

# Evolutionary and Integrated Features for Designing Business Centers in Kazakhstan

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## Abstract

In the development of cities in Kazakhstan, there is a modern trend to focus on the features of space-planning and the formation of business centers. In this context, the purpose of this article is to examine the functions necessary for the fully-fledged development of business centers, through research. It aims to acquaint students with the theoretical concepts and ideas that make up the methodology of designing modern buildings.

Various research methods have been employed in the research, such as dialectical and system analysis, methods of abstraction and comparison, as well as the method of statistical analysis. It first analyses the development of business centers and business parks in the modern cities in Kazakhstan. Then, the peculiarities of the functional, internal planning and urban planning solutions are examined. Moreover, the principles of creating aesthetic and physical comfort of the recreational environment of business centers are scrutinized.

The article analyzes the modern structures and planning solutions for business centers. It substantiates the methodology for assessing the parameters of social infrastructure and investigates the modern classification of business centers and offices influencing the economic growth of the region.

**Keywords:** business park, recreational areas, urban planning solution, landscape design, architectural and artistic solutions.

## 1. Introduction

In recent years, the issue of forming business centers has become extremely relevant. The growth of cities and agglomerations, the organization of the largest territorial production complexes, and the implementation of large-scale urban transformations have set urgent tasks. These involve optimizing the functional processes, rational use of the territories, protecting and improving the ecological and urban environments, creating memorable architectural and spatial images of cities and their public and business centers.

Business centers have become one of the most important architectural spaces of modern cities. The need for such centers has increased due to the concentration of a large number of enterprises and international businesses within large cities. This has created a need for an architectural cluster of business centers that facilitates businesses between enterprises and could maintain a high concentration of financial flow within them.

It is also very important to understand the different types of business centers as they provide a wide variety of services, as well as the importance of the locations. This article briefly explains the main classification of business centers using an example and discusses the requirements of the city, since it is important to understand the concept of a central business district.

In recent decades, the economic developments of Kazakhstan have proved that the construction of infrastructure plays an indispensable and important role in sustainable and rapid economic developments (Khomyakov and Bessimbayev, 2017). The emergence of new infrastructure concepts has obvious peculiarities of the times. It is worth noting that the global economy is gradually transforming into a digital economy. Innovative activities related to digital economy are active. Continuous development of technologies and the improvement of the capabilities of the digital platforms have become important characteristics and guarantees the development of business centers. Indeed, the economic benefits that bring the development of the digital economy should become the “initial driving force” of their construction (Valieva and Matniyozov, 2022; Mysak et al., 2016). A number of studies on business centers have formulated ideas about a new type of public buildings that have emerged as a result of the evolution of the business functions. In fact, the modern business centers are also formed as groups of these public buildings, i.e., they form a new type of urban development complex.

Research has just begun to pay attention to the specifics of the design and development of business centers. This paper examines the issues of data for spaces of business centres. Generally, only the structural features of buildings, the layouts of the premises and individual characteristics of functional elements are often considered.

The first attempt to combine all the information and data for design was the book by the German author Neufert titled “Architects' Data” (1970). Various aspects of construction, operation and the design of business centers have been studied by architectural scientists since then, such as Kovalskiy (2019), Tereschenko (2019), Shamraeva (2019), Smirnova (2020) and Demin (2010). They have dealt with issues of architecture of buildings and structures, as well as urban planning in modern cities. Further, Saunders (1999) and Ambasz (1998) have also studied the impact of the urban structures on the ecological environment and the behavior of people. The problems of landscape design and landscape architecture have been developed by Adilov and Matniyozov (2020), Dobronravova et al (2021), and Aggelis (2020).

