Adaptive Reuse of Old Structures into Heritage Hotel Buildings: A Post-Occupancy Evaluation in Jordon, Amman.

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Abstract

Recently, new practices of adaptive reuse (AR) of historic buildings into heritage hotels have begun in Amman, Jordan. This study presents the findings of a post-occupancy evaluation (POE) of heritage hotels which are adaptively reused historic buildings. It aims to explore and prioritize the main factors of physical aspects of the architecture of the adapted buildings.

To carry out a POE, hotel guests' written reviews from online international and national travel platforms were analyzed. According to this preliminary analysis, a questionnaire was designed and randomly distributed among 299 tourists. The data obtained from the questionnaire were analyzed using SPSS software. Principal component analysis (PCA) was used to reduce the set of indicators into the main components.

This study introduces a new application of POE in the field of conservation of heritage assets and the hospitality industry. It focuses on the evaluation of the users' feedback regarding the architectural aspects of adaptively reused historic buildings into heritage hotels based on original empirical data.

The paper recommends guidelines for more user-friendly heritage hotels buildings. This includes principal components and their sub-indicators that should be considered in the AR process of historic buildings by conservators, investors, and hoteliers. The extracted factors can also be implemented for heritage hotel improvements in operations because they determine the order of priority from the users' viewpoint.

Keywords: Heritage hotel, Abandoned buildings, Post-occupancy evaluation, Adaptive reuse.

Introduction

Adaptive reuse (AR) is a conservation approach that may restore historic buildings and textiles (Pongsermpol and Upala, 2017) and serves as an effective strategy for optimizing the operational and economic performance of constructed property (Yung and Chan, 2013). In general, AR refers to the process of repurposing existing structures for new uses (Sharifi and Farahinia, 2021; Chen et. al., 2018).

AR is composed of two words. Adaptation refers to rehabilitation, remodeling, or restoration projects that do not necessarily include changes in usage (Cisak et. al.,2020; Günçe

and Mısırlısoy, 2019) while reuse refers to something unique, one-of-a-kind, and frequently valuable (Holyoake and Watt, 2002). AR is defined differently by several authors, including Saaty and Vargas (2012), Hong and Chen (2017) and Huq et al (2017). AR is defined by Ijla and Brostrm (2015) as "creating the possibility of extra use and wear for functionally outmoded structures". It is basically building recycling. The technique is often connected with historic preservation of abandoned buildings, although it entails more than just repair. AR is seen as an important approach for the preservation of architectural heritage in modern conservation theory and practice (Nguyen and Nguyen, 2021, Tan and Ti, 2020).

Furthermore, AR is a significant conservation initiative that recycles previous resources and transforms them into experiences in and for the present (Heintzelman,. and Altieri, 2013). Old buildings are seen as reusable resources in terms of aesthetics, culture, and economics, and preserving their historic aspect is important, but adapting these structures for new purposes will bring glamor and human scale to a city and neighborhood (Savaşkan et. al., 2022; Adiwibowo et. al., 2015). It is often related to historic preservation in cities with a valuable past. AR of historic structures has been completed in a number of tourist sites, and heritage tourism is strongly encouraged (Olimpio et. al., 2021; Kayan,. 2019; Ribera et. al., 2019).

The new and contemporary areas in historic hotels and historical lodgings are often excellent instances of inventive augmented reality. For example, numerous ancient theaters, warehouses and jails have been transformed into hotels in recent years (Ong et. al., 2015). The Downtown of Amman, as represented in Fig. 1. is the historical heart of Amman. This area represents the origins of Amman and it is considered a tourist attraction because of the presence of important historical sites, such as the Roman Amphitheatre, the Citadel (Temple of Hercules), the Al-Hussein Mosque, and the Nymphaeum (Al Dein, 2021). In addition, the heritage hotels around the vicinity of these landmarks are distinguished by their proximity to each other (Al Fahmawee and Jawabreh, 2022a).

Fig. 1: The Downtown of Amman historical sites, heritage, and abandoned buildings.
Source: Authors.

