

STUDYING THE ARCHITECTURE ELEMENTS OF SUBURBAN CARAVANSERAI IN CENTRAL IRAN TO IDENTIFY THEIR SIMILARITIES AND DIFFERENCES



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Abstract: This study explores how the architecture of Iranian caravanserais evolved due to changes in architectural knowledge, techniques, and functional needs. The main goal is to classify and compare the physical and architectural features of caravanserais in central Iran to identify their common and distinctive characteristics. The research addresses one main question: How do physical and metaphysical factors influence the formation of architectural styles?. Using a developmental and applied approach, the study combines inductive, interpretive, historical, and comparative methods. Data were collected through library research and field observations. Key architectural components—such as entrances, vestibules, porches, courtyards, rooms, porticos, stables, and towers—were analyzed in terms of spatial organization and typology. Findings show that caravanserai architecture was shaped by the construction traditions and design systems of its time, following shared frameworks created by skilled architects and coordinated institutions. By comparing architectural features, the research identifies which elements remained consistent and which evolved, offering valuable insights for the conservation and restoration of damaged caravanserais. The study focuses on roadside caravanserais in Isfahan, Qom, Markazi, and Tehran provinces, analyzing 65 examples from various historical periods in Iran's hot and dry central regions.

Keywords: architecture elements, physical typology of caravansary, commonalities and differences of caravansary, restoration and conservation of caravansary, suburban caravansary in central Iran..

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Introduction

Caravanserais are generally classified into two main types: urban and rural (or roadside). Since the focus of this study is on outer-city (rural) caravanserais, the architectural characteristics of urban caravanserais are mentioned only for definitional purposes. Like other historical structures, caravanserais consist of various architectural elements and components that together form a unified identity. The entrance system may be single- or double-storied and can either project outward, recede inward, or align with the main façade. Beyond the entrance lies a vestibule, typically square or polygonal in shape, which serves as a transitional space determining access to other areas.

Following the vestibule, a long corridor usually leads to a porch, which then opens into a central courtyard—a key spatial feature that can be square, rectangular, or polygonal. This courtyard provides access to verandas, chambers, and stables, which are arranged around it. The chambers are typically fronted by verandas, while the stables occupy the outermost ring of the complex. Inside the stables, docks, and raised platforms are commonly found, and shepherds' rooms are often located near the stable entrances.

Externally, caravanserais resemble fortified castles, characterized by strong towers and ramparts. Some were equipped with windcatchers (badgirs) for natural ventilation and thermal balance. Water was supplied through ponds, reservoirs, qanats, or nearby springs [1,2].

In this research, the physical typology of caravanserais is analyzed based on the spatial composition of their principal architectural elements and examined across different historical periods. The arrangement and interrelation of these elements, whether present, absent, or spatially modified, form the basis of their typological differentiation.

In addition to the main elements, some caravanserais also include secondary components, which vary from one structure to another. The formation of both primary and secondary elements has been influenced by a range of physical and metaphysical factors—including climatic, cultural, social, political, religious, technical, and structural considerations.

Depending on the facilities provided, caravanserais are categorized into three types:

1. Simple caravanserais, consisting solely of the main structure,
2. Intermediate caravanserais, which include an external but independent water tank,
3. Combined or complex caravanserais, integrating additional features such as gardens, baths, mosques, bridges, water mills, and reservoirs.

The architectural patterns of caravanserais evolved gradually under the influence of these diverse factors. Social, climatic, cultural, religious, structural, and economic conditions all contributed to shaping their designs. Initially, early caravanserais lacked stables or watering facilities, but as travelers' needs grew, their architectural diversity expanded in form, geometry, proportion, and function.

Throughout history, every architectural element of caravanserais has transformed. The creativity of architects, the functional requirements of travelers, and the economic capacities of patrons—whether rulers, benefactors, or wealthy individuals—collectively fostered remarkable variety in design.

Architectural plans from different periods reveal both diversity and evolution. During the early Islamic centuries (up to the 4th century AH), the architectural form remained close to pre-Islamic prototypes. The major evolution occurred in the Seljuk era, reaching its peak during the Safavid period.

Typical Safavid caravanserais featured a prominent entrance (often with one or two stories), a quadrangular or octagonal vestibule, and a long corridor leading to a porch that opened into a central courtyard surrounded by rooms. Behind these rooms were camel stables, accessible from the courtyard. The exteriors included watchtowers, high walls, and outer verandas.

