

EVOLUTION OF PATTERNS IN ARCHITECTURE OF SISTAN, EAST OF IRAN

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Abstract: The Sistan Region in the East of Iran with more than 900 villages and a history of five thousand years is one of the most important areas in Iran. Since pre-historic (Shahr-i Sokhta) so far, as well as specific climatic conditions, and economic and social structure governing it, Sistan has led to the formation of unique kinds of architecture within. However, so far, little research and scientific studies have been done on the architecture of the Sistan Region, which is mostly done by archaeologists who study other aspects of human civilization, such as pottery, effigy, and dozens of other human hand works, and the Sistan architecture has been just introduced and mentioned. However, during the study by the authors on this structure, it became evident that the architecture of Sistan had a structural discontinuity and chaos before and after Islam. In this study, a brief study was done on the historical evolution of architecture in Sistan from prehistory to the Qajar era based on the remaining buildings. The Sistan pre-Islamic architecture includes the architecture of Shahr-i Sokhta, Dahan-e Gholaman, and Khajeh Mount are great glory. They have remained steadfast and shining. Also, in the writings of Islamic historians and foreign travelers, a lot of Islamic places and cities in Sistan have been named that a large part of them are gone, and currently, examples of these architectures, such as the old city of Zahedan, Rostam Castle, Sekoheh Castle, have remained in the Sistan area, Iran. The result shows that during pre-historic and historical periods, Sistan had great architectural sites, such as Shahr-i Sokhta, Dahan-e Ghulaman, and Khajeh Mount, which can influence the all territory of Iran.

Keywords: Sistan, Architectural history, Castle, City, Helmand River.

چکیده: سیستان در شرق ایران با بیش از ۹۰۰ روستا و سابقه سکونت دائم پنج هزار ساله از شهر سوخته تاکنون و همچنین شرایط اقلیمی خاص و ساختار معیشتی و اجتماعی حاکم بر آن، باعث شده است که گونه‌های منحصر بفردی از معماری در آن شکل بگیرد. اما تاکنون پژوهش‌ها و مطالعات علمی اندکی در خصوص معماری سیستان صورت گرفته است و این بررسی‌ها بیشتر توسط باستان‌شناسان که جنبه‌های دیگر تمدن انسانی از قبیل سفال، پیکرک و ده‌ها اثر دیگر انسانی را مطالعه می‌کنند، انجام و به معماری سیستان نیز در حد شناسایی و معرفی پرداخته شده است. با این همه در خلال مطالعه صورت گرفته توسط نگارنده‌گان بر روی این معماری، آشکار گردید که معماری سیستان در قبل و بعد از اسلام از یک گسست و آشفتگی ساختاری برخوردار است. در این پژوهش به مطالعه مختصری از سیر تحول تاریخ معماری در سیستان از پیش از تاریخ تا عصر قاجار بر اساس بناهای باقی‌مانده پرداخته شده است. معماری قبل از اسلام سیستان، معماری شهر سوخته، دهانه غلامان و کوه خواجه را شامل می‌شود که از شکوه و عظمت زیادی برخوردار است، به گونه‌ای که پس از گذشت چندین هزار سال از عمر این بناها همچنان استوار مانده و می‌درخشند. همچنین در نوشته‌های مورخین اسلامی و سیاحان و مامورین خارجی از اماکن و شهرهای اسلامی زیادی در سیستان نام برده شده است که بخش زیادی از آنها از بین رفته و هم اکنون نمونه‌هایی از این معماری از قبیل شهر زاهدان کهنه، قلعه رستم، قلعه مچی (قلعه‌چه) و سکوه در بخش سیستان ایران باقی‌مانده است.

کلمات کلیدی: سیستان، تاریخ معماری، قلعه، شهر، رودخانه هیرمند.

