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Architectural functional design for hotels extension in Amman: A Days Inn Hotel case study

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ABSTRACT

Recently, the extension for the existing hotel buildings in Amman has markedly increased, as a result of the lack of experience in the design of hotel buildings, which consequently led to chaos in the design process, especially in the lack of many complementary functions for the main functional operation of the building, which weakened the operational effectiveness of this type of buildings. This study is based on studying and analyzing four existing hotel buildings in Amman, using Days Inn Hotel as a case study. The study identified Amman hotels character, the space allotments, and their functional components, in addition to the area of each of functional spaces. Statistical analysis for the functional spaces was presented as a guide in designing the extension of businessmen hotels for Amman city. Based on the results of accurate study analysis of the hotels extension project, together with interviews and questionnaires with the hotel's guests and administration team, the Days Inn Hotel's extension building has been designed based on its architectural characteristics taking into account the hotel's character as a businessmen hotel. The area in the extension building is either increased or reduced (such as twin rooms, king rooms, and other units), and new functional spaces were created like meeting rooms, lounge, health club, and others, to make a balance between functional groups. The interior design of the extended building was also carried out, characterized by the unity and integration of all its elements in terms of the harmony of materials, colors, and furniture.

Keywords: Businessmen's Hotel; Functional spaces; Hotel extension; Space allotment.

INTRODUCTION

In recent decades, many hotel buildings have appeared in the organizational structure of the city of Amman, where the hotel is a businessmen one, which represents itself as one of the following: Hotels, Resorts, Conference Centers, Motels, Extended Stays, Convention Hotels, All Suites, and Lodging Properties (Cobanoglu *et al.,* 1999). Jordan's accession to the World Trade Organization, and the radical change in the economic structure towards the free market, besides the modification of the customs and tax regulations contributed to a rapid flow of investments to Jordan, so that Amman has become a regional center for businessmen and one of the most desirable places to invest in the region, where the financial tourism sector emerged directly for the first time, which led to an accelerated pace of mega-infrastructure hotel projects. The influence of global processes on economic development is reflected in the intensity and direction of tourist streams, and thus in the development of the hotel companies' strategy (Petrović *et al.,* 2013). However, the urgent need to speed up the construction of this type of buildings during that period to meet the

needs of investors, and the lack of experience in the design of hotel buildings, led to chaos in the design process, especially with the lack of many complementary functions for the main functional operation of the building, which weakened the operational effectiveness of this type of buildings. The hotel is a place where experiences are co-produced in interaction between hotel staff, other guests, and material artifacts. It is also a site where economic and cultural processes intertwine (Strannegard and Strannegard, 2012). The general idea of the hotel buildings was focused on its main function, sleeping, without taking into account other activity functions carried out by guests of a financial and commercial character, such as business meetings, conferences, exhibitions, communication, leisure, and comfort. After more than a decade, many of these hotels have been looking for change and development in order to increase the efficiency of the building through both horizontal and vertical extensions to rehabilitate the spaces for optimal use and achieve the multi-functional character of the hotel building. Successful occupancy rates require the provision of an element of distinction, and the architect's attempts to maximize the building's address reflected the need to develop a form of differentiation the large harbor-view hotels could offer (McNeill and McNamara, 2009). The volume of investments in the hotel sector has increased worldwide in recent years, which is one of the leading sectors of the economy in many countries. In 2000, the world's tourism revenue reached 600 billion dollars. Tourism is one of the most important sectors of the Jordanian economy because it has unique elements: the unique historical, religious, and cultural heritage, moderate climatic conditions, geographical location, security, and political stability at the regional level, where tourism revenues reach about 3 billion dollars. Tourist generating markets and destination regions are separate geographical entities; the complex and multi scale nature of destinations requires a flexible hierarchical structure adapted to suit different locations, scales, and market characteristics (Dredge, 1999). In 2009, 3.5 million tourists visited Jordan from different countries. Jordan has gained importance as a venue for meetings, incentives, conferences, and exhibition centers; for example, Jordan has hosted, in the past few years, a series of international conferences: World Economic Forum (2005 - 2007), Iraq Reconstruction Exhibition, United Nations Special Forum, and Anti-Corruption Forum. In recent years, full-service hotels have been the primary beneficiaries of this unprecedented increase in the size and volume of meetings, incentives, conventions, and exhibition businesses. Hotels have joined forces with city councils, visitor bureaus, and tour companies in hosting major meetings and conventions, as they recognize the direct advantages of these gatherings (Madanoglu and Ozdemir, 2016). As many industry specialists have pointed out, hotels focusing on aesthetic expressivity have grown substantially in numbers in the latest decades (Lea, 2008). A modern hotel is designed to create comfortable conditions for overnight stays and provide a number of additional services. Modern hotels are ascribed to star ratings based on the variety and quality of other services they can offer in addition to lodging. These can range from conference facilities, gymnasiums, and spas to indoor games, night clubs, and casinos, amongst others. In the face of competition and modernization, hotels keep adding more functions to their repertoire (Charles, 2012). A hotel building is a multifunctional building that contains technologically sophisticated equipment. International hotels should have certain standards of facilities that provide international standards of services and comfort, while interior design and architecture style are able to provide a unique local flavor for guests and visitors (Yu and Lee, 2013). There are 566 hotels in Jordan, of which 144 are in the Amman metropolis.

According to the latest statistics for the Ministry of Tourism and Antiquities in 2016, more than 55% of these hotels have been extended and renovated, which are classified as five and four star hotels, and often do not contain any historic value, unlike hotels that are rated as three stars or less; these have the most historical and artistic value and are located within the historical center of Amman, which needs an accurate and urgent study for rehabilitation (Study & research Department, The Ministry of Tourism and Antiquities, 2016). Planning is the process of establishing a strategic vision for an area that reflects a community's goals and aspirations and implementing this through the identification of preferred patterns of land use and appropriate styles of development (Dredge, 1999). In designing hotels, architects are frequently handicapped by the lack of factual data on space requirements. Too much space results in excessive investment and building maintenance costs. Too little space makes it difficult for the hotel owners to achieve satisfactory profits and, in service areas, causes crowding, reduces speed, and increases payroll (Chiara and Callender, 1987). From an economic point of view, the rehabilitation process of the existing buildings and interior spaces for hotels is much better than building new buildings in terms of cost. Interior spaces within buildings are defined by the architectural elements of structure and enclosures, which include floors, ceilings, walls, windows, doorways, and stairways (Ching, 2005). However, the extension and reconstruction of the hotel building require a large investment. Hence, the importance of this research is the need to develop clear mechanism for the design process of hotel buildings to be compatible with the variables that the city of Amman going through, and to find a scientific methodology of hotel buildings' design, taking into account that the future extension leads to the reduction of future financial expenditures, improves the operational efficiency of the building, and improves the level of services.

METHODOLOGY

The identification of needs in hotel spaces is a complex problem, for which it is necessary to have appropriate methods, to know the factors that influence the existing demand in hotel rooms, and to anticipate future changes in supply and demand (Study &Research Department. Source: Ministry of Tourism (. This research will be based on studying and analyzing the existing hotel buildings in Amman, as well as the renovation and habilitation of hotels based on their architectural characteristics. This will be performed using two main phases: preparation and design.

