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Original Research Article

An Investigation into Gender-Influenced Factors in the Formation of Spatial Structure in Vernacular Housing along the Coastal Regions of Hormozgan Province

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ABSTRACT

Cultural variations shaped by diverse climatic conditions have led to the emergence of distinct residential environments. The physical form of the house, in every historical period, has been influenced by a range of factors—each playing a critical role. Architectural spaces and their patterns of use evolve in response to user needs and the forces that act upon them. Housing, as a socio-cultural phenomenon, has persisted through time, continuously shaped by the dynamics of society, climate, cultural norms, and gender structures. These characteristics, rooted in both mental constructs and social realities, are transmitted intergenerationally. Gender, as a marker of social and cultural identity, significantly influences the spatial organization of domestic environments. The spatial placement of gendered areas within the home reflects residents' cultural values and societal beliefs about gender roles. The way men and women utilize space—based on gendered expectations and spatial relationships—can result in distinctive spatial configurations. Historically, the differentiated roles of men and women within society have directly impacted the nature and function of the spaces they occupy. This research aims to explore how gender roles have influenced the spatial structure of vernacular housing in Hormozgan Province. In response to the central research question—"In what ways and to what extent has gender shaped the spatial organization of traditional homes in southern Iran, particularly during the Qajar and early Pahlavi periods?"—the study focuses on women's roles in spatial allocation, the gendered use of public and private zones, and the influence of social norms and gendered lifestyles on the physical configuration of the home. The methodology is based on theoretical studies in the anthropology of domestic space and lifestyle patterns and includes ethnographic fieldwork and direct spatial analysis. Through a comparative approach and selected case studies, the paper analyzes the floor plans and spatial arrangements of vernacular dwellings in Hormozgan's coastal cities.

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Introduction

Architecture is a reflection of human needs, beliefs, values, and ways of life, and understanding the architecture of any historical period is only possible within the cultural context of its time and place. Housing, as the core of family life, has evolved over time and across geographies in response to the expectations and needs of its inhabitants. The house did not emerge suddenly; rather, it developed gradually under the influence of societal norms, climate, culture, and gender structures, becoming a mental and social legacy transmitted from one generation to the next.

Iran's historical architecture mirrors the culture of its people—a culture that, in recent decades, has faded due to an intellectual neglect of vernacular values. Contemporary residential design in many cases disregards human-centered needs, leading to a diminished sense of belonging and reduced comfort in daily life. Despite constituting the majority of urban building stock, housing design plays a fundamental role in shaping the quality of life for different social groups (Ghouchani & Arabi, 2020, 234).

A review of Iranian architectural history reveals a coherent and continuous progression across many periods, suggesting a logical relationship between successive eras. However, this continuity was disrupted during the Qajar period (Jamali et al., 2022, 38). A close examination of architectural spaces through the lenses of gender, lifestyle, and socio-cultural transformations indicates that architectural design requires a nuanced understanding of gender-related dynamics and the roles of both women and men in society.

In traditional Iranian society, the interior domain of the house was predominantly associated with women, while public spaces beyond the home were perceived as the realm of men. The home functioned as a protective and private space for women, where their identities were primarily formed through domestic roles such as caregiving and child-rearing (Mohammad Zadeh et al., 2000, 43). Privacy, as a deeply rooted cultural principle, has historically shaped Iranian domestic architecture and has been addressed through diverse spatial solutions. Spatial hierarchy, privacy maintenance, and gender-based interactions have all played crucial roles in the formation of vernacular dwellings.

Throughout the history of this land, efforts were made to safeguard women from unintended or direct public exposure—an intention that was reflected clearly in the architectural design of homes across various climatic regions. Social interactions between men and women in the late Qajar and early Pahlavi periods continued to follow traditional, often same-gender patterns of communication (Kiaei et al., 2020, 44).

The factors shaping gender in architecture include cultural expectations regarding gender roles, family structure, modes of interaction, and women's participation in public and social life (Dabirinezhad et al., 2024, 4). Within Iranian culture, women's lives have historically been defined within two specific spatial stages: first in the father's house, and then in the husband's. Rarely was there a third, independent stage. This socio-spatial structure positioned women as inherently linked to the private domain defined by patriarchal norms (Mohammadzadeh et al., 2022, 525).

Historic and traditional houses represent some of the most valuable cultural, architectural, and historical heritage of any city. These dwellings not only reflect the lifestyle of their inhabitants but also provide vital insights into the socio-cultural context of their respective historical periods. This research seeks to address the following key questions:

- How did the vernacular houses of Hormozgan Province, particularly during the late Qajar and early Pahlavi periods, reflect and absorb the cultural teachings and gendered lifestyles of their residents?
- In what ways did gender as a social variable influence the spatial organization and structural patterns of traditional housing in Hormozgan?

This study is qualitative in nature and employs a descriptive-analytical and historical-interpretive approach. Data were collected through a combination of documentary resources (including historical manuscripts, travelogues, and peer-reviewed academic publications), as well as field observations and interviews with local residents. The selected case studies include houses located within the coastal climate of Hormozgan Province that have undergone minimal alterations over time and retain high historical significance.

Three key cities were chosen for this analysis, with several houses studied in each location:

- Bandar Kong: 17 houses
- Bandar Lengeh: 8 houses
- Bandar Khamir: 22 houses

The overarching aim of this research is to investigate the influence of gender on the formation of spatial structures within the vernacular housing of southern Iran's coastal settlements. By focusing on historical houses and examining the interplay between gender, culture, and architecture, the study endeavors to reveal the social and cultural dimensions that shape residential spatial organization. The findings of this research may

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offer valuable insights and inspiration for contemporary architectural design strategies that seek to preserve cultural identity while addressing gender-responsive spatial needs.

Research Methodology

This study adopts a descriptive-analytical and historical-interpretive approach in terms of its methodology, and it is classified as fundamental research in terms of its purpose. Nevertheless, its findings hold practical relevance for contemporary architectural design. Data collection was conducted through two complementary strategies: library-based research and fieldwork.

In the library-based phase, theoretical frameworks concerning domesticity, spatial structures in architecture, and the impact of gender on the built environment were investigated. Sources included specialized books, scholarly articles, historical records, and relevant academic theses.

In the fieldwork phase, the research employed an ethnographic approach, with a focus on semi-structured interviews. A total of 26 women from the cities of Bandar Kong, Bandar Lengeh, and Bandar Khamir were purposefully selected to ensure diversity in age, family background, and occupation. The interviews explored themes such as:

- Women's daily, professional, and semi-professional activities,
- Their social interactions within the residential space,
- Satisfaction with existing spatial configurations,
- Fulfilled and unmet spatial needs,
- The influence of local customs and cultural norms on patterns of dwelling and space use.