I. Introduction

Sistan and Baluchestan province is in the South East of Iran, and the Sistan area is also located in the most northern part of this province (Sarhaddi-Dadian, *et al.*, 2015; Mehrafarin, *et al.*, 2011, 2010; Mutin *et al.*, 2017). This relatively flat land is around Hamun Lake and is formed from the Helmand River sediments. Due to the fertility of the Sistan plain in the past, so many great centers of civilization had been formed in it. The presence of magnificent monuments and architecture from prehistoric, historical, and Islamic eras shows the fact that Sistan has put glorious periods behind and has had an important role in the culture and civilization of Iran and the world. The presence of magnificent architecture in Shahr-e Sukhteh, which corresponds to the period of starting writing, and the impact of this city

on neighboring civilizations, have caused its high significance. The historic period city of Dahan-e Gholaman, with a massive and diverse architecture, which the city map was first designed and then, the city has been built according to archaeologists, appears to be evidence of the rule of Achaemenid control over the eastern regions of Iran. Also, the architectural monuments of Sistan Mount Khajeh are as the most important works of the Parthian and Sassanid periods, as the mountain has been frequently praised along with Hamun Lake and Helmand River in the religious texts. The Mount is considered a blessed and holy mountain for Muslims, Zoroastrians, and Christians, and is the only Iranian work that watercolor painting works and clay high reliefs have been inscribed on its walls (Kavosh, 2004). In this land, majestic brick buildings

have remained from the past Islamic days that were built by Sistani architect masters in different Islamic periods, including Rostam Castle, Old Zahedan, Ramrood Castle, Sekoheh Castle, Mil-i Qasimabad and windmills, etc., that each one has had special architectural features (Kavosh, 1999). Therefore, the

aim of this study was to introduce the remaining architectural features of Sistan in different eras and study the evolution of its architectural structure and history (Fig. 1).



Figure 1: Sistan location and its Historical Monuments (after Sarhaddi-Dadian, 2018).

II. Sistan hydrology and its impact on human settlements

Helmand River and Hamun Lake have been the main source of the rise and flourishing of civilization in Sistan. Whenever Helmand River has had a natural and continuous flow, human groups have been deployed on its path. Then, in a short period of time, many towns and villages have been established around it. In other words, cities and villages of Sistan in the past have always been displaced by the relocation of the Helmand River. Hence, frequent ancient abandoned sites are seen in Sistan plain, including Shahr-i Sokhta and its satellite villages, that have continued to exist from 3200 BC to 1700 BC longitudinally along the old branch of Helmand River known as the Desert River. During this period, Helmand has been entering into Hamun Lake from the south (Huntington, 2000). Shahr-i Sokhta and other prehistoric sites in the region were suddenly abandoned at the end of the third millennium BC (Tosi, 1977). One of the most likely reasons for leaving the area has been the redirection of the Helmand River to the north. The antiquities identified since the early first millennium BC in the Nad Ali area (East Side of Upper Helmand) confirm this theory (Ghirshman, 1939).

On the other hand, with the outbreak of the Helmand River, massive floods occurred in the region and buried some of the towns and villages in the

lowlands under a mass of mud. Their inhabitants, while migrating from these areas, constructed new settlements. Also, after the abandonment of towns and villages along the dried branches, the shifting sands began to bury and destroy the remaining buildings. As Shahr-i Sokhta site, Ramshahrestan, Dahan-e Gholaman (Sajjadi, 1987), and hundreds of other small and large ancient sites have been destructed over time as a result of 120-day winds erosion and buried under the piles of dirt and sand after a short time (Lestrange, 1995).

III. Sistan Prehistoric Architecture

Shahr-i Sokhta is the name of a great ancient site that is located 56 km from the southwest city of Zabol. This city, covering an area of over 151 hectares, is one of the largest archaeological sites of the beginning of urbanization in the central plateau of Iran, dating back to 5200 years ago (Tosi, 1983). All buildings in this city are made of adobe, clay wall, wood, and mat. The raw clays are placed longitudinally in rows. The wall's width usually does not exceed two rows of bricks; however, there are walls made up of five rows of bricks. The separator's small walls are often built of a row of clays. In some cases, piles have also been used to reinforce the walls. Most bricks are of standard sizes of $10 \times 20 \times 40$. The walls' foundations are 30 centimeters or one meter deep, and

soil and broken large pieces of bricks are placed inside them. After the walls were built, they were lined with a layer of thatch with high amounts of lime residues. The lime was used not only on the walls, but also inside the doors, windows, and entrances (Tosi, 1969).

