The city competitiveness taking into account the assessment of the comfort of population living

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Abstract. The concept of sustainable city development based on a balance of environmental, economic and socio-cultural factors in modern conditions is often replaced by the concept of city competitiveness as autonomous socio-economic systems. The imbalances in the city development and their inequality in terms of the comfort of population living are becoming even more acute at the junction of the contradictions of these concepts. Comfortability of living in the city is the main competitive advantage of every city, thanks to which it has all the conditions for high-quality reproduction of the most important wealth - human resources, attraction and effective involvement of labor resources in the economic life of the city. It explains the relevance of the study, which proposed a theoretical and methodological justification of the city competitiveness in terms of assessment the comfort of living in it. This approach is original, has a high degree of reliability, the ability to verify the forecast of the competitiveness of a modern city. The results of testing prove the feasibility of its use in the development and scientific justification of strategies for sustainable development of the cities.

Keywords: competitiveness, city, comfortable living, population, sustainable development.

1 Introduction

The city is the territorial center and place of the population of individuals, social groups, who combine their forces (physical and intellectual) and material resources for conducting a common economy and industrial activity in order to ensure social and economic security and development. There is no single typology and classification of cities, but there are differences in the cities depending on the population: small - up to 50 thousand, medium – 50-100 thousand, large - 100-250 thousand, larger - 250-1 million, the largest – more than 1 million. The development trend of modern society, taking into account purely economic interests, determines the priority of large cities and megacities that have the resource potential to be self-sufficient for all aspects of the population life. A large city or metropolis is, first of all, a colossal consumer of all resources, including energy in all types of their sources. The population in a large city or mega-city is the element of the economic mechanism aimed at creating wealth and profit in all possible forms.

Large cities as constituting and forming a region, its territorial centers, are peculiar various models of its life activity, accumulating all kinds of resources, economic ties and relations. The population of a large city or metropolis can be considered as a resource for profit, it is over national, over cultural, and over patriotic.

According to UN forecasts, by 2050, more than 85% of the world's population will live and work in cities. Today in Russia there are 1,128 cities, taking into account the settlements of Crimea and closed administrative-territorial entities. At the beginning of 2020, 108 657 433 people or 69% of the population of Russia lived in them. Over the past 25 years, 60 settlements of Russia have acquired the status of a city. In the modern world, there is a steady tendency to reduce administrative and economic obstacles to the movement of people across the country and beyond. When person chooses city, one of his main motives is the opportunity and realistic expectations to increase the comfort of his life as a whole.

The larger the city, the more attractive it is for relocation and, accordingly, this is mainly due to the growth of large cities and the development of the regions in which these cities are located. The large cities and megacities in the context of globalization determine the development of the entire territory...
of the region and most clearly demonstrate the competitive ability of the region. It follows that competitive conditions are not equal for many regions in which there are no such cities historically, or the region-forming cities are on the decline of their development.

The resulting labor migration has a significant impact on the competitiveness of cities. The search for ways to increase the competitiveness of the city in order to solve the problem of mass labor migration of the population to cities more comfortable for living predetermined the particular relevance of this study.

The purpose of the author’s search is the theoretical and methodological substantiation of the city’s competitiveness in terms of assessment the comfort of living in it, taking into account historical, sociocultural, economic and environmental aspects. In order to achieve this goal, the authors solved the following problems:

1) the definition of the competitiveness of the city is given, a comparative analysis of theoretical and methodological approaches to the determination and assessment of the competitiveness of the city is carried out;

2) an original theoretical approach to determining the comfort of living as a factor in the competitiveness of a modern city was developed and tested, and the feasibility of its use in the development of programs for the socio-economic development of the city was substantiated;

3) a methodological approach to determining the criteria and parameters of the comfort of living in the city is proposed.

The subject of the author's research is the factors that determine the competitiveness of a city in terms of assessment the comfort of living in it, and the object is a city as a socio-economic system and a structural unit of the region.

