

S. Reidolda¹
A.M. Berzhanova¹
S.A. Azylkanova¹

¹L.N. Gumilyov Eurasian National University, Astana, Kazakhstan
(E-mail: Sau_1981@mail.ru, aigul_berjanova@list.ru, azsaule@mail.ru)

Analysis of the effectiveness of PPP projects in the Akmola region

Abstract. *The article presents an analysis of the composition, structure and correlation and regression analysis of the dynamics of public-private partnership projects in the Akmola region, implemented in the period from 2017 to 2020. The purpose of the study is to identify during what period there was a change in the number of projects and the reasons for their change, as well as the impact on the development of the region by conducting dynamic-structural and correlation-regression analysis of PPP projects implemented in the Akmola region. In the course of the study, methods of comparative analysis, analysis of dynamic series, calculation of relative indicators, comparison, correlation-regression, variance analysis and forecasting were used.*

As a result of the analysis of the Akmola region for the period from 2017 to 2020, 76 projects were presented in general, of which only 52 projects are being implemented. In comparison with the republican level, the submitted projects in the Akmola region amount to 5.58%. Also in 2018, the most projects were implemented, i.e. 27 projects and an increase of 3.5 times compared to 2017. Of the main industries considered, it was revealed that the largest number of projects were implemented in the healthcare sector, and its share was 4.3%. At the same time, a minimal project has been implemented in the field of agriculture and its share amounted to 0.08%. According to the results of the correlation analysis, the correlation coefficient between GRP and attracted PPP investments in education is 0.6 and in other industries is 0.57. According to the results of regression analysis, there is an average close relationship between the studied performance indicator and the factor indicator, and since the value of R² is less than 0.6, the model may be nonlinear. The value of the indicator F is 0.75, and the value P is greater than 0.05 for performance and factor indicators, therefore, factor indicators do not have a significant impact on the performance indicator.

In conclusion, the projects implemented in the Akmola region are concluded on the basis of trust management of state property and other contracts, therefore it is necessary to pay attention to the application of other types of contracts provided for by law, as well as to the provision of projects in the field of industry, agriculture and utilities and attracting investments in these industries.

Keywords: *PPP projects, investments involved in PPP projects, the institutional approach of PPP, the contractual approach of PPP, comparative analysis, dynamic analysis, structural analysis.*

DOI: <https://doi.org/10.32523/2789-4320-2022-4-11-25>

Introduction

Poor-quality infrastructure hinders the country's sustainable economic growth and increases its stability in the international market. Undeveloped infrastructure is one of the main reasons for the poor quality of life of the population. Therefore, the social efficiency of infrastructure projects will be significant. The growth of investments in infrastructure contributes to the improvement of the well-being of the population. However, the public sector finances infrastructure services from the budget. Despite this, it is constantly looking for effective ways to attract investment. PPP is an important tool for attracting investment in infrastructure. Here, PPP is considered in a broad sense as a contract concluded between the state and the private sector to expand and improve infrastructure activities [1].

In most cases, projects using the PPP mechanism are created in a hurry without sufficient funding and the help of experts. It is a big mistake. The basis should be priority strategic projects, the PPP projects which are part of the economic policy of the sectoral structures. The main role of the state is to ensure the implementation of the project at the proper level, supervision of the activities of private investors, prompt resolution of emerging controversial issues. The use of the PPP mechanism is costly and can take a long time [2]. Even in developed PPP countries, on average, the preparation of projects accounts for 2.6% of all work costs and the duration of the preparation process is 36 months. In this regard, the question arises as to how effective the use of the PPP mechanism is for solving issues related to any infrastructure. However, there are some reasons why the state needs to use the PPP mechanism:

- the presence of corruption in public procurement methods, lack of transparency in financing ways, and low efficiency of private sector activities;
- lack of managerial and technical specialists;
- high costs for the implementation of infrastructure projects, significant costs for periodic repairs and maintenance, lack of public resources, and the need for investment.

Using PPP mechanism brings many benefits to the state. In this regard, PPP projects have been implemented in the Republic of Kazakhstan since 2006. Recently, the activation of PPP has been associated with the improvement of the legislative and institutional framework. In the period from 2012 to 2020, amendments were made to the legislation aimed at expanding the scope of PPP, and the independence of local executive bodies when considering PPP projects were expanded. By the law on PPP, the following opportunities are provided: using PPP in all sectors of the economy; expansion of forms and types of contracts; introduction of a private finance initiative when initiating a project by the private sector, rather than by a public institution; reduction of planning time and development of a special procedure for PPP projects [3]. These opportunities have led to an increase in the number of PPP contracts. As of November 20, 2020, a total of 1,362 projects have been issued in the republic for the period up to 2020, of which 76 projects have begun to be implemented in the Akmola region and the share is 5.58% [4]. The sharp increase in the number of PPP projects requires their analysis.

The purpose of the article is to assess the dynamic growth in the Akmola region with a comparative and dynamic analysis of the structure and composition of PPP projects. By the set goal, the following tasks were set:

- Dynamic analysis of the composition, structure, and coverage of economic sectors of projects submitted under PPP contracts concluded in Akmola region for 2017-2020;
- conducting a comparative analysis of current PPP projects.

The object of the study is the number of PPP projects in the Akmola region for 2017-2020. The subject of the study is an economic and statistical analysis of PPP projects in the region.

Public-private partnership is a new institution that emerged in the early 1990s in Europe as a new instrument of state participation in the market economy and an alternative to privatization. Among the foreign PPP studies, the most authoritative are the works of Hackman, R. J. Bennett and G. Krebs 1994, J. Sellgren (1990), E. Osborne (2003), S. Stern and D. Hardin (2005), J.

Broadbent and J. Llewflina 2003, G. Hodja and K. Greve (2007), E.R. Yascomb (2007) and others [5].

Within the framework of foreign PPP research, several conceptual approaches can be distinguished. PPP has defined its place and role in the economy:

1. The word PPP in a broad sense was interpreted as any form of cooperation between business and the state, based on charity, corporate social responsibility, etc.