Planning and the management of the physical, social and economic facets of cities and the areas around them is referred to as urban development. Such surroundings as hospitals, schools, airports and retail malls are referred to as "specialized facilities". Researchers and urban planners have both been interested in the connection between specialized facilities and urban development since they have a big impact on how an inhabitants' quality of life is shaped (Liu and Jin, 2022; Luo and Wang, 2022). Impact of specialized facilities on urban development is one of the key topics of focus in this field. Studies have demonstrated, for instance, how the specialized facilities can affect urban form, transportation systems and land use patterns (Antczak-Stępnia, 2022; Cudo, 2022). Urban developments and specialized facilities have a complex and nuanced interaction. Urban development can create new demands for specialized facilities while the presence of such facilities might influence how urban areas evolve. Furthermore, there are important implications for sustainability and the standard of living for residents in the relationship between urban development and specialized facilities (Mbiba, 2022).

Businesses and entrepreneurs can gain from the building of business centers in a number of ways, such as flexible leasing agreements, a variety of amenities and networking possibilities. The necessity for a steady stream of tenants, hefty up-front costs and the need to adjust to shifting market conditions are just a few of the difficulties faced by the business centers. As a result, in order to build effective and long-lasting projects, business center developers must carefully take these variables into account (Uzakbayev et al., 2022; Naguib and Ragheb, 2022). The design of business centers must carefully evaluate the physical areas and how they can support employees' work activities. The procedure entails planning and setting up the actual place. Business centers can design an environment that encourages

cooperation, creativity, and innovation by placing a high priority on utility, efficiency, and productivity (Jiang, 2022; Aitmukhanova et al., 2019; Rajput et al., 2022).

The purpose of this paper is to study the main functions necessary for a fully-fledged business center. The objective is to assess how urban planning can make an active contribution in creating a recreational environment for business centers in Kazakhstan.

## 2. Research Methods

This research employed theoretical modeling as well as empirical methods along with document analysis and observation. It employed standard analysis and synthesis to interpret the data. The theoretical and methodological basis for studying this issue was the research of modern Kazakh scientists in the field of developing infrastructure for the business centers, assessing their resource potential, industry publications, scientific articles in reviewed publications and the features of urban planning at the regional level.

Data analysis include dialectical data, the method of statistical observations and expert assessments of architects, methods of abstraction and comparison. Following steps were followed.

- analysis and generalization of experience in designing business centers;
- study of the main stylistic trends in the latest architectural practice; how?
- method of experimental design of green architecture;
- analysis of creative achievements and existing issues in the newest social infrastructure of business centers.

The paper is based on modern approaches to buildings, open systems methodology, and international design standards. A systematic classification of business centers as well as methods for analyzing processes and recommendations for designing and choosing a territory are proposed. The selection and processing of information is carried out by complex and comparative literary analysis of project materials. The field surveys help to find the prevailing features and issues at this stage during the construction and reorganization of the object under study. Classification was used as the main method of scientific generalization of the first stage of the research. It lies in the distribution of certain objects into classes (types, categories) depending on their common features. The method of analysis of typological developments makes it possible to classify according to the main and auxiliary criteria (urban location, function, number of storeys, structure).

The paper was organized following several stages. The first stage examines the background, purpose and significance of the research, methods and content of the research. It also explains the favorable role in the study of infrastructure for the economy and social development of the country. The second part briefly describes the process of formation and development of the infrastructure potential of Kazakhstan. It compares and analyzes the external and internal potential of infrastructure construction, focusing on the rapid improvement of the creation of business centers. The third part includes design guidelines related to the placement, orientation and design of buildings on the territory. This section describes the required urban design characteristics of new developments within each characteristic area of a business center. In addition to this, the distinctive features of office premises of various classes are analyzed.

## 3. Findings

### 3.1. Technical features of buildings and offices

The design and construction of modern office buildings is a process aimed at achieving a specific return on investment. However, this is precisely the reason for which it is impossible to fully understand the complex processes taking place in the office center. As a result, a single building of a business center stands out, perhaps even devoid of architectural significance. The all-glass building will no longer be a true architectural feature, but will become unsuitable in historic areas of the city. The only practical solution to this issue is not only the design of new business centers, taking into account previous mistakes, but also the analysis of the feasibility of their planning and reasonable management (Bessimbyev et al., 2014).