After the Safavid era, caravanserai architecture experienced only minor stylistic changes, with most designs adhering to established layouts.

This study aims to analyze and explain the typology of the key architectural elements of caravanserais—namely, the entrance, veranda, central courtyard, porch, rooms, front verandas, stables, and towers. The research focuses on the spatial composition and interaction of these core components within the overall architectural plan.

Research Question

How do physical and metaphysical components affect the formation of architectural designs and types?

Literature Review

In one article, researchers have studied the emergence and evolution of caravanserais architecture throughout history and have introduced the details of the architecture and structure of caravanserais by presenting maps and documentary evidence. In this article, the process of changes in caravanserais attributed to the Sassanid, early Islamic, Seljuk, Ilkhanid, Safavid, and Qajar periods has been examined, and the major changes that have occurred in them have been graphically depicted [3].

In another article, the researcher of the article studied the structure of Safavid-era caravanserais, identified the origin of the formation and conceptual terminology of caravanserais, and compared the architecture of caravanserais. In this article, the author studied the Safavid caravanserais of the central plateau of Iran and compared their plans and architectural characteristics. The author deals with the anatomy of caravanserais and studies the physical, architectural, organizational, main axes, and full and empty spaces of the caravanserais by presenting graphic maps and images. He examines the elements and components of the caravanserais, such as the entrance, the porch corridor, the private part, the stable, and the stables of the room. In another part of the anatomy of caravanserais, the author introduces several examples of the Safavid

caravanserais under study and applies his practical analysis to caravanserais such as Aminabad, Madar Shah, Mazinan, and Mehr, and reviews their full and empty spaces, main axis, symmetry, main form, and area [4].

Another article has compared the proportions governing the architecture of courtyard caravanserais in central Iran during the Safavid and Qajar periods. The authors of the article have first examined the history of the emergence of the caravanserais, defined their terminology, and examined their historical developments over time from the Achaemenid period to the Sassanid period. In the second part of the article, the authors have examined the role of the caravanserais in Iranian-Islamic civilization and have researched the evolution of caravanserais in the Islamic period and have outlined and described their evolution by presenting plans. In the following article, the authors have introduced study examples. In this statistical population, three categories of Iranian caravanserais were selected, such as caravanserais in hot and dry regions, mountainous regions, and the Persian Gulf coast. In this article, the emphasis and focus are on courtyard caravanserais in the central regions of Iran. In this research, the characteristics of the length and width of the rooms, courtyards, and entrances, and their ratio to each other have been examined. In this research, the architectural structure and its details have been seen and fully introduced [5].

In a book, researchers have studied the history, history of the emergence, and architectural stylistics of caravanserais and have examined the evolution of caravanserais. The authors of this article have examined the historical course of caravanserais from the pre-Islamic period and from the Achaemenid period to the Islamic period, and in the Islamic period, they have also researched the course of their emergence and development from the early Islamic period to the Qajar period. They have also studied and read the functions of caravanserais. They write about the caravanserais of Isfahan in the Safavid period: The most extensive and prosperous commercial function of the Safavid caravanserais was in the international commercial city of Isfahan, a city where not only political affairs but also all economic activities ended [6].

Another work has studied the architectural elements of the entrance spaces of the Safavid caravanserais of Khorasani Razavi. The authors of the article initially examined and defined the elements and components of the entrance and examined the course of their development in the caravanserais of Khorasan. In this article, the authors have examined the form of the caravanserais' entrances in the introduced statistical population. They have examined the entrance system and their hierarchy, and the form of the entrance has been further clarified by presenting images and graphic maps [7].

Another article has reviewed the physical characteristics of Sabzevar caravanserais during the Safavid period. In the first step, the authors have discussed the transformation and evolution of the caravanserais in Iranian architecture. By examining the historical course of the Iranian caravanserais from the pre-Islamic period to the Islamic period, the authors have reviewed the changes in the plan, form, and shape of the caravanserais and the changes that have occurred in each period. In the next step, the authors have categorized the caravanserais and studied them in terms of climate, architecture, and functionality. In the next section, the authors discuss the multiple functions of the caravanserais and specify their functions. In the next step, the authors introduce the presented caravanserais on a case-by-case basis. This introduction is accompanied by a map and image, and they have studied and reviewed their architectural features and spatial organization, length, width, and area [8].