2. PPP as an organizational structure and tool of the "new public administration" Yu. Van Ham and D.K. Koppen Jean (2001), J. Broadbent and J. Llewflyn (2003) works were considered. According to this approach, PPP was interpreted as an alternative to state regulation and privatization of strategic and vital objects of state property. However, these studies focused on the search for effective organizational schemes and methods [6].

3. Teaching staff E.S. Savaz (2000), M. Gubelman and H. Delmonet (1983) has been interpreted as a "play on words". According to this approach, the authors noted not the positive, but the negative sides and risks of PPP. They explained that this is a disguised form of privatization of state facilities with the inclusion of shortcomings and problems in it [7].

4. The PPP mechanism was interpreted as an instrument of national, international, regional, urban, municipal, economic and social development (World Development Bank 1999, S. Agere 2000).

The basics of the concept in the practice of the CIS and PPP were considered by the characteristic features of the domestic economy V.A. Korolev, V.G. Varnavsky, A.V. Klimenko, V. A. Kabashkin and others [8]. Issues related to PPP in Kazakhstan are considered by Piunova A.V., Smagulova F., Ishkinina G.Sh., etc. In Kazakhstan, the possibilities of public-private partnership have been studied and are not fully used, the practice of which allows us to identify only a few examples of the use of permitted forms of partnership within the framework of current legislation.

According to the results of research to date, it can be noted that there is no single general

definition related to PPP. In our opinion, public-private partnership (PPP) is a long-term concession agreement on cooperation between the public and private sectors, which is widely used in infrastructure projects. At the same time, a deeply developed methodology for studying this topic is not presented, an economic analysis of PPP mechanisms has not been carried out [9].

As a result of a review of the researchers' work related to the active use of PPP mechanisms in the economy, it was revealed that they were mainly analyzed by macroeconomic indicators and were not analyzed by industry indicators. According to the literature review, the authors' opinions can be divided into two groups: analysis of the impact of only one indicator on the activity of using the PPP mechanism and analysis of the impact of several indicators. Scientific works aimed at analyzing the influence of one factor are largely aimed at assessing public debt, the impact of inflation and foreign investment. In this direction, M. Han et al. It is possible to note the works of Alessi et al [10]. In the works of these scientists, it was concluded that there is a positive relationship between the amount of public debt and the activity of PPP, since the PPP mechanism allows you to distribute the volume of investments between several partners. Economists M. Hammami et al., S. Banerjee et al. we conducted research on the example of developing countries and used the same set of macroeconomic variables [11]. Among the researchers M. Hammami et al. It has been established that population density is one of the most important indicators of the analysis of PPP activity, such as analysis is widespread in densely populated countries. It is also concluded that countries with budget deficits are more likely to use the PPP mechanism than countries with rich natural resources, since budget constraints are not so tight in countries with rich natural resources [12]. S. Banerjee et al. analyzed the impact of inflation and GDP per capita on the volume of private investment and established the presence of connections. Using PPP mechanism proved the existence of a positive relationship between activity and money supply. This will reduce the cost of raising funds for ongoing PPP projects [13]. According to Sharma's research,

Table 1. PPP projects developed in the Akmola region for 2017-2020

Economic sectors	Total	Share, %	Under implementation	Planned	A competition is underway	Violation of the agreement
Transport and infrastructure	5	7	4	1	-	-
Education	54	71	37	-	16	1
Agriculture, Forestry, and Fisheries	1	1	1	-	-	-
Health care	9	12	6	3	-	-
Energy and housing and communal services	7	9	4	2	-	1
Total	76	100	52	6	16	2

Note-Compiled by the authors based on data from the literature [4]

it is assumed that an increase in international reserves will contribute to macroeconomic stability, that is, reduce the risk of implementing infrastructure projects [14].

In this regard, in our article, we will consider a comparative analysis of PPP projects implemented in the Akmola region.

Research methods

In the course of the study, methods of economic and statistical grouping, dynamic analysis, structural analysis, and comparative analysis were used. The implemented, competitive, planned, discontinued PPP projects in the Akmola region are grouped by branches of the economy using the grouping method. The absolute growth rates and growth rates of PPP projects implemented in the period from 2017 to 2020 were determined by the method of dynamic analysis. By the method of structural analysis, it was established under which form of the contract the projects were carried out. Its results are compared with the republican level and it is determined how many tenges of investments have been attracted by industries in which PPP projects have been implemented. According to the results of the correlation analysis, the correlation coefficient between GRP and attracted PPP investments in education is 0.6 and in other industries is 0.57.

According to the results of regression analysis, there is an average close relationship between the studied performance indicator and the factor indicator, and since the value of R2 is less than 0.6, the model may be nonlinear. The value of the indicator F is 0.75, and the value P is greater than 0.05 for performance and factor indicators, therefore, factor indicators do not have a significant impact on the performance indicator.

Discussion

The projects cover several sectors of the economy. PPP projects developed in Akmola Region cover the following sectors of the economy, and data in this regard are presented in Table 1:

According to Schedule 1, a total of 76 projects have been submitted for the implementation of PPP in the Akmola region for 2017-2020, of which the PPP agreement has been terminated for 2 projects, 16 are being held, 6 are planned, 52 are being implemented. A total of 52 projects are being implemented, including a maximum of 37 projects in the field of education, 12 projects in healthcare, 9 projects in energy and housing and communal services, 4 projects in transport and infrastructure. The share of actually implemented projects by sectors of the economy has been determined. In this regard, information on the