In the modern world, there are two main types of office buildings designed for business activities: business centers and business parks. Business centers are being implemented as independent, often high-rise buildings built in limited urban planning conditions with

infrastructure created using external resources (Schults et al., 2016). Business parks are complexes of buildings with a developed internal infrastructure that can be visited even by external users. An important functional difference between business parks and business centers is the combination of many functions, excluding office functions, such as the production or research function, logistics and others. A business center has one main function, which is conducting business, while the rest of the functions are partial and auxiliary (Kovalskiy et al., 2019).

Data center should be mentioned as well. It is a large open space, which carefully prepares a warehouse designed to house and operate a demanding IT (information technology) infrastructure. While the size of an enterprise-class data center is certainly a significant factor, it is just one of many important considerations. Other critical factors include the design and layout of the space, including power and cooling systems, security measures, and other infrastructure elements. Each of these factors requires careful planning and consideration to ensure that the data center is efficient, secure, and meets the needs of the organization. The most important and challenging spatial issue is the right definition of size of the data center for the business. Data centers are incredibly expensive: they are too small and may not be able to meet current or future business needs. Too much capital can be wasted providing unused spaces. It is critical to create a facility that offers rooms for growth while optimizing usage. Sizing a data center is sometimes considered an art in itself. Many other factors to consider in a data center space include the following (Kovalskiy et al., 2019):

1. Lighting. In most data centers, lighting is dim or turned off in the absence of people.
2. Temperature. The need for refrigeration can keep temperatures low, so people may need protective clothing.
3. Noise. The cooling fans of dozens or even hundreds of servers can create a cacophony that requires hearing protection.
4. Weight. Equipment is heavy and floors must be designed to support the extreme weight. Raised floors used to handle cooling air flows may require special weight considerations.

When designing data centers, in addition to the physical space, it is also necessary to carefully consider the location and layout of the equipment, i.e., where the IT infrastructure will be placed in the building. The most common feature of any data center layout is a server rack, or simply a rack. A rack is an empty metal frame with standard spacings and mounting options designed to house standard rack-mounted IT equipment, such as servers, storage subsystems, networking equipment, cabling, auxiliary power systems such as UPS (uninterruptible power source) devices and input/output devices, keyboards and monitors for administrative access (Bigelow, 2022). The choice of one or another office space is influenced by the requirements for its level of comfort. To systematize these requirements, experts have developed standards that have become the basis for classifying business centers.

Let's consider the main criteria for classifying the premises to a particular class. The property category can be accurately defined using the following evaluation criteria:

1. Location of the building. This criterion often plays a decisive role.
2. Infrastructure of the area. The availability of convenient transport interchanges and metro stations, distances from banks, shopping and entertainment centers and catering establishments are taken into account when assessing the location.
3. Building type and age. This is an important criterion for peer review.
4. Technical condition of the building. The technical condition of the object, the serviceability of engineering systems, and the convenience and functionality of communication channels are determined when evaluating this parameter.
5. Ergonomics and environmental friendliness. Often, an important factor for modern companies is the convenience of premises layout, the use of environmentally friendly construction materials and the availability of a comfortable microclimate (Pukhkal et al., 2016).

6. Glazing areas and views from the windows. High-class business centers usually offer a variety of premises with beautiful panoramic views.
7. Security and access control. The approach to this issue is different in business centers of different classes.
8. Availability of parking spaces. The high status of the premises implies the availability of spacious parking spaces for tenants and the guests (Brink et al. 2022; Dubovik 2022).