So far, two different types of flooring have been identified in the Shahr-i Sokhta. In the first method, a thick layer of thatch with a diameter of 5 cm was placed on the room floor. In the second method, the room floor was first carpeted with pieces of Adobe. Then, they were hammered to be tightened. For roofing the rooms in the Shahr-i Sokhta, first, a row of logs was placed on the walls of the room. Then, these logs were covered with trees, branches, and leaves. Then, a thick layer of thatch was placed on them (Sajjadi, 1996). The room's heating system is composed of several types of stoves, including rectangular central stoves, hemispherical and horseshoe ovens, and portable ceramic ovens with a domed roof (Sajjadi, 1996).

The huge architectural complex known as Shahr-i Sokhta, belonging to the fourth period of the city and dating back to 4,000 years ago, can be considered a significant architectural work that has an area of about 500 square meters (Fig. 2). Its walls are made of adobe with a 1.5 meters thickness. In central parts, the building has remained intact up to a height of approximately 3 meters. The building has four different groups of rooms. In the southern part of the building, along the outer wall, there is a row of small narrow rooms, which have probably been home depots used to store food. All the rooms are around a central courtyard, according to the tradition of architecture in the Shahr-i Sokhta (Tosi, 1977).



Figure 2: Architecture of Shahr-i Sokhta (Tosi, 1983).

IV. Achaemenid city of Dahan-e Gholaman

The extent of the wealth and influence of the Achaemenid Empire at the time required the construction of many towns and villages in the satraps under their influence, especially since they were fully familiar with the principles of urban planning, and many architects from various nations and races were present in their administration. However, the only ancient city

of this period that has been so far discovered in the eastern half of Iran is Dahan-e Gholaman (Sajjadi, 1997).

Dahan-e Gholaman is located about 2 km from Ghale-e-Noor (New Castle) village and about 44 km from the city of Zabol. This Achaemenid city has been located in the past next to Sanarood River, one of Helmand branches, and the sudden leaving of Dahan-e Gholaman suggests the drying or removal of water from the area (Scerrato, 1966).

The architecture and effects of the buildings of this city are located in a so vast area on a terrace approximately 1.5 kilometers in length. Iranian and Italian archaeologists excavated the city of Dahan-e Gholaman and achieved good results. The city of Dahan-e Gholaman is the only city discovered of the Achaemenid era, which shows Iran's full sovereignty over its eastern regions well. The city has had a very short life, between 150 to 200 years in the sixth and fifth centuries BC. In this city, a significant number of large, public, and religious buildings can be seen next to the civilian houses. The eastern part of the city was divided into two equal parts, and its works and effects have continued as long as the site called Zoroaster's grave. There are 27 recognizable buildings in these two sections. These buildings have had public, religious, social, and industrial uses. In the southern part of the city core, there are the effects of a large building, which has been called "Military Building" or "Garrison". Iranologists research has shown that the place has been the political, administrative, and social center, or in other words, the Achaemenid Drangyana or Dranjay capital, at least for a short time, and is consistent with Achaemenid Zarankay and Zarrin of historians like Ctesias and Isodore of Charax (Sajjadi, 1977).

Another important feature of this city is its architecture, in which the entrance doors of all houses of the city are built on the south side of the buildings, or a windbreak has been in front of them due to the blow of famous 120-day winds of Sistan that always blow from the North West to the South East. The industrial area of the city is located in a large part around the holes of mid-day's well (Sajjadi, 2004); (Scerato, 1966).