2 Materials and methods

What should a city be like to be classified as competitive? There are many points of view and opinions about this problem (Table 1).

| The authors                  | Assessment indicators                                                                                                                                                                                                 |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vinogradov V.                | The city is considered ideal for life if it is a balance between different sectors of the economy. The key areas that contribute to improving living conditions in cities include:  
- improvement of the urban physical environment,  
- restoration of existing housing stock,  
- the creation of social and cultural opportunities in cities,  
- urban development and public participation.                                                                 |
well as strategic determinants: the effectiveness of government, city strategy, public-private partnership and institutional flexibility [1].

Begg I. The competitiveness of the city lies in its protection of its market share (similar to companies). The ability of a city to compete depends on its basic attributes, which determine the attractiveness of the city as a location for “urban actors”, and on the strengths and weaknesses of economic agents. Moreover, the city cannot be competitive in all sectors of the economy.

Krugman P. Competitiveness should be an attribute of companies, not cities, regions, countries or continents [2].

Porter M. The author defends his conviction that the competitiveness of the city, the country affects the competitive position of firms. Competitive advantages are created not from outside, but in domestic markets [3].

Shepelev E. The competitiveness of the region is manifested in its ability to ensure the production of competitive goods and services in the context of the effective use of existing factors of production (economic potential), the use of existing and creation of new competitive advantages, and the preservation (improvement) of living standards in compliance with international environmental standards.

Rudnitskaya A. An assessment of the competitiveness of a municipality is a procedure for determining the ability of a territorial unit to be more attractive to consumers compared to other units due to better quality of life and more favorable conditions for carrying out economic activities.

Dzhegutanov V. The city can be called competitive where there is socio-economic, political, cultural, environmental, religious, institutional, etc order which allows each resident to satisfy his interests to a greater extent and quality, but also to reserve for their quantitative and qualitative resolution. Thus, the competitiveness of the city is the ability of the city to satisfy the interests of all its subjects (residents, business entities, investors, and at the same time the state (represented by state authorities)) - and attract new ones.

Loginova V. The competitiveness of territorial systems is considered as the ability to ensure such a level of development of productive forces in a given territory that will be attractive for the movement of the population and the allocation of capital in this territory.

Animitsa E. The competitiveness of a city is the ability of an urbanized territory to compete on an equal footing with similar territories in the market of investment resources, to compete in the market of goods and services which match the requirements of the world and national markets and have higher value compared to similar products manufactured in other countries cities, as well as the ability to create favorable living conditions for citizens.

Boddy, M., Parkinson, M. The competitiveness of territories is associated with the ability to determine their special features and effectively disseminate information about their competitive advantages [4].

Maksimchuk O., Pershina T. The competitiveness of a city is determined by the presence of objective and potential opportunities for the effective realization of its competitive potential (otherwise, by using its own and attracted economic resources in economic activity), if the city receives effects and directs the effects in the form of targeted funding for programs to improve the comfort of living in this region.

A critical analysis of the existing definitions of the city competitiveness allows to conclude that the multidisciplinary and integrated approaches, tools of systems theory, institutional theory, utility theory, factor theory, management theory, marketing theory and apparatus of theories of regional and municipal economies are widely used. However, it is obvious that there is no clearly expressed theoretical position of the authors in determining the competitiveness of the city [5-9].

Of course, the prevailing point of view on determining the competitiveness of the city mainly as an economic system by analogy with enterprises is almost all the opinions expressed in this. The idea of the competitiveness of the city as a result of the interaction of factors of the external and internal environment from the standpoint of the theory of factors and control theory (Kresl P., Fillipova Yu.V., Matos, F., Kolesnikova N.A., Dzhegutanov V.V.). In a number of definitions of the city’s competitiveness, there is a mixture of characteristics of different nature and content: objective, clearly definable and quantitatively measured, and subjective, the boundaries of which are not clear enough (for example, “favorable life activity as a reflection of lifestyle, thinking, and interests of the
population”, “Tolerance and the general culture of the population”, “the objectivity of the urban media”, “trust in the city authorities”) from the point of view of economic science.

