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ARCHITECTURE AND ARTISTIC DESIGN OF RESIDENTIAL BUILDINGS (BASED ON THE EXAMPLE OF FERGANA CITY)

Nigoraxon Muminova[1,*]

[1]Fergana Polytechnic Institute, Fergana, Uzbekistan
*Correspondence: muminova1706@gmail.com

Abstract

This article explores the architecture and design of residential buildings in Fergana city. The harmony between local traditions, cultural heritage, and modern trends plays a crucial role in creating a comfortable living environment for the population. The research findings indicate that the design of residential buildings is expected to evolve in line with the needs of the population in the future. The article aims to contribute to research in the fields of architecture and design.

Keywords: Uzbek mosaic, residential buildings, energy efficient, design, local traditions, cultural heritage, modern trends.

1. Introduction

The city of Fergana is one of the most beautiful and significant cities in Uzbekistan with a rich history, culture and architectural heritage. The architecture of the city, in turn, serves as a mirror of the social, economic and cultural development of the region. Residential buildings in the city of Fergana, their design and architectural features reflect local traditions and the historical heritage of the people. The architecture of the city of Fergana is distinguished by its own characteristics.

Historically, as the city was located along the Silk Road, it witnessed a fusion of different cultures and architectural styles, which played an important role in shaping its residential development. These architectural features were not only the aesthetic appearance of the place, but also a determining factor in the lifestyle, social life and economic activities of the city's residents. [1]. In modern times, architectural trends are changing and updating in the city of Fergana. The use of modern methods, technologies and materials in the design of buildings helps the development of the city. A balance is maintained between local traditions and modern design elements, allowing the city to maintain its individuality. The development of urban architecture is also influenced by the needs of the population and modern living conditions.

This study is aimed at an in-depth study of the architecture and design of residential buildings in the city of Fergana. Our goal is to analyze the historical roots of urban architecture, modern trends and connections with local traditions. The results reveal the architectural features of the city of Fergana, their cultural significance and opportunities for further development.

2. Materials and Methods

Study of existing studies, articles and historical sources about the architecture and design of the city of Fergana in the methodology of literature analysis. There are many studies on the architecture of the city of Fergana: "The unique aspects of the architecture of the Fergana Valley must be studied in historical and cultural context." Through these studies, historical and contemporary aspects of urban architecture are revealed.

Among the literature studied, there are scientific articles and architectural magazines reflecting traditional and modern buildings of the city and their historical development. When analyzing products, their structure, materials and design features are studied. [2].

Inspection of the locations of residential buildings in the city of Fergana and study of their design features using field research methods. “As a result of field research, connections between

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architectural traditions and modern trends were identified." This process examines the appearance of residential buildings, their location and integration with the environment. During these surveys, it is also important to take photographs and videos to gather information about the site's mapping, engineering and architectural needs. The results show the functional and aesthetic aspects of the studied buildings, which allows for a deeper understanding of the architectural heritage of the city of Fergana.

Gathering opinions by conducting interviews with local architects, designers and representatives of the public using the interview technique. "Interviews with local architects and designers provide important information about architectural changes and current trends in the city of Fergana." These interviews provide an opportunity to discover how local traditions and cultural heritage are reflected in residential design. [3]. The information collected during the interviews highlights the level of urban architecture that meets modern requirements, existing problems and solutions proposed by architects. The interviews also reflect the opinions of local residents about the city's architecture, which increases the significance of the research results.

In quantitative research methodology, questionnaires are used to study the attitudes of city residents towards the design of residential buildings. "Based on the results of the survey, residents' opinions on the functionality and aesthetics of residential buildings were collected." This method is important in determining the needs of the population and their requirements for residential buildings. Data collected through questionnaires helps assess the quality of residential buildings, comfort and proximity to public facilities. The results also make it possible to determine the level of compliance of residential buildings with modern architectural standards.

Fergana, a city in Uzbekistan, showcases a unique blend of historical and modern architectural trends that reflect its cultural and historical richness while adapting to contemporary urban development needs.



Figure 1. An illustration showing architectural trends in the city of Fergana. It combines traditional Uzbek mosaic domes, modern glass buildings, Soviet monumental architecture and green urban spaces.

General architectural trends in the city of Fergana. The architecture of Fergana is developing in accordance with modern requirements, based on a rich historical and cultural heritage. The combination of traditional elements and modern technologies in urban architecture is manifested as the main trends of urban development. The main aspects observed in these areas are:

1. Preservation of cultural heritage and traditions

The architecture of Fergana has noticeable elements based on local culture and traditional values. The use of local motifs, natural materials and national ornaments is widespread in the design of private houses and public facilities. These traditions serve to preserve the identity and originality of the city.