Preparation phase

Data collection, case study characteristics, and case analysis are the key steps in the preparation phase.

Data collection

This research employed this technique to gather information about the current situation of hotel buildings in Jordan, current state of extension hotel buildings in Amman, the space allotments, and functional components of many hotels, in addition to the area of each of the functional spaces. Moreover, data was collected in three stages:

Stage 1: Background information and design characteristics will be gathered from head of the hotels and managers. Drawings of the hotels layout will be analyzed and diagramming, drawn.

Stage 2: Walkthrough observations will be conducted, and data will be recorded using Notepad and a digital camera.

Stage 3: Feedback from the managers and visitors will be gathered using a guest's survey. Interviews and questionnaire for this survey will be formulated through the process of reviewing and modifying several user satisfaction survey forms.

Case study characteristics

The study will be conducted in Days Inn Hotel, located in west of Amman (Rabiah) as shown in Fig. 1; the hotel was established in 2001; it is a four-star high-grade tourist hotel that attracts a growing number of visitors annually; however, no major renovation has been carried out.

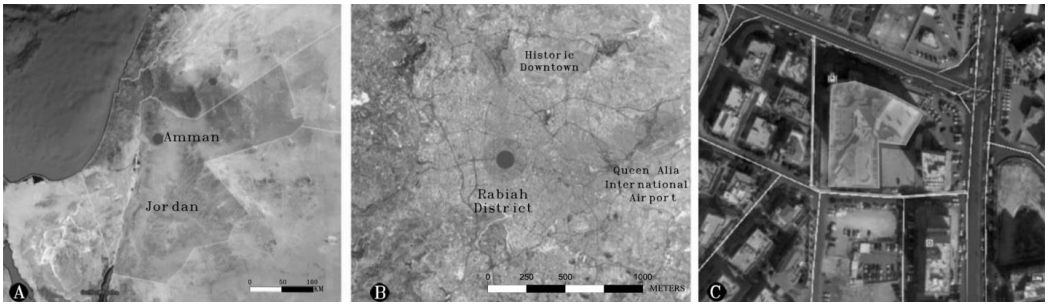

Figure 1.

A. Regional Map

Amman is located in the Northwest portion of Jordan, and is the capital of the Hashemite Kingdom of Jordan. It is strategically located in what has been referred to as the "Fertile Crescent" and is one of the oldest continuously inhabited cities of the world.

B. City Map

Al- Rabiah is one of the most affluent neighborhoods in Amman. Landscape of hills and valleys, neighborhood of residential and hospitality vocation, it offers magnificent views and prominent location.

C. Neighborhood Map

Site is located near the western districts of the heart of the capital Amman. It is one of the most important business areas with Wadi Saqra intersection, less than 35 minutes from Queen Alia International Airport and 25 minutes from Marka airport. (Source: Author, 2017).

Case analysis

Days In Hotel site will be visited several times to collect data about site situation, building area, various suites and rooms, spaces, functions, architectural and interior solutions, economic status, and social categories of visitors.

Design phase

The design concept based on the results of collected data and case analysis will be conducted. The final drawings, schematic diagram for functions, interior perspectives, and materials & furniture were included in the final design plan: interior design drawings illustrating space and furniture layout and concept of interior detail and guest room types and sizes, including layout of furniture, in addition to lobby, dining, lounge, bar, meeting spaces, and other important spaces (Days Inn Hotel and Serviced Apartments, 2004).

Data analysis

Analysis of variance (ANOVA) test is conducted to obtain the differences between the study variables (residential, public, and parking spaces) regarding the extension. The descriptive statistics of the study variables is discussed using mean and standard deviation of functional space areas before and after extension. Post hoc (Tukey) multiple comparison tests were used to determine which means among a set of means significantly differ from the rest regarding study variables (functional spaces).

RESULTS AND DISCUSSION

Preparation phase

Studying the current situation of hotel buildings in Jordan.

Important indicators in calculating the lump-sum capacity of hotels are the dynamics of household income, the importance of the region, the peculiarities of regional development of business activity, the recreation industry, and the transport system (Study and Research Department. Source: Ministry of Tourism). The orientation of hotels in daily occupancy performance space has been related to the market orientation of hotels and their positioning in a geographical space (Jeffrey and Barden, 2000). Amman leads the cities in terms of the number of existing hotel rooms and bed supplies, due to the importance of its geographic location as shown in Table 1. Hotel locations could differ by region, metropolitan statistical area, or other factors (such as city, suburban, highway, airport, resort, etc. (Xiao *et al.,* 2012).

Table 1. Number. of Hotel, Apartments & Others, Rooms, Beds in 2016

City	No. of Hotels	SUITE	Room	Bed
Amman	144	1,078	10,852	19,616
Aqapa	43	68	3,803	7,732
Petra	28	83	1,982	3,784
Dead Sea	64	173	4,274	8,950
Total	**279**	**1,402**	**20,911**	**40,082**

(Source: Study& research Department, The Ministry of Tourism and Antiquities. 2016).

Table 1 shows that the number of hotels in different cities in Jordan depends upon the tourist activity of each city. Tourism in Jordan is divided into different types, geographically distributed, tourism of businessmen, which are often centered in the capital Amman. A business traveler is defined as a visitor who stays overnight away from home for the purpose of conducting business (Callan, 1996), therapeutic tourism (medical tourism and therapeutic resorts characterized by hot sulfur water) as with the case of Maen in Madaba city, and religious tourism as the Baptism site in the Jordan river near the Dead Sea, in addition to therapeutic resorts in it. Historical tourism and archeology are present in Petra, Jerash, and Ajloun, and leisure tourism, in Aqaba. A hotel's size (i.e., number of rooms) and location also influence the net operating income, but a hotel's region does not significantly affect the net operating income percentage (Neill and Mattila, 2006).

Study of current state of extension hotel buildings in Amman.

Most of the modern hotel buildings in Amman city, which were designed by local architects, were either rehabilitated or extended by the functional requirements of the visitor's character, unlike the hotels designed by international architects, for example, the Royal Hotel, which have not undergone any change. This is because of its efficiency and the harmony of its functions with the requirements and character of the visitor. Recently some of the hotel buildings have been renovated in the city of Amman such as Holiday Inn, Crown Plaza, Intercontinental, Four Seasons, and Sheraton, while others have been extended as Marriott, Sadden Hotel, Intercontinental Hotel, Meridian Hotel, Jerusalem Hotel, Landmark Hotel, and others. In this research, the extension of the following hotels will be studied: Kempinski Hotel, Geneva Hotel, Bristol Hotel, and Days Inn Hotel; these hotels are classified a five- and four-star hotels, where all plans for hotels were obtained from their owners. During analysis and study of the existing hotel buildings, the functions were divided into three spatial groups to determine the purpose of the extension. The first group is residential space, which includes the twin, king hotel rooms, the suites, and the main corridors leading to them. The second group is public spaces, which include the main entrance, restaurants, coffee shop, multi-purpose halls, wedding hall, meeting rooms, lounges, business centers, fitness, and health club. The third group is parking and technical spaces, which include parking, maintenance, storage, air conditioning, heating, pumps, staff offices, and electricity and laundry rooms.