Data were analyzed using thematic analysis, enabling the identification of spatial and behavioral patterns embedded in the lived experiences of women.

To complement the qualitative data, architectural analysis of the houses was also carried out as supportive material. The criteria for selecting case studies included:

1. Dwellings must date back to the late Qajar and early Pahlavi periods;
2. They must possess architectural and cultural significance;
3. They must have undergone minimal spatial alterations over time.

The study sample comprises 17 houses in Bandar Kong, 8 houses in Bandar Lengeh, and 22 houses in Bandar Khamir, selected randomly from eligible properties.

The primary objective of this research is to extract key indicators for explaining how women's roles and social positions have influenced the spatial organization of residential architecture in southern Iran during the specified period. These indicators can serve as a foundation for understanding transformations in vernacular architecture and for informing future design approaches that are sensitive to gender-based spatial needs.

Theoretical Framework

The architecture of each historical period is not only a function of human physical needs but also a reflection of the cultural, social, and climatic characteristics of that era. Understanding architecture—especially in traditional societies—requires examining the deep connections between physical structures and the cultural behaviors of the community. In this context, houses, as central spaces of human life, have always acted as reflections of the culture, beliefs, and lifestyle of the individuals within a society (Emami et al., 2021). Architecture, particularly traditional houses, is the result of architectural thinking that served as a response to the social, cultural, and environmental needs of societies prior to the industrial era. These houses symbolize the interaction between humans and nature, as well as between various cultures over time (Mohammadi Mazraeh, 2021, 22). Among these, houses as cultural phenomena not only fulfill physical needs but also reflect the cultural and social identities of the society that created them (Abbasi Maleki et al., 2022, 18).

One of the most significant cultural dimensions influencing the architecture of traditional houses is gender. In traditional societies, the spatial division of houses was based on gender roles. This spatial segregation not only served to meet physical needs but was also closely linked to the social, cultural, and religious values and norms of the community. In particular, gender-based spatial divisions in traditional houses can be seen as a symbol of the social and cultural status of men and women in that society (Al-Mohannadi & Furlan, 2022, 3).

Rapoport (2005, 102) strongly emphasizes that the house, as a space of human life, embodies many aspects of the customs and social relations of its society. This is especially evident in traditional Iranian houses across various regions, where the precise separation of spaces has been established. For example, in many traditional Iranian houses, spaces such as the courtyard, veranda, and rooms were specifically designed for men or women—features that relate not only to functionality but also to the cultural and social identity of the society. In addition to biological needs, houses also function

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as places for social, familial, and cultural interactions. These spaces provide appropriate conditions for the realization of family and social activities and are, in a sense, a reflection of the cultural values and identities of the society (Emami et al., 2021, 409). Moreover, studies indicate that the spatial structure of traditional Iranian houses has been influenced by the region's cultural, social, and climatic parameters, and these structures have acted as tools for displaying and transmitting cultural values and traditions from one generation to the next (Mohammadzadeh et al., 2022, 534).

Ultimately, architectural analysis of houses can serve as a tool for understanding cultural, social, and even gender-related transformations within societies. The house, as a representation of a society's culture, reflects developments through which the society's values, beliefs, and social relations can be interpreted and examined (KamiShirazi, 2018, 35). In this regard, examining the spatial structure of traditional houses can lay the foundation for analyzing cultural and social changes in different societies, and particularly provide insightful information on gender and social divisions in architecture.

In analyzing the spatial structure of vernacular housing along the coasts of Hormozgan Province, it is essential to examine spaces specifically shaped by gender and cultural factors. Such an investigation aids in better understanding how domestic spaces are formed and divided, revealing how they reflect social and gender roles and identities within the community.

Accordingly, multifunctional, gender-specific, and utilitarian spaces play a vital role in spatial analysis. Multifunctional spaces, designed for multiple uses simultaneously, typically reflect social and familial interactions within the household. Gender-specific spaces involve designated male and female areas, shaped by the society's cultural and social divisions. Utilitarian spaces, such as kitchens and windcatcher rooms, are designed based on both physical and social needs.

These three categories of space are designed not only in response to daily necessities but also to address gendered and social requirements within traditional environments. Studying these spaces in plan analysis is crucial for accurately identifying and understanding the connections between physical space and social-gender roles.

• Gender in architecture

Gender refers to a set of behaviors, actions, and social constructs assigned by the dominant culture in each society to individuals based on their sex. This concept is shaped by cultural factors and evolves over time, influencing all aspects of human life (Mohammadzadeh et al., 2022, 530). Gender affects not only social norms and behaviors but also spatial structures. Since the 1980s, increasing attention has been paid to the relationship between gender and architecture, particularly in analyzing the impact of these factors on residential space design (ibid., 528).

In traditional houses, spatial structures respond not only to physical needs but also to social and cultural divisions related to gender. As such, gender roles, ideologies associated with each gender, and spatial segregation directly influence residential design (KamiShirazi, 2018, 38). According to Rapoport, gender relations deeply affect the type and timing of family interactions, patterns of visitation, and the dynamics between men and women in private and public spaces throughout different historical periods (Rapoport, 1969, 60–63).

These influences are especially evident in traditional Iranian houses, where specific spaces are designed for women and men. These spaces are shaped not only by physical needs but also under the influence of the culture and social identity of the community. Therefore, gender, as a concept defined within social and cultural contexts, impacts the spatial structure of traditional houses (Mohammadzadeh et al., 2022, 525).

One important topic concerning gender and space is the formation of gendered domains, which manifest physically as segregation or integration, public and private realms, and the degree of enclosure of spaces (Soltanzadeh, 1992). Differences in gender roles are shaped by factors such as economic status, environment, adaptive strategies, and societal complexity and become ingrained in the collective mindset (Nersisianse, 2012, 60). The symbolic roles of women and men in cultural customs modulate or intensify dominance-based interactions. Moreover, the privacy and seclusion created to protect women have a direct connection to power, gender, and religion (Mohammadzadeh et al., 2022, 531).

From a socialization perspective, appropriate behaviors and roles for women and men largely depend on the social teachings of each society (KamiShirazi, 2018, 37). Based on this, it can be stated that gender roles in any society are shaped according to the social and cultural teachings of that region and directly influence the lifestyles and social definitions of women and men.