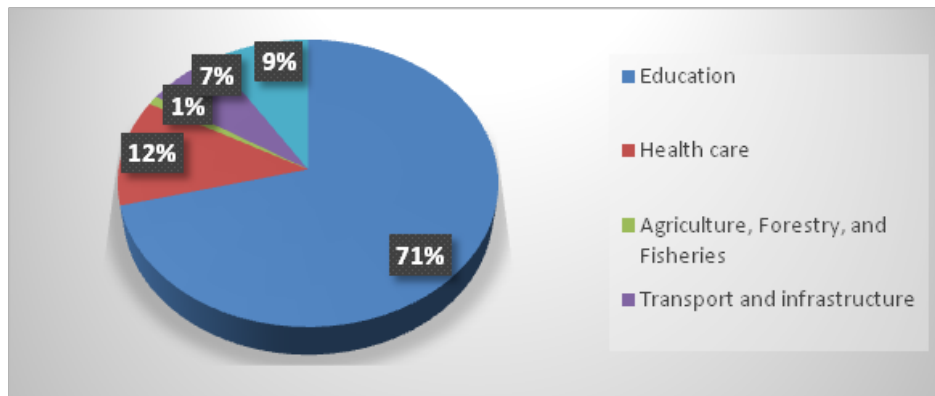


Figure 1. Structure of PPP projects in Akmola region for 2017-2020

Note - Compiled by the authors based on data from the literature [4]

structure of the sectors of the economy covered by PPP projects is presented in the following diagram 1:

According to figure 1, among PPP projects, the share of projects in education is 71%, healthcare - 12%, energy and housing, and communal services - 9%, transport, and infrastructure - 7%, and agriculture, forestry, and fisheries -1%. The sphere of education, in which the largest number of contracts on PPP projects were concluded since the issue of preschool education was very relevant at the level of the republic. Representatives of private business took an active part in the effective organization of kindergartens through PPP.

Figure 1 shows that PPP projects in the Akmola region are implemented only in 5 main sectors of the economy, while in other countries, such as the UK, USA, Ireland, Israel, France, Italy, Germany, Japan, projects in infrastructure, housing, road construction and reconstruction, education, healthcare are mainly implemented

[2]. Currently, the projects implemented in the Akmola region mainly cover the most important sectors of the economy.

It is necessary to pay attention to the dynamics of PPP projects implemented in the 5 sectors of the economy listed above. In total, 9 out of 74 projects in the Akmola region are private financial initiatives, the remaining 65 are competitive. To determine the dynamic change of implemented projects, the proportion of projects by year, absolute and relative growth rates are calculated. We will also pay attention to the dynamics of PPP projects in 2017-2020 and the information is presented in the following 2 tables:

According to Schedule 2, the largest number of PPP projects were implemented in the Akmola region in 2018 and amounted to 52%, in 2017 - 12%, in 2019 - 21%, and 2020 -15%. If we analyze the dynamics of the implementation of PPP projects, the absolute increase in implemented projects in 2018 compared to 2017 increased by 21 projects or 3.5 times. The main reason for

Table 2. Dynamics of PPP projects implemented in Akmola region for 2017-2020

Years	Number of projects	Share, %	Absolute growth	Growth rate, %
In 2017	6	12	-	-
In 2018	27	52	+21=(27-6)	+350=27/6*100-100
In 2019	11	21	-16=(11-27)	-59=11/27*100-100
In 2020	8	15	-3=(8-11)	-27,3=8/11*100-100
Total	52	100	-	-

Note-Compiled by the authors based on data from the literature [4]

Table 3. The share of PPP projects in the Akmola region and the Republic of Kazakhstan for 2017-2020

Projects	Akmola region		Republic of Kazakhstan		Structural contribution, %
	Number of projects	Share, %	Number of projects	Share, %	
General recommended	76	100	1362	100	5,58
Under implementation	52	68	829	61	6,27
The competition is underway	16	21	293	22	5,46
Planned	6	8	202	15	2,97
Violation of the agreement	2	3	38	3	5,26
Note-Compiled by the authors based on data from the literature [4]					

the growth was the priority state financing of PPP projects, also in 2018, due to the urgency of the issue of kindergartens, projects to create preschool education centers were successfully implemented. Thus, the kindergarten issue has been resolved through PPP. Compared to 2018, the number of projects in 2019 decreased by 16 projects or 59%, and in 2020 by 3 projects or 27.3% compared to 2019. And in 2019-2020, due to the massive spread of coronavirus, problems arose with holding tenders for PPP projects and as a result of the priority of private initiative, the number of projects being implemented sharply decreased.

Analyze the projects implemented in the Akmola region in comparison with the republican level. First, separate shares were determined for the Akmola region and the republican level

related to the preparation of projects. In this regard, based on information from November 20, 2020, in the period from 2017 to 2020, a total of 1,362 projects were submitted in the Republic of Kazakhstan, of which 38 PPP agreements were terminated, a tender was held - 293, contracts were concluded - 829 [4]. For the provision of PPP projects in general at the level of the republic, 5.58% of the submitted projects are Akmola region, in particular, the share of implemented projects is 6.27%, the share of ongoing tenders is 5.46%, the share of planned ones is 2.97% and the share of terminated contracts is 5.26%.

The comparative analysis data are presented in the following 3 tables:

Thus, according to Table 3, it can be seen that among the projects presented at the national level, the share of the Akmola region was 5.58%,

Table 4. Comparative analysis of the presented PPP projects by economic sectors in 2017-2020

Economic sectors	Republic of Kazakhstan		Including Akmola region		Structural contribution, %
	Number of projects	Share, %	Number of projects	Share, %	
Energy and housing and communal services	187	15,1	7	0,5	5,7
Health care	282	27,7	9	0,7	3,1
Agriculture, Forestry, and Fisheries	10	0,8	1	0,08	10
Education	716	57,8	54	4,3	7,5
Transport and infrastructure	43	3,4	5	0,4	11,6
Total	1238	100	76	6,1	6,1
Note-Compiled by the authors based on data from the literature [4]					

