Economic Aspects of Infrastructure Projects Implementation in Towns and Medium-Sized Cities

Yulia Medyanik(✉), Elvira Shagiakhmetova, Liliya Gimadieva, and Dilyara Vakhitova

Kazan State University of Architecture and Engineering, 420043 Kazan, Russia

Abstract. The state of the infrastructure is a reflection of the socio-economic development and investment attractiveness of the city. However, the decision on attracting investments for the implementation of infrastructure projects should be made taking into account the indicators of the project's financial stability and possible negative scenarios. The aim of the research is to assess the investment attractiveness of the infrastructure project in the city of Leninogorsk (Russia, the Republic of Tatarstan) and to model the risks of its implementation. The following methods were used in the calculations: the method of calculating the net present value of the project (NPV), the method of calculating the discounted payback period (PBP), the method of calculating the internal rate of return (IRR). A two-parameter sensitivity analysis was used for risk simulation of the investment project. The net present value of the project (NPV) and the internal rate of return (IRR) were taken as the result indices. It was concluded that long payback and low financial sustainability make infrastructure projects in towns and medium-sized cities unattractive for private investors. The simultaneous increase in the discount rate and the investment costs of the project has the greatest influence on the NPV indicator. The results can be used in the strategy for the development of infrastructure projects in towns and medium-sized cities.

Keywords: Infrastructure facilities · Construction · Towns and medium-sized cities · Economic efficiency of investments

1 Introduction

Towns and medium-sized cities make up 84.5% of the total number of all urbanized areas in Russia. They are home to more than 26 million people (about 18% of the population). Such cities play an important role in the socio-economic development of the country and reflect not only a separate municipality, but also the country as a whole [1]. The development of social infrastructure is one of the most important problems faced by the majority of towns and medium-sized cities. The economy of small towns lacks the social focus. Furthermore, social infrastructure and urban environment have unsatisfactory quality which do not allow ensuring a decent standard of living for the

N. Vatin (Ed.): STCCE 2021, LNCE 169, pp. 122–134, 2021.
https://doi.org/10.1007/978-3-030-80103-8_13

population. Consequently, improving the comfort of the urban environment and creating the mechanisms for its formation is a priority area in the development of modern Russia.

Programmes for the development of technical infrastructure are being implemented, the innovative infrastructure for conducting business is being created [2], and the sports infrastructure is developing rapidly in the Republic of Tatarstan (Russia). At the same time, a distinguishing feature is the discrepancy between the rates of the social infrastructure development of towns and medium-sized cities and the rates of economic and socio-cultural changes taking place in the society. However, the level of infrastructure development varies in the cities, municipal districts and rural settlements of the Republic of Tatarstan [3].

The construction of multifunctional shopping centres has become very popular in large cities of Russia, which are also used as public spaces. These centres perform not only shopping functions but also combine entertainment, sports, recreational and other public functions. The transformation of shopping centres into public spaces contributes to the economic growth of cities and it is an important factor in improving standards of living.

However, the construction of multifunctional shopping centres in towns and medium-sized cities has not become widespread yet, therefore, it is an urgent task. We hypothesize that the construction of multifunctional shopping centres, hotels and other infrastructure facilities will provide employment opportunities in towns and cities. This fact will also contribute to the development of small and medium-sized businesses, domestic tourism and provide a competitive advantage of the city for the development of investment potential and business environment. The expected social effect of the construction of such centres involves increasing the availability, diversity and quality of cultural leisure activities as well as the attractiveness of living conditions by creating a modern social infrastructure and reducing the migration outflow of the population.

The purpose of this work is to assess the investment attractiveness of an infrastructure project on the example of the construction of a multifunctional shopping centre in Leninogorsk (Republic of Tatarstan, Russia).

Leninogorsk is a city with a population of 61974 people, located in the south-east of the Republic of Tatarstan. The city was founded in 1955 near the explored oil field. In accordance with the classification applied in Russia, Leninogorsk can be attributed to the group of medium-sized cities (with a population of 50 to 100 thousand people). The economy of the Leninogorsk municipal district and the city of Leninogorsk is highly dependent on the oil and gas producing industry; therefore, fluctuations in oil prices are the most important external factors that affect the socio-economic development of the region.