Another study examined the impact of understanding the different causes and factors in the formation and organization of the Iranian caravanserai. The author of the article first examined the buildings of caravanserais and the historical course of their emergence in the pre-Islamic period and briefly examined similar buildings such as Robat, Chaparkhaneh and Sabat. Next, the author of the article studied the climatic course of Iranian caravanserais and reviewed the classification presented by Kiani and Klais. In fact, the author studied the physical evolution of Iranian caravanserais throughout history, and he considers the emergence of caravanserais in the Achaemenid period and considers Chaparkhanehs that were located on the royal road and main roads to be the first example and type of caravanserais. The author considers climate and

weather conditions to be the main factors in determining the materials used in caravanserais and considers this a characteristic of Iranian architecture. The author concludes that the form and plan of the caravanserais are more subject to rules and laws than other buildings and that their form is usually square or rectangular and has guard towers at the entrance and on the top. The caravanserais are called Shetarkhan, and they had stables, and the layout of the spaces has not changed much over time, and most of the caravanserais have four porches, and brickwork, plasterwork and tilework decorations have been used on the surface of the walls [9].

A researcher has studied the origin and history of caravanserais in a study and has categorized them and divided them into two categories: urban and rural (wayside) caravanserais. He studies Iranian caravanserais on a case-by-case basis and introduces some of the important caravanserais. The author of the above book has visited most of the Iranian caravanserais and has also taken and drawn their maps. In this article, he examines the caravanserais and the characteristic ropeways of each historical period. In this book, the author has studied the process of formation of caravanserais from the pre-Islamic period to the Qajar period. Most of the maps presented in this book are among the first documentaries about caravanserais in Iran. The positive advantage of this book is the presentation of accurate and reliable maps and explanations [10].

Twenty years later, in another book, the same author has examined the historical roads of Isfahan province and their routes and has introduced the buildings related to them, such as caravanserais, in full. In this article, the author introduces the inner and outer caravanserais of Isfahan and examines the reasons for the emergence of caravanserais in this region. He presents a plan and a photo to introduce each caravanserai so that the reader's vision is broadened and their understanding of the subject becomes more tangible. He also reviews the documents that travelers have written about caravanserais by referring to historical texts [11]. These two books are among the first valuable research on caravanserais.

Other researchers have studied the spatial physical typology of the out-of-town caravanserais on the Isfahan-Ray and Saveh road network based on the spatial composition of the rooms and stables of the caravanserais. In this study, the authors of the article have presented patterns by examining the stables and rooms of the caravanserais and how they are arranged in the architectural plan. In the above study, only the two elements of the stable and the room have been typified, and the other main elements have not been examined. Considering the background of the presented research, it can be said that there have been studies on the typology of the architectural elements of the caravanserais in the studied area, but the studies have been limited to one region. This study examines the caravanserais in several different regions, and this type of article is in the field of typology [12].

However, no independent research has been conducted on the similarities and differences of the caravanserais in the studied area. And the present study tries to address this issue for the first time.

Research Methodology

The present study is analytical and descriptive. The main method of collecting information is based on library studies, studying architectural plans, and field impressions. The approach to data analysis is interpretive, historical, and comparative. The sampling method is purposive (non-probability). The statistical population of this study includes intact and ruined caravanserais in the central regions of modern Iran. In this study, 65 caravanserais were selected from the caravanserais in the central regions of Iran for the study. The studied caravanserais cover the regions of Isfahan, Yazd, Qom, Tehran and Markazi (Table 1). The sample caravanserais include a variety of geographical, spatial, and historical features and typologies. The data were initially raw, but with interpretive, historical, and comparative analyses of the architectural elements of the caravanserais, they were reread and categorized, and then by comparing the categories and architectural indices of the samples one by one, the patterns were explained, and finally, by comparing them with each other, the similarities and differences were explained. The limitations of the present research are the lack of maps and documented information on some elements and components, such as the entrance device, the gate,

the stable, and the room of the ruined and damaged caravanserais, and the incorrect past restorations in the remaining and lost parts of the caravanserais. The method of overcoming limitations includes field observations, documentary photography, extraction of information and library documents, and comparison of similar caravanserais in the same cultural area.