Building No. 15: This building consists of 36 long and narrow rooms that all have the same rectangular plan, and are located at four sides of the building and around a rectangular courtyard with sides of 50 meters in length. This similar and standard shape of the building, and some similarities of its plan with the buildings in the sixth and fifth centuries BC of Central Asia, induces, at first sight, the presence of probably a religious monument, an edifice, or a tomb. The mentioned building has approximately 2,500 square meters, and the main materials used in this building are also raw clays (Sajjadi, 2004). In general, this city has four main characteristics

of historical period cities, meaning it has had signs of everyday religious, economic, manufacturing, and administrative life. As a result, one can summarize the importance of Dahan-e Gholaman city in several points in terms of archaeological and historical studies and other various cultural fields:

The buildings in the city have been constructed based on a determined map with precise planning. In this regard, Dahan-e Gholaman is unique among the Iranian plateau cities during this period. Dahan-e Gholaman is perhaps the only city of this period in which a variety of personal and private houses of people can be clearly seen next to governmental, religious, and social buildings. Dahan-e Gholaman is the only city of the Achaemenid era in which the signs of influence by the official architecture and also the influence of local architecture, as well as the influence of climatic conditions in the composition of the city buildings, can be seen (Sajjadi, 1977) (Fig. 3).



Figure 3: Dahan-e Gholaman Architecture (Sajjadi, 1977).

V. Sistan Khajeh Mount

There is a rock and isolated mountain made of black basalt in the context of Hamun Lake, so that the German archaeologist, Herzfeld, believes that it is the same Oshida Mountain in Avesta, where the prophet Zoroaster had been under the auspices of King Goshtasp, the father of Darius (Herzfeld, 2013). This mountain is located within 30 kilometers southwest of Zabol. Khajeh Mount has been a center of worship in the Mithraic periods and Zoroastrian periods due to the presence of a Fire Temple. In other words, Khajeh Mount and Hamun Lake have had a special sanctity in three religions Zoroastrianism, Islam, and Christianity, so that the manufacturers of

the stronghold has mostly used bricks and mud and fewer stones in the construction of its buildings because of such a sacred identity and also weather conditions (Kavosh, 2004). The Mountain appropriate position has led to the construction of splendid brick architectural works since the Parthian and Sassanid and early Islamic periods in different forms, such as palaces, temples, fortresses, cemeteries, and shrines, which have remained. These works are as follows: Khajeh Mount Palace and Temple (Kakha Castle), Kok Kohzad Castle, Chehel Dokhtaran (forty girls) Castle, Sarsang Castle, Khajeh Ghaltan Shrine, Pir Gandom Beryan Building, Sheytan (Satan) House and single tomb buildings (Kavosh, 1999).

Khajeh Mount and Its Temples are considered Iran's architectural masterpieces. English Stein introduced these works as the remains of a Buddhist temple and monastery, whose emergence in Iran is unique. He believes that the buildings of Khajeh Mount are a Greco-Buddhist art that has combined the Buddhist architecture of Central Asia and the Far East. Herzfeld offers different opinions on Khajeh Mount's works. In his latest visit to Khajeh Mount in 1932, he stated that the first period of the building has been created by instructions of a local satrap in the name of King Gundopharr Rostam, who was ruling in the South East of Iran and Sistan around 20 to 65. According to Herzfeld, the castle consists of a palace and a temple, which is known as the royal building. The palace building has allocated the high part of the castle, which has been built around a vast courtyard. There are wide roofed porches on the western and eastern sides of the courtyard. The main front is located on the north side of the yard, including an extensive corridor and gallery with a staircase that leads to the upper gallery and fire temple. Herzfeld has found a stone hearth foundation inside the temple (Herzfeld, 2013). Furthermore, clay motifs have been obtained in the Khajeh Mount, and it is the only place in Iran where clay motifs have been seen (Moussavi, 1996).