### 3.2. Classification of business centers and offices

Even though most modern cities have a central business district, some small business center buildings can be scattered in crowded and important parts of the city. There are main categories of business center buildings, which differ in terms of components, numbers of offices and functions:

1. **Class A business centers:** new buildings located in areas with high business activities in the city center, class A business centers are considered the most prestigious. The minimum ceiling height is 3.6 m. Air enters the premises through a centralized ventilation system that provides a comfortable temperature for work. The building management and life support system complies with international standards. The security service exercises serious control of access to the premises and to the adjacent territory. Having own parking is a must. High-speed elevators are often installed in high-rise buildings. Class A business centers have several conference rooms and a reception desk. Tenants have access to many services that can be obtained without leaving the office. The building houses restaurants and hairdressers, sports clubs and banks.
2. **Class B business centers:** For class B business centers, some easing of requirements is acceptable; the building may not have the most recent renovation and the perfect location. Less stringent requirements are also imposed on the level of comfort and engineering systems. In some cases, there are not enough parking spaces. The location and the particular market circumstances would both affect whether or not this is a standard and applicable. The rental costs for Class B business centers may start at roughly USD 15 per square meter in some places in Kazakhstan, but they may be more or cheaper in other areas.
3. **Class C business centers:** Class C business centers accept poor sound insulation, outdated communications, poor layout of premises and not too developed surrounding infrastructure. Valmi and Inox options are of interest among the proposals for the lease of class C office real estate. The cost of renting a square meter, as a rule, is offered in this class in the range from USD 6 to 12 per square meter (Business Center Design Plan, 2017) in Kazakhstan as of 2023.
4. **Class D business centers:** This is a commercial foundation in need of renovation. Buildings with outdated utilities are also characterized by the absence of specialized life support services. Despite the basic services of the simplest communications, a small parking lot and a dining room, such offices are not suitable for fully-fledged business activities.
5. **Class E business centers:** Non-residential premises adapted for office activities. This group includes basements converted into offices, semi-basements, or former kindergartens. Objects equipped with separate entrances with a facade location on the street, with high throughput and convenient access for several cars are of value in this class (Chapter 8-Parks, Recreation and Open Space Element, 2021).

The territory of the business center is conceived as an area for target industries. This provides an opportunity to create an office and high-tech manufacturing area with ancillary services such as commercial and residential use. An area should also be configured to provide increased intensity of development, avoiding impact on nearby residential areas. There are several important points to consider when designing office-type buildings:



1. Ability for storm drains to be in a naturalized system that mimics the natural pattern and beautifies the surrounding area.
2. Use of a larger area is suitable for this where connection is limited by the expressway.
3. A special buffer zone is required for industrial use near the existing area.
4. Residential usable area to allow density transition between existing area and the new development.
5. An area suitable for high density residential or mixed/multi-purpose commercial and office space.
6. An area suitable for high density residential or mixed/multi-purpose commercial and office space.
7. Opportunity to improve and expand the landscaping of the park.
8. Commercial and/or industrial use appropriate to the location.
9. Large area is suitable for the area where the connection is limited by the expressway. If industrial, care must be taken to manage access points for truck traffic.

The shape and scale of a building are key factors in creating an aesthetically pleasing working environment. There are design principles to ensure high-quality developments that facilitate a wide range of uses from light manufacturing to offices:

1. Facades of the buildings visible from the public areas should be designed to contribute to an overall attractive urban landscape.
2. New buildings should use appropriate durable exterior building materials to create a cohesive urban form and ensure the sustainability and reuse of buildings over time.
3. Parking lots and the use of vehicles, especially loading docks should be designed and located to reduce their visual impact on the urban landscape and their functional impact on pedestrians.
4. All sites should be landscaped to soften the appearance of large building blocks and facilitate transitions between adjacent sites.
5. Streets should be designed in such a way as to ensure the safe movement of both heavier vehicles and pedestrians.
6. Buildings should have a clean, simple form that emphasizes office use (Sohrab, 2019).

### 3.3. Types of buildings, according to size

The analysis of planning the social infrastructure of business centers in Kazakhstan carried out in the paper allows distinguishing three main types of buildings.