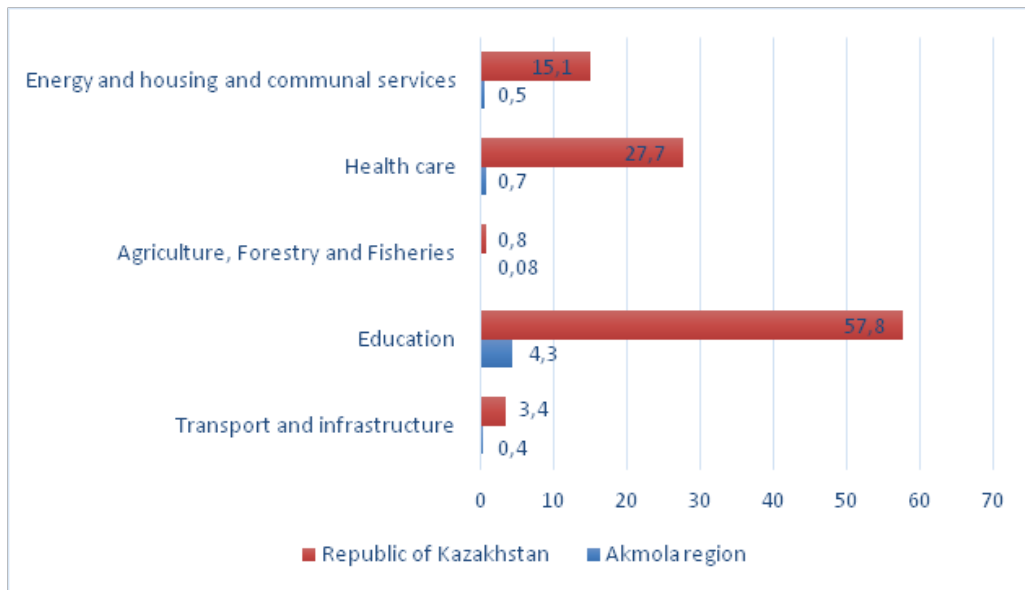


Figure 2. Structure of PPP projects by economic sectors in 2017-2020

Note-Compiled by the authors based on data from the literature [4]

as well as projects being implemented - 6.27%, ongoing tenders - 5.46%, planned - 2.97% and terminated contracts - 5.26%.

In the future, to determine the scale of development and comparison of PPP projects with the republican level, the shares by economic sectors were determined and the structural share comparable to the republican level was calculated. Information related to the results of the analysis, namely a comparative analysis conducted between PPP projects developed at the level of the Akmola region and the Republic of Kazakhstan, is presented in the following 4 tables:

The presented PPP projects in the Akmola region cover the following areas of the economy: transport and infrastructure, education, agriculture, forestry and fisheries, energy and housing, communal services, and healthcare. According to the results of the comparative analysis, a total of 1,238 projects were presented at the republican level, including 76 projects in the Akmola region, which amounted to 6.1% of those presented at the republican level. Including transport and infrastructure - 0.4%; education-4.3%; agriculture, forestry, and fisheries-0.08%; healthcare-0.7%; energy and housing and communal services-0.5%. Also,

according to the results of the structural analysis, the share of Akmola region among the submitted projects of the republican level in economic sectors was: transport and infrastructure – 11.6%, education - 7.5 agriculture, forestry, and fisheries - 10, healthcare-3.1. Consider the structural characteristics based on the results of this decay. The structure of PPP projects by economic sectors is presented in the following 2 diagrams:

According to Figure 2, the largest number of PPP projects were implemented in the fields of education and healthcare, the share of projects in the field of education in the republic was 57.8%, including 4.3% in the Akmola region. The share of PPP projects in the healthcare sector in the republic amounted to 27.7%, in the Akmola region - 0.7%. The smallest number of projects are represented in agriculture, forestry, and fishing, the share of which in the republic was 0.8%, and in the Akmola region – 0.08%. Of the 74 projects in the Akmola region, 9 are private financial initiatives, the remaining 65 are competitive. In general, out of 1,360 projects in the republic, 435 are private financial initiatives, and the remaining 925 are competitive initiatives.

Next, we will consider the volume of attracted investments from PPP projects implemented in the Akmola region. Public-private partnership

Table 5. First data for correlation and regression analysis

Years	Education, x1	Other industries, x2	Attracted PPP investments, x3	GRP (y)
2017	198469	2531305	2729774	1552703,8
2018	593416	1165879	1759295	1 699 883,9
2019	167788	1309564	1477352	1 933 580,2
2020	19416	4105414	4124830	2 283 939,8
Note-compiled by the authors according to information obtained from the source of information				

in the Republic of Kazakhstan is carried out in institutional and contractual ways. Under the institutional PPP agreement, a company is being created and a public-private partnership project is being implemented. In other cases, the PPP is carried out according to the contractual method. Contractual PPP can be of the following types: concession; trust management of state property; property hiring (lease) of state property; leasing; contracts for technology development, prototype manufacturing, pilot tests, and small-scale production; life cycle contract; service contract; other contracts corresponding to the characteristics of PPP. In the Akmola region, PPP projects are implemented only under 2 different contracts:

- other conditions corresponding to the characteristics of PPP-19 projects;
- trust management of state property-33 projects.

In the future, in order to determine the impact of PPP projects on the development of the Akmola

region, a correlation and regression analysis of the relationship between the volume of attracted investments between GRP was carried out.

According to the table, the first data for the studied years were complete only in the field of education, and information related to agriculture, healthcare, transport and infrastructure, energy and housing is discrete, so they were all combined into other industries. Correlation and regression analysis was carried out to determine the relationship between the amount of attracted investments and GRP for implemented PPP projects in the Akmola region for 2017-2020. The main goal is to determine what impact the investments attracted from PPP projects had on the economy of the Akmola region. In the course of correlation and regression analysis, a correlation matrix was first created. As a result, factor x2 was removed due to the calendar relationship between factors x2 and x3, and the result is as follows:

Table 7. Regression analysis of the relationship between GRP and attracted investments by industry through PPP

Regression statistics	meaning	Dispersion analysis	Regression	Remains	Total
Multiple R	0,657774442	df	2	1	3
R-square	0,432667217	SS	1,3196E+11	1,7303E+11	3,05E+11
Normalized R-square	-0,70199835	MS	6,5978E+10	1,7303E+11	
Standard error	415963,2637	F	0,38131695		
Observations	4	Significance of F	0,75321497		

Coefficients	Standard error	t-statistics	P-Value	Lower 95%	Upper 95%	Lower 95%	
Y-intersection	1779965,4	907769,75	1,96	0,3	-9754342,8	13314273,8	-9754342,8
Variable X1	-0,526860	1,26	-0,41	0,74	-16,59	15,54	-16,59
Variable X2	0,08582	0,25	0,33	0,79	-3,21	3,38	-3,21
Note-calculated by authors using data from the source							