V.1. Kok Kohzad Castle

On the mountain ridge with a very wide area, and at the eastern end of the nose, there are the remains of a fortress on the highest point of the mountain that the local people refer to as Kok Kohzad Fortress. Like the central citadel, this fortress has been built with Adobe and Thatch and seems to have been built at the same time. The Kok Kohzad castle lacks a central courtyard and is a collection of large rooms and ancillary spaces, which according to the building plan, can be claimed to be the residence and site of the commanders and the governor, and has had the old aspects of the fort in the whole collection (Moussavi, 1996) (Fig. 4).



Figure 4: Kok Kohzad Castel Architecture (photograph by Kavosh).

V.2. Chehel Dokhtaran Castle

In the southwest nose of Khajeh Mount, overlooking the lake and the surrounding plains, there are the remains of another construction site that is shaped from a central courtyard with two gates, ancillary rooms and arcades, towers, and ramparts (Fig. 5). The effect is known among local inhabitants by the name of Chehel Dokhtaran Castle. It is a brick building that stone has been used occasionally in making its foundation. Depending on the building situation, it can be regarded as a defense and military bastion. It may also date back to the time of two Kak and Kakha castles, and with them, make a set that has been called Mount Khajeh Monuments (Moussavi, 1996) (Fig. 5).



Figure 5: Chehl dokhtaran Castel Architecture (photograph by Kavosh).

VI. Sistan Islamic architecture

VI.1. Rostam Castle

This castle is located in the historic area of Hozdar, about 70 km the southwest of city of Zabol. Rostam Castle can be considered the biggest fort remaining of the Islamic period of Sistan, and its greatness in the region has brought a mythical - historical aspect to it and has been named after Sistan's greatest character, i.e., Rostam. The main architectural elements of the castle include the entrance facade, located at the southeast,

guard and defensive towers attached to the wall of the castle, moat, freezer, and most importantly, its king's settlement. Other residential facilities inside the castle have been partially destroyed (Ovissi-Keykha and Kavosh 2016) (Fig. 6).



Figure 6: Architecture of Rostam Castel (photograph by Kavosh).

VI.2. Old Zahedan City

The Old Zahedan City is located about 27 km from the East of Zabol, in the Poshtab section and in the area of Zahak city, which has been of great importance in the Islamic period, so a group of researchers consider it the city of Zarang, the power center of Saffarids (McMahon, 2000) and others know it as Sistan city (Mousavi, 2010).

But in regard to the history of the city foundation, G.P Tate from Britain believes that Old Zahedan existed about 420 years before being destroyed by Timur and was built around 365 AH at the time (Khalaf ibn Ahmad) the Last King of Safari (Tate, 1984).

Also, according to the surveys and studies of archaeologists, this city has been continuously residential and the center of the Sistan government since the late fourth century to the early ninth century AD. This city was destroyed by the attack of Timur and destroyed by the attack of his son, Shahrukh, which was associated with the destruction of Sistan dams. In general, the city consisted of five separate parts named Ghale, First Arg, Second Arg, Sharestan, and Rabaz. Except for Rabaz, which has no walls, the other four parts of the city have been surrounded by reinforced towers and walls (Mousavi, 2010) (Fig. 7).

The set of the city's main fence (walls) has an area of several kilometers that has been constructed with adobe and clay materials. At various distances, semicircular towers have been established to defend the city and the 120-day winds of Sistan have led to the deterioration and destruction of these works (Kavosh, 1999).

The materials used in buildings are completely raw clay, along with mortar thatch and plaster coating. In some cases, cubic bricks are used amidst the adobes, but

it seems that many of the buildings in the city of Old Zahedan had been made of brick materials. The bricks by dimensions of $27 \times 14 \times 5$ and $27 \times 27 \times 5$ cm are widely distributed in the southern part of the city. Unfortunately, in recent centuries, the local people have moved many of them with the destruction of ancient monuments for the construction of tombs of their dead (Kavosh *et al.*, 2002; 1999) (Fig. 7).



Figure 7: Zahedan Kohnneh Architecture (photograph by Kavosh).