Consequently, the relationship between gender and space is one of the important dimensions linking culture and architectural space (Mohammadzadeh et al., 2022, 525). Various variables can affect livelihood patterns and gender, thereby

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altering the relationship between gender and space. One influential factor in this regard is privacy and visual protection, which is observable in many vernacular houses (Dabirinezhad et al., 2024, 5).

Overall, the connection between gender and architecture is considered a fundamental dimension of the social culture of any community. Gender roles, formed over time based on values, beliefs, and social behaviors, have a direct impact on the spatial structure of housing and the division of public and private spaces. In this context, architectural space not only meets human biological and physical needs but also, through spatial design and arrangement, reflects gender identity and social relations. Particularly in traditional and vernacular societies, residential architecture, influenced by cultural, religious, and social factors, plays a significant role in determining the status of women and men within the family and society. On the other hand, cultural interactions and social changes lead to transformations in concepts of gender and related spatial needs over time. As a result, architecture, as a reflection of social and gender-related developments, represents the connection between culture, history, and gendered needs that directly influence the design and formation of spaces.

• The cultural domain of the Hormozgan coastal region

Economy is recognized as the foundation of power and freedom between men and women, such that the greater the gap in economic and social resources between them, the more power is attributed to the breadwinner while the other side is overlooked (Varmaghani & Soltanzadeh, 2018, 124). The distinction between women's household work and men's work outside the home creates a conflict between the two genders; men are known as individuals in the public domain, active in various social spheres, while women, with a more limited role, belong to the interior domestic space (Nersisianse, 2012, 60). Men are expected to earn income and provide for the family in public and political spaces, whereas women are responsible for domestic duties and caring for the husband and children and depend financially on their husbands.

Due to water scarcity along the Persian Gulf coasts, agriculture is not prosperous, and people engage in activities such as fishing and animal husbandry. Traditional tools like nets, hooks, and cages are used for fishing (Afshar Sistani, 2008, 179). Animal husbandry is practiced traditionally with goats, sheep, and cows, and the surrounding plants are used for feeding the livestock. One of the main occupations of men in this region was trade through maritime voyages to the shores of the Persian Gulf, the Indian Ocean, and the Red Sea. These voyages sometimes lasted up to nine months (Hasan Nia & Bahri, 2018, 43 & 44). These cultural and commercial exchanges played a significant role in shaping cultural relations between the people of this region and other nearby and distant countries.

In the studied region, similar to other parts of Iran during the Qajar era, women mainly belonged to the private space of the home. Their presence in the streets was very limited, and in public gatherings, they mostly stayed in secluded areas away from men's eyes. Women were forbidden from participating in mourning ceremonies and visiting cemeteries, mourning only within their homes. Women in this region did not leave the house in the absence of their husbands. Female sailors and seamen, who lived more comfortably, did not go to water sources themselves; their workers fetched water from nearby ponds. One important criterion for choosing a spouse was cooking skills and the ability to prepare delicious food and keep the kitchen clean, with women striving to be acceptable to their husbands through these abilities (Suhada et al., 2022, 1206). Girls helped with household chores from childhood, and upon reaching the age of 14, cooking training began to prepare them for married life.

In this region, women were responsible for household duties including cleaning, washing, cooking, child-rearing, and managing the home. These responsibilities were not only held by the mother of the family (*Mum*) but also by other women such as grandmothers (*Bibi*), daughters (*Dokht*), and daughters-in-law (*Gaviyo*). Living in multi-family houses encouraged cooperation among women to help each other with household tasks (Dabirinezhad & Soltanzadeh, 2019, 7). During leisure time, women commonly gathered to smoke hookah and drink coffee as a form of entertainment.

When a boy got married, he would settle with his family in one of the rooms of his parental home. At mealtime, family members gathered around a single dining cloth to eat together, and afterward, they would sit together and converse (Saeidi, 2014, 75). In some cases, men had multiple wives who lived together in one house, and women of different ages were present. The eldest woman was responsible for managing the household affairs, and other women carried out daily duties under her supervision. Women in this region were categorized based on their marital status: married women were simply called "women," widows often remarried, and unmarried girls were referred to as such. When leaving the house, women wore a veil (*burqa*), the decoration

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of which indicated their social status and position in society.

The people of this region highly value hospitality, and some houses had separate kitchens specifically for preparing food and entertaining guests (Debiri-Nejad & Soltanzadeh, 2019: 8). Houses typically included a guest room known as the "Majles," which had a separate entrance from the main building (Hasan Nia & Shahriari Nasab, 2020, 176). In the presence of men, women spoke from a different room and did not enter the guest room; also, separate dining arrangements were made for men and women.

These spatial and behavioral divisions reflect the segregation of gender roles within the society and culture of the region, evident not only within the household spaces but also in social interactions and hospitality practices.

Analysis of Samples

The plans of the samples have been separately drawn from the perspectives of functional spaces, multi-purpose spaces, and gendered spaces, and are presented in Figs. 1, 2 & 3 Each will be analyzed and examined in detail subsequently.

• Definition of space usage

Houses in Hormozgan province include spaces that will be analyzed and examined based on gender. The entrance is the space providing access from urban paths to the house and is usually recessed relative to the main façade of the house. Some houses have separate entrances from different directions, depending on access to surrounding paths.

Kitchens (*Matbakh*) in houses are used seasonally or permanently, and in some houses, there are two or more kitchens. Some of these spaces are located on the rooftops, which are used in warm seasons to take advantage of the sea breeze.

The windcatcher room is a space where ventilation is provided through the windcatcher. Houses with better financial status tend to have more windcatchers. Windcatchers are usually not present in mansion-like houses (*Kooshki*) because these houses are often built at higher elevations and have multiple openings that facilitate airflow in all spaces. Windcatcher rooms are generally used as gathering places for family members or for social meetings and are not considered permanent living quarters.

The guest room is a special space for receiving guests who come from near or far cities or for family events and special gatherings. Some guest rooms have direct entrances from the house's entrance vestibule and do not open into the main living area, while others are located inside the main house space.

Wet spaces include restrooms, bathrooms, and "Gatyeh." Gatyeh are a type of wet space used not only for bathing but sometimes also for washing and drying women's clothes. This space is common in Bandar Kong houses, and in some houses, each room has its own dedicated "Gatyeh", which can be either integrated or separated into wet and dry spaces.

Considering that the main occupation of the people in this region is trade, some houses have spaces designed for commercial activities referred to here as shops. These spaces usually have direct access from urban streets and private access from inside the house.

Residential rooms include rooms where residents live, with each couple having a separate room. Unmarried daughters or sons often live together in a shared room. Multi-family living in one house is common, and after marriage, sons continue their lives in their private rooms within the house.