2. Use of modern technologies.

In recent years, the use of modern technologies and materials in the construction process has increased. As a result, energy-efficient houses, intelligent infrastructure and environmentally friendly buildings are being built.

3. Urban structure and development of high-rise buildings.

In densely populated areas of the city, the construction of high-rise residential buildings is increasing. These buildings are created to provide unified communications and convenient infrastructure taking into account the modern lifestyle. For example, shopping centers, educational and entertainment areas are being created around modern residential areas.

4. Create a comfortable environment

In architecture, special attention is paid to creating a comfortable environment suitable for human needs. Closed courtyards are being built, enriched with squares, ponds and recreation areas.

6. Integration of social facilities

There is a tendency to strengthen the connection of residential buildings with social facilities. Schools, kindergartens, hospitals and public buildings are located near residential areas, which increases their accessibility.

7. Ecological architecture

Interest in ecological projects is growing in Fergana. Economical facades, solar panels and natural ventilation systems are widely used.

Conclusions. The architecture of the city of Fergana is developing in a combination of traditional and modern trends. This process is aimed at improving the quality of life of the population by combining local culture and modern technologies. This approach creates an important basis for the future development of the city.

3. Results

The results of the study show the features of the main residential buildings in the city of Fergana. In the city of Fergana there is harmony between traditional and modern architectural styles. Traditional styles are enriched, for example, with local building materials and unique patterns. Folk motifs and unique geometric patterns in mosques and madrassas, which are one of the main features of Central Asian architecture, are also reflected in residential buildings in Fergana. "Residential buildings in the city of Fergana are often inspired by national architectural styles and based on the use of local materials And modern buildings add new trends to urban design. [4]. Architects pay attention to environmental and energy-efficient projects, modern functional solutions and aesthetic requirements. There are many residential buildings in the city of Fergana, including multi-storey and private houses. Each of them has its own architectural features and suits the lifestyle of city residents. [5]. High-rise buildings are mainly designed for young families and renters, equipped with modern design and amenities to create a comfortable living environment. "The architecture of high-rise buildings combines traditional and modern elements to create comfortable spaces for residents." Private homes often reflect individual designs and traditional architectural features that add to the uniqueness of the city of Fergana.

Modern architecture and design elements provide a comfortable and high-quality living environment for residents. When planning the spaces inside the building, local traditions and modern needs are taken into account. "In the interior design of modern residential buildings, special attention is paid to ensuring the comfort of residents, as well as the use of environmentally friendly materials." For example, creating play areas, recreation areas and green spaces for families living in high-rise buildings is an integral part of modern design. This, in turn, serves to improve the quality of life of city residents. [6]. The architecture of the city of Fergana deeply influences the local culture and traditions. Local architectural elements such as open balconies, loggias and traditional colors have a special look. "The use of traditional design elements in modern buildings helps preserve the historical and cultural heritage of the city of Fergana." This is important for preserving the cultural identity of the city's residents and passing it on to future generations.

4. Discussion

In the discussion part of my article I would like to emphasize that the design of residential buildings in the city of Fergana is associated with local traditions, cultural heritage and modern requirements. The balance between traditional architectural elements such as patterns, colors and layouts, as well as contemporary styles, creates a comfortable living environment for residents. The uniqueness of the city of Fergana lies in the combination of its traditional architecture and elements of modern design. Local traditions, such as unique patterns and color palettes, give buildings an uplifting feel and add an aesthetic dimension to city life. The architecture of the city also plays an important role in the socio-economic development of the city. "The architecture and design of the city of Fergana creates favorable conditions for the local population and economic activity." In turn, buildings strengthen social bonds among the population and serve to strengthen cultural identity. Projects created in collaboration with local residents contribute to the development of the city while responding to their cultural heritage and needs. [7].

The design process can take into account the views and needs of the local population, which will have a positive impact on the overall appearance of the city. The demand and opinion of the population for residential premises are an important source of information for designers and architects. "The attitudes of urban residents towards residential design have an important influence on contemporary architecture and design processes." This, in turn, leads to city development and increased energy efficiency. [8]. Modern architectural and design elements provide environmentally friendly and energy efficient solutions to create a comfortable living environment for residents. This is also associated with the development and improvement of the quality of urban infrastructure and the preservation of local traditions. "The design of residential buildings in the city of Fergana must strike a balance between local traditions and modern needs." Dialogue between local residents and planners can be useful in the process of urban development, which allows taking into account the needs of the population and the culture of the city.

The Importance of Energy Efficiency in the Development of Residential Buildings in Fergana.