Kempinski hotel

The extension of Kempinski Hotel is currently under construction; it is located in the heart of the Al- Shmeisani commercial area which is surrounded by banks, regional offices, trade unions, hotels, and many other business locations. The hotel has 278 rooms and suites in addition to a variety of facilities: Businessmen's Center, with 11 halls accommodating up to 295 persons, an entertainment center with a bowling area, a coffee shop, a health club, ball room with irregular shape accommodate up to 300 persons, restaurants, an outdoor swimming pool, and commercial shops.

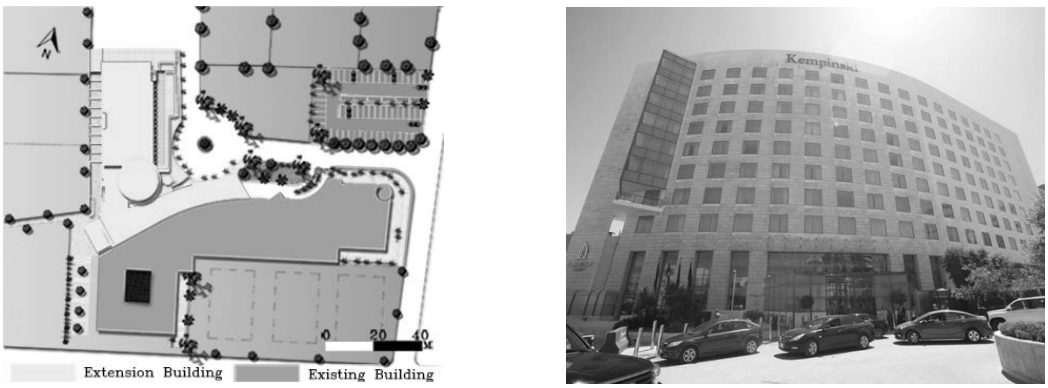

Figure 2. General Site plane of Kempinski Hotel (left),(Source: Author, 2017)
Image of Kempinski Hotel (right),(Image downloaded from
https://www.booking.com/hotel/jo/kempinski-amman.ar.html in March 2016)

The location of the hotel is very bad for the visitors to be located within a dense area of buildings and the most crowded and narrow streets where it is not easily accessible. Fig. 2 shows the existing building versus to the extension part of the building. The facade of the main building does not exceed 40 meters, although the length of the building exceeds 140 meters. The shape of the piece imposed the building block to be part of the main street, and the other back part is adjacent to neighboring commercial buildings, giving the feeling that this building is small with a side main entrance.

Table 2. Space Allotments of Kempinski Hotel in Amman

Description	**Area Before Extension**	**%**	**New Extension Area**	**%**	**Area After Extension**	**%**
Residential Space	12704 m^2	30%	0	0	12704 m^2	23.5%
Public Space	21902 m^2	52%	6500 m^2	55%	28402 m^2	52.5%
Parking and Technical Space	7500 m^2	18%	5500 m^2	45%	13000 m^2	24.3%
Total Areas	**42106 m^2**	**77.8%**	**12000 m^2**	**22.18%**	**54106 m^2**	**100%**

The building does not contain any exterior green spaces, even though the recent studies also have shown that some green attributes do, indeed, contribute to overall guest satisfaction (Berezan, *et al.,* 2014). The existing building consists of 14 floors, four of which are under the ground level, with a total area of 42106 m^2 as shown in Table 2. There has not been any change to the residential group in terms of area after extension, and the space remains the same, but the new extension area has included only the public space and Parking & Technical Space by 55% and 45%, respectively, since the number of parking lots for the hotel before extension is equivalent to 60 car plots only, and it is considered one of the main reasons for extension.

Geneva hotel

Geneva Hotel is a four-star hotel located on the connecting main road to Queen Alia Airport, in west of Amman, close to embassies and commercial and financial centers. The building is surrounded by three main streets; it consists of 3 floors below the ground and five floors above the ground. The building was horizontally extended by adding three floors of residential spaces to the second basement level of the existing building as shown in Fig 3.

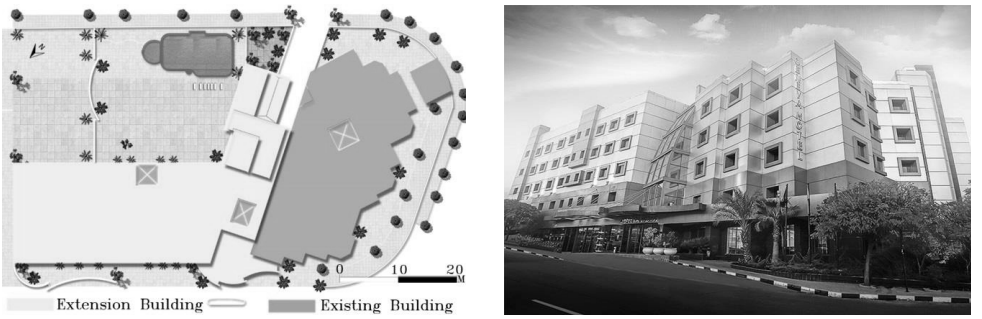

Figure 3. General Site plane of Geneva Hotel (left) (Source: Author, 2017)
And image of Geneva Hotel (right), (Image downloaded from
https://www.booking.com/hotel/jo/geneva.ar.html in March 2016)

As it is clear in Figure 3, the shape of the main plane of building before the extension is characterized by several edges (more than 24 edges), which affected the shape of the rooms, so that we find them not straight shape, in contrast to the extension characterized by the straight lines and regular shape. The exterior of the building was covered with alucobond material, so that it was presented in a totally contradictory manner with the adjacent stone buildings and gave the facades a kind of cheapness compared to Amman hotel buildings. The existing old building contains 59 rooms, with different areas and shape. The rooms are completely separated and have no interconnected doors between them. In general, the extension process was done by adding three floors to the existing part and extending the existing basement, in addition to adding new spaces that never existed as five meeting rooms, multi-purpose hall, and small spa with outdoor swimming pool.

Table 3. Space Allotments of Geneva Hotel in Amman.

Description	Area Before Extension	%	New Extension Area	%	Area After Extension	%
Residential Space	2960 m^2	37.5%	1015 m^2	23.5%	3975 m^2	32.5%
Public Space	2902 m^2	37.5%	3055 m^2	70.8%	5957m^2	48.5%
Parking and Technical Space	2022 m^2	25%	240 m^2	5.5%	2230 m^2	18%
Total Areas	**7884 m^2**	**65%**	**4310 m^2**	**35%**	**12162 m^2**	**100%**

As shown in Table 3 the total area of the Geneva Hotel after the extension was 12162 m2; the main change was in the public spaces, where they have been doubled after the extension by 70.8%, which is due to the lack of public spaces in the existing building before the extension and their urgent necessity as a businessmen hotel, while the residential, parking, and technical space increase is not significant compared to the case before the extension. One of the disadvantages of designing the rooms in this hotel after extension is to putting the wardrobes inside the room (non-independent) and using the bathtub instead of shower. The swimming pool has been created in the outdoor areas, which results in the fact there are no other areas that can be exploited as green spaces or for landscaping.