Result

Introduction to the main elements of caravanserais (Table1)

Entrance: The entrance in caravanserais has 4 types: 1- The entrance surface is flush with the exterior. 2- The entrance is prominent and protrudes from the exterior. 3- The entrance is recessed and hollowed out from the exterior. 4- The entrance protrudes from the exterior, but its corners are chamfered. In the example of the first type, we can refer to the Pasangan and Yangi Imam caravanserais, which are attributed to the Safavid period, and the Haj Kamal caravanserais, which are attributed to the Qajar period. The entrances of the early caravanserais were one-story and did not have an upper house, but in later periods, such as the Safavid and Qajar periods, the entrances were two-story and had an upper house. For the second type of entrance, we can refer to the Deirgachin, Gabarabad, and Tor caravanserais. For the third type of entrance, we can refer to the Mahyar caravanserais. In the fourth type of entrance with 45-degree bevels, we can mention the caravanserais of Jolegir, Natanz, Hasaniyeh, Morche Khorat, Hajib, and San San. Usually, there were arches next to the entrance of the caravanserais, which were sometimes decorative arches. Caravanserais with two-story entrances usually had an opening called a lead thrower, which was used to pour hot lead on attackers in times of danger. Usually, there was a stone and brick inscription at the entrance of the caravanserais, in which the name of the founder, builder, date of construction, and the name of the architect of the caravanserais were mentioned. The entrance of the caravanserais was the most decorated and beautiful part of the caravanserais. The entrance was usually higher than the adjacent levels. Sometimes the entrances were high and sometimes wide.

Hallway: The communication space between the vestibule and the porch is called a hallway. The roof of the corridor is usually covered with a barrel vault. The corridors were usually long spaces and extended to the outer edge of the courtyards. In some caravanserais, there is a platform on the sides where the caravans can temporarily sit and stand to watch the space inside the caravanserais. The platforms are usually 60 cm high. And their materials are made of stone and brick. Examples of platform corridors of caravanserais include the Deirgachin and Aveh caravanserais.

Vestibule: The vestibule is the entrance ring connecting the other spaces of the caravanserais. The vestibule is usually quadrangular or octagonal. Vestibules usually have a domed roof, and there are guard chambers on two sides. Vestibules are usually higher than the ground level, and connection with the guard chambers is possible via stairs. In some caravanserais, access to the camel stalls was possible through the vestibule, and on the sides of the vestibule, there were two doors to the left and right camel stalls, such as the caravanserais of Yengi Imam and Zayn al-Din. On the sides of the octagon, or quadrangle, there are rows of stairs to access the roof, such as the caravanserais of Hajib, Jalogir, Deirgachin, and San San. The width of these stairs was usually 1 meter. The octagons usually had a platform on which people could sit. There are false arches on the vestibule wall that have a decorative role.

Towers and ramparts: Due to their location in desert, mountainous, and desert areas and away from urban centers, suburban caravanserais need guard towers at the corners of the caravanserais to ensure their security. These towers are usually circular and made of stone and brick. The towers are usually higher than the ramparts and have crossbows for shooting. Among the caravanserais with towers, we can mention the caravanserais of Hajib, San San, Deirgachin, Nogonbad, and Pasangan. In the Safavid period, in order to ensure the relative security of the roads and the country, and considering the location of the caravanserais, caravanserais were usually designed without towers, such as the caravanserais of Yengi Imam and Haj Kamal.

Chamber: Chambers in suburban desert caravanserais are located around the central courtyard and are usually higher than the ground level so that dust, rainwater, and animals cannot enter them. Chambers have a small veranda in front of them, and access to the rooms is through this veranda. The rooms have a fireplace and a stove, and their light is provided either through a horno in the ceiling or through the entrance door of the room. The rooms usually do not have an entrance door, and curtains are used instead. The ceiling of the rooms is usually a curved arch, such as a cradle arch or a four-part arch. The heat of the rooms is also provided by burning shavings and firewood. In mountain inner-city caravansaries, the rooms are usually located around a central hall. In mountain caravansaries, the caravansaries are covered and roofed. In such caravansaries, the spaces are lower than the ground level to use the heat of the earth. The exterior of the rooms and verandas was decorated with pedimented arches. Some caravansaries had a porch in front of their rooms, but this type of design was not common in caravansaries. Usually, there were enclosures for animals in the outer side courtyards facing the caravansary courtyard. The caravanserai of Wardeh-e-Saveh has no rooms, and there are only verandas around the courtyard for travelers to rest.