Different spaces in houses from the three cities of Bandar Kong, Bandar Lengeh, and Bandar Khamir have been examined. On average, houses in Bandar Kong have 17 spaces, houses in Bandar Lengeh 19 spaces, and houses in Bandar Khamir 13 spaces. Overall, houses in Bandar Lengeh have the highest number of spaces.

The residential rooms in Bandar Kong houses average 4 rooms, constituting 25% of the interior space. In Bandar Lengeh, this number is 5 rooms and 27%, and in Bandar Khamir, 3 rooms and 24%. The percentage of residential rooms in houses across these three cities is similar.

Windcatcher rooms average 2 rooms and 10% of the house space in Bandar Kong, 5 rooms and 27% in Bandar Lengeh, and 3 rooms and 24% in Bandar Khamir. The higher number and percentage of windcatchers in Bandar Lengeh houses indicate a better economic condition for the people in this city.

Guest rooms in Bandar Kong houses average 1 room and occupy 6% of the house space. In Bandar Lengeh, this increases to 2 rooms and 10%, and in Bandar Khamir, 1 room and 8%. The greater number of guest rooms in some houses reflects frequent family visits from other cities and neighboring countries or the presence of elder family members who hosted other families during holidays and ceremonies.

Kitchens (*Matbakh*) in houses of the three cities average 1 room and occupy 6 to 8% of the house space. Entrances in Bandar Kong houses average 1 room and 8% of the space, while in Bandar Lengeh and Bandar Khamir, there are 2 rooms and 13%, and 11%,

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Fig. 1. Functional spaces in coastal houses of Bandar Kong. Source: Authors.

respectively. Shops, which are present in only a few houses, have a near-zero percentage.

Sanitary spaces (bathrooms, restrooms) in Bandar Kong houses average 3 rooms and 12%, in Bandar Lengeh 4 rooms and 23%, and in Bandar Khamir 3 rooms and 20%.

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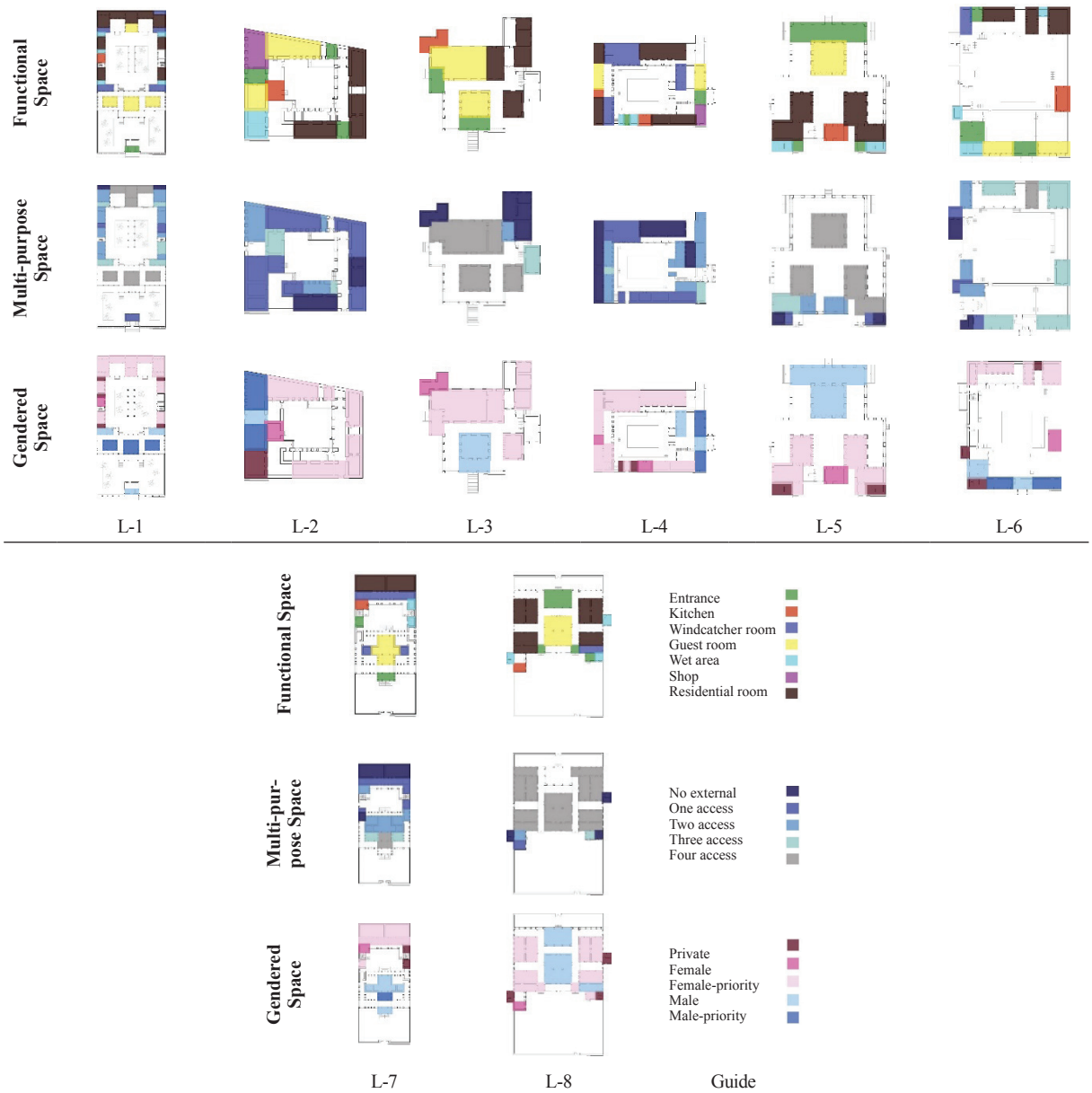

Fig. 2. Functional spaces in coastal houses of Bandar Lenge. Source: Authors.

By examining the average spaces across the three cities, it can be concluded that residential rooms constitute 26% of the house space. Windcatcher and guest rooms occupy 8%, kitchens 7%, entrances 11%, shops 1%, and sanitary spaces 18%. Finally, other spaces account for 19% of the house space.

Overall, the largest portion of house space in all three cities is allocated to residential rooms, followed by sanitary and other spaces. Windcatcher rooms, guest rooms, and kitchens have similar proportions, while shops have the smallest percentage. Fig. 4 shows a spatial comparison of these three cities and their average.

The highest percentage of residential room placement in Bandar Kong houses is observed in the north and west sections with 82%, in Bandar Lengeh in the north and east with 62%, and in Bandar Khamir in the north with 63%.