Bristol hotel

The hotel is classified as five-star hotel; it is strategically placed close to Amman's business areas as well as the trendiest hotspots, near the fifth circle, which encompasses many hotels of the same classification, not far from the most famous medical centers in the region, in addition to its proximity to embassies.

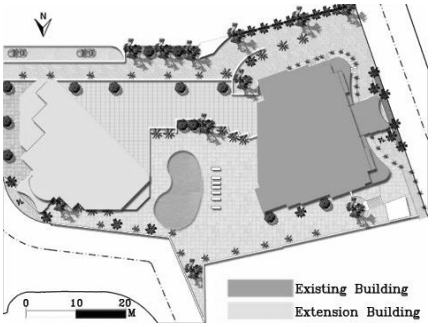

Figure 4. General Site plane of Bristol Hotel (left) (Source: Author, 2017)
And image of Bristol Hotel (right) (Image downloaded from
https://ar.hotels.com/ho404355/bristol-hotel-amman-jordan/ in March 2016)

The hotel is located on two main streets linearly. The extension was done after the purchase of the back plot of the hotel by connecting the two-story building with the new building as shown in Fig. 4. The building from the outside has the features of modern architecture in terms of glass and stone use; the height of the existing building is 9 floors above the ground level, in addition to two floors below the level of the ground.

Table 4. Space Allotments of Bristol Hotel in Amman

Description	Area Before Extension	%	New Extension Area	%	Area After Extension	%
Residential Space	5195 m^2	63%	1713 m^2	31%	6908 m^2	50%
Public Space	1583 m^2	19%	2477 m^2	45%	4060 m^2	30%
Parking and Technical Space	1492 m^2	18%	1300 m^2	24%	2792 m^2	20%
Total Areas	**8270 m^2**	**60%**	**5490 m^2**	**40%**	**13761 m^2**	**100%**

The extension includes four floors above ground level and two floors below the level of the ground. As is noticeable in Table 4, the residential spaces constituted the largest percentage of the existing building before the extension by 63%. On the other hand, the public spaces are few and do not correspond to the number and areas of the total rooms. The extension has led to some changes in terms of raising the percentage of public spaces from 19% to 45%, by adding multi-purpose hall, meeting rooms, and their annexes of more than 1000 m^2, health club, and restaurant so that this gives a logical balance with the residential spaces, which maintains its lead even after the expansion of 170 rooms. As for the parking and technical spaces, those increased slightly, but not significantly.

Case study characteristics

Days Inn Hotel

The Days Inn Hotel chain is one of the most famous international companies in this field, especially in recent years. It was established in 1970 by Mr. Cecil Jerk, where the first hotel was opened on the island of Taipei in Georgia. Since that date, the company has managed more than 1,900 Days Inn Hotels around the world across six continents. The parent company has several international hotel chains with more than 7,200 hotels (Arab Businessmen Magazine).

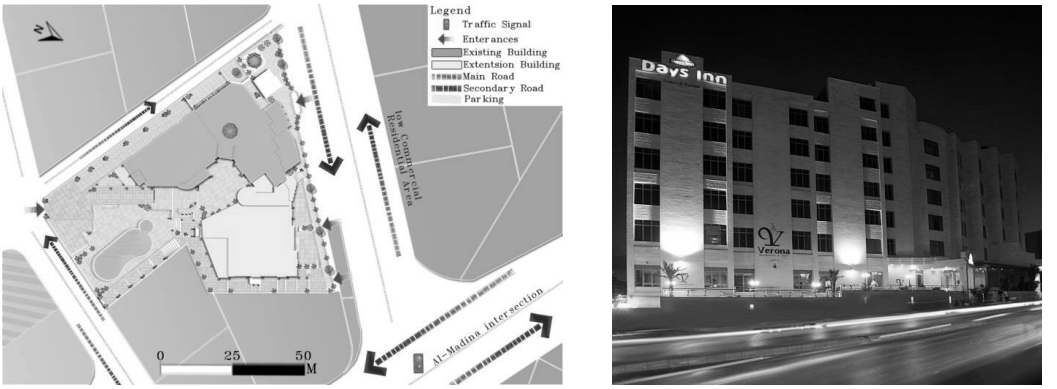

Figure 5. General Site plane of Days Inn Hotel in Amman (left) (Source: Author, 2017)
The Exterior view of it (right) (Photographed by the author in 2016)

The first Days Inn Hotel in the Middle East was opened in Jordan in 2001 as an important architectural monument in Al Rabia as shown in Fig. 1. It is one of the most important western districts at the heart of the capital Amman and one of the most important business areas in Wadi Saqra intersection, less than 35 minutes from Queen Alia International Airport and 25 minutes from Marka Airport. It is a distinguished location that gives many privileges in terms of mediating the site of the hotel and the ease of transportation, whether in terms of work or special transactions for businessmen, in addition to the proximity of the hotel on a lot of shops and malls, banks, restaurants, cafes, and international embassies. Figure 5 shows its location and the limits of the existing building versus to the extension part of the building. The hotel was built on an area of 1765 m^2 and is located on three streets as shown in Fig. 5: the front street is width of 25 meters, which contains the main entrance to the hotel; the back street is twelve meters wide, the second entrance that leads to the services and it is eight meters down from the main street, in addition to the side street with a width of eight meters. Architectural composition of the hotel is simple without any traditional elements, where the facades were processed through the local stone with a coarse engraving of the prominent parts and a soft engraving of the submersible parts, which constitute a contrast of the facade. This is in addition to splitting the main facade into four equal fractions from the outside, giving a dynamic interface, especially in the shade and shadows. The building is designed in "L" character, with the longest edge being located on the main street and the short edge on the side street, while the middle of the building is an indoor courtyard from the ground floor to the fifth floor, the main stairway in the middle of the building, and another two stairs to escape in the suites of the building. From the main street of the hotel, there is a canopy for cars, guest entrance, while the services entrance is from the back street. The hotel consists of ten floors, which is the upper limit of the floors of this plot

according to the organizational plan of the Greater Amman Municipality. There are three cellars, two basements, ground floor, and five typical floors with an average area of 950 m^2; the total area for floors is 10195 m^2; and the total height of the building from the lowest level of the ground is 35 m. The first cellar floor is designed as parking spaces, which can accommodate only 24 cars, in addition to storage, pumps, maintenance, and electricity rooms. The second cellar floor consists of staff offices (accounting, marketing, human resources, and administration) with an area not exceeding 110 m^2, which is not enough to work, where the work area of the employee does not exceed 2m^2, and also it is not enough for the auditors. In addition to the maintenance partition with an area of 50 m^2, and the staff bathrooms with an area of 55 m^2, the laundry and ironing area is 110 m^2. The second basement floor consists of a single main hall, used in the morning for breakfast, and a night ballroom with an area of 420 m^2, of irregular shape, with huge columns in the middle. The column section is 140*40 and the total floor height is no more than 3 meters. This is in addition to the interior design of the hall; it is not compatible with the modern requirements of the ballroom, where the green color was used for the carpets and curtains dominate the hall, which gives a feeling of boredom and old. In addition to the hotel's main kitchen with an area of 150 m^2, besides the small health club of no more than 80 m^2, which consists of a modest gym, small Jacuzzi, bath, and a shower, there is a small outdoor swimming pool of 110 m^2. The first basement floor consists of a small main meeting room with an area of no more than 47 m^2 of irregular shape, in addition to the night club with an area of 230 m^2, and 11 guest rooms, which are accessed through the lobby of the meeting hall and through the night club as shown in Figure 6 (left). The design did not take into consideration the privacy of the guest rooms on this floor, with the night visitors for the club overlapping with the hotel guests as well as the inconvenience caused by the club.