There is also some violation of the subordination of parameters - in a series of listings of private or local signs of the city’s competitiveness, complex ones are included that absorb all local ones, in particular, this refers to “quality of life”, “quality of environment”, “favorable life activity”, “level of life”(Vinogradov V., G. van der Borg, Bramezza I., Shepelev E.S., Rudnitskaya A.V.). The authors are close to the interpretation of the competitiveness of the city of Kotler F., Lever F., Loginova V.A., Toma S.-G., Appio, F., Nijkamp P., Turok I., Caroli, M., Taylor Buck, N., also true it seems that the allocation of the living comfort of the population by Glebova I.S. [10-15].

Recognizing the right of scientists to their opinions and not claiming scientific discovery, the authors propose their definition: “The competitiveness of a city is determined by the presence of objective and potential opportunities for the effective realization of competitive potential (using its own and attracted economic resources in economic activity) with subject to receiving and directing effects on the goal of increasing the comfort of living in this city”.

As can be seen from the Table 1, there are the quantitatively measured parameters of competitiveness which are used in well-known methods of measuring the level and quality of life and assessing the human development index. Such an approach is controversial, according to the authors, and not sufficiently suitable in the context of the author’s definition of the city’s competitiveness. However, at this stage of the study, based on the objectives and the availability of statistical data, it is enough to test the methodology for assessing the index of human development in relation to assessing the competitiveness of the city.

In general, the human development index shows the average level of achievements of the country in three basic dimensions of human development: longevity and health, access to knowledge and a decent standard of living and represents the geometric mean of normalized indices that reflect achievements in each dimension. In relation to the city level, an incomplete set of indicators of the city competitiveness is presented in Table 2.

| Target group | Sphere Name | Indicator |
|--------------|-------------|-----------|
| Population, tourists | Social | - provision of children with places in a preschool educational institution, places for 100 children;  
- the ratio of the average wage to the cost of living, times;  
- the number of students in preschool educational institutions, people per 10 thousand people;  
- the number of doctors, people per 10 thousand people of population;  
- the number of hospital beds, pieces per 10 thousand people of population;  
- the number of sports facilities, units per 10 thousand people of population;  
- commissioning of residential buildings, m2 per 10 thousand people of population;  
- the total area of residential premises in dilapidated and emergency residential buildings in the total area of the housing stock, %;  
- the number of stationary social services for elderly citizens and persons with disabilities, units;  
- the number of institutions for children with disabilities, units;  
- the number of voluntary formations of the population for the protection of public order, units;  
- the number of general education organizations at the beginning of the school year, units.;  
- current (operating) costs for environmental protection, including payment for environmental services, thousand rubles. |

Table2. City competitiveness indicators.
Cultural and entertainment — the number of places in public catering facilities, units for 10 thousand people of population;
— the number of institutions of cultural and leisure type, units for 10 thousand people of population;
— the number of professional theaters, museums, public libraries, units per 10 thousand people of population;
— the number of recreation parks (city gardens), units per 10 thousand people of population;
— the number of children's music, art, choreographic schools and art schools, units per 10 thousand people of population.

Investors and business — Natural growth, ppm;
— the proportion of the population younger than able-bodied and able-bodied age in the total population, %;
— the presence and growth of jobs and vacancies, number, %
— unemployment rate, %.

Production — the cost of fixed assets, thousand rubles for 1 resident;
— the proportion of completely worn out fixed assets in the total volume;
— the volume of shipped industrial goods of own production, thousand rubles for 1 resident;
— the volume of work by type of activity "construction", thousand rubles for 1 resident;
— retail turnover, thousand rubles for 1 resident;
— the turnover of catering, thousand rubles for 1 resident.