Transforming these structures and reusing them is indeed to restore the spirit to them by exploiting them as heritage hotels, as preserving them is part of the emotional memory of the people of Amman. These buildings are not just stones, but history, memories, and stories. They date back to the twenties of the last century. The shape and aesthetics of the buildings are distinguished from the inside and outside, and the decorations that characterize the city's houses in that period, and the tiles and windows as displayed in Fig. 2.

Fig. 2: Abandoned Heritage buildings.
Source: Authors.

Art hotel is one of the adaptively reused hotels, which is located in the heart of Amman's cultural center. The building is considered one of the oldest buildings in the surrounding area as a cultural, entertainment and hospitality landmark in Amman. While the hotel was established in 1922 as a residential building for the Shreim family, it was converted and reused as a two-star hotel in 2010 until now, while preserving the architectural and heritage identity of the building as shown in Figures 3 & 4.

Fig. 3:. The Art hotel before and after the AR
Source: Authors

Fig. 4: Interior view of the Art hotel before and after the AR
Source: Authors

In 2010, Amman opened its first Tourism product "Heritage House". Heritage House is a 15 unit serviced apartments product located at the end of the Rainbow Street (Shaheen). The 80-year-old Al-Qasim House is classified as a heritage building that has been reused as a boutique hotel with an area of 9,000 square meters accommodating 40 hotel rooms. It is located in Al-Ghreib site in the heart of Jabal Amman overlooking the dense urban fabric of Oman's mountainous terrain with a view of the Citadel. A modern building next to the old dwelling were designed, featuring rooms and suites with views and balconies in the courtyard below and the city beyond as highlighted in Figure 5. The design suggests that the front of the building serves as a civilized facade, housing the development's commercial functions to seamlessly connect it with other neighboring marketing spaces. On the other hand, the rooms are located on a higher plot to allow for great views of the city, following the architectural statement for which Jabal Amman is famous (Al Fahmawee, & Jawabreh,2022b).

The design aims to add a contemporary building that respects the architectural heritage of the area and create a building that is sustainable in both construction and operation.

Fig. 5: Exterior view of the Al-Qasim Heritage House before and after AR
Source: http://www.maisam.com.jo/content/ahyaa-amman-boutique-hotel

According to the statistics of the Ministry of Tourism and Antiquities, as is evident in the table 1, the number of hotel rooms in Amman is 11365, not exceeding 18% in the old city center of the total hotel rooms, and the rest is distributed on the outskirts of the city. What causes a big problem for tourists is the possibility of staying in this historical area for a longer period due to the distance between the historical archaeological sites and the hotels farthest from it.

Table 1: Occupancy rate & classification of Amman hotels 2021
Source: Ministry of Tourism and Antiquities

Amman	No. of Hotel	Suite	Room	Bed	Room Occupancy
Five Stars	18	490	4,757	7,365	33.08%
Four Stars	25	232	2,483	4,544	38.35%
Three Stars	40	201	2,082	4,087	42.26%
Two Stars	44	168	1,380	2,801	30.56%
One Stars	31	26	663	1,368	20.60%
Total	158	1,117	11,365	20,165	17.67%

Building regulations and laws do not allow the creation of new constructions in this important historical center, which causes a significant shortfall in the demand for reservations by tourists and guests, as the reuse of old buildings and abandoned buildings is an ideal solution to address this shortage. Surprisingly, what has been overlooked in this research is consumers' perceptions of the actual architectural characteristics of adaptive reused historic buildings converted into historical hotels. Lazrak et. al. (2014) and Gunçe & Srlsoy, 2019) underline the importance of reusing buildings from the consumers' point of view and experience. Thus,

identifying user needs is a significant problem in AR projects as part of an architectural program, and the capacity to meet the criteria shows the project's functional viability (Alavi et. al., 2022; Jie and Bruce, 2020).