Camel House (stable): Camel houses were designed around the outermost layer of the caravanserai. The stables are usually located behind the rooms, and the outermost layer of the caravanserai is against its perimeter wall. The camel houses have platforms and docks on both sides or on one side so that they can unload the animals. Sometimes the guard and the animal handler would stay on these platforms and spend the night. The roof of the camel houses is vaulted and domed. Part of the heat of the rooms was also provided through the camel houses. Access to the camel stalls was either in the vestibule area and on the sides of the vestibule, or through the central courtyard, and the path was taken from the corners of the central courtyard. The central courtyard of the caravanserai was either rectangular or octagonal, and access to the camel stalls was possible through one of the small sides of the octagon or the corners of the rectangular square. Heating of the interior of the camel stalls was provided by burning firewood. In the camel stalls, a small opening with a stone or a cylindrical wooden rod inside was used to close the animals. Light inside the camel stalls was provided through the opening in the roof dome (horno).

Porch: Caravanserais have four porches on their four sides. These porches are higher than the ground level and have a fireplace and a ledge. Some porches of caravanserais have steps so that the porch can be accessed from the floor of the courtyard. The dimensions and size of the porches are larger than the rooms of the caravanserai. Usually, the height of the porches is also higher than the height of the rooms next to them. The porches are usually long and deep. Sometimes the porches have the role of a royal residence and are divided into two longitudinal parts. The first part had a more public role, and the second part, which had the form of a post, was more private. The access road from the first part to the inside was through not very high doorways. The porches were usually decorated with rich decorations, such as brickwork with a sleeping and upright design.

Verandas on the exterior and interior of the caravanserai: Caravanserais usually had several platforms and verandas on their exterior that were used for temporary rest of the caravans. In some cases, these verandas served as rooms, and a few people could rest on the platforms and spend the night. Usually, there were fences and pens for tying animals next to or below these platforms.

Central court yard: Iranian caravanserais had a central courtyard, depending on their geographical and surrounding environment. The shape of the courtyards was usually square, rectangular, circular, or octagonal. The octagonal courtyards were usually octagonal and half- octagonal, not completely octagonal, and the octagonal chamfers were small. And in the course of the development of caravanserais architecture, this small chamfer later became the access point to the stables. Circular caravanserais also had circular courtyards, such as the Zizeh and Zein al-Din caravanserais and Taj Abad in Hamedan. In octagonal caravanserais, such as Amin Abad, the inner space of the courtyard was also a regular octagon of the same size. In the central courtyard of the caravanserais, there were enclosures for tying animals. In early caravanserais, there was usually no camel house space, and the miansarais also played the role of a stable.

Table 1. Main architectural elements of caravanserais (Authors, 2025)