Local government (local budget) — the volume of investments in fixed assets, thousand rubles for 1 resident;
— the share of financial assistance provided in the total amount of budget funds, %;
— incomes of the local budget, rubles for 1 resident;
— the tax on personal income, thousand rubles.
— the payment for negative impact on the environment.

Both the human development index and the parameters of the level and quality of life of the population characterize the objective living conditions and factors of human reproduction as a result of the organization of the life of the population. In detail, various approaches to their determination and assessment of the level and quality of life, the authors considered earlier. However, with all the many parameters of the human development index, the level and quality of life of society, the question of measuring the comfort of living in the city remains relevant. The authors believe that there is no direct relationship between them: for comparable indicators of the level and quality of life, cities are evaluated differently from a comfortable position: the range of these estimates is unlimited in terms of subjective preferences and expectations of individuals from their life activities.

3 Results and Discussions
We will justify our point of view by answering the questions “What should be understood by the comfort of living?”; “How can we measure the comfort of living in order to determine the desired optimum?” using the capabilities of the comparative analysis.

Is there a semantic identity between determining the level and quality of life and living comfort? As noted earlier, the level and quality of life, the human development index are clearly quantifiable and measurable, which is quite understandable by the elaboration of this area in science and practice [16-21].

The authors see the identity with the concept of “comfort of living” in terms of determining the institutional conditions for organizing the life of the population. However, in assessing the comfort of living in a particular city, individuals are more subjective, relying on qualitative assessments, relying on their intuitive preferences and expectations, which vary throughout life. A positive assessment of living comfort is often based on perception as a favorable combination of many living factors for a particular individual or social group. For example, a marginal Russian social group with the conditional name “downshifters” considers living in a “simplified” form (“living for themselves”)
comfortable, consciously choosing a living environment with less comfortable institutional conditions and less stressful and intensive work rhythm and the pace of life.

In Russia, this phenomenon takes place in megacities (Moscow, St. Petersburg) and is manifested in relocation to a place of residence mainly in a developing country (India, Thailand, Vietnam, Egypt, Serbia, Croatia, etc.) or a European country (for example, Greece, Bulgaria, etc.). At the same time, the source of livelihoods is often the rental of an apartment in Russia, the transfer or organization of your business in more preferential and transparent terms in comparison with domestic regulatory and financial conditions. Or there are examples of relocation to a place of residence in rural and sparsely populated places of quite successful and successful people. In Europe, the prevailing ecological motive is downshifting, associated with the creation or relocation of residence in agricultural or eco-farms, “smart” and energy-efficient villages and homes. The list of examples can be simply unlimited, especially since downshifting is only one of the facets and in this study is far from the most significant problem of the study of the competitiveness of cities in terms of living comfort.

Based on a critical analysis of the definitions of foreign and domestic scholars, authors understand living comfort as an integral characteristic of a favorable combination of external (political, sociocultural, demographic, economic, scientific and technological natural, external security) and internal (social management, relations and relations in society, structure society, working conditions, development conditions, living conditions, internal security) factors of human life in a particular city.

What is the subordination and interconnection of factors of comfort living in a city? And is there a semantic identity with the concept of the level and quality of life? According to the authors, the level and quality of life is more clearly defined and quantifiable, which is quite understandable by the elaboration of this area in science and practice. The author sees the identity with the concept of “comfort of living” in terms of external factors, from the very definition of which follows the identification of all institutional conditions for organizing the life of the population. As for the second component - internal factors, the comfort of living to a greater extent, according to the authors, is determined by their favorable combination in a particular city. The whole set of factors of comfort living is defined in Table 3.