The previous studies [4] contributed to the identification the range of the most pressing problems for the city residents: low standards of living, unfavorable demographic trends, lack of jobs offering decent salaries, inconsistency between the development level of the urban environment and social infrastructure and the modern needs of the society.

Socio-economic problems of urban infrastructure development are the area of research conducted by many scientists around the world. These studies show that modern cities operate in a very dynamic, changeable environment and struggle with many

economic, social and spatial problems, which make them seek an optimal development model [5, 6]. G. Gemenetzi [7], S.M.F. Costa [8] note that the specifics of life in towns and medium-sized cities differ significantly from life in large residential areas. However, each city is unique and has its own range of problems due to the historical features of its formation, geographical location, production structure and a number of other factors [6, 9–11].

E.V. Shcherbina [11], D.F. Meyer [12] state in their research that infrastructure is one of the most significant factors influencing the long-term economic growth of both cities and rural settlements. In addition, infrastructure significantly improves the quality and standard of living of the population [13].

Modern society is changing ideas about the quality of the environment [14]. The urban environment should meet the diversity of needs of the population [15] and be functional, physically and psychologically comfortable; the residents themselves should be active participants in its development [14]. A decrease in the quality and comfort of the human life environment leads to an aggravation of social problems in the society [12]. The creation of a comfortable urban environment not only contributes to a more efficient performance of labor activities of the population, cultural leisure activities, recreation and daily routine, but also determines largely the investment attractiveness of the city [16].

Currently, many towns in Russia are monotowns [14] with only one town-forming industry, and their economic situation is difficult [17]. The global financial and economic crisis of recent years has strongly affected the socio-economic development of such towns. The enterprises turned out to be uncompetitive, many of them ceased work.

There is an increase in migration processes among the economically active population in towns and medium-sized cities of Russia. According to M. Eremenko, I. Gareev, insufficient development of social infrastructure is one of the reasons for this phenomenon [18].

N. Zubarevich [19] notes in the study that the degradation of the social infrastructure of small towns aggravates the processes of depopulation and migration, which are one of the significant barriers to the country's spatial development.

Studying the distinguishing features of the territorial settlement of the population of Russia, R. Fattakhov, M. Nizamutdinov and V. Oreshnikov predict an increase in the gap between megalopolises and provincial cities [20], which will inevitably lead to an aggravation of economic, social and infrastructural problems. Therefore, when forming a socio-economic policy for the development of towns and medium-sized cities, it is necessary to take into account their cultural, historical, production, territorial and social potentials [4]. This will have a positive effect on the integrated development of territories and will reduce the level of differentiation between regions in terms of economic indicators.

One of the most effective ways to solve infrastructure problems is the transition to managed development [12, 20]. Y. Skorobogatova [21] notes in her study that the government should pursue an effective policy of support and development of small business, especially in terms of tax and financial policies. The state should contribute to the development of small business in monotowns by creating infrastructure support, providing financial and information assistance, legal regulation of small business activities

[21–23]. At the same time, the town should be not only attractive for business, but also comfortable for its residents [24].

Studying the relationship between infrastructure development and entrepreneurship, Daniel L. Bennett argues that investment in infrastructure can play both a stimulating and restrictive role [25]. Private investment in infrastructure provides benefits for business and job creation, while state investment has the opposite effect.

A number of studies deal with the problems of transport infrastructure and transport accessibility of cities as a driving force of urbanization [13, 26–28], but they do not focus on the issues of investment attractiveness of infrastructure projects.

The review showed that towns and medium-sized cities have significant economic, intellectual and cultural potential and can be considered as important engine of the national economy [29]. The development of social infrastructure is an important factor in ensuring the effective functioning of the economy of such cities, stimulating its growth and promoting employment. Thus, the task is to determine what factors affect the financial stability indicators of the investment project for the construction of a social infrastructure facility, namely, a multifunctional shopping centre.