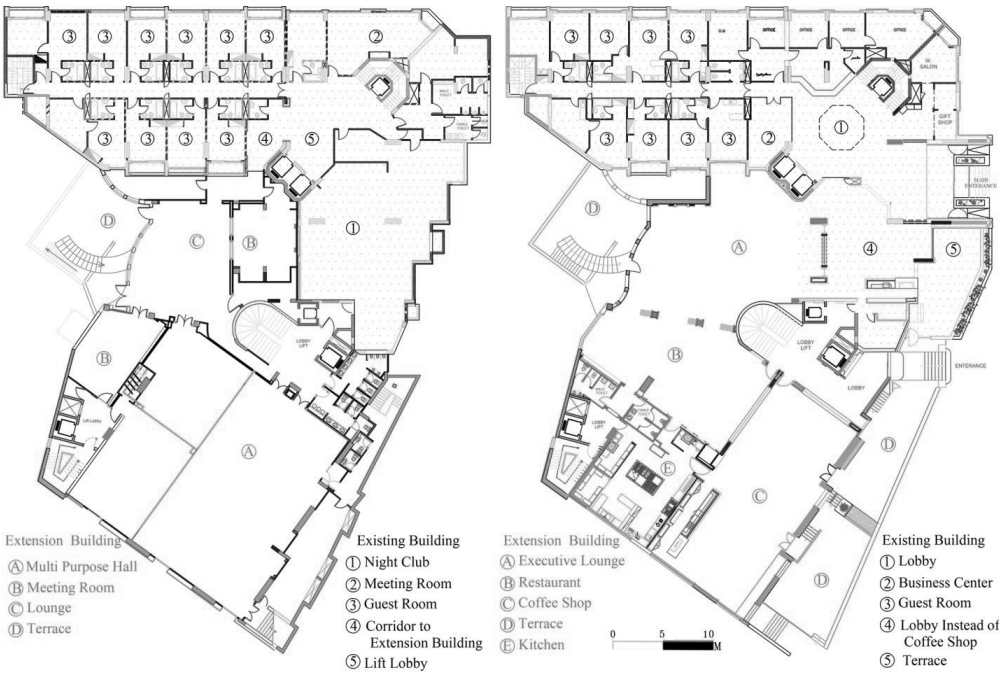

Figure 6. The first basement floor plan in Days in hotel (left),
(Designed by author) and its ground floor plan (right), (Source: Author, 2017)

The ground floor consists of the main entrance of the hotel, a lobby with an area of 180 m^2, eight guest rooms (the access to them through the manager's offices, which is a crowded and annoying area and does not give privacy to the guest), shops, the offices of the general manager and his assistant with an area of 55 m^2, and lobby lifts (guests and services lifts), which are not completely separated. The old design did not take into account the separation of lifts, where we find them facing each other, causing permanent problems for the user and the guest as shown in Fig. 6. The café shop is 105 m^2, which is considered as a small space compared to the number of guests, and is always packed with guests as the only place to sit beside the lobby area. The design is old-fashioned and unattractive as shown in Fig. 7.

Figure 7. Café shop in existing hotel building (left), (Source: Author, 2015)
and café shop plan before redesign (right) (Photographed by the author in 2015)

The residential floors are not typical, consisting of sixteen guest rooms varying between twin and king size guest rooms, besides suits distributed on all floors. The main corridors between the rooms do not exceed 160 meters. The hotel rooms are small in area of space, not more than 13 m^2. The bathroom area is very small; it contains a marble washbasin, a seat, ceramic wall tiles, and bathtubs, which takes a large area and is not practical in hotels. The interior treatment of the rooms design is old-fashioned, characterized by dispersion of colors and lack of a unified design idea as is clear in Fig. 8, where the variety of furniture is not identical in terms of spirit and color, its contrast with the color of green carpet, and distribution in a random way; in addition to that, the electrical points do not match with the furniture. The hotel suites were distributed in a traditional solution similar to hotel apartments where the corridors and rooms are separated completely and equipped with one bathroom and one kitchenette with a salon.

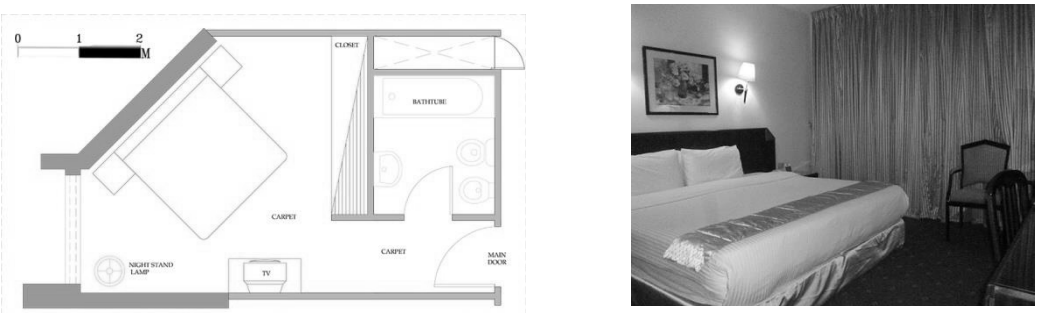

Figure 8. King Size guest room in existing hotel building (left), (Source: Author, 2017)
and guest room plan in existing building (right). (Photographed by the author in 2015)

The design did not take into account the privacy of the rooms in terms of sound insulation; the noise is transmitted through walls between the rooms that are made of non-soundproofed brick, which have a thickness of 10 cm and are used for the mechanical shaft openings in the rooms.

The total area of the pre-extension building is 10193 m^2, divided into three functional groups: the first group is the residential area of 4592 m^2 by 45% of the total existing area, which is equivalent to half of the total area, with 127 rooms, distributed into three types of rooms: 58 twin rooms, 34 king rooms, and 35 suites. The second group is the public area, constituting of 2280 m^2 with 22.38% of the total area, which is about one-fifth of the total area, distributed as follows: the main lobby area, small main meeting room, shop, ballroom, night club, small health club, toilets, kitchen, and the outdoor swimming pool. The third group is the parking and technical services; they are amounted to 3321 m^2, representing 32.57% of the total area, which is equivalent to one-third of the total area. It was distributed to parking plots of 801 m^2, services, laundry, pumps, and others. The previous preliminary percentages of the existing building showed that the percentage of residential spaces is the highest compared to the percentage of public and parking function spaces; it is the double of that mentioned in Table 9, indicating a defect in the components and the functional areas. The study showed defects in the functional relations of the existing building in terms of communication between spaces and structural treatment such as main halls.

