22*(6), 1-6.

Marchant, L.F., & McGrew, W.C. (1999). *Innovative behavior at mahale: New data on nasal probe and nipple press.*

Markina, I., Safonov, Y., Zhylinska, O., Gaidai, T., & Kahanov, Y. (2019). Entrepreneurship education management in the context of global changes in economy. *Journal of Entrepreneurship Education, 22*(6), 1-10.

Ramjoué, C. (2015). Towards open science: The vision of the European Commission. *Information Services & Use, 35*(3), 167-170.

Scholz, B., Vuorio, E., Matuschek, S., & Cameron, I. (2010). *Research careers in Europe landscape and horizons.* In A report by the ESF Member Organisation Forum on Research Careers.

Sumawidjaja, R.N., Suryana., Ahman, E., & Machmud, A. (2019). The impact of entrepreneurial competencies on creative industry performance in Indonesia. *Journal of Entrepreneurship Education, 22*(6), 1-13.

Vitae. (2011). *Researcher Development Framework.* Cambridge: Careers Research and Advisory Centre.

Waychal, P. (2016). *A framework for developing innovation competencies.* In 2016 ASEE Annual Conference & Exposition.

World Bank Group. (2016). *World development report 2016: digital dividends.* World Bank Publications.

Yashin, A., Klyuev, A., & Bagirova, A. (2018). Designing entrepreneurial education in Russia: hard and soft skills. *Ekonomski Vjesnik, 31*(2), 261-274.