2 Methods

2.1 Discounted Method of Evaluating the Effectiveness of Investment Projects

The following methods were used in the calculations:

– method of calculating the net present value of the project (NPV);
– method of calculating the discounted payback period (PBP);
– ymethod of calculating the internal rate of return (IRR).

The calculations were made using the software product «Alt-Invest. Construction».

Net present value method (NPV) is based on comparing discounted income and discounted expenses during the implementation of the investment project. This method possesses sufficient stability under various combinations of initial conditions, which allows finding an economically rational solution in all cases.

The NPV indicator characterizes the net cash flow from the project modified to the present value:

$$\text{NPV} = \sum_{t=1}^{n} \frac{CF_t}{(1+d)^t} - \sum_{t=0}^{n} \frac{I_t}{(1+d)^t} \tag{1}$$

where CF_t – cash inflow at the end of the period t, d – discount rate, I_t – investment cost in the period t.

The project is effective if NPV > 0.

The discounted payback period (PBP) is the amount of time necessary for an investment to generate cash flow to recover, taking into account the time value of money. This indicator demonstrates accurately the risk degree of the project.

Internal Rate of Return (IRR) shows the maximum allowable level of interest expense related to the project financing:

$$\mathrm{IRR} = \mathrm{d}_1 + \frac{NPV(d_1)}{NPV(d_1) - NPV(d_2)} \cdot (d_2 - d_1) \quad (2)$$

where d_1 – discount rate when NPV $(d_1) > 0$, d_2 – discount rate when NPV $(d_2) < 0$.

The project is effective if the IRR exceeds the discount rate included in the calculation.

2.2 Risk Simulation of an Investment Project

This method is based on the change in the resulting performance indicators of the project in case of a possible increase or decrease in the initial project parameters. Two-parameter sensitivity analysis allows finding out how the net present value of the project (NPV) will change in two cases:

– a simultaneous increase in investment cost and the discount rate;
– a simultaneous increase in operating costs and the discount rate.

The simulation was carried out using the software product «Alt-Invest. Construction».

3 Results and Discussion

The research deals with a multifunctional shopping centre in the city of Leninogorsk with a total area of 1932.77 m^2 with further leasing of its retail space. The location of the shopping facility is one of the most important factors affecting the popularity and, as a result, its attendance. The main difficulty of choosing a location for a multifunctional shopping centre relies in the necessity to take into account a number of factors that show the attractiveness of this centre for the population not only for this area, but also for the surrounding areas. The key point is its location in relation to traffic flows, visitor profile, the profile of the prospective tenants, specifics of management [30].

In accordance with the general plan of the city of Leninogorsk, the site selected for construction refers to public and business areas intended for the construction of administrative, business, commercial facilities as well as consumer services for cultural and leisure facilities, sporting venues, religious building sand healthcare facilities.

The construction site is located near the city center along one of the largest streets in the city and has good transport links, which will simplify its search and save time for visitors from the neighbouring areas.

Other social infrastructure facilities are located in close proximity, which is a positive factor in the formation of groups of visitors.

The construction site is provided with the following engineering networks: high pressure gas pipeline; water supply, sewerage; telephone and radio communication systems;

electric power supply. The existing road network of this area has good traffic capacity, which allows carrying out the transportation necessary for the construction.

The criteria for choosing a site for the construction of a multifunctional shopping centre are given in Fig. 1.

When choosing a location, possible competitive advantages of the city for the development of investment potential and business environment were also taken into account: favorable economic, geographical and transport position of the region (at the intersection of the main types of transport routes); availability of free land resources and production sites for infrastructure development; promising opportunities for the development of certain areas of recreation and tourism within the unified tourist and recreation system of the Republic of Tatarstan (Russia) [4].