Through post-occupancy evaluation (POE) research, this study intends to bridge this knowledge gap by presenting recommendations based on the assessment of indicators from the viewpoint of hotel guests and categorizing them into major components for more user-friendly historic hotels. POE is a tool used in the construction industry to evaluate system performance, user satisfaction, and environmental attributes (Chen et. al., 2016). It also promotes ongoing development by using lessons learned from the previous initiatives (Abdelrazik, and Marzouk, 2021; Chen et. al., 2021). Given the growth of AR for historic buildings converted into heritage hotels in this region of the globe, the findings of this study may present significant AR variables for the future heritage hotel practices in locations where the tourist sector is still in its infancy. It allows and encourages redevelopment, rehabilitation, and adaptive reuse but only in a way that preserves the historic character and texture of Amman as well as other future designated heritage districts. These important criteria could help people understand the basic flaws in the physical parts of architecture when converting old buildings into hotels, especially in less developed countries.

Theoretical Background
Post Occupancy Assessment

Post-occupancy evaluation (POE) is a systematic and thorough method that compares a building's actual performance to its predicted performance (McDougall et. al., 2022; Zolkafli et. al., 2019; Agyefi-Mensah et. al., 2015). This procedure is based on the views of those who utilize the buildings (Kronenburg, 2007). POE offers two major benefits in total. It first explores the repercussions of adopting building adjustments or changes, and then it measures the performance levels of the building's primary parts (Sanni-Anibire et al, 2016). These findings may be useful to designers, facility managers, and owners of augmented reality projects (Alborz and Berardi, 2015). Designers, for example, might get acclimated to the performance of their designs by taking into account the needs of owners and the expectations of consumers (Cooper, 2001). Managers may also cut capital and operating expenditure while increasing tenant happiness and productivity (Boussalh et. al., 2016; Bordass and Leaman, 2005). Owners may also issue precise recommendations to building designers and builders for new constructions (Ali et. al., 2019).

POE has an extensive history. It first appeared in the literature during the 1960s and 1970s, when evaluators were interested in constructing users' behavior, and it was part of a wider effort to describe the design process in the light of logical models derived from research data (Behloul, 1991). POE took on its own identity and evolved as a field throughout the 1980s. Then there were breakthroughs in POE theory, techniques, strategies, and applications. POE research included evaluating the utility of a space, efficiency, accessibility, spatial capacity for activities, and sufficiency of essential amenities (Falorca, 2021).These investigations are carried out using quantitative, qualitative, or a combination of both methodologies. Case studies may also help assessment studies, such as POEs, and showcase the best models. As a result, a POE based on a genuine topic provides contextual information, a higher depth of qualitative data, possibilities for performance analysis and learning opportunities from each project for all stakeholders involved. Guests' perceptions about the Guests' experiences of the historic hotels are related to having a distinct personality, quality, escapism, and relaxation throughout their hotel stay. As a result, it is advised to focus on customer desires while developing core hospitality items. The nature of hotel product qualities may affect hotel stay experiences (Walls et. al., 2011) and be set up in a manner to fulfill consumer demands.

Heritage Hotels

According to Lockwood, and Pyun (2020), and El-Barbary et al, (2022) the physical environment is a dimension of hotel experience quality. The physical environment of a hotel refers to its physical characteristics, which are represented by aesthetic, atmospheric, and

material resources. The servicescape is the constructed environment or physical location, the service-scape is largely composed of environmental components, such as ambient aspects such as temperature, sound, lighting and music, as well as the spatial arrangement and functioning of those elements to meet specified goals. As a result, these spatial layouts and functional features should be addressed in rooms and public situations. Abou-Shouk et. al., (2018) argue that the hotel room, as the visitors' private and personal spaces throughout their stay, is an important element of the whole hotel experience. In addition, hotel customers rate the room amenities as one of the most important aspects of their stay. As second homes, the guest rooms should be warm, pleasant, and welcoming (Abou-Shouk et. al., 2018).