Table 6. Matrix of the relationship between GRP and attracted investments by industry through PPP

	X1	X3	GRP (y)
X1	1		
X3	-0,632714912	1	
GRP (y)	-0,608770454	0,578100624	1
Note-calculated by the authors according to the information obtained from the source of information			

It can be seen from the Matrix that there is an average correlation between the effective GRP indicator and factor indicators. Since the correlation coefficient between PPP investments in education and GRP is 0.6, and the correlation coefficient between GRP and PPP investments in other industries is 0.57. Further, the result of the regression analysis is presented in the following table:

According to the results of the regression analysis, the multiple regression coefficient is 0.65 and the R2 value is 0.43. Since there is an average close relationship between the studied performance indicator and the factor indicator, and the value of R2 is less than 0.6, the model may be nonlinear. The value of the indicator F is 0.75, and the value P is greater than 0.05 for performance and factor indicators, therefore, factor indicators do not have a significant impact on the performance indicator. This conclusion

can be said with 95% certainty. Further, a forecast was made for the future change in investments and GRP attracted through PPP in the Akmola region for 2017-2020 and the result is presented in the following table.

According to the above table, we see that the volume of attracted PPP investments in education in the next 4 years will gradually decrease. And for other industries and PPPs in general, we see an increase in the volume of attracted investments, respectively, there is an increase in GRP. In particular, investments in education in the next 4 years will decrease by an average of 1.4 thousand tenge, in other industries -by 4.22 million tenge. total investments of 4.08 million tenge and, accordingly, GRP will increase by 28.3 million tenge. In general, the attracted PPP investments will contribute to the growth of GRP.

Results

In total, 76 projects were issued for the implementation of PPP in the Akmola region for the period from 2017 to 2020, of which the PPP agreement was terminated for 2 projects, 16 are at the tender stage, 6 are at the planning stage and 52 are at the implementation stage. Of the 74 projects in the Akmola region, 9 are private financial initiatives, the remaining 65 are competitive.

The largest number of implemented PPP projects in the Akmola region in 2018 amounted to

Table 8. Forecast of attracted investments through PPP in Akmola region for 2017-2020

Years	Education, x1	Other industries, x2	Attracted PPP investments, x3	GRP (y)
2017	198469	2531305	2729774	1552703,8
2018	593416	1165879	1759295	1 699 883,90
2019	167788	1309564	1477352	1 933 580,20
2020	19416	4105414	4124830	2 283 939,80
Forecast				
2021	4075,5	3494544	3498619	2474378
2022	-92203	3981145	3888942	2717118,43
2023	-188482	4467746	4279264	2959858,86
2024	-284761	4954347	4669587	3202599,29
Орташа мәні	-140343	4224445	4084103	2838488,645
Note-calculated by authors using data from the source				

52%, in 2017 - 12%, in 2019 - 21%, and 2020 - 15%. If we analyze the dynamics of the implementation of PPP projects, the absolute growth of implemented projects in 2018 compared to 2017 increased by 21 projects or 3.5 times. Compared to 2018, the number of projects decreased in 2019 by 16 projects or 59% and in 2020 by 3 projects or 27.3% compared to 2019. In 2018, due to the urgency of the problem of kindergartens, projects on the creation of preschool education centers were successfully implemented. Thus, the issue of kindergartens was solved at the expense of PPP.

Thus, among the PPP projects presented in the republic, the share of the Akmola region was 6.1%, including transport and infrastructure - 11.6%, education - 7.5, agriculture, forestry, and fisheries - 10, healthcare - 3.1%.

The volume of attracted investments for all 663 projects implemented in the Republic of Kazakhstan amounted to 403.47 million tenges, including in the Akmola region for 52 projects - \$ 268.85 million.

For the implementation PPP projects in the Akmola region, it is necessary to pay attention to the application of other types of agreements, as well as to the provision of projects in the field of industry, agriculture, and utilities.

It turned out that the development of PPP requires serious adjustments, and the current policy and legislative requirements that ensure exponential growth of PPP at the regional level can destroy the state budget of Kazakhstan and cause serious damage to the economy. In this regard, a new PPP policy has been announced, in which priority is given to quality rather than the number of projects. For approving the new PPP policy, amendments were made to the legislation on PPP to improve the efficiency of projects in 2020. By these amendments, the following categories of PPP projects have been approved:

1. Category 1 projects requiring reimbursement of all expenses from the state budget - payment for access to the PPP model;
2. Category 2 projects requiring reimbursement of operating costs only;
3. projects of 3 categories, projects that do not require compensation from the state budget-a model paid by users.

From 2020, Kazakhstan will remain a new PPP model of the 3rd category, which will be paid by users.

According to the results of the regression analysis, the multiple regression coefficient is 0.65 and the R2 value is 0.43. Since there is an average close relationship between the studied performance indicator and the factor indicator, and the value of R2 is less than 0.6, the model may be nonlinear. The value of the indicator F is 0.75, and the value P is greater than 0.05 for performance and factor indicators, therefore, factor indicators do not have a significant impact on the performance indicator. This conclusion can be said with 95% certainty.

The volume of attracted PPP investments in education in the next 4 years will gradually decrease. And for other industries and PPPs in general, we see an increase in the volume of attracted investments, respectively, there is an increase in GRP. In particular, investments in education in the next 4 years will decrease by an average of 1.4 thousand tenge, in other industries - by 4.22 million tenge. total investments of 4.08 million tenge and, accordingly, GRP will increase by 28.3 million tenge. In general, the attracted PPP investments will contribute to the growth of GRP.

Conclusion

To ensure the socio-economic development of the region, it is possible to implement socially significant projects through PPP. PPP projects have been successfully implemented in the Akmola region since 2017. An assessment of quantitative information on implemented PPP projects over the past year was carried out by economic and statistical analysis, in particular, an assessment of which sectors of the economic projects are being implemented, which type of PPP is more often used by economic entities, how many investments have been attracted compared to the national level and a discussion of the results. Based on the results of the analysis, the following conclusions can be drawn:

1. A total of 76 projects have been presented in the Akmola region, 52 of them have been implemented, that is, 68.4% of the developed

projects have been implemented. This indicates the activity in the development and implementation of PPP projects in the Akmola region.