Case analysis

The administration of Days Inn Hotel commissioned the researcher to conduct an accurate scientific study analysis of the hotel extension project, to suit and meet the guest needs in order to raise the operational efficiency and profitability within international standards and controls. The success of the hotel depends on matching a good design to the market; the guest should be the most influential person of all those who have input to the design process (Siguaw and Enz, 1999). An interview was held with the hotel's administration team to identify the most important current operational constraints and the initial vision of the extension. Five extremely important aspects were developed for the extension:

First: The administrative team explained that there is a big imbalance between the number of guests and their compatibility with the number and type of guestrooms whether twin, king size, or suite, despite the availability of rooms. We find that most guests' needs are met by twin rooms or a suite instead of the double, which often causes awkwardness of the hotel in front of the guests, who are having a negative impact on the marketing of the hospitality industry.

Second: The inability of the hotel to meet the needs of the guest in terms of business, entertainment, and sport activities, forcing the guest to searching for these activities outside the hotel.

Third: There is a desire to develop solutions and interior design rehabilitation in line with the modern design trends of hotel buildings to attract guests.

Fourth: There is a desire to establish proper bases and architectural references for the hotels of the Days Inn Hotel intended to be established in the region.

Fifth: The orientation towards extension is limited in the horizontal direction, because the provisions of Amman Municipality Regulations prevent more than five floors of public buildings. Although it seems to be a problem with the hotel extension, they are certainly proper procedures to maintain the aesthetic appearance of the city.

Environment friendly hotel operation may be the wave of the future for a variety of reasons; one of them is because of the increasing governmental regulations (Enz and Siguaw, 1999). A questionnaire was conducted for 300 of the hotel guests in order to determine the purpose of the visit for the guests, through which the hotel's character was determined. The results are shown in Table 5.

Table 5. Purpose of the Visit to Jordan.

Purpose of the Visit	Country Arab Countries	Arab 48	Foreign Countries	Sub - Total
Business	30%	0	10%	55%
Therapy	20%	5%	5%	20%
Tourism	15%	5%	5%	20%
Other	5%	0	0	15%

The survey was conducted by the researcher for hotel guests from the Arab countries. Palestine and 48 Arab countries as well as various international countries showed that the basic segment of the hotel guests is businessmen by 55% of the total number, frequented by double rooms, followed by guest rooms. Medical treatment accounted for 20% of the total number, frequented by twin rooms and suites. Conference and resort hotels are hotels that often contain full-sized luxury facilities with full service accommodations and amenities. These hotels may attract both business conferences and vacationing tourists and offer more than just a convenient place to stay (Arnold, 1995). The previous results gave a clear main realistic property of the hotel's functional purpose, which is represented by the businessmen's hotel, knowing hotels for tourists whose main purpose of travel is professional activity (business, commerce, meeting, conferences, exchange of experience, training professional, and exhibitions); these categories belong to business hotels, through which a coherent study was carried out on the existing function spaces and the functions to be created, then creating a real balance between them, by adding or reducing the spaces to create interconnections between them.

Design phase

Based on this study, the researcher designed the extension building, and the administration of the hotel adopted and implemented it under his supervision. The design includes both functional and aesthetic elements such as style, layout, and architecture (Heide *et al.,* 2007). In the design of extension areas, the residential space has been completely separated from the public space, where the guest rooms were placed in the upper levels of the floors, unlike the situation in the old building that was found at a level lower than the street level. The rooms were designed after the extension in a way that allows them to be converted into suites as needed, which we missed in the old building through the interconnected door between them, giving absolute privacy in terms of sound and insulation through the work of cavity walls. The extent to which guest rooms and public spaces can make a guest feel comfortable at home has a great influence on the guest's hotel experience (Laurette *et al.,* 1999). The room was designed and furnished in an exceptional manner of luxury, to match the comfort of the guest through the luxurious interior treatments as shown in Fig. 9, using upscale wood for all pieces, marble and carpets with international specifications, artworks, wallpapers, headboards with height of 2m, and credenza headboard with the same height; each room is also equipped with a Jack Rack to facilitate the businessmen's network of computers, telephones, and iPads with television, with the desk being taken into account; the electricity points correspond to the furniture.

Figure 9. King Size guest room in extension hotel building (left), and guest room plan in extension building (right) (designed by author).

Technology amenities and applications are loaded as a factor in business travelers' selection of hotels in Turkey. This may suggest that the availability of technology for individual guest use could increasingly influence guests' selection decisions (Chian, 2003). For the bathroom, the shower was used instead of the bathtub, and the walls were cladding with marble. The main corridor was 1.8 cm instead of 1.6 cm; for the maintenance, the access panel of mechanical shaft became through the main corridor instead of guest room.

The hotel suites were designed in a modern way. The living area was designed to be opened to the bedroom using simple wood partitions that gave a spaciousness to the suite, unlike the case with the old building, where the bedrooms were separated from the living ones with wooden partitions. The 12 m2 suite baths were equipped with Jacuzzi, shower, and two wash basins. The kitchen was canceled from some of the suites because it is not necessary, where most of the guests are businessmen. The architectural planning of the typical guest room floor is critical to a hotel's success. Not only should the design be pleasing for guests and efficient for the staff, but also the floor configuration, which comprises up to two dozen rooms, must also fit into the hotel's construction budget. Economies in the plan of a guest room floor configuration are multiplied many times over (Rutes *et al.,* 2001).

Table 6. Space Allotments of Residential and Corridors Functions in Days in Hotel.

Type of Guest Room	Area Before Extension	%	New Extension Area	%	Area After Extension	%
Twin Size Guest Room	1568 m^2	15.38%	825 m^2	6.6%	23930 m^2	10.53%
King Size Guest Room	884 m^2	8.67%	1155 m^2	9.20%	2039 m^2	9%
Suite	1610 m^2	15.80%	540 m^2	4.30%	2150 m^2	9.46%
Main Corridor	486 m^2	4.76%	4500 m^2	3.60%	936 m^2	4.12%
Total Areas	**4592 m^2**	**45%**	**2937 m^2**	**23.50%**	**7529 m^2**	**33.16%**

The king size room's rate in the existing building was 8.67% and the twin size rooms were 15%. This resulted in the failure of the high bookings in the king size rooms and a decrease in the twin size rooms. Therefore, the king size room rate was increased by 50% in the new extension and the twin size rooms were reduced to 35.5%; the increase in the proportion of twin size rooms was also at the expense of the reduction of suites as is clear in Table 6.