The highest percentage of windcatcher rooms in Bandar Kong is in the east with 82%, in Bandar Lengeh in the east and west with 50%, and in Bandar Khamir in the north and west with 27%.

Guest rooms in Bandar Kong and Bandar Lengeh houses are mostly located in the south with 35% and 62%, respectively, while in Bandar Khamir, these spaces are more frequently found in the north and south with 27%.

Kitchens (*Matbakh*) in Bandar Kong are most frequently located in the south with 70%, in Bandar Lengeh in the east and west with 37%, and in Bandar Khamir in the west with 40%.

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Fig. 3. Functional spaces in coastal houses of Bandar Khamir. Source: Authors.

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Entrances in Bandar Kong houses have the highest frequency in the east with 47%, in Bandar Lengeh in the north and west with 37%, and in Bandar Khamir in the south with 68%.

The highest percentage of shop frequency in Bandar Kong and Khamir is in the south with 11% and 13%, respectively, and in Bandar Lengeh in the east with 12%.

The highest frequency of sanitary spaces in Bandar Kong houses is in the north with 70% and in Bandar Lengeh and Khamir in the south with 37% and 31%, respectively.

Fig. 5 shows the average directional placement of spaces on each facade.

- Residential rooms are mainly located on the north, east, and west sides, and lastly on the south side.
- Windcatcher rooms are more concentrated on the east and west sides.
- Guest rooms are mostly in the south, followed by the north and east, with the lowest percentage in the west.
- Kitchens are mainly located in the south and west.
- Entrances have the highest percentage in the south, followed by the west and east.
- Shops have the highest frequency in the south.
- Sanitary spaces are mostly located in the west, east, and north, then south.

Overall, the average percentage of spaces on the southern facade is the highest, followed by the east and west facades, and finally the north. The average placement of spaces by facade from least to most is as follows: South 27%, East 19%, West 18%, and North 16%. Fig. 5 shows the average percentage of spatial placement by each geographic direction separately.

• Definition of types of multi-front spaces

Each space is located adjacent to several other spaces, and the type of connection, as well as the number of neighbors and accesses, can somewhat indicate the degree of security and privacy of the spaces. Some spaces lack an external frontage, which provides them with the highest level of security and privacy. The connection of these spaces usually occurs through an intermediate space, often a courtyard, or through a transitional space. Generally, spaces are categorized based on having from one to four front accesses, and the greater the number of front accesses a space has, the more its level of privacy and security significantly decreases. It is noteworthy that in the present study, only enclosed spaces were examined, while open and semi-open spaces were considered as connecting and mediating spaces.

Overall, spaces without external frontage in houses of Bandar Kong account for 3 spaces and 18%, in Bandar Lengeh 3 spaces and 20%, and in Bandar Khamir 3 spaces and 23% of the total spaces. The frequency of one-front spaces in Bandar Kong is 11 spaces (69%), in Bandar Lengeh 4 spaces (20%), and in Bandar Khamir 6 spaces (51%). Two-front spaces are 1 space (10%) in Bandar Kong, 4 spaces (23%) in Bandar Lengeh, and 2 spaces (16%) in Bandar

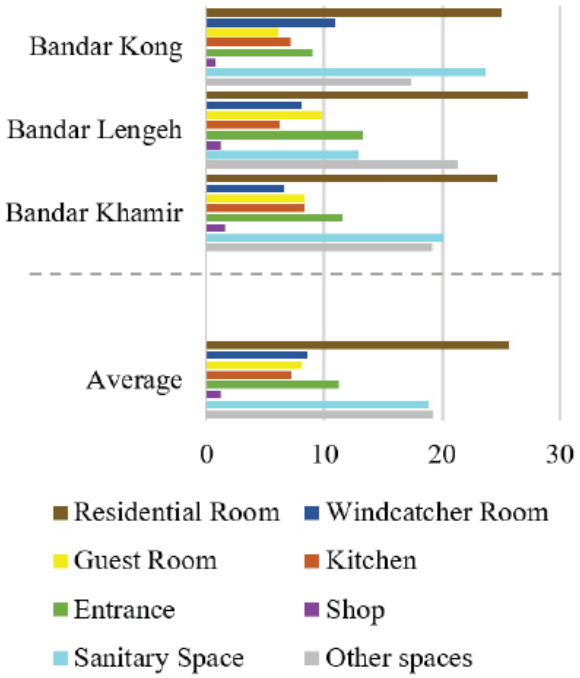

Fig. 4. Average percentage of space usage in coastal houses of Hormozgan Province. Source: Authors.

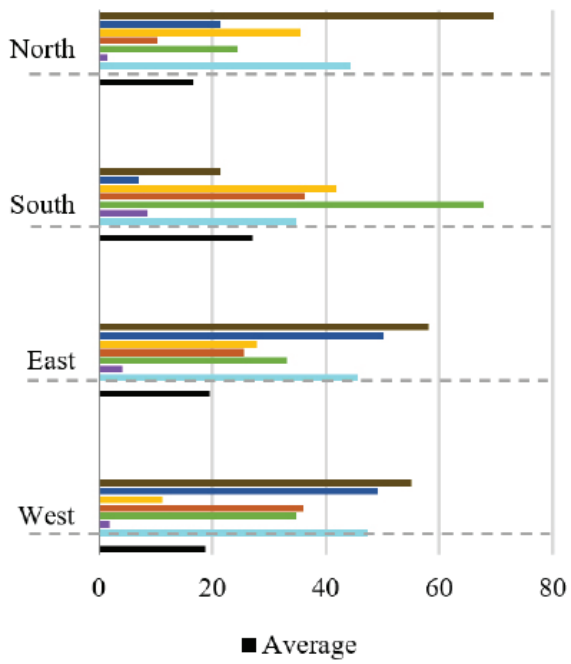

Fig. 5. Average percentage of spatial usage distribution by geographic directions in coastal houses of Hormozgan Province. Source: Authors.

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Khamir. Three-front spaces do not exist in Bandar Kong but there are 3 spaces (14%) in Bandar Lengeh and 1 space (5%) in Bandar Khamir. Four-front spaces do not exist in Bandar Kong and Bandar Khamir, but in Bandar Lengeh they constitute 4 spaces (22%).

The total number of spaces in houses in all three cities averages 15 spaces. Spaces without external frontage average 3 spaces, accounting for 21% of the total house spaces in all three cities. One-front spaces have the highest frequency with a significant difference in houses of Bandar Kong and Bandar Khamir, averaging 7 spaces or 47% of the house spaces. Two-front spaces are most frequent in Bandar Lengeh houses, generally comprising 3 spaces or 17% of the house spaces. Three-front spaces average 2 spaces, about 7% of all spaces. Four-front spaces are almost non-existent in houses of Bandar Kong and Bandar Khamir but have a considerable percentage in Bandar Lengeh houses, comprising 1 space or 8% of the total house spaces.