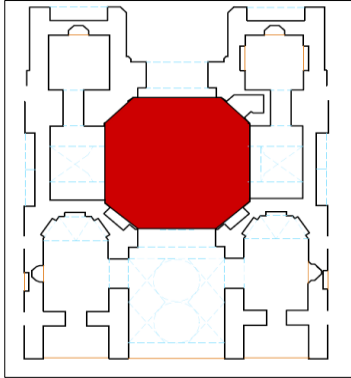

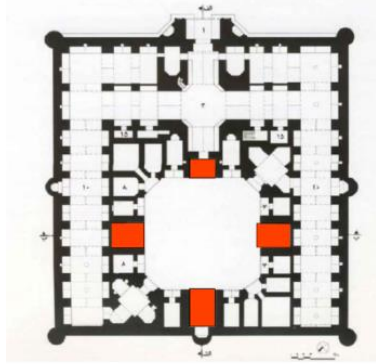

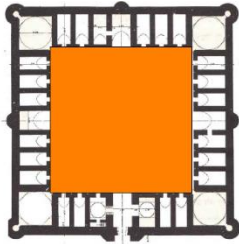

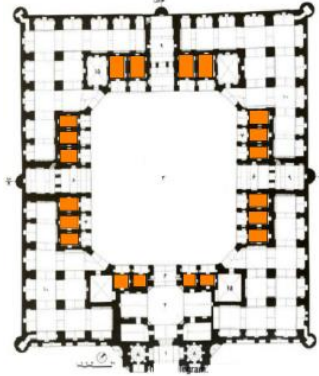

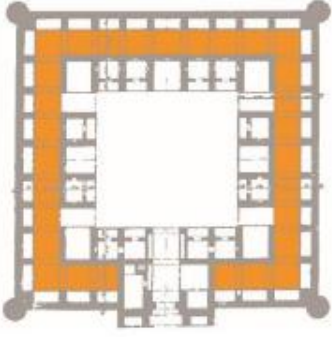

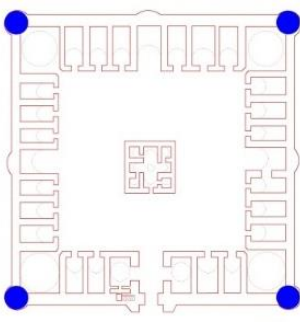

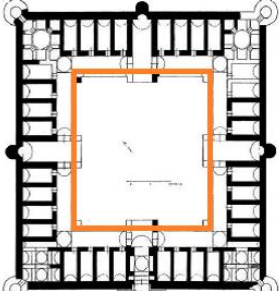

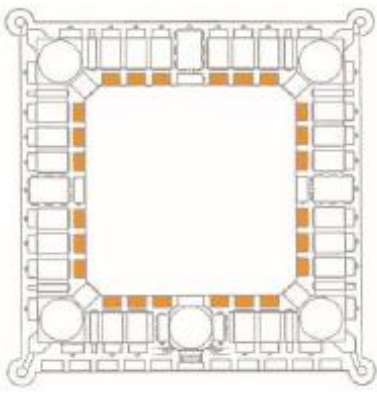

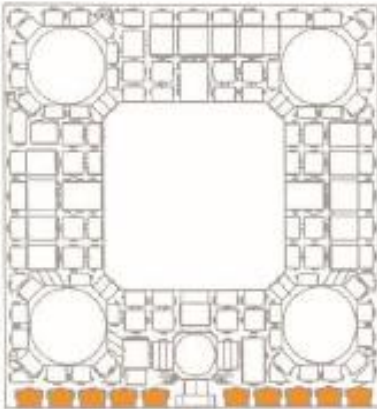
N	Title	Picture	Plan
1	Entrance		
2	Vestibule and hallway		
3	Porch		
4	Central court yard		
5	Chamber		

Table 1 (continued)

6	Stable		
7	Tower		
8	Portico		
9	interior veranda		
10	exterior veranda		

Commonalities and Differences of the Caravanserai in this area

After categorizing and analyzing the findings in this section in order to find the commonalities and differences of the caravanserai by historical period, based on the research findings, the caravanserai of each period were studied comparatively, and the similarities and differences of their elements and components were explained. Next, in order to clarify the evolution of the caravanserai, the commonalities and differences of the elements and components of the caravanserai were compared and examined with respect to their historical periodization, and then their general similarities and differences were explained by combining the historical periods (Tables 2 and 3). Seljuk caravanserai often had a portico, four porches, solid circular towers, and a prominent entrance, and they lacked a vestibule and instead had a corridor. The rooms were rectangular, and the caravanserai did not have a veranda in front of the rooms. Seljuk caravanserai did not have a veranda on the exterior. Seljuk caravanserais often have four-sided spaces in their corners and a central pavilion in the middle of the courtyard, which often plays the role of a royal residence. In Ilkhanid caravanserais, the portico element gradually gives way to a veranda. The rooms in Ilkhanid caravanserais are square, and the evolution of the rectangular room of the Seljuk caravanserais is the one. Ilkhanid caravanserais have a corridor at the entrance, and a vestibule space is also taking shape. The towers in Ilkhanid caravanserais are solid and circular. Another change in Ilkhanid caravanserais is the creation of a special space for caravan owners, which is located in the corner of the caravanserais and at the entrance of the camel khans. Another change in Ilkhanid caravanserais is the creation of the camel khan behind the rooms and in the last ring. Ilkhanid caravanserais do not have a veranda on their exterior. The main building in Seljuk, Ilkhanid, and Timurid caravanserais is one-story. In Timurid caravanserais, the camel sheds behind the rooms and towers are round, hollow, and solid. The rooms in Timurid caravanserais are mostly square. Safavid caravanserais are an evolved form of their previous caravanserais. The hierarchy of access is completed in the caravanserais of this period. The veranda space is added to the exterior of the caravanserais. The latrine is seen in the caravanserais of this period. The caravanserais of this period have a private space for the king. There is a veranda in front of the rooms. The design of an independent water tank outside the caravanserais is more visible in this period. The general geometric shape of the caravanserais in the Seljuk caravanserais is square; in the Ilkhanid and Timurid caravanserais it is square and octagonal; in the Safavid caravanserais it is a full octagon, a jewel octagon, and a quadrangle; in the Qajar caravanserais it is octagonal and circular, a quadrangle, and an octagon; and in the Qajar caravanserais it is also a quadrangle. The geometric shape of the courtyard is also a quadrangle in the Seljuk and Ilkhanid caravanserais. Considering the above, it can be said that the climate, cultural, and technical factors and the period of construction have played a colorful role in the design and formation of the architectural patterns of the caravanserais. But it can be said that the climate has played the greatest role in the design of the caravanserais (Tables 2 and 3). In addition to causing the emergence of diverse patterns in different historical periods, even in each historical period, it also causes the formation of numerous patterns.