**Small buildings:** This type of business centers is usually located outside the central business district, but may be located in the city center. It typically contains offices, public areas, warehouses, as well as restaurants. An example of a business center is “Downtown” (Fig. 1). It has a convenient location in the administrative district of the capital of Kazakhstan, the city of Astana. The building is provided with good infrastructure, which includes all the necessary services. Business centers of this type are very popular, as they can be easily located almost anywhere in the city, whether it is a big or a small city.



**Fig. 1:** “Downtown” business center  
Source: created by authors

**Medium-sized buildings:** Such business centers typically contain offices, public areas, warehouses, conference rooms, event spaces, shops, restaurants, cafes, a sports center and may also include apartments and/or a hotel. This type of a business center is usually found in large cities and is suitable for establishing business centers away from the main business district within a large city or in a small area. An example of this type of a business center is “Kaisar Plaza” located in Almaty, Kazakhstan (Fig. 2).



**Fig. 2:** “Kaisar Plaza” business center.  
Source: created by authors

The “Kaisar Plaza” business center is a symbiosis of a shopping and office center. Due to its convenient location, it becomes a venue for cultural and business events. This building also houses buffets, gyms, restaurants, jewelry boutiques and parking.

One can also point to another example of a medium-sized business center. “Nurly Orda” is a modern business center, which is located in the heart of the business part of the city of Astana (Fig.3). It has the same access from the main avenues Turan and Kabanbai Batyr of the capital. Residential complexes of business and premium class are located nearby. Developed infrastructure makes the business center more unique and in demand.



**Fig. 3:** “Nurly Orda” business center.  
Source: Authors

**Large buildings/skyscrapers:** This type of a business center has it all. It includes a sports and shopping center, a hotel, restaurants and cafes, storage facilities, entertainment venues, cinemas, event halls and other facilities. They are usually located in the central business district and host various businesses and events. An example of this type of building is the “Sat NS Tower” business center in Astana, Kazakhstan (Fig. 4).



**Fig. 4:** “Sat NS Tower” business center.

Source: created by authors

The 18-storey building of the “Sat NS Tower” business center fits in the existing space of the central highway of the capital, on Turan Avenue, between Syganak and Dostyk streets, in close proximity to the two previously erected high-rise buildings of the Astana Marriott Hotel. All structures are united by an arched gallery of low-rise commercial structures deployed in the space between the buildings. The concept of the project was based on the principle of creating purely comfortable conditions for the professional and business activities of people engaged in the dynamics of modern city life. Another important message was the need to transform the internal spaces for specific functional tasks.

#### 4. Discussion

The development of high-rise constructions determines the creation of modern business centers. They are characterized by vertical zoning and, accordingly, vertical connections. It becomes clear that the predominant type of building in a modern business center is a high-rise building. After the World War II, industrial and financial centers in Europe, such as Frankfurt, Milan and Rotterdam acquired blocks of skyscrapers. Then the European capitals, still appreciating their historical integrity, began to build high-rise buildings as a sign of prosperity. Today, interest in such buildings in Europe has already passed into the category of an urban planning instrument of regulation widely used in cities with an already established image. In the first stages, new business centers were characterized by an exorbitant upward trend, prompted by the scarcity and high cost of the urban environment given a rather rigid mono-functionality. Later, it turned out that business activities often changed during recessions in the economy. High-rise office buildings are being transformed from mono-functional to multi-functional buildings. Now the problems of the viability of skyscrapers are solved solely through their “openness”. In addition to businesses, these include premises of a new functional purpose – observatories, observation platforms, and premises for tourists (Wenbo and Rodionova, 2019).