Fig. 6 shows the frequency percentages of multi-front spaces in houses in each city and their overall average. In Bandar Kong houses, the highest frequency belongs to one-front spaces, and these houses lack four-front spaces. In Bandar Lengeh houses, the distribution of spaces is more balanced, with percentages ranging from 1% to 15%. Bandar Khamir houses are similar to Bandar Kong, with the highest percentage in one-front spaces and the lowest in four-front spaces. The overall average of houses shows that one-front spaces have the highest frequency by a large margin, while four-front and three-front spaces have the lowest percentages. In general, one-front spaces are more abundant than other types, followed by spaces without front access.

Each multi-front space is located in a specific geographical direction, which has been analyzed separately. In Bandar Kong and Bandar Khamir, spaces without front access have the highest frequency percentages on the western side, with 76% and 50%, respectively. In Bandar Lengeh, these spaces are located on the northern and western fronts with 50%. One-front spaces in Bandar Kong have the highest frequency percentages on the eastern and western sides with 94%, in Bandar Lengeh on the southern and western fronts with 62%, and in Bandar Khamir on the northern, eastern, and western fronts with 73%. Two-front spaces in Bandar Kong have the highest frequency on the northern and eastern fronts with 35%, in Bandar Lengeh on the western front with 62%, and in Bandar Khamir on the western front with 59%. Three-front spaces show the highest frequency in Bandar Kong on the western front with 12%, in Bandar Lengeh on the eastern front with 75%, and in Bandar Khamir on the northern and southern fronts with 18%.

Fig. 7 shows the average frequency of multi-front spaces on each side. Spaces without external frontage have the highest frequency on the western front with 58%, followed by the eastern front with 48%. On the eastern and southern fronts, frequencies are 27% and 22%, respectively. One-front spaces rank from highest to lowest frequency on the western, eastern, southern, and northern fronts, with percentages ranging from 76% to 58%. Two-front spaces are distributed in

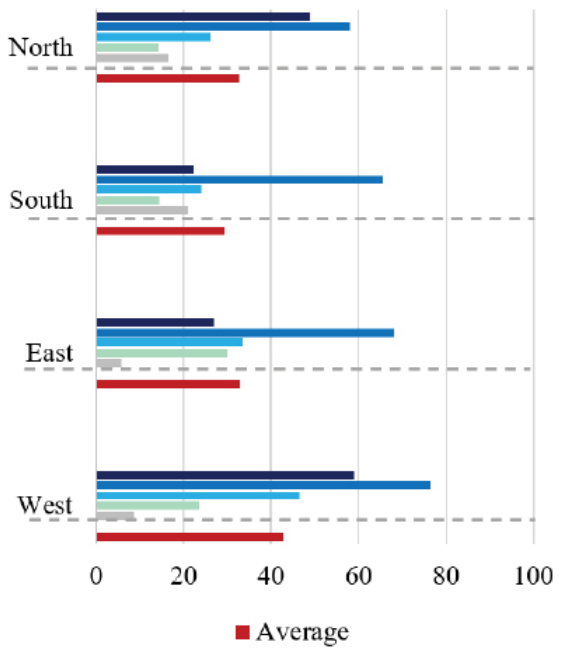

Fig. 6. Average percentage of multi-front spaces in coastal houses of Hormozgan Province. Source: Authors.

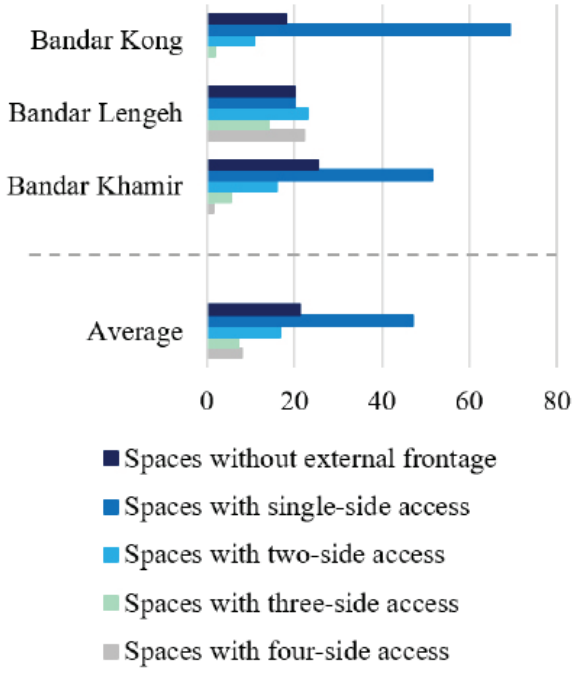

Fig. 7. Average percentage of geographical orientation of multi-front spaces in coastal houses of Hormozgan Province. Source: Authors.

[DOI: 10.22034/2.5.76]

descending order on the western, eastern, northern, and southern fronts, with percentages ranging from 46% to 23%. Two-front spaces have the highest frequencies on the eastern and western fronts with 30% and 23%, while on the northern and southern fronts, it is 14%. Four-front spaces have the highest frequency on the southern front with 20%, followed by the northern front with 16%, western with 8%, and eastern with 5%. Overall, most spaces are located on the western front with 42%, on the northern and eastern fronts with 32%, and on the southern front with 29%. Fig. 7 displays the frequency percentage of each type of multi-front space broken down by geographical direction.

Next, the analysis of each multi-front space by functional usage is presented. The highest percentage of spaces without front access in the houses belongs to sanitary spaces, followed by residential rooms. One-front spaces mostly correspond to residential rooms, with sanitary spaces next in this category. Two-front spaces belong to residential rooms and guest rooms. The highest percentage of three-front spaces is related to guest rooms and shops, while four-front spaces mostly correspond to residential rooms, followed by guest rooms. Fig. 8 shows the relationship between space usage and multi-front spaces.

• Gendered spaces

The spaces in houses are specifically categorized by gender. Some of these spaces are recognized as private spaces requiring a high level of privacy, such as bathrooms, toilets, and storage rooms. Female spaces include areas designed for specific women's tasks, such as the kitchen, which is particularly dedicated to women. Male spaces consist of areas related to men's activities and guest rooms designated for hosting male guests in the houses. The presence of women in these spaces is not defined, and even when a male guest is present in the room, women do not enter these spaces—not even for serving guests. Spaces with female priority include rooms such as residential rooms and guest rooms used for women's ceremonies and gatherings, which exist in some houses. Occasionally, windcatcher rooms are also used for this purpose. Some entrances are specifically for household members and are considered entrances with female priority. Spaces with male priority include the main entrance of the house and some windcatcher rooms, which are jointly used by men, women, or both for daily activities and family gatherings.