Table 2. Commonalities and differences between caravanserais based on historical period (Authors, 2025)

Historical Period of Caravanserai	Similarities	Differences
Sassanid	<ul style="list-style-type: none"> Has an entrance. Has a corridor. Has a room. Has a porch. Has a camel house. Has a courtyard. Has a tower. <p>The Deirgachin Caravanserai is the only study example attributed to the Sassanid period in this research and was transformed during the Safavid period.</p>	-
Seljuk	<ul style="list-style-type: none"> Has an entrance. Has a corridor. Has a porch. Has a room. Has a portico. Has a camel house. Has a courtyard. Has a tower. Has no veranda on the exterior. 	<p>The Koh Namak Caravanserai has a vestibule and no corridor.</p> <p>The Dehchi caravanserai does not have a portico and has a veranda in front of the room.</p> <p>The old Chaleh Siah Khohneh and Tarlab caravanserai do not have towers.</p>
Ilkhanid	<ul style="list-style-type: none"> They have a corridor. They have a porch. They have rooms They do not have a portico. They have a camel house. They have a courtyard. They have a tower. They do not have a veranda on the exterior. They have a veranda in front of the room. 	<p>The Chahar Abad caravanserai does not have a tower.</p>
Safavid	<ul style="list-style-type: none"> They have a corridor and a vestibule. They have a porch. They have rooms. They have a veranda. They do not have a portico. They have a camel house. They have a courtyard. They have a tower. They have a veranda on the exterior. 	<p>Some caravanserais do not have a tower.</p> <p>Some caravanserais do not have a veranda on the exterior.</p> <p>Some caravanserais do not have rooms (Pasangan and Vardeh).</p> <p>Some caravanserais do not have a veranda in front of the room.</p> <p>Some caravanserais have both a vestibule and a hallway, and some have either a vestibule or a hallway.</p>

Table 2 (continued)

Qajar	<p>They have a hallway and a vestibule.</p> <p>They have a porch.</p> <p>They have rooms.</p> <p>They have a porch.</p> <p>They do not have a portico.</p> <p>They have a camel house.</p> <p>They have a courtyard.</p> <p>They have a tower.</p> <p>They have a veranda on the exterior.</p>	<p>Some caravanserais do not have a tower.</p> <p>Some caravanserais do not have a veranda on the exterior.</p> <p>Some caravanserais do not have a room (Dalak caravansarai).</p> <p>Some caravanserais do not have a veranda in front of the room.</p> <p>Some caravanserais have both a vestibule and a hallway, and some have either a vestibule or a hallway</p>
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Table 3. Commonalities and differences between caravanserais based on the intertwining of historical periods (Authors, 2025)

Title	Description
Similarities	<p>Sassanid, Seljuk, Ilkhanid, Safavid and Qajar caravanserais have rooms.</p> <p>Some Sassanid, Ilkhanid, Safavid and Qajar caravanserais have a veranda in front of the rooms.</p> <p>Caravanserais have an entrance.</p> <p>Caravanserais have a camel house.</p> <p>Caravanserais have porches.</p> <p>Caravanserais have courtyards.</p> <p>Caravanserais have towers.</p> <p>Seljuk caravanserais do not have verandas in front of the rooms.</p> <p>Ilkhanid, Safavid and Qajar caravanserais have verandas on the exterior.</p> <p>The entrance system of Sassanid caravanserais includes an entrance, a hallway.</p> <p>The entrance system of Seljuk caravanserais includes an entrance, a hallway.</p> <p>The entrance system of Ilkhanid caravanserais includes an entrance, a hallway.</p> <p>The entrance system of Safavid caravanserais includes an entrance, a hallway.</p> <p>The entrance system of Safavid caravanserais includes an entrance, a hallway.</p> <p>The entrance system in Qajar caravanserais includes a main building, a vestibule, and a hallway.</p> <p>Most Safavid caravanserais have a tower.</p> <p>Most Qajar caravanserais have a tower.</p> <p>Sassanid, Safavid, Ilkhanid, and Qajar caravanserais have no portico.</p> <p>Seljuk and Ilkhanid caravanserais do not have a veranda on the exterior.</p> <p>Sassanid, Seljuk, Ilkhanid, Safavid, and Qajar caravanserais have a single-story entrance.</p>
Differences	<p>The Seljuk caravanserais have a portico.</p> <p>Some Seljuk (2 examples), Ilkhanid (1 example), Safavid, and Qajar caravanserais do not have a tower.</p> <p>Some Safavid and Qajar caravanserais do not have a veranda on the exterior.</p> <p>Two examples of Safavid (Vardeh and Pasangan) and one example of Qajar (Pol-e-Dalak) caravanserais have no rooms.</p> <p>One example of Seljuk caravanserais has a vestibule instead of a corridor.</p> <p>One example of Qajar caravanserais (Baquerabad) and one example of Seljuk caravanserais (Robat Sangi Natanz) do not have a main building.</p> <p>One example of Seljuk caravanserais (Dehchi Morche Khoret) has a veranda in front of the room and does not have a portico.</p> <p>The Sassanid caravanserai has a two-story main building.</p> <p>Examples of Seljuk caravanserais (Sangi Parand and Mohammadabad Kaj) have a two-story entrance.</p> <p>Some Safavid and Qajar caravanserais have a two-story entrance.</p>