Throughout the 20th century, the business function has evolved as a managerial and entrepreneurial function, as well as a coordinated business process. Thus, at the turn of the century, business centers had seemingly diverse options: embassies, ministries, consulates, cities (city within a city), conglomerate developments, offices, business clubs, conference hotels, trade missions, IT centers, and multi-purpose hubs at the intersection of highways, etc. (Stepanchuk et al., 2020). A high-rise building rarely has a mono-functional purpose. A huge



amount of space allows them to be distributed taking into account the specifics of a building in such a way as to achieve maximum economic returns. Parking is arranged in the basement, and shopping and entertainment are often located on the ground floor. As a rule, the next block of floors is occupied by the offices. The upper floors have residential apartments, which can also be rented out. The last floors, as the most prestigious, can be both public entertainment spaces and penthouses. However, engineering systems in ecological buildings are sometimes concentrated in these floors, which allows the use of environmental factors (wind, sunlight and rain) to provide the buildings with energy and resources. Thus, at present, a business center is a new multi-purpose high rise complex, in which actual and potential business functions are simultaneously revealed depending on the socio-economic factors (Cyr, 2022).

Based on the consideration of the variety of modern business centers, two leading types can be distinguished: a large urban development complex, usually containing high-rise buildings, and a separate high-rise building or a group of them, which is an important new element of urban planning. The first can be conditionally called a “city within a city”, and the second – a “vertical city”. Both are essential elements of the city structure. In order to further improve the quality of the landscape, the architectural and aesthetic appearance of micro-districts and urban centers develop their prestige for international investors, build innovative facilities on the main tourist routes, as well as expand the list and improve the quality of services provided to the people (Sarkisov et al., 2021).

At the beginning of this paper, it was decided to consider various types of business centers in the cities of Kazakhstan. For this purpose, the study of the issue of the formation of business centers as the end result of complex urban planning processes should be considered taking into account the main directions, including:

- development of administrative, business, public, cultural, educational and trade functions of the city center;
- separation of pedestrian and car traffic;
- increasing the intensity of the use of the building and the development of its center-forming functions;
- preservation and reconstruction of existing urban developments in order to increase its historical, cultural and architectural values;
- achievement of socio-economic and technical substantiation of ongoing urban development activities.

Only recently have studies begun to appear that address various aspects of the problem. For example, Valieva and Matniyazov (2022) consider the landscape environment of recreational areas in business centers, and analyses the peculiarities of urban planning, functional and planning solutions for business centers at the current development level. According to them, the ideas of organizing business centers with the allocation of leading functions on their territory have become widespread in the urban planning practice of many countries over the past two decades. Valieva and Matniyazov (2022) also show that the transformation of public centers and their planning structure is significantly behind the development of cities in general.

Many cities still do not have clearly defined systems for the specialized functional zones for recreational, administrative, business, cultural, educational, commercial and other purposes. There is a fragmentation of functional zones in the public centers of many cities, which, as a result, makes it difficult to optimize the functioning of the entire system of the center and its individual facilities (Kudabaeva and Aitmukhanova, 2016). While discussing the topic of the formation of business centers in Kazakhstan, it is worth saying that at present, the public and business centers of cities do not have a differentiated system of recreational zones.

All these create serious difficulties with a clear functional zoning of the centers and they do not meet the modern requirements. Nevertheless, as shown by the results of a comprehensive analysis of the urban situation in cities in Kazakhstan, there are opportunities for improving the architectural, planning and recreational structure of the business centers.

When discussing urban development and architectural and planning formation of business complexes in Kazakhstan, “Architects' Data” by Neufert (1970) cannot be ignored.

The book provides an important reference for the initial design and planning of a construction project. It is intended to assist in the initial design of buildings by providing extensive information on space requirements. Thousands of drawings, focusing mainly on ergonomics and functional building layouts illustrate the text and are organized according to building types.