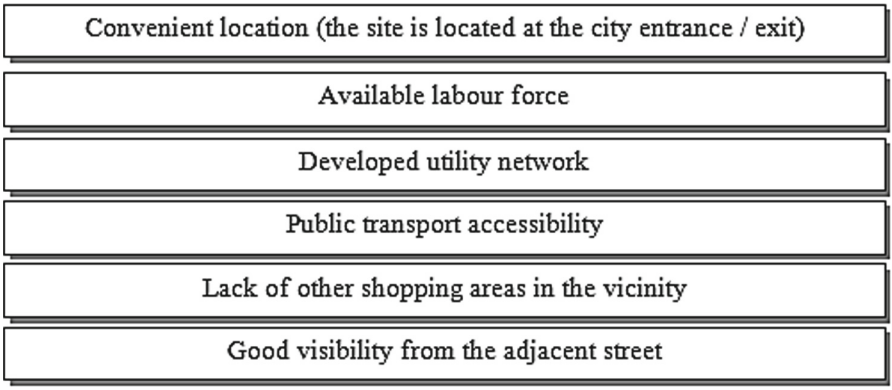

Fig. 1. Criteria for choosing a site for construction. (Proposed by the authors).

The following areas can be found on the territory of the multifunctional shopping centre: trade, consumer services, culture, leisure and entertainment zones. It is planned to build a food court (3 restaurant chains) having 120 seats, a cinema, an entertainment area for children and parents, more than 20 shops. It is also possible to equip the adjacent territory with entertainment zones.

The project provides the following service and utility areas of the multifunctional hall: a cloakroom, 2 washrooms for customers and staff, necessary rooms for the staff.

The plan of the site improvement includes its division into functional zones and the work on the development of the area, driveways and pedestrian ways. The area in front of the building, the sidewalk and pedestrian zones are made of paving slabs.

The blind area around the buildings, trash container enclosures, a utility site with an entrance for service and special vehicles, parking lots for cars have an asphalt concrete surface.

The territory of the centre has outdoor artificial lighting due to lamps placed on the facade of the building from the side of the utility site and three park lamps of the standing type from the side of the main entrance.

The description of structural elements of a multifunctional shopping centre in the city of Leninogorsk (Russia) is given in Table1.

Table 1. Structural elements of a multifunctional shopping centre.

№	Element name	Characteristic
1	Foundations	Foundations for external and internal walls made of concrete blocks
2	Framing	Frameless building
3	Floor slab	Precast concrete floor slab
4	External walls	Three-layer structure: 1st layer – 380 mm thick inner bearing layer made of silicate bricks; 2nd layer – 100 mm thick heat insulation made of non-combustible mineral wool boards with «Tyvek» vapor barrier and hydro-windproof membranes; 3rd layer – facing with porcelain stoneware tile son a metal frame (according to the «ventilated facade» system)
5	Roof	Attic roof based on rafters with intermediate support and lathing. Pitched roof made from PK «Metalloprofil» metal profile
6	Architectural appearance of the facade	Exterior wall facing made of porcelain stoneware of contrasting colors «light beige», «terracotta» and «dark brown» on the metal frame. White windows made of metal-plastic

The total cost of construction of the building of a multifunctional shopping centre was calculated using the software product «Grand Smeta» and amounted to 85370.9 thousand rubles.

A construction schedule was developed on the basis of the cost estimate summary (Table 2).

Table 2. Schedule for the construction of a multifunctional shopping centre in the city of Leninogorsk.

№	Name	Start date	Completion date
1	Preparation of the construction site	01.09.2020	30.10.2020
2	Temporary construction facilities	15.09.2020	30.10.2020
3	Power facilities	25.09.2020	30.10.2020
4	Transport and communication facilities	17.07.2021	20.08.2021

(*continued*)

Table 2. (*continued*)

№	Name	Start date	Completion date
5	External engineering networks	01.09.2020	16.11.2020
6	Shopping and entertainment centre building	30.10.2020	01.09.2021
7	Landscaping	15.07.2021	01.09.2021
8	Other work and costs	01.09.2020	01.09.2021

Source: calculated by the authors.

Calculations to substantiate the construction efficiency were carried out using the software product «Alt-Invest. Construction». The chosen planning horizon is 12 years. When performing the calculations, the investment costs of the project were taken into account (Table 3).

Table 3. Investment costs.