In Fergana, energy efficiency issues that meet the requirements of a modern lifestyle are becoming increasingly important. Currently, there is a growing need for environmentally friendly and energy-saving solutions in the construction industry. This trend is reflected not only on a global scale, but also in various types of development in Fergana.



Figure 2. Example of an energy efficient house

1. Energy efficiency and modern construction technologies. Energy-saving technologies are used in modern buildings being built in Fergana. For example:

• Solar panels - installed outside residential buildings, reduce energy consumption.

• Modern insulation materials - effectively retain heat and reduce fuel consumption.

• Energy-saving lighting systems - LED lamps are widely used in indoor and outdoor lighting systems of buildings.

2. Environmental aspects and rational use of natural resources.

Particular attention is paid to the rational use of natural resources in the construction process in Fergana. In this:

• The use of local materials such as wood, clay and natural stone helps to reduce the amount of construction waste.

• Choosing environmentally friendly materials will help save energy and reduce carbon emissions.

3. Renewable energy sources

The use of renewable energy sources is one of the developing areas in the city of Fergana. Especially in private houses and some public facilities:

• Solar energy systems;

• Wind turbines have begun to be used.

4. Urban infrastructure and energy efficiency

Energy efficiency requirements have been introduced into the urban infrastructure, the following activities are carried out in public buildings:

• Use of energy-efficient air conditioning and heating systems.

• Optimization of electricity using automatic control systems.

• Energy-saving facades are widely used in modern high-rise buildings.

5. Socio-economic significance

Considering the economic and social significance of energy-efficient buildings, they bring the following benefits:

• Easing the financial burden of the population by reducing monthly electricity costs.

• Improving the urban environment by reducing the impact on the environment.

• Helps in modernizing the city's economy and improving construction technologies.

Conclusions. Ensuring energy efficiency in the city of Fergana not only has a positive impact on the environment, but also serves to improve the living conditions of the local population. The widespread use of environmental and innovative approaches in the construction process will ensure the sustainable development of the city in the future. This, in turn, further strengthens the harmony of tradition and modernity in the architecture of Fergana.

Existing Problems and Solutions in the Architecture of Residential Buildings in Fergana

In the process of designing and constructing residential buildings in Fergana, it is important to ensure the interests of the local population. However, there are some problems in this area. Below are some of the main problems and recommendations for solving them:

1. Ignoring local traditions

Problem: Local traditions and cultural characteristics are sometimes not taken into account in the construction process, causing the city to lose its identity.

Solution: Using traditional elements: The design should include local architectural elements such as patterns, colors, and geometry.

• Collaborating with local designers and community activists: The opinions of local residents should be taken into account in the design of the exterior and interior of buildings.

2. Inappropriate application of environmental requirements.

Problem: Energy efficiency and environmental approaches are not fully implemented in modern buildings.

Solution: Using renewable energy sources: Wide use of solar panels, energy-efficient heating and cooling systems.

To ensure sustainable urban development and reduce environmental impact, Fergana is increasingly adopting renewable energy technologies. By focusing on these renewable energy solutions, Fergana can lead the way in creating an eco-friendly, energy-efficient city that balances modernization with environmental responsibility.

• Ecodesign standards: Developing standards for the use of environmentally friendly building materials and waste reduction.

3. Lack of infrastructure for the population

Problem: There are not enough playgrounds, green areas and recreation areas for residents living in multi-storey buildings.

Solution: Infrastructure development: Each multi-apartment building must have children's playgrounds, public recreation areas and sports facilities.

• Increase green areas: The city should pay special attention to landscape design and encourage the planting of trees.

4. Quality and safety issues of construction.

Problem: Some construction work involves the use of low-quality materials or non-compliance with building codes.

Solution: Strict control system: Strengthen the work of government agencies to control the construction process, ensure strict compliance with quality standards.

• Training of specialists: Training personnel working in the construction industry according to modern standards.

5. Ignoring the harmony of the urban appearance

Problem: Some new buildings do not harmonize with the overall architecture of the city, which causes aesthetic discomfort.

Solution: Development of architectural standards: introduction of special standards guaranteeing the compatibility of new buildings with the overall urban appearance. • Improving urban planning policies: Adopting strategies to preserve the traditional style of the city.

6. Reducing social contacts

Problem: New residential buildings do not create sufficient conditions for strengthening social ties between neighbors.

Solution:

• Creating public spaces: Create common meeting spaces, cafes, and sports grounds inside or near buildings.