Discussion

Major trade and pilgrimage routes, such as the Silk Road and Atabat routes, shaped architectural similarities among caravanserais built along these paths. Based on available facilities, caravanserais are classified as simple, intermediate, or complex (combined). Complex examples often included secondary elements such as royal residences, mosques, bathhouses, bazaars, water tanks, and ponds.

Geographical and historical contexts played an important role in design variations. For instance, caravanserais in Isfahan province, the capital during the Seljuk and Safavid periods, were more elaborate and included multiple secondary spaces, reflecting the city's political and economic prominence. Royal caravanserais like Jolegir, Madar Shah Morchekhord, Sheikh Ali Khan, Neistanka, Mahyar, Robat Sultan, and Robat Turk were specifically designed for elite travelers and state officials.

Despite common features, no two caravanserais are identical. Their main architectural components, the entrance, porch, central courtyard, rooms, veranda, stables (camel huts), and guard towers, appear consistently but vary in form and arrangement across historical periods. Secondary spaces, such as prayer halls, royal quarters, ponds, and courtyard platforms, were optional additions depending on location, function, and patronage.

The study shows that architectural evolution in caravanserais was gradual, influenced by factors like climate, local building traditions, available materials, and the skill of architects. Physical characteristics such as geometry, symmetry, spatial organization, and overall plan composition were examined in detail. These features demonstrate that Iranian caravanserai architecture follows a structured, rule-based system rooted in earlier construction traditions while adapting to contemporary needs.

Furthermore, architectural similarities among caravanserais built in close historical periods or along the same routes, such as the octagonal caravanserais of Amin Abad, Khan Khoreh, and Deh Bid, and the Chah Qadeh and Gaz caravanserais, suggest the involvement of common architects or patrons.

Recognizing these shared design features not only highlights the systematic and codified nature of Iranian caravanserai architecture but also provides valuable guidance for restoration and preservation efforts. Given the study's wide range of samples spanning diverse historical periods, climatic zones, and spatial geographies, its findings can be meaningfully generalized to other caravanserais within similar contexts.

Conclusion

In response to the research question, it should be stated that physical and metaphysical components, such as climatic, cultural, social, economic, religious, technical, and structural factors, have caused various types to form in the overall shape and architectural elements of caravanserais. For example, the climate of the region causes the formation of covered caravanserais, or the presence of only a veranda in the caravanserais, and the absence of rooms is due to the climate of the region. The caravanserais of Wardeh and Pasangan have no rooms and have a veranda. This type of design has emerged due to the hot climate of the region. The formation of the upper room above the entrance door in some caravanserais is due to the economic, cultural, and political importance of that historical route and the caravanserais. Caravanserais that had strategic locations and were in important geographical locations usually offered more facilities. The existence of spaces such as mosques, bathhouses, coffee houses, and markets next to the caravanserais is due to the influence of economic, political, and cultural components on the design of the caravanserais. Among the influential cultural factors, we can mention the use of two courtyards, a public courtyard and a private courtyard, and the separation of private and public space by designing a dedicated space for the royal residence. The use of indigenous materials and architectural elements such as stone and brick and brickwork decorations, plastering, and tiling caused.

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Conflict of Interest

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