№	Name	Cost, thousand rub, (1$ = 74.82 rub)
1	Land plot	1482
2	The cost of construction of a multifunctional shopping centre per sq. m	44.170
3	IP video surveillance kit for 4 indoor and 4 outdoor 2MP PST cameras IPK08BH	65.430
4	Sound equipment Rebox Street M	86.552
5	Snow removal machine Weima WXS0722A 21000100	114.980
6	Mini loader CDM307 Lonking	3940
7	Light box	36.720

Source: calculated by the authors.

The income of the multifunctional shopping centre at the operational stage will be generated by renting out space, placing advertisements on the facade of the building. The costs are given in Table 4.

Table 4. Total operating costs for 11.5 years of a multifunctional shopping centre operation in the city of Leninogorsk.

№	Name	Cost, thousand rub.
1	Salary of the employees	40 359
2	Utility payments	3 071
3	Facility insurance	12 285
4	Advertisement	575
5	Taxes	147 292

(Calculated by the authors taking into account 4% inflation rate).

The result efficiency indices of the construction and operation of a multifunctional shopping centre in the city of Leninogorsk are given in Table 5.

Table 5. Performance indicators of total investment costs.

№	Name	Values
1	Annual discount rate, %	15
2	Net present value (NPV), thousand rub	28 069
3	Internal rate of return (IRR), %	21.8
4	Profitability index (PI), times	1.32
5	Discounted pay-back period (PBP), years	8.22

Source: calculated by the authors.

When performing the calculations, a two-parameter risk simulation was carried out: the effect of simultaneous increase in the discount rate and investment costs of the project on NPV was studied (Fig. 2).

Calculations show that at the planned level of investment costs (91.942 million rubles), safety margin of the project based on IRR is 6%. In the case of 20% increase in the investment costs, the safety margin will be only 2%.

Similar simulation by operating costs shows a slightly lower NPV sensitivity to the simultaneous increase of operating costs and the project discount rate (Table 6).

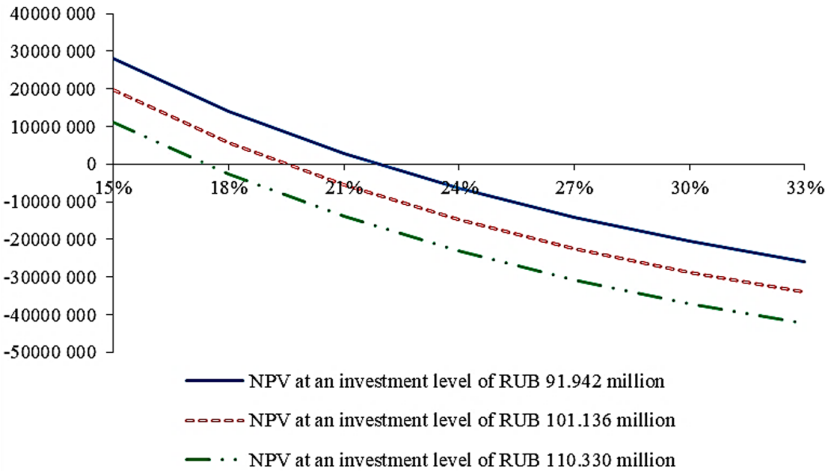

Fig. 2. NPV change in the case of a simultaneous increase in investment costs and discount rate. Source: calculation tables from the software product «Alt-Invest. Construction» (calculated by the authors).

Table 6. NPV change in the case of a simultaneous increase in operating costs and discount rate.

№	Discount rate, d, %	NPV, rub.		
		level of operating costs 16.965 million rubles a year	level of operating costs 18.661 million rubles a year	level of operating costs 20 358 0 million rubles a year
1	15%	28 069 554	21 437 870	13 787 459
2	18%	14 087 392	8 255 279	1 518 513
3	21%	2 773 451	−2 407 436	−8 399 980
4	24%	−6 475 073	−11 119 675	−16 499 261
5	27%	−14 107 460	−18 305 817	−23 175 272
6	30%	−20 462 217	−24 285 606	−28 726 331
7	33%	−25 797 055	−29 302 468	−33 379 548

Source: calculation tables from the software product «Alt-Invest. Construction» (calculated by the authors).