The global experience in the hotel buildings design for businessmen shows great interest in the comfort of the guest, through the technical equipment, services, and communications and provides the space for meetings and conferences to hold deals and contracts, organize exhibitions, and maintain the privacy of the guest in addition to entertainment and sports. The design of the new extension took into account the small percentage of the existing public spaces compared to the residential spaces, which constituted only 22.38% of the total areas shown in Table 7, which was clearly increased to 37% of the total area, by adding space for the existing public functions or creating new functions not found in the old building of approximately 48.88% of the new area.

Table 7. Space Allotments of Public Service Functions in Days Inn Hotel.

Public Functions	Area Before Extension	%	New Extension Area	%	Area After Extension	%
Main Lobby	180 m^2	1.76%	300 m^2	2.40%	480 m^2	2.11%
Business Center	0	0	25 m^2	0.20%	25 m^2	0.11%
Restaurant	0	0	170 m^2	1.36%	170 m^2	0.74%
Coffee Shop	105 m^2	1.03%	240 m^2	1.90%	345 m^2	1.52%
Terraces	55 m^2	0.54%	575 m^2	4.60%	630 m^2	2.77%
Ball Room	410 m^2	4%	550 m^2	4.40%	960 m^2	4.22%
Lounge	0	0	440 m^2	3.50%	440 m^2	1.93%
All Day Restaurant	Instead of ballroom	0	410 m^2	3.27%	410 m^2	1.80%
Meeting Room	50 m^2	0.50%	580 m^2	4.63%	630 m^2	2.77%
Toilets	70 m^2	0.70%	230 m^2	1.83%	300 m^2	1.32%
Kitchen	225 m^2	2.2%	260 m^2	2.07%	485 m^2	2.13%
Night club	235 m^2	2.30%	0	0	235 m^2	1.03%
Shops	40 m^2	0.45%	0	0	40 m^2	0,17%
Lobby Lift	195 m^2	1.90%	330 m^2	2.63%	525 m^2	2.30%
Gym	85 m^2	0.83%	675 m^2	5.40%	760 m^2	3.34
Swimming Pool	350 m^2	3.43%	660 m^2	5.27%	1010 m^2	2.90%
Roof Garden	0	0	490 m^2	3.90%	490 m^2	2.15%
Offices	280 m^2	2.74%	180 m^2	1.43%	460 m^2	23.6%
Total Areas	**2280 m^2**	**22.28%**	**6115 m^2**	**48.88%**	**8395 m^2**	**37%**

As shown in Table 7, the main lobby was extended by 2.4% in a modern design of New Classic style, in addition to the development of a businessmen center. In the extension design, there are two distinct meeting rooms with their furniture that can accommodate up to 20 persons as shown in Fig. 10. Meeting spaces, along with lounge, can be said to be one of the major demand generators for hotels. If meeting rooms are provided, these are to be located with convenient access from the reception area; a lobby type area outside but adjacent to the meeting space entrances is desirable for group gatherings before and after meeting activities (Days Inn Hotel and Serviced Apartments, 2004). This is particularly true for hotels that aim to attract group businessmen, given its stable nature relative to transient hotel guest patronage (Madanoglu and Ozdemir, 2016).

Figure 10. Meeting rooms in extension hotel building, (Designed by author),

Figure 11. Multi-purpose hall in extension hotel building, (Designed by author),

In addition to a multi-purpose hall accommodating 400 persons as shown in Fig. 11, it is free of columns with regular shape, can be separated into three completely halls, and opened to the lounge, so that it gives the flexibility and efficiency in the design space. The percentage of meeting rooms and lounge increased to 8.13%. This is in addition to the design of ballroom for up to 500 persons, shown in Fig. 12. It is free of columns with regular shape, beside establishment of restaurants for visitors and hotel guests, as well as café shop extended by 1.5%.

Figure 12. New ballroom in extension hotel building. (Designed by author)

Figure 13. New café shop in extension hotel building (designed by author).

The new café shop is designed as an executive lounge as shown in Fig. 13; the space has become open to the terrace with view of the main street with multiple entrances. The walls were covered with Appanoose wood combined with cream-colored leather in a new classic design, using comfortable furniture. The Health Club and Gym represent a complex that contains an indoor swimming pool as shown in Fig. 14 and contains all sports and therapeutic functions; it has formed 5.4% instead of 0.83% of the total area.

Figure 14. Health Club and Gym in extension hotel building. (Designed by author)

Figure 15. External pool in extension hotel building (designed by author).

The external pool and its facilities were developed as shown in Fig. 15, where direct contact was made with the ballroom, with the roof besides them being a coffee shop. It is designed to be a garden with a beautiful view of Amman Mountains. The total area of parking and technical spaces for the old building was 3321 m^2, as is clear in Table 8. The parking area of the old building was only 7.85% with 24 car plots, which was increased to 24% with 106 car plots, to become a total of 130 car plots, also adding a few areas for technical spaces as AHU, pumps and electrical rooms, and others, thus creating a greater balance and more exploitation of spaces.

Table 8. Allotments of Parking and Technical Functions in Days Inn Hotel.

Service Functions	Area Before Extension	%	New Extension Area	%	Area After Extension	%
Parking	801 m^2	7.85%	3000 m^2	24%	3801 m^2	16.73%
Technical Space	2520 m^2	24.72%	458 m^2	3.66%	2978 m^2	13.11%
Total Area	**3321 m^2**	**42.57%**	**3458 m^2**	**27.66%**	**6779 m^2**	**29.84%**

The total final percentages for the hotel functional spaces, after the extension shown in Table 9, are as follows: the residential space by 33.16%, the public by 37%, and the parking by 29.84%. There is a close correlation between the economics of hotel property development and the design of the public and private spaces of the hotel itself (Neill, 2008).

Table 9. Space Allotments of Days Inn Hotel. (Source: Author, 2017)

Description	Area Before Extension	%	New Extension Area	%	Area After Extension	%
Residential Space	4592 m^2	45%	2937 m^2	23.50%	7529 m^2	33.16%
Public Space	2280 m^2	22.28%	6115 m^2	48.88%	8395 m^2	37%
Parking and Technical Space	3321 m^2	42.57%	3458 m^2	27.66%	6779 m^2	29.84%
Total Areas	**8270 m^2**	**60%**	**5490 m^2**	**40%**	**13761 m^2**	**100%**

The high percentage of residential space compared to the area of public spaces of the existing building indicates that the hotel's character has not been taken into consideration, which led to random determination of hotels' room numbers and types. The areas and functions of spaces must be balanced in order to operate the hotel efficiently. And based on the previous results through the analysis of many hotel buildings, the guest questionnaire, and hotel administrator requirements, and after defining the hotel's usage character, the balance between functional groups in the extension building was determined by the reduction of the total percentage of residential spaces from 45% to 33.16% of the total area and increased the public spaces percentage to meet the needs of the hotel's business guests in terms of interviews, conferences, and other activities, which are the main functions of the hotel after sleeping. For the parking spaces, the number of cars in the existing building relative to the residential areas was very small at a rate of one car for each 160 m. This percentage was adjusted by increasing the percentage of the parking spaces to become one car for every 30m, in addition to increasing some technical spaces for storage, maintenance, and electricity rooms.