Adilov and Matniyozov (2020) have studied the impact of the urban structures on the ecological environments and the issues of landscape design and landscape architecture. They describe that the environmental crisis of the last decade of the twentieth century in most industrialized countries influenced the rethinking of the role of landscape elements in the improvement of external territories and in the internal spaces of public buildings. Reproduction of the natural environment is increasingly becoming an urgent task for large-scale business centers: the placement of natural elements in a multi-layered version with an increase in green surfaces in space as well as the use of facades and roof surfaces of buildings makes such centers more modern (Bieliatynskiy et al., 2022).

In the article “Toward local Pastiche: Business Center Architecture Along New Silk Road”, Sohrab (2019) considers various business center projects, such as: the business center of the Chinese-Belarusian industrial park (Belarus) (Wenbo and Rodionova, 2019); office complex in the international free trade zone (Djibouti); Gwadar Free Zone Business Center (Pakistan) (Business Center: The Latest Architecture and News, 2022).

In his work, the author describes the Belt and Road Initiative, which is the first large-scale globalization project launched in China that creates infrastructure and logistics centers to support Chinese state-owned enterprises. These business spaces are in fact free trade zones for companies. Under inter-governmental agreements, some giant state-owned enterprises are investing abroad in the development of the free trade zones. The development of Chinese free trade zones in the world today is differentiated, although all of them have passed the initial stage, corresponding to the creation of business centers equipped with fully infrastructural hotel and office premises.

Several authors have studied innovative research and development in the field of construction, construction materials and their application. They include Cyr (2022), Cardoso, Pereira, Ramos, and Almeida (2022), and Siegner and Searcy (2021). At a time when all engineers, architects and contractors are forced to optimize the use of new materials and modern technologies, they provide important information that will help increase productivity, efficiency and competitiveness in the global markets. Therefore, these are essential reading for all specialists and scientists involved in the research of construction materials.

Kovalskiy, Tereschenko, and Shamraeva (2019) have examined the peculiarities of the emergence and formation of business centers, as well as the difference between administrative centers, business parks and business centers. They have analysed the features of volume-spatial solutions in the construction of business centers. According to them, the most modern and one of the main features of the spatial organization of such centers is the creation of a single universal room that could change and transform in accordance with the needs. Versatile spaces require a certain spatial organization associated with various functional and technological processes and achieved through transition, which helps to create a flexible layout. Such an organization of space is quite reasonable and has many advantages, including multi-functionality in the use of the premises of the business center, the possibility of changing the spatial characteristics of the object and the aesthetic aspect, which creates unexpected effects and expressive architectural solutions.

## Conclusion

At present, a new type of complex has come into being in Kazakh and in the global practice of urban planning – a business center, consisting of high-rise administrative buildings and a number of related elements. Such business centers are created in the largest cities, displacing production from them, sometimes occupying former industrial territories. The research revealed that the largest business centers, which form the entire urban areas, carry out significant landscape and urban transformations as well as use landscape components to create their own expressive architectural and artistic appearances. Same approach can be seen in the

small business centers. The issue of humanization of the environment of business centers has two aspects: aesthetic and environmental, which include engineering and landscape-architectural direction. These aspects must be taken into account when designing and organizing the territories of business centers in Kazakhstan.

Based on the above analysis, it can be seen that the construction of new infrastructure should not only be fully integrated with the current economic environment and industrial structure, but also require adjustment of the development model and path. The usefulness of a new infrastructure depends largely on whether it can effectively facilitate the flow of data and applications to bring added value, as well as help improve the efficiency of social factor resources and realize potential.

Thus, building a new infrastructure requires the co-deployment of hardware, software, and the external environment. In the course of the research, it was revealed that there are basic schemes that form the volumetric and layout structure of the business centers. There is also an established classification of business centers and business parks, which take into account the location and type, as well as the technical levels of the building. Additional research is needed in the aspect of creating and developing social infrastructure using innovative technologies in the process of modernizing the national economy, the territorial location and the level of intra-industry priority at each design stage.

In summary, one important way to take full advantage of Kazakh manufacturing is to increase its digitalization, and the construction of new infrastructure such as business centers. They will help speed up this process.

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