Table 6 shows that in the case of 20% increase in operating costs per year the safety margin of the project according to IRR will be 3%.

The simulation shows that the project does not have sufficient financial stability in the case of a possible negative 20% change in the initial indicators: investment and operating costs, discount rate for the chosen planning horizon is 12.5 years (1 year of construction and 11.5 years of operation). Long payback and low financial stability make infrastructure development projects unattractive for private investors. However, it should

be noted that the implementation of negative scenarios associated with 20% increase in costs seems unlikely.

4 Conclusions

The performed calculations and two-parameter risk simulation made it possible to identify possible negative scenarios in the implementation of an investment project for the construction of a social infrastructure facility and draw the following conclusions:

1. Infrastructure projects are unattractive for private investors under existing conditions.
2. The simultaneous increase in the discount rate and the investment costs of the project has the greatest influence on the NPV indicator.
3. To attract private investors to the implementation of infrastructure projects in towns and medium-sized cities of Russia, state support is required in the form of tax incentives, compensation for pre-project preparation costs and the use of a public-private partnership scheme at the stage of infrastructure facilities operation. The inflow of private investment can be increased by means of the mechanism of infrastructure mortgage and the conclusion of special investment contracts to ensure a stable business environment.

Further research in the development of this topic will allow establishing the optimal ratio of state and private capital for the implementation of infrastructure investment projects. This will give the opportunity to use them as the basis of a strategy for the development of infrastructure projects in towns and medium-sized cities.

References

1. Yu, A., Laamarti, A.V.: Kofanov: small towns in contemporary Russia. Sotsiologiya Goroda **4**, 3–16 (2012)
2. Zagidullina, G.M., Klescheva, O.A.: The development of innovation infrastructure of investment-building complex. Izvestija KGASU **2**(16), 271–277 (2011)
3. Bakhareva, O.V., Ilina, E.V., Serova, A.S.: Methodology of formation of social infrastructure in the region investing in the quality of life. Manage. Econ. Syst. Sci. Eelectron. J. **12**(94), 32 (2016)
4. Yu, V.: Medyanik: trends in the socio-economic development of towns and cities (on the example of Leninogorsk in the Republic of Tatarstan). Ekonomika predprinimatelstvo i pravo **10**(10), 2489–2504 (2020). https://doi.org/10.18334/epp.10.10.111072
5. Gunko, M., Eremenko, Yu., Batunova, E.: Planning strategies in the context of urban shrinkage in Russia: evidence from small and medium-sized cities. Mir Rossii **29**(3), 121–141 (2020). https://doi.org/10.17323/1811-038X-2020-29-3-121-141
6. Wierzbicka, W.: Socio-economic potential of cities belonging to the Polish national cittaslow network. Oeconomia Copernicana **11**(1), 203–224 (2020). https://doi.org/10.24136/oc.2020.009
7. Gemenetzi, G.: Exploring the relationship between urban sprawl and the urban system. Evidence from Thessaloniki, 1991–2011. Spatium **37**, 1–11 (2017)