• Neighborhood programs: Organizing cultural events and neighborhood forums to strengthen social ties between residents. Conclusions. It is important to ensure harmony between tradition and modernity in the architecture of residential buildings in Fergana, to improve the lifestyle of local residents. Solving the above problems will be effective for the sustainable development of the city and the creation of a comfortable environment for residents. Innovative approaches based on local traditions further enhance the cultural and social significance of the city.

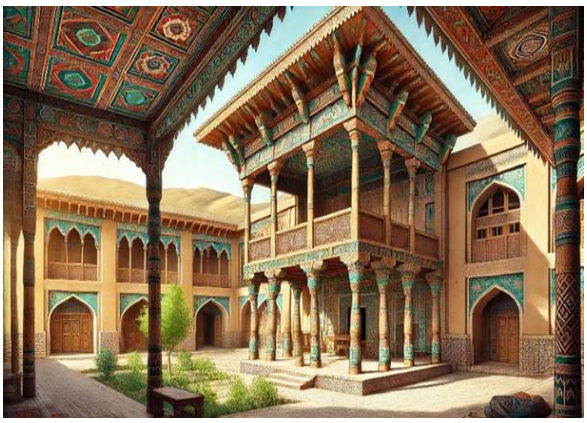


Figure 3. Illustration showing traditional residential architecture of Fergana, including courtyard, iwan and decorative elements.

Case studies

1. Aivan as a symbol of coziness: In one of the residential projects, work was carried out to integrate an aivan into a modern multi-story building. As a result, common areas for neighbors were created, decorated in a traditional style.

2. Eco-architecture: In the Fergana region, projects are being created that focus on sustainable development. For example, one of the cottage villages uses solar energy and local materials, while preserving the traditional appearance of the buildings.

Materials and construction

• Adobe houses:

On average, about 12-15 tons of adobe are used to build one adobe house. This material provides thermal insulation, keeping the house cool in summer and warm in winter.

oApproximate wall thickness is 50-60 cm, which reduces heat loss by 30% compared to modern panel houses.

• Wooden elements:

One iwan structure requires about 4-6 columns made of walnut or elm, the average height is 2.5-3 meters.

Traditional carved elements require up to 3-6 months of work by craftsmen to create complex patterns on columns or ceilings.

2. Urban planning and preservation of traditions

• Traditional neighborhoods (mahallas):

The average area of houses is 150-250 m², of which 30-50% are courtyards.

Example: In the city of Fergana, about 60% of mahallas still retain elements of historical development.

The courtyard provides privacy: up to 80% of mahalla residents prefer to spend the evening in the courtyard instead of indoor spaces.

Aesthetics and decor

• Aivans:

70% of traditional houses in the region have aivans. In multi-story reconstructions, their elements are adapted as open terraces.

• Decorative elements:

More than 50% of old buildings have preserved their original carved gates and columns.

Each aivan column contains an average of 15-20 decorative motifs, representing geometric or plant patterns.

Examples and case studies

• Residential block in Margilan mahalla:

o As part of the reconstruction, 25 houses were modernized, modern engineering systems were added, but historical facades were preserved. Resident satisfaction increased by 40%.

• Eco-cottages project in Fergana:

o The use of solar panels reduced energy costs by 30%. The design of the houses includes traditional courtyards and iwans, preserving the local flavor.

These data highlight that traditional architecture of Fergana has significant advantages in terms of ecology, aesthetics and cultural identity.

5. Conclusions

In general, the design of residential buildings in the city of Fergana is important for preserving local culture and traditions. This design process will not only improve the quality of life for the city's residents, but will also help pass on the city's cultural heritage to future generations.

In short, the architecture and design of residential buildings in Fergana is developing in harmony with local traditions and modern trends. [9]. The results of the study show that architecture and design are one of the most important aspects of urban life. The balance between local traditions, cultural heritage and modern architectural elements serves to create a comfortable and aesthetic living environment for residents. At the same time, the renovation of the design of residential buildings in Fergana is expected to be developed in accordance with the needs of the population in the future. [10]. "High-quality building design is important for the development of the city and the well-being of the population." Local architecture also helps to strengthen a city's sense of identity and unity. In the future, the city's architectural projects should be aimed at improving the functionality and aesthetic appearance of residential buildings, taking into account the opinions of residents. In the city of Fergana, architectural reconstruction can also help improve the city's amenities and living environment. In addition, modern environmental requirements and energy efficiency are also important to ensure comfortable living conditions for the population, and "ecological architecture should be considered as a preliminary point of view." Thus, the architecture and design of residential buildings in the city of Fergana should be considered as an interrelated process. This process, in turn, will be aimed at preserving local culture, increasing economic stability and improving the standard of living of city residents. It is also expected that the architectural heritage of Fergana will serve as an example for future generations and will be important in the development of the city.

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