Data analysis

The descriptive statistics of the variables using mean and standard deviation of functional spaces areas before and after extension showed that there is no significant difference between spaces before the extension, while the descriptive statistics showed that there is significant difference between spaces after extension as shown in Fig. 16. Post hoc (Tukey) test was conducted to obtain these differences; it shows that the public spaces were significantly different than the residential and parking spaces, and they have a higher percent than others after the extension, followed by the residential and parking spaces, respectively.

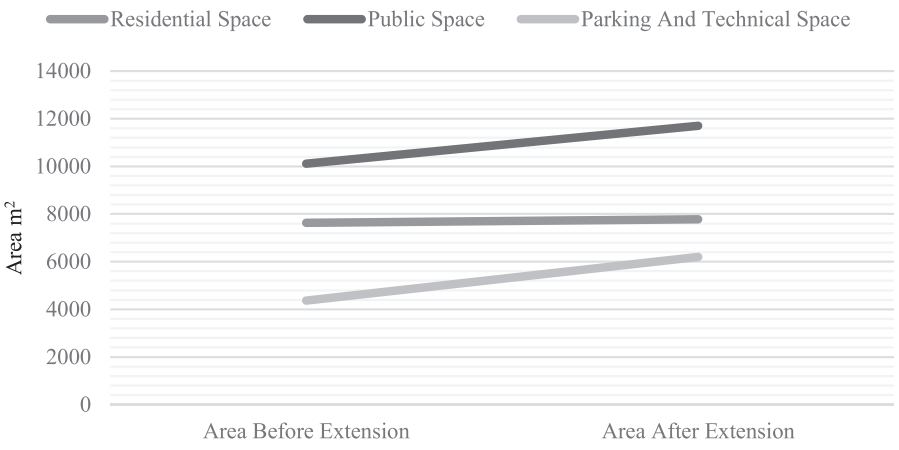

Figure 16. Space allotments for the three functional groups. (Source: Author, 2017).

This statistical analysis for the functional spaces is presented as a guide in designing the extension for businessmen hotels, so that the public group must have the highest area in businessmen hotels, followed by residential, and then parking group.

CONCLUSION AND RECOMMENDATION

The concept of extension, renovation, or rehabilitating hotel buildings is usually for old buildings that are over 50 years old. The international experience in the design of hotel buildings is often multifunctional, integrated, and homogenous, and this is a reflection of the scarcity and lack of extensions of these buildings, which are based on prior studies of the hotel characteristics and features of the geographical location. The buildings that were designed by international companies took this factor into consideration, so we find that they have maintained their continuity without change.

There is no study in Jordan based on the distribution of hotels' functional spaces and their spatial components based on the hotel's geographical advantage, which shows the hotel's character, which led to random design of this type of buildings. Therefore, in Amman, we find the extension and renovation of the buildings no more than 10 years old. It is an indicator of the lack of real experience in the design of these buildings. Most buildings that are extended or need to be extended and rehabilitated do not usually contain any historical architectural value.

So this study presented the guide of hotels extension, by making a balance between the functional spaces of hotel areas, based on the characteristics of the hotel, and the geographical, historical, religious, therapeutic, recreational, or commercial value of such a city as Amman.

In this research, the hotel's basic character for Amman city has been identified as businessmen's hotel. All the existing spaces and functions were also studied and distributed to three main groups: residential, public, and service spaces; then the areas of each group were analyzed separately to find out the real percentage of each space, where the space allotments for the functional groups were determined so that the residential group should constitute 35% of the total area, 35% of the public group, and 30% of the service group. To achieve these space allotments, the area is either increased or reduced (such as twin size rooms, king size rooms, and other units) or used in the creation of new functional spaces as meeting rooms, lounge, health club, and others. The interior design of the extended building was characterized by the unity and integration of all its elements in terms of harmony of materials, colors and furniture were matched for the functional spaces where the visitor can see the unity and diversity of the place at the same time.

Finally, the study shows that the extension of hotel buildings in Amman faces significant obstacles and challenges, the most important of which is that the permitted extension is only horizontal and is often not available because it is related to securing vacant plots of land around the hotel for sale, so the current regulatory provisions relating to hotel buildings should be considered for the city of Amman, which does not allow vertical extension and the development of modern standards and systems that correspond to the economic changes of Amman city.

The hotel owners used new architects in the extension and design process, which was clearly reflected in a negative way on the aesthetics composition of the building, where they used new materials and architectural treatments that ran counter to the existing building in terms of materials or composition.

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التصميم المعماري الوظيفي للأبنية الفندقية الموسعة في مدينة عمان: حالة دراسية عن فندق الدايز إن

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الخلاصة

انتشرت نزعة توسعة المنشأت الفندقية القائمة في عمان بشكل ملحوظ في السنوات الاخيره، نتيجة لفقروقلة الخبرة في تصميم هذه الأبنية، والذي أدى بدوره إلى فوضى في العملية التصميمة لا سيما في نقص الكثير من الوظائف المكملة للعملية الوظيفية الرئيسية للمبنى وخلل في الحصص المساحية للفراغات مما أضعف من الفاعلية التشغيلية لهذا النوع من الأبنية. قامت هذه الدراسة على عمل تحليل وظيفي وفراغي لأربعة أبنية فندقية قائمة في عمان، تم توسعتها في الآونة الأخيرة، وأخذ فندق الدايز إن من ضمنها كحالة دراسيه مبنية على استبيان للاداريين والنزلاء لتحديد الاشكاليات الموجودة في المبنى القائم وأسباب التوسعة. قام الباحث بعمل تحليل إحصائي للمساحات الوظيفية للأربعة فنادق واستخدام النتائج كمرجعية أساسية لعملية تصميم فنادق مقترحة أو قائمة ذات صفة رجال أعمال لمدينة عمان. واستناداً إلى نتائج تحليل ودراسة توسعة الفنادق، جنباً إلى جنب مع استبيان لإداريين فندق الدايز إن ونزلائه، حيث قامت الدراسة على تحديد الحصص المساحية للمجموعات الوظيفية الثلاث (السكنية والعامة والمواقف). أظهرت نتائج الدراسة الخلل في تحديد صفة الفندق الأساسية والتي لم تاخذ بعين الاعتبار عند التصميم في المرحلة الأولى للأبنية القائمة والتي أدت بدورها إلى نقص ملحوظ في المجموعة الوظيفية العامة نسبة لباقي المجموعات للجميع الفنادق، واستناداً للنتائج قام الباحث بتصميم مبنى توسعة لفندق الدايز إن القائم يراعي صفة فندق رجال اعمال حيث أنشئت مساحات وظيفية جديدة مكملة مثل القاعات متعددة الأغراض وقاعات الاجتماعات، والندوات، والنادي الصحي وغيرهم، لتحقيق التوازن بين نسب المجموعات الوظيفية . كما تم عمل تصميم للأعمال الداخلية للمبنى المُوسع الذي يتميز بوحدة وتكامل جميع عناصره من حيث انسجام المواد والألوان والأثاث.