2. according to the analysis of the dynamics of project implementation, it can be noted that in 2018, the absolute increase in implemented projects increased by 21 projects or 3.5 times. The main reason for the increase in the number of projects in 2018, in connection with the urgent problem of kindergarten, projects were implemented to create pre-school education centers. The state paid great attention to it. Thus, the kindergarten issue has been resolved through PPP. And in 2020, the share of projects decreased by 27.3%. Its main reason was the massive spread of the coronavirus, there were problems with holding tenders for PPP projects and as a result of prioritizing private initiative, the number of projects being implemented has sharply decreased.

3. In total, the implemented projects in the Akmola region covered only five sectors of the economy: transport and infrastructure - 0.4%; education - 4.3%; agriculture, forestry, and fisheries - 0.08%; healthcare - 0.7%; energy and housing and communal services - 0.5%. In general, since the Akmola region is agrarian, it is necessary to increase the implementation of projects in the field of agriculture, forestry, and fisheries.

4. According to the results of the analysis of the composition of attracted investments by types of PPP contracts in the Akmola region, only three types of contracts were applied: concession, trust management, and service type of lease agreement. In the future, it is necessary to provide for the use of other types of contracts permitted by the Law of the Republic of Kazakhstan "On Public-Private Partnership".

5. The share of attracted investments from implemented projects in the Akmola region in comparison with the Republican level is 6.68%. This is a small indicator, therefore, for the successful implementation of a PPP in the Akmola region, it is necessary to create a stable investment climate and take into account the following factors affecting it:

- specialists are required to implement and promote the process: employees working in certain government agencies receive political support, stimulate and finance the process of project development and implementation;
- legislation facilitating the process: the state should be able to implement and protect activities, and the private sector should not hinder the implementation of projects;
- financial support: government support of projects, carried out through private sector financing, ensures the commercial viability of the project.

6. Investments attracted from PPP projects implemented in the period from 2017 to 2020 will not have a significant impact on GRP. Because according to the results of correlation and regression analysis, there is a weak functional relationship and the degree of influence is also low.

7. According to the forecast for 2021-2024, the volume of attracted PPP investments in sectors other than education will amount to an average of 4.22 million tenge, total investments of 4.08 million tenge and, accordingly, GRP will increase by 28.3 million tenge. In general, PPP has found that attracted investments contribute to the growth of GRP.

Taking into account these proposals, in the future, it is possible to effectively use PPP and solve the socio-economic problems of the region.

References

1. Regan M., Smith J. Public infrastructure procurement: A review of adversarial and non-adversarial contracting methods//Journal of Public Procurement.- 2015.-№ 15 (4).-P. 405-438
2. Юрѣва Т.В. Проекты государственно-частного партнерства в России и в зарубежных странах// Региональная экономика и управление: электронный научный журнал. – 2016.- № 3(2).- С.23-29.

3. Справка о защите прав и интересов предпринимателей в сфере государственно-частного партнерства. [электрон.ресурс] - URL: <http://www.atameken.kz> (дата обращения: 13.01.2021).
4. База проектов. [электрон.ресурс] - URL: http://www.kzppp.kz/project_base (дата обращения: 13.12.2020).
5. Hodge G. A., Greve C. Introduction: Public-private partnership in turbulent times. Rethinking public-private partnerships: Strategies for turbulent times.- Abingdon, UK: Routledge, 2013.-1-32с.
6. Savas E.S. Privatization and Public-Private Partnerships.- New York: Chatham House Publishers, 2000.- 237258с.
7. Greve C., Mörth U. Public-private partnerships: The Scandinavian experience. International handbook in public-private partnerships.- Cheltenham, UK: Edward Elgar, 2010.- 439-455с.
8. Broadbent J., Laughlin R. Public private partnerships: an introduction"// Accounting, Auditing & Accountability Journal.- 2003.- № 16. Т. 3.- С.332 – 341
9. Закон РК О государственно-частном партнерстве .- [электрон.ресурс] - URL: <http://www.online.zakon.kz> (дата обращения: 01.12.2020).
10. Alessi L., Ghysels E., Onorante L., Peach R.W., Potter S. Central bank macroeconomic forecasting during the global financial crisis: The European Central Bank and Federal Reserve Bank of New York experiences // Journal of Business & Economic Statistics. – 2014. – Т. 32. № 4. – С. 483–500.
11. Banerjee S.G., Oetzel J.M., Ranganathan R. Private provision of infrastructure in emerging markets: do institutions matter? // Development Policy Review. – 2006. – Т. 24. № 2. – С. 175–202.
12. Hammami M., Ruhashyankiko J.F., Yehoue E.B. Determinants of publicprivate partnerships in infrastructure//IMF Working Paper. – 2006. – № 99. –С. 39
13. Sharma C. Determinants of PPP in infrastructure in developing economies // Transforming government: people, process and policy. – 2012. – Т. 6. № 2. – С.149–166.
14. Yurdakul H., Kamaşak R., Öztürk T.Y. Macroeconomic drivers of public private partnership (PPP) projects in low income and developing countries: A panel data analysis // Borsa Istanbul Review. – 2021. – Т. 22. № 1. – С. 37–46.
15. Герасименко О.А., Авилова Ж.Н., Осадчая С.М. Оценка эффективности региональных проектов ГЧП// Вестник Белгородского университета кооперации, экономики и права. – 2019.- №1. –С. 102-109.
16. Мажарова Л.А. Концептуальная модель оценки эффективности ГЧП-проектов // Наука Красноярья. – 2020.- № 2.-С. 133-150.
17. Berezin A., Bruno S., Gorodnova N. Efficiency Assessment of Public-Private Partnership (PPP) Projects: The Case of Russia [электрон.ресурс] - URL: <https://www.Sustainability | An Open Access Journal from MDPI> (дата обращения:13.12.2020).
18. Peter E.D. Shared leadership, value, and risks in large scale transport projects: Re-calibrating procurement policy for post-COVID-19. Research in Transportation Economics. [электрон.ресурс] - URL: <https://www.sciencedirect.com> (дата обращения:13.02.2021).