8. Costa, S.M.F., Carmo, M.B.S., Barja, P.R.: The urban hierarchy at the delta of the Amazon River and the importance of small cities, urbe. Revista Brasileira de Gestão Urbana **11**, e20180014 (2019). https://doi.org/10.1590/2175-3369.011.001.AO09
9. Zemtsov, S.P., Smelov, Y.A.: Factors of regional development in Russia: geography, human capital and regional policies. J. New Econ. Assoc. **4**(40), 84–108 (2018). https://doi.org/10.31737/2221-2264-2018-40-4-4
10. Yu, V., Medyanik, E.E.: Valeeva: actual problems of development of small towns of Russia (on the example of Leninogorsk of the Republic of Tatarstan). Int. J. Hum. Natural Sci. **11–1**(38), 101–104 (2019). https://doi.org/10.24411/2500-1000-2019-11707
11. Shcherbina, E.V., Gorbenkova, E.V.: IOP Conf. Ser.: Mater. Sci. Eng. **753**, 032086 (2020). https://doi.org/10.1088/1757-899X/753/3/032086
12. Meyer, D.F., Neethling, J.R.: Meaurement of the enabling developmental environment: a comparative study in a developing region. Econ. Soc. **10**(4), 67–82 (2017). https://doi.org/10.14254/2071-789X.2017/10-4/6
13. Thondoo, M., Marquet, O., Márquez, S., Nieuwenhuijsen, M.J.: Small cities, big needs: urban transport planning in cities of developing countries, J. Transp. Health **19**, 100944 (2020). https://doi.org/10.1016/j.jth.2020.100944
14. Antonova, N.L., Grunt, E.V.: IOP Conf. Ser.: Mater. Sci. Eng. **687**, 055053 (2019)
15. Palicki, S.: Housing resources and needs in light of modern urban transformations: the case of Poznan. Real Estate Manage. Valuation **25**(2), 72–78 (2017). https://doi.org/10.1515/remav-2017-0014
16. Shagiakhmetova, E.I., Medyanik, Y.: Assessment of investment in the development of recreational areas of the city of Kazan. Manage. Econ. Syst. Sci. Eelectron. J. **12**(130), 86 (2019)
17. Bakhareva, O.V., Romanova, A.I., Safina, R.S., Kursina, I.M., Shindina, T.A.: Infrastructure in the region: long-term investments of institutional investors in Russia. J. Adv. Res. Law Econ. **6**(3), 488–503 (2015). https://doi.org/10.14505/jarle
18. Eremenko, M.M., Gareev, I.F.: Research on the relationship between housing construction and sustainable development of territories. Zhilischnye Strategii **6**(3), 333–376 (2019). https://doi.org/10.18334/zhs.6.3.41188
19. Zubarevich, N.V.: Development of the Russian space: barriers and opportunities for regional policy. Mir novoj ekonomiki **2**, 46–57 (2017)
20. Fattakhov, R.V., Nizamutdinov, M.M., Oreshnikov, V.V.: Analysing and modelling of trends in the development of the territorial settlement system in Russia. Ekonomika Regiona **15**(2), 436–450 (2019)
21. Skorobogatova, Y.A., Bovkun, A.S., Ivanov, M.Yu., Shilova, O.S.: IOP Conf. Ser.: Mater. Sci. Eng. **880**, 012103 (2020)
22. Sharma, P.: Opportunities and struggles of decentralized governance reform for urban municipalities in India. World Dev. Perspect. **17**, 100174 (2020)
23. Gimadieva, L.S.: Strategy and methods of engaging of investment resources at municipal level. Sci. J. Kub Gau **74**(10), 378–387 (2011)
24. Oleinik, E.B., Zakharova, A.P.: City: Economic growth and social attractiveness issues. Entrepreneurship Sustain. Issues **7**(1), 454–470 (2019). https://doi.org/10.9770/jesi.2019.7.1(32)
25. Bennett, D.L.: J. Bus. Venturing **34**, 105907 (2019). https://doi.org/10.1016/j.jbusvent.2018.10.005
26. Kasraian, D., Maat, K.: Bert van Wee: the impact of urban proximity, transport accessibility and policy on urban growth: a longitudinal analysis over five decades. Urban Anal. City Sci. **46**(6), 1000–1017 (2019). https://doi.org/10.1177/2399808317740355

27. Angel, S., Blei, A.: The spatial structure of American cities: the great majority of workplaces are no longer in CBDs, employment sub-centers, or live-work communities. Cities **51**, 21–35 (2016). https://doi.org/10.1016/j.cities.2015.11.031
28. Engelfriet, L., Koomen, E.: The impact of urban form on commuting in large Chinese cities. Transportation **45**(5), 1269–1295 (2017). https://doi.org/10.1007/s11116-017-9762-6
29. McDonald, C., Buckley, P.J., Voss, H., Cross, A.R., Chen, L.: Place, space, and foreign direct investment into peripheral cities. Int. Bus. Rev. **27**(4), 803–813 (2018). https://doi.org/10.1016/j.ibusrev.2018.01.004
30. Latypova, T.A.: Spaces of urban activity in Kazan. Izvestija KGASU **4**(54), 161–171 (2020)