VI.3. Windmills of Hozdar area

On arrival in Sistan, the only thing that surprised the Arabs was windmills (Sistani, 1989). Right now, some of them have remained in the historic sites of Hozdar, Ramrood Castle, old Zahedan, and As Abad Randeh. Some beautiful windmills have remained sporadically in the region of Ghale Che Raes Castle and Rostam Castle, which are devastating.



Figure 8: Windmills of Hozdar area photograph by Kavosh).

This life-making building consists of three main parts, including a central room, side walls, and a room that was probably for the miller. The orientations of windmills are built all from North West to South East and in the path of 120-day winds of Sistan (Fig. 8). The largest and most important part of the building, in a

rectangular shape, is located in the north of it where the millstone was operating within it. Two openings can be seen on the north side that have been directing the wind into the building. The exterior facade of the windmills has magnificent brickwork forms, so that the clay used recalls the full-shade texture of the walls and honeycomb fan, and like a curtain prevents the intense reflection of the sunlight, and for a moment, creates a feeling of the wind coldness. The elegant and prolific architect divided the wall into six parts and transferred the cross decoration from his mind to the winded wall (Kavosh, 1999) (Fig. 8).

VII. Conclusion

Due to its strategic location, specific geographical conditions, and suitable environment, the presence of professionals and experts in arts, animal resources, and fertile lands along with abundant water, has drawn the attention and settlement of humans from the Bronze Age and led to the rise of many towns and villages in different periods. On the other hand, various factors have had an impact on the construction of Sistan architecture. The most important factors affecting the formation of this type of architecture have been climatic, environmental, social, and livelihood factors. In general, studying and reviewing Sistan architectural history shows that this type of architecture is the result of the thinking, ideas, and experience of many generations with unique features that some of their characteristics have continued to date, and are still used in the creation of local settlements of the region. However, it should be noted that Sistan architectural evolution and development have not experienced an identical continuous and ascending flow since the emergence of the first cities and villages so far, and had frequent fluctuations at some times. As already stated, most of these fluctuations are concerned with water flows in Sistan. But sometimes, political tensions and regional conflicts by humans have affected the process.

In the end, it should be noted that, in addition to buildings investigated in this study, in travel books and historical texts on Sistan, the names of places have been mentioned that there are nowadays no traces of them in Sistan. We, therefore, conclude that in addition to the factors mentioned above, human intervention and unkindness have led to the full destruction of many brick buildings of Sistan in the past to be used in the construction of tombs and even contemporary residential buildings. The occurrence of floods, storms, enemy attacks, and ignorance of people are other factors that have led to the remaining of only a name of the magnificent architectural works of Sistan past.