С. Рейдолда, А.М. Бержанова, С.А. Азылканова

Л.Н. Гумилев атындағы Еуразия Ұлттық Университеті, Астана, Қазақстан

Ақмола облысы бойынша МЖӨ жобаларының тиімділігін талдау

Аннотация. Мақалада Ақмола облысы бойынша 2017-2020 жылдар аралығында жүзеге асырылған мемлекеттік-жекеменшік әріптестік жобаларының динамикасына, құрамы, құрылымын талдау және корреляциялық-регрессиялық талдау жасалған. Зерттеудің мақсаты - Ақмола облысы бойынша жүзеге асырылып жатқан мемлекеттік-жекешелік әріптестік жобаларына динамикалық-құрылымдық және корреляциялық-регрессиялық талдау жасау арқылы қай кезеңде жобалары санының өзгергенін және өзгеру себептерін, сондай-ақ өңірдің дамуына әсерін анықтау болып табылады. Зерттеу барысында салыстырмалы талдау, динамикалық қатарларды талдау, қатыстық көрсеткіштерді есептеу, салыстыру, корреляциялық-регрессиялық, дисперсиялық талдау және болжау әдістері қолданылды. Талдау нәтижесінде Ақмола облысы бойынша 2017-2020 жылдар аралығында жалпы 76 жоба ұсынылған және оның

52 жобасы ғана жүзеге асырылып жатыр. Республикалық деңгеймен салыстырғанда Ақмола облысы бойынша ұсынылған жобалар 5.58% үлесті құрап отыр. Сондай-ақ 2018 жылы ең көп жоба жүзеге асырылған, яғни 27 жоба және 2017 жылмен салыстырғанда 3.5 есеге өскені байқалды. Негізгі қарастырылған салалардың ішінде денсаулық сақтау саласы бойынша ең көп жоба жүзеге асырылғандығы анықталды және оның үлесі 4.3% құраған. Сонымен қатар ауылшаруашылығы сала бойынша ең аз жоба жүзеге асырылған және оның үлесі 0.08% құраған. Корреляциялық талдау нәтижесі бойынша білім беру саласы бойынша МЖӘ тартылған инвестиция мен ЖӨӨ арасындағы корреляциялық коэффициент 0,6 және өзге салалар бойынша МЖӘ тартылған инвестициялармен ЖӨӨ арасындағы корреляциялық коэффициент 0,57 тең болып отыр. Регрессиялық талдау нәтижесі бойынша зерттеліп отырған нәтижелі көрсеткіш пен факторлық көрсеткіш арасында орташа тығыз байланыс бар және R^2 мәні 0,6 аз болғандықтан модель сызықтық емес сипатта болуы мүмкін. F көрсеткіштің маңыздылығы 0,75 және P мәні нәтижелі және факторлық көрсеткіштер үшін 0,05 үлкен, демек факторлық көрсеткіштер нәтижелі көрсеткішке елеулі әсер етпейді.

Қорыта келгенде, Ақмола облысы бойынша жүзеге асырылып жатқан жобалар мемлекеттік мүлікті сенімгерлік басқару және өзге де келісім-шарт негізінде жасалған, сондықтан заңмен ұсынылған басқа да келісім-шарт түрлерін қолдану, сонымен қатар өнеркәсіп, ауылшаруашылығы және коммуналдық қызмет саласы бойынша жобалардың ұсынылуына және осы салалар бойынша инвестиция тартуға назар аудару қажет.

Кілт сөздер: мемлекеттік-жекешелік әріптестік жобалары, МЖӘ жобаларына тартылған инвестициялар, МЖӘ институционалдық тәсілі, МЖӘ келісім-шарттық тәсілі, салыстырмалы талдау, динамикалық талдау, құрылымдық талдау.

С. Рейдолда, А.М. Бержанова, С.А. Азылканова

Евразийский национальный университет им. Л.Н. Гумилева, Астана, Казахстан

Анализ эффективности проектов ГЧП по Акмолинской области

Аннотация. В статье представлен анализ состава, структуры и корреляционно-регрессионный анализ динамики проектов государственно-частного партнерства по Акмолинской области, реализованных в период с 2017 по 2020 год. Цель исследования - выявить, за какой период произошло изменение количества проектов и причины их изменения, а также влияние на развитие региона путем проведения динамико-структурного и корреляционно-регрессионного анализа проектов ГЧП, реализуемых по Акмолинской области. В ходе исследования были использованы методы сравнительного анализа, анализа динамических рядов, расчета относительных показателей, сравнения, корреляционно-регрессионного, дисперсионного анализа и прогнозирования.

В результате анализа по Акмолинской области за период с 2017 по 2020 год в целом представлено 76 проектов, из них реализуется только 52 проекта. По сравнению с республиканским уровнем представленные проекты по Акмолинской области составляют 5.58%. Также в 2018 году реализовано больше всего проектов, т. е. 27 проектов и наблюдается рост в 3.5 раза по сравнению с 2017 годом. Из основных рассмотренных отраслей было выявлено, что наибольшее количество проектов реализовано в сфере здравоохранения и его доля составила 4.3%. В то же время в сфере сельского хозяйства реализован минимальный проект и его доля составила 0.08%. По результатам корреляционного анализа коэффициент корреляции между ВРП и привлеченными инвестициями ГЧП по сфере образования равен 0,6 и по другим отраслям равен 0,57. По результатам регрессионного анализа существует средняя тесная связь между исследуемым результативным показателем и факторным показателем, и, поскольку значение R^2 меньше 0,6, модель может носить нелинейный характер. Значение показателя F равно 0,75, а значение P больше 0,05 для результативных и факторных показателей, следовательно, факторные показатели не оказывают существенного влияния на результативный показатель.