| № | Factors | Character Description | Component parts | Quantitative measurement, units |
|---|---------|----------------------|-----------------|---------------------------------|
| 1 | Political | X₁.1 -political stability | The number of services of cultural institutions per 1000 people of population, pieces | % |
| 1 | Political | X₁.2 - degree of realization of constitutional freedoms | | % |
| 2 | Socio-cultural | X₂.1 - provision of the population with the services of cultural institutions | The number of service industry objects per 1000 people of population, pieces | The number of health facilities per 1000 people of population, pieces |
| 2 | Socio-cultural | X₂.2 - provision with facilities of the service sector | | |
| 2 | Socio-cultural | X₂.3 - the density of health facilities, the availability of doctors | The number of health facilities per 1000 people of population, pieces | |
| 2 | Socio-cultural | X₂.4 - provision of grants, subsidies | Amount of accrued subsidies to the population to pay for housing and utility bills for the reporting period, thousand rubles | |
| 3 | Demographic | X₃.1 -population density and structure | Ratio of average salaries to the living | % |
| 3 | Demographic | X₃.2 - fertility / mortality | | % |
| 3 | Demographic | X₃.3 - children aged 1–6 years with preschool education | The number of preschool institutions per 1000 children aged 1-6 years, pieces | |
| 3 | Demographic | X₃.4 - children aged 7-17 years with the general educational process | The number of educational institutions per 1000 children aged 7-17 years, pieces | |
| 4 | Economic | X₄.1 - purchasing power of population | | |
| mic | incomes | wage of the working population, % |
|-----|---------|-----------------------------------|
| $X_{4.2}$ | -ratio of average accrued pension to subsistence minimum population over working age | Ratio of average accrued pension to subsistence minimum population, % |
| $X_{4.3}$ | – provision of population with economic assets | % |
| $X_{4.4}$ | – registered unemployment rate | % |
| **5 Scientifically technical** | **X$_{5.1}$** | -level of scientific and technological progress | % |
| | **X$_{5.2}$** | - the number of organizations performing research and development | The number of organizations performing research per 1000 people of population, pieces |
| | **X$_{5.3}$** | - the number of organizations engaged in research and development | The number of organizations engaged in research and development per 1000 people of population, pieces |
| | **X$_{5.4}$** | -amount of funding Research and development | Thousand rubles |
| **6 Natural** | **X$_{6.1}$** | - energy efficiency | % |
| | **X$_{6.2}$** | – the level of atmospheric pollution | Emissions from stationary sources per resident, g/m$^3$ |
| | **X$_{6.3}$** | -climatic characteristic | % |
| | **X$_{6.4}$** | -landscaping of the territory | % |
| **7 External security** | **X$_{7.1}$** | -food | % |
| | **X$_{7.2}$** | -environmental safety of the urban environment | % |
| | **X$_{7.3}$** | -economic | % |
| **8 Society Management** | **X$_{8.1}$** | - awareness and participation of the population in the process of managing society | Public participation in the management of society, % |
| **9 Relationships and Relationships in society** | **X$_{9.1}$** | – the number of public organizations operating in the city | Number of public organizations, pieces |
| | **X$_{9.2}$** | – sustainability of the institution of the family | Marriage to Divorce Ratio, % |
| **10 Working conditions** | **X$_{10.1}$** | -sanitary | % |
| | **X$_{10.2}$** | - aesthetic | % |
| | **X$_{10.3}$** | - psychophysiological | % |
| | **X$_{10.4}$** | - socio-psychological | % |
| | **X$_{10.5}$** | - organizational and economic | % |
| **11 Living Conditions** | **X$_{11.1}$** | – provision of population with medical services | Number of doctors, nurses, hospital beds per 10,000 inhabitants (people) |
| | **X$_{11.2}$** | – health status of the population | Morbidity per 1000 inhabitants (occasions) |
| | **X$_{11.3}$** | – housing provision | Total area living quarters, on average per inhabitant, m$^2$ |
| | **X$_{11.4}$** | – quality of housing conditions | Housing depreciation rate, % |
| **12 Internal security** | **X$_{12.1}$** | - crime rate | Number of recorded crimes per 1000 inhabitants, (people) |
| | **X$_{12.2}$** | – road safety | Number of accidents per 1000 inhabitants, pieces. |
| | **X$_{12.3}$** | - the number of voluntary public order policing units | The number of participants in voluntary groups for the protection of public order, people |
External and internal factors are calculated according to the following formulas «Eqs. (1) and (2)»:

\[
I_t = \frac{x_t - x_{t,\min}}{x_{t,\max} - x_{t,\min}}
\]

\[
I_{\text{cum}} = \frac{1}{n} \sum_{t=1}^{n} I_t
\]