Heritage hotels have expanded in quantity and prominence in recent years and they are now a significant classification in the hospitality sector. Heritage hotels include themes such as heritage, historic locations, and remarkable contemporary architecture (Chittiprolu et. al., 2021).They are often built from old, refurbished structures or have some historical significance (Yabanci, 2022). Today, historic buildings are sought after not just as money producers by hotel owners and developers, but also as a notion of unique travel experiences by customers. The goal of historic hotels with a distinct idea is to distinguish themselves from other conventional hotels. Heritage hotels are one-of-a-kind establishments that provide an intimate ambience, genuine cultural or historic experiences and engaging services to hotel guests (Sen, and Bhattacharya, 2019). As a result, hotel customers do not see these hotels in historic structures as just places to sleep, but rather as places to enjoy a feeling of spectacle and luxury.

Converting old structures into heritage hotels poses architectural issues. Old historic structures are often rooted in a society's culture, and their tremendous significance is critical for their preservation (Xie, and Shi, 2020). Old structures were often altered to meet modern needs, with architectural configurations evolving through time. With limited intervention methods in architectural components, the current restoration culture cherishes the tangible evidence that past has left for future generations (Yasien, and Kebede, 2022). Often, a historic structure was constructed when contemporary standards did not exist, making compliance with current rules impossible. When historic structures can no longer operate in their original capacity, it is necessary to provide a new role in order to conserve these structures. Furthermore, the strategy of conserving tangible evidence may be influenced by the building's historic status, the longevity of the materials used in it, and the geographical and cultural location in which it is placed.

The AR of buildings is a unique way for bringing old structures up to current standards by offering modern comforts (Nikolic et. al., 2014). Therefore, finding a balance between preservation criteria and essential alterations for reuse is a diverse and complicated process that must consider the circumstances of each situation. Similar to other construction projects, examining possible suggested design choices is critical and must be addressed throughout the AR feasibility evaluation (Amado, and Rodrigues, 2019). Furthermore, several physical factors must be addressed for an AR project to be effective. One of the most important criteria, for example, is the flexibility to rearrange the available space for accommodating design solutions within the usable dimensions. Furthermore, the potential adaptability of a structure may be analyzed using its present layout and space.

Review of Literature

Methodological guidelines have been highlighted and suggestions and principles for future activities to manage the measures thoroughly have been developed. Alavi et. al., (2022) evaluated the AR techniques used in historic structures such as hotels in Melaka and George Town, both of which are UNESCO World Heritage Cities. They chose hotels that had been converted from historic structures and conducted questionnaires to learn about the viewpoints of the owners or management. Based on the findings, the conservation concept employed in AR is rather minimal. Unless certain precautions are followed, there is a good chance that an adaptable hotel may lose its favor and become indistinguishable from another ordinary hotel. Matos (2018) has analyzed the many design solutions used in the AR transformation of old structures into boutique hotels. The research illustrates how the user experience is connected to

a historically constructed boutique hotel and how the character-defining characteristics were incorporated into this design. It also explores the AR of five historically designed boutique hotels in North Carolina as case studies (USA). Ressler (2020) investigated the conversion of historic structures in Los Angeles via another case study (USA). She evaluated how reusing a historic oil business building provides benefits such as the character, location and financial worth, all of which contribute to the success of an AR hotel project. This research also establishes the parameters that make a historic building suitable for a hotel conversion to guide the future AR hotel developments and the repercussions of leading restorations.

Hamida and Hassanain (2020) describe the results of a POE of an adaptively reused student living facility converted into an office building in Saudi Arabia's Eastern Province. The purpose of the research was to evaluate the effects of the conversion procedure on the technical and functional performance components of the converted building. Various ways have been used to obtain data. This includes a walking tour to better understand the building's performance and a discussion with users on the tour outcomes. In addition, interviews and satisfaction questionnaires were used to get input from the users. Thermal, visual, acoustic comfort, indoor air quality, fire safety, plumbing services, internal and exterior finishes, furniture, distribution and layout of workplaces, information technologies and power distribution, vehicle parking and other facilities were all rated well by users. Finally, a set of suggestions to enhance the case study building's performance were offered.

Mundo-Hernandez et al. (2015) performed a POE in Puebla, Mexico, for an adaptively reused textile