Проекты, реализуемые по Акмолинской области, заключены на основе доверительного управления государственным имуществом и иных договоров, поэтому необходимо обратить внимание на применение других видов договоров, предусмотренных законом, а также на предоставление проектов в сфере

промышленности, сельского хозяйства и коммунальных услуг и привлечение инвестиций по этим отраслям.

Ключевые слова: проекты государственно-частного партнерства, инвестиции, привлеченные в проекты ГЧП, институциональный подход ГЧП, контрактный подход ГЧП, сравнительный анализ, динамический анализ, структурный анализ.

References

19. Regan M., Smith J. Public infrastructure procurement: A review of adversarial and non-adversarial contracting methods. *Journal of Public Procurement*, 15 (4), 405-438(2015).
20. Jur'eva T.V. Proekty gosudarstvenno-chastnogo partnerstva v Rossii i v zarubezhnyh stranah [Public-private partnership projects in Russia and abroad], *Regional'naja jekonomika i upravlenie: jelektronnyj nauchnyj zhurnal*, 3(2), 23-29 (2016).
21. Spravka o zashhite prav i interesov predprinimatelej v sfere gosudarstvenno-chastnogo partnerstva [Certificate on the protection of the rights and interests of entrepreneurs in the field of public-private partnership], [Electronic resource]. Available at: <http://www.atameken.kz> (Accessed: 13.01.2021).
22. Baza proektov [Electronic resource]. Available at: http://www.kzppp.kz/project_base (Accessed: 13.12.2020).
23. Hodge G. A., Greve, C. (2013). Introduction: Public-private partnership in turbulent times. In C. Greve & G. Hodge (Eds.), *Rethinking public-private partnerships: Strategies for turbulent times* (pp. 1-32). (Abingdon, UK, Routledge).
24. E. S. Savas, *Privatization and Public-Private Partnerships* (New York, Chatham House Publishers, 2000), 237258.
25. Greve C., Mörth U. (2010). Public-private partnerships: The Scandinavian experience. In G. A. Hodge, C. Greve, & A. E. Boardman (Eds.), *International handbook in public-private partnerships* (pp. 439-455). (Cheltenham, UK, Edward Elgar).
26. Jane BroadbentRichard Laughlin, (2003), "Public private partnerships: an introduction", *Accounting, Auditing & Accountability Journal*, 16(32), 332 – 341
27. Zakon RK O gosudarstvenno-chastnom partnerstve [Electronic resource]. Available at: <http://www.online.zakon.kz> (Accessed: 01.12.2020).
28. Alessi L., Ghysels E., Onorante L., Peach R.W., Potter S. Central bank macroeconomic forecasting during the global financial crisis: The European Central Bank and Federal Reserve Bank of New York experiences, *Journal of Business & Economic Statistics*, 4(32), 483–500(2014).
29. Banerjee S.G., Oetzel J.M., Ranganathan R. Private provision of infrastructure in emerging markets: do institutions matter? *Development Policy Review*. 2(24), 175–202(2006).
30. Hammami M., Ruhashyankiko J. F., Yehoue E.B. Determinants of publicprivate partnerships in infrastructure, *IMF Working Paper*, 99, 39 (2006)
31. Sharma C. Determinants of PPP in infrastructure in developing economie, *Transforming government: people, process and policy*, 2(6), 149–166(2012).
32. Yurdakul H., Kamaşak R., Öztürk T.Y. Macroeconomic drivers of public private partnership (PPP) projects in low income and developing countries: A panel data analysis // *Borsa Istanbul Review*, 1(22), 37–46(2021).
33. Gerasimenko O.A., Avilova Zh.N., Osadchaja S.M. Ocenka jeffektivnosti regional'nyh proektov GChP [Evaluating the effectiveness of regional PPP projects], *Vestnik Belgorodskogo universiteta kooperacii, jekonomiki i prava*, 1, 102-109(2019).
34. Mazharova L.A. Konceptual'naja model' ochenki jeffektivnosti GChP-proektov [Conceptual model for evaluating the effectiveness of PPP projects], *Nauka Krasnojarka (Science of Krasnoyarsk)*, 2, 133-150(2020).
35. Berezin A., Bruno S., Gorodnova N. Efficiency Assessment of Public-Private Partnership (PPP) Projects: The Case of Russia [Electronic resource]. Available at: <https://www.Sustainability | An Open Access Journal from MDPI> (Accessed: 13.12.2020).
36. Peter E.D. Shared leadership, value, and risks in large scale transport projects: Re-calibrating procurement policy for post-COVID-19. *Research in Transportation Economics* [Electronic resource]. Available at: <https://www.sciencedirect.com> (Accessed: 13.02.2021).

Авторлар туралы мәліметтер:

Рейдолда С. – 8D04102-«Экономика» ББ 1 курс докторанты, Л.Н.Гумилев атындағы Еуразия ұлттық университеті «Экономика және кәсіпкерлік» кафедрасы, Қ. Мұңайтпасов., 13, Нұр-Сұлтан, Қазақстан.

Бержанова А.М. – экономика ғылымдарының кандидаты, Л.Н.Гумилев атындағы Еуразия ұлттық университеті «Экономика және кәсіпкерлік» кафедрасының қауымдастырылған профессор, Қ. Мұңайтпасов., 13, Нұр-Сұлтан, Қазақстан.

Азылканова С.А. – экономика ғылымдарының кандидаты Л.Н.Гумилев атындағы Еуразия ұлттық университеті, «Экономика және кәсіпкерлік» кафедрасының доценті, Қ. Мұңайтпасов., 13, Нұр-Сұлтан, Қазақстан.

Reidolda S. – 1st-year PhD Student, Department of Economics and Entrepreneurship, L.N. Gumilyov Eurasian National University, K. Munaitpasov str., 13, Astana, Kazakhstan.

Berzhanova A.M. – Associate Professor, Candidate of Economic Sciences, Department of Economics and Entrepreneurship, L.N. Gumilyov Eurasian National University, K. Munaitpasov str., 13, Astana, Kazakhstan.

Azylkanova S.A. – candidate of Economic Sciences, Associate Professor, Department " Economics and Entrepreneurship", L.N. Gumilyov Eurasian National University, K. Munaitpasov str., 13, Astana, Kazakhstan.