References

- Kavosh, H.A. (2004). *Sistan Mountains and lakes in the mirror of religions*, First Edition, Zabol University.
- Kavosh, H.A. (1999). *Identifying and introducing works of the Sistan Islamic period*, Master's thesis, Department of Archaeology at Tehran University.
- Kavosh, H.A., et al. (2002). *Sistan, The paradise of archaeologists*, First Edition, Zabol University.
- Lestranger, G.(1995). *Historical geography of the lands of the Eastern Caliphate*, Translator: Erfan, M., Scientific and Cultural Publishing Company, Tehran.
- Ghirshman, R. (1939). *Fouilles de Nad-i-Ali dans le Seistan Afghan*. Revue des arts asiatiques, 13(1), 10-22
- Herzfeld, E. (2013). *Iran in Ancient East*, Translated by Sharifi Nematabad, Mohammad., First Edition, Scientific and Cultural Publishing Company, Tehran.
- Huntington, A. (2000). *Eastern Iran Bowl and Sistan, In: Historical Geography of Sistan, (Travel with itineraries)*, Translation and editing by Ahmadi, Hassan., First Edition, Tehran.[2]
- McMahon, H. (2000). *Mapping and new discoveries in Sistan, Sistan historical geography (Travel with itineraries)*, Translation and editing by Ahmadi, Hassan., First Edition, Tehran.
- Mehrafarin, R., and S.R.M. Haji. (2010). "In Search of Ram Shabrestan the Capital of the Sistan Province in the Sassanid Era." Central Asiatic journal 54, no. 2 256-72.
- Mehrafarin, R, S. R. M. HADJI, and S. A. FEYZ. (2011). *A Study of the Ceramics of East Iran during the Later Parthian Era with Special Reference to Tapa Gowri*. Central Asiatic journal 55, no. 2, 240-58.
- Mousavi, M., (1996). *Adobe Memorial of Mount Khajeh*, Proceedings of the Congress on Architectural and Urbanization History of Iran, Volume IV, Cultural Heritage Publications, Tehran.
- Mousavi, H. S. R. (2010). *Old Zahedan: A city asleep in Sistan*, First Edition, Pazh Publishing, Mashhad.
- Mutin, B., H. Moradi, H. Sarhaddi-Dadian, H. Fazeli Nashli, M. Soltani. (2017). *New Discoveries in the Bampur Valley (South-Eastern Iran) and Their Implications for the Understanding of Settlement Pattern in the Indo-Iranian Borderlands During calcolitic period*, Iran 55(2), 99-119.
- Oveisi-Keikha, Z., & Kavosh, H.A. (2016). *Rostam Castle: The largest castle (fortress) remaining from Sistan Islamic period*; Second National Conference on Archaeology of Iran, Mashhad, 1-15
- Sajjadi, S.M.S.(1996). *Archeology and History of Baluchistan*, First Edition, Cultural Heritage Organization of Iran, Tehran.
- Sajjadi, S.M.S.(1977). *Daban-e Gholaman: An Achaemenid City in Sistan*, Journal of Archeology and History, Year 11, No. 1&2, 1997 & 1998, eleventh year, University Press, Tehran,43-52
- Sajjadi, S.M.S. (1987). *An Overview of Urbanism and Urbanization in Iran*, By Kiani, M.Y., Ershad Publications, Tehran.
- Sajjadi, S.M.S. (2004). *Concise Guide on Sistan Antiquities*, First Edition, Management and Planning Organization of Sistan and Baluchestan, Zahedan.
- Sajjadi, S.M.S.(2010). *Notebooks of Shabr-e Sukhteh 2*, First Edition, Cultural heritage and tourism base of Shahr-e Sukhteh, Zabol.
- Sarhaddi-Dadian, H., Ramli, Z., Rahman, N. H. S. N. A. & Mehrafarin, R. (2015). *X-ray diffraction and X-ray fluorescence analysis of pottery shards from new archaeological survey in south region of Sistan*, Iran. Mediterranean Archaeology and Archaeometry, 15(3), 45-56.
- Scerrato, U. (1966). *Excavations at Daban-i Ghulaman (Sistan-Iran) First Preliminary Report (1962-1963)*. East and West: 9-30.
- Sistani, M. A (1989). *Sistan (Land of Sands and Epics)*, Volume II, Publisher Center for Social Sciences, Academy of Sciences, Volume I, Afghanistan, 49-68.
- Tate, G. P., (1984). *Sistan, By the efforts of Raisolzakerin*, Gh.,Volume II, First Edition, Directorate General of Islamic Guidance of Sistan and Baluchestan, Mashhad.
- Tosi, M. (1969). "Excavations at Shabr-i Sokhta. Preliminary report on the second campaign", East and West 19/3-4: 283-386.
- Tosi, M. (1977). *The Proto-urban cultures of Eastern Iran and the Indus Civilization. Notes and suggestions for a spatio-temporal frame to study the early relations between*, South Asian Archaeology.
- Tosi, M.(1983). *Prehistoric Sistan 1*. Rome: IsMeo
- Yate, E. C. (1984). *Khorasan and Sistan Travel Book*, Translated by Rahbari, M. & Roshani, Gh., Tehran.