In this study, gendered spaces in houses from three different cities have been examined. On average, houses in Bandar Kong include 14 gendered spaces, Bandar Lengeh houses have 15 spaces, and Bandar Khamir houses have 11 spaces. Bandar Khamir houses have fewer spaces compared to the other cities. Private spaces in Bandar Kong houses comprise 4 spaces (28% of total spaces), in Bandar Lengeh 3 spaces (16%), and in Bandar Khamir 3 spaces (25%). The highest percentage of private spaces belongs to Bandar Kong houses, and the lowest belongs to Bandar Lengeh houses. Female spaces in all three cities average one space, with 8% in Bandar Kong and Lengeh and 9% in Bandar Khamir. Spaces with female priority rank from highest to lowest as follows: Bandar Lengeh with 8 spaces (51%), Bandar Kong with 6 spaces (42%), and Bandar Khamir with 4 spaces (38%). Spaces with male priority average 2 spaces across all cities, with percentages ranging between 16% and 19%. There are no male-priority spaces in Bandar Kong, whereas Bandar Lengeh and Bandar Khamir each have one male-priority space with 7% and 6%, respectively.

Private spaces in the three cities range from 16% to 28%, with Bandar Kong houses having the highest percentage. Female spaces account for 7% to 9% of total spaces in the houses and are almost equal across all cities, being less than male spaces. Spaces with female priority have the highest frequency in the houses, with Bandar Lengeh having the highest percentage between 38% and 51%. Spaces with male priority range between 16% and 19%, with similar percentages across all cities. Male spaces have the lowest frequency, ranging from 2% to 7%, with the highest percentage in Bandar Lengeh houses. Overall, the average percentage of gendered spaces in the houses from highest to lowest is as follows: spaces with female priority 44%, private spaces 23%, spaces with male priority 18%, female spaces 9%, and male spaces 5% (Fig. 9).

Next, the geographical orientation of each gendered space is analyzed separately. The highest frequency of private spaces is located in the north in Bandar Kong with 70%, in the west in Bandar Lengeh with 50%, and in the north in Bandar Khamir with 50%. Female spaces in Bandar Kong are recorded mostly in the south with 70%, in Bandar Lengeh in the east and west with 37%, and in Bandar Khamir in the west with 40%. Female-priority spaces in Bandar Kong are concentrated in the north and west with 94%, in Bandar Lengeh in the north and east with 75%, and in Bandar Khamir in the north with 68%. Male-priority spaces in Bandar Kong are located on the east side with 70%, while in Bandar Lengeh and Khamir they are in the south with 50% and 59%, respectively. Male

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Multi-access spaces		Functional	Living Room		Windcatcher Room		Guest Room		Kitchen		Shop		Sanitary Space	
		City Name	NO.	Percent	NO.	Percent	NO.	Percent	NO.	Percent	NO.	Percent	NO.	Percent
Spaces without external frontage		Bandar Kong	2	4.54	1	2.27	1	2.27	0	0.00	0	0.00	40	90.90
		Bandar Lengeh	10	50.00	1	5.00	1	5.00	1	5.00	0	0.00	7	35.00
		Bandar Khamir	23	40.35	5	8.77	3	5.26	3	5.26	0	0.00	23	40.35
		Overall Average	12	31.63	2	5.35	2	4.18	1	3.24	0	0.00	23	55.42
Spaces with single-side access		Bandar Kong	65	48.14	24	17.77	9	6.66	18	13.33	0	0.00	19	14.07
		Bandar Lengeh	4	18.18	5	22.73	2	9.09	3	13.46	0	0.00	8	36.36
		Bandar Khamir	32	35.16	10	10.99	10	10.99	8	8.79	0	0.00	31	34.07
		Overall Average	34	33.83	13	17.16	7	8.91	10	11.92	0	0.00	19	28.17
Spaces with two-side access		Bandar Kong	9	42.85	5	23.80	٥	23.80	0	0.00	0	0.00	2	9.52
		Bandar Lengeh	5	35.71	3	21.43	2	14.29	3	21.43	1	7.14	0	0.00
		Bandar Khamir	11	39.29	3	10.71	7	25.00	6	21.43	1	3.57	0	0.00
		Overall Average	٨	39.28	4	18.65	5	21.03	3	14.29	1	3.57	1	3.17
Spaces with three-side access		Bandar Kong	0	0.00	1	16.66	2	33.33	0	0.00	3	50.00	0	0.00
		Bandar Lengeh	4	22.53	4	23.53	2	11.76	1	5.88	1	5.88	5	29.41
		Bandar Khamir	4	30.77	1	7.69	5	38.64	2	15.38	1	7.69	0	0.00
		Overall Average	3	17.77	2	15.96	3	27.85	1	7.09	2	21.19	2	9.80
Spaces with four-side access		Bandar Kong	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Lengeh	13	54.52	1	4.35	9	39.13	0	0.00	0	0.00	0	0.00
		Bandar Khamir	2	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Overall Average	5	51.51	0	1.45	3	13.04	0	0.00	0	0.00	0	0.00

Fig. 8. Analysis of the percentage of functional spaces relative to multi-front spaces in coastal houses of Hormozgan Province. Source: Authors.

spaces in Bandar Kong, Lengeh, and Khamir have the highest frequency in the south with percentages of 17%, 57%, and 36%, respectively.

Fig. 10 shows the average geographical orientation of gendered spaces along different sides. The highest percentage of private spaces is on the west side with 47%, followed by the east side with 45%. Female spaces have the highest percentages on the south and west sides with 36% and 35%, respectively, while female-priority spaces have the highest percentage on the north side with 77%. Male-priority spaces have the highest percentage on the east side with 52%, and male spaces on the south side with 30%. Overall, the average distribution of gendered spaces from highest to lowest is as follows: south and east with 39%, west with 38%, and north with 31%.