The study of factors affecting the comfort of a population in a city requires a comprehensive, interdisciplinary and systematic approaches, within it is effective to use comparative, retrospective, statistical and logical analyzes to identify and evaluate causal relations of a stochastic nature between deterministic parameters of individual subjective and objective indicators, determine their importance, obtain a weighted average score of a generalized integral indicator of the comfort of living in a city population, also modeling and forecasting this indicator in order to use it in developing, evaluating and approving plans for the socio-economic development of the regions, which will allow the country to become one of the industrialized countries with a high level of human development in a relatively short time.

The assessment of the comfort of living in the city population can be described as a procedure for identifying the degree to which the basic parameters and conditions of a person’s vital activity correspond to his vital needs, as well as personal ideas about a decent, complete and satisfying level of comfort. It is carried out on the basis of comparing the parameters and characteristics of the life of a given individual or society with the corresponding parameters and comfort characteristics taken as the basis of comparison, a standard, and value interpretation of the results of this comparison. The procedure for assessing the quality of life consists of a number of stages and operations, among which the most important: the selection of the nomenclature of the components of living comfort, the determination of the values of the components, the selection of evaluation criteria and, finally, the determination of the integral indicator of living comfort.

Currently, researchers in the field of assessing the comfort of living are discussing various proposals for creating an integral indicator. Both different model approaches and indicators differing in composition and number are used. For example, the simplest model comes down to summing up scores for all components. More complex models involve weighted summation, taking into account the importance of various characteristics of the quality of life for a person.

For each individual person, the significance of various indicators is significantly differentiated, therefore, an element of subjectivity is inevitable in their analysis [22]. It is important to determine their significance for the "average" person at the moment. In this case, it is necessary first to bring all the private indicators of living comfort to a single dimension.

According to the authors, the most reliable assessment of the comfort of the population consists in comparing the actual components of it with the normative ones, i.e. with the degree of satisfaction of the population’s needs for life benefits and various services [23]. This option of calculating the generalized indicator of the comfort of living of the population is presented as the average weighted value from private indicators expressing the ratio of the actual consumption of material goods and services by their groups and types on average per person with the norms of this consumption.

And although the concept of assessing the comfort of living is much deeper and richer than that which can reflect any of the integral indicators, the most simple tool is needed to monitor progress in the field of human development. In our opinion, this approach is the most reliable, since it allows you to take into account external and internal factors of living comfort, such as political, demographic, sociocultural, economic, scientific and technical, natural, external security, living conditions, internal security, etc.
4 Conclusions
1. The city as a socio-economic system is an institutionally organized environment for human life, which has its own infrastructure, a set of city-forming enterprises, institutions, people living together, having specific goals of existence and development paths. The uneven development of cities in terms of socio-economic and a number of other indicators puts them in conditions of competition for resources and markets and makes the task of effective realization of potential more relevant. However, the competitiveness of the city as a socio-economic system cannot be absolutely equated with the concept of business competitiveness.

2. The competitiveness of cities can be determined by the level and quality of life, which fully determine the institutional structure and the human environment, however, these parameters do not show the role of person identity, his involvement and “relation” with this territory. It can be determined through the assessment of the comfort of living.

3. The approach to the theoretical definition of living comfort as a key factor in the competitiveness of the city, which is proposed by the authors, has advantages: a high degree of reliability, versatility and the ability to determine quantitatively measured indicators in the system, which is advisable to use in the process of developing and scientifically substantiating programs and strategies for socio-economic development of Russian cities.

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