Generally, residential rooms are recognized as female-priority spaces, comprising 79% of female-priority

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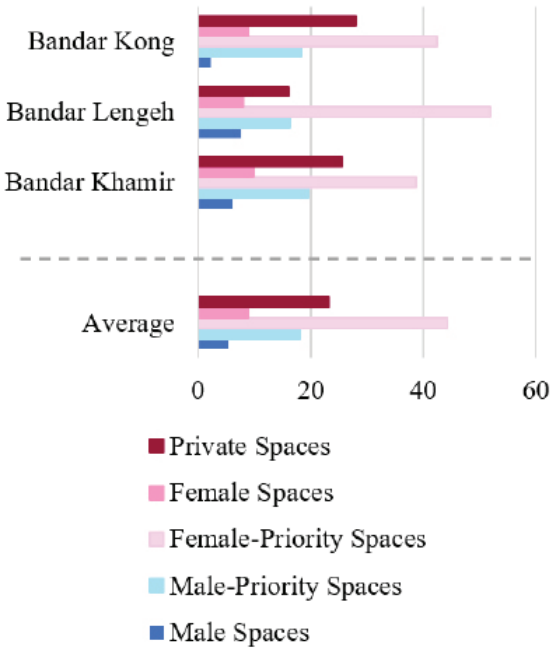

Fig. 9. Average percentage of gendered spaces in coastal houses of Hormozgan Province. Source: Authors.

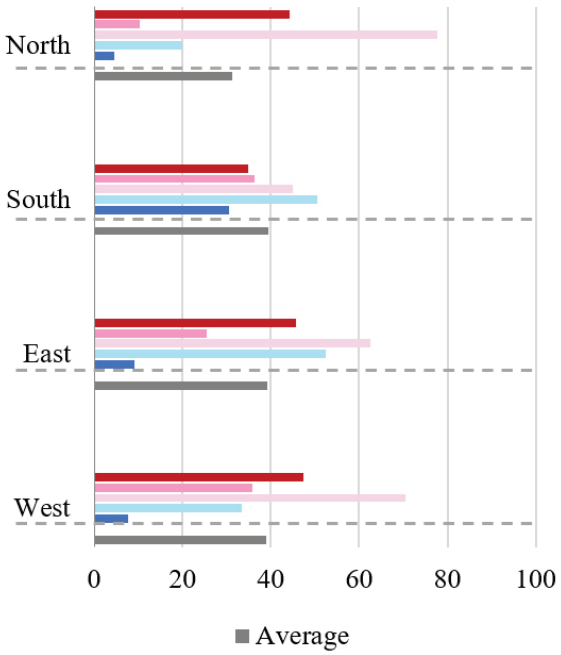

Fig. 10. Average percentage of geographical orientation of gendered spaces in coastal houses of Hormozgan Province. Source: Authors.

spaces. Windcatcher rooms in the houses have dual priorities for females and males, with 12% female priority and 70% male priority. Guest rooms also exist with dual female and male priorities, as well as exclusively male use; 8% are female-priority, 29% male-priority, and 70% exclusively male. The kitchen is entirely considered a female space, accounting for 100% of that category. Shops are completely male spaces, comprising 30% of all male spaces. Additionally, sanitary spaces are entirely considered private spaces, accounting for 100% in that category (Fig. 11).

Conclusion

The spatial structure analysis of indigenous houses in Hormozgan Province during the Qajar and Pahlavi periods indicates that the design of spaces was primarily based on the climatic and social needs of the inhabitants. In these houses, residential rooms located on the northern side occupy a significant portion of the overall spaces. This geographical positioning is logical considering the region's climatic characteristics and its impact on the comfort and well-being of the residents. Additionally, sanitary spaces, entrances, and kitchens are specifically situated in certain orientations within the houses, and this geographical distribution addresses various functional aspects and the residents' comfort.

Moreover, the spatial design of these houses has been particularly adaptable to the gendered needs of the inhabitants. Spaces with the highest frequency, especially those located in the northern sections of the houses, are mainly related to the daily activities of women. Residential rooms and female gathering spaces in these areas reflect the cultural and gender influences on the spatial design. In contrast, male spaces, which include guest rooms and shops, are predominantly located on the southern side, a spatial division closely linked to the local social and cultural requirements.

The analysis of multifunctional spaces shows that the houses were mainly designed to ensure privacy and seclusion for the residents, especially in female spaces. These features also indicate that the spatial organization of the houses functionally and structurally considers the simultaneous needs for security, comfort, and specific accessibility.

Ultimately, these spatial divisions and the design pattern of the houses demonstrate a complex interaction among the climatic, social, and gender needs of the inhabitants. These spaces, particularly in the allocation of female and male areas, are distinctly flexible according to local values and traditions, thereby reflecting the cultural and social identity of the region.

Conflict of Interest

The authors declare that there was no conflict for them in conducting this research.

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Gendered Spaces	Functional	City Name	Private Spaces				Female Spaces				Female-Priority Spaces				Male-Priority Spaces				Male Spaces			
			Sanitary Space		Shop		Kitchen		Guest Room		Windcatcher Room		Living Room									
			NO.	Percent	NO.	Percent	NO.	Percent	NO.	Percent	NO.	Percent	NO.	Percent	NO.	Percent	NO.	Percent	NO.	Percent	NO.	Percent
		Bandar Kong	71	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Lengeh	20	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Khamir	57	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Overall Average	49	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Kong	0	0.00	0	0.00	20	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Lengeh	0	0.00	0	0.00	9	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Khamir	0	0.00	0	0.00	23	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Overall Average	0	0.00	0	0.00	17.33	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Kong	0	0.00	0	0.00	0	0.00	12	11.56	15	14.56	76	73.79	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Lengeh	0	0.00	0	0.00	0	0.00	4	7.84	7	13.73	40	78.43	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Khamir	0	0.00	0	0.00	0	0.00	4	4.82	8	9.64	71	85.54	0	0.00	0	0.00	0	0.00	0	0.00
		Overall Average	0	0.00	0	0.00	0	0.00	6.67	8.10	10.00	12.64	62.33	79.25	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Kong	0	0.00	0	0.00	0	0.00	1	5.26	18	94.74	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Lengeh	0	0.00	0	0.00	0	0.00	4	40.00	6	60.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Khamir	0	0.00	0	0.00	0	0.00	8	44.44	10	55.56	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Overall Average	0	0.00	0	0.00	0	0.00	4.33	29.90	11.33	70.10	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Kong	0	0.00	3	42.86	0	0.00	4	57.14	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Lengeh	0	0.00	2	20.00	0	0.00	8	80.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Bandar Khamir	0	0.00	5	26.32	0	0.00	14	73.68	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		Overall Average	0	0.00	3.33	29.72	0	0.00	8.66	70.28	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

Fig. 11. Examines the percentage of functional spaces relative to gendered spaces in coastal houses of Hormozgan Province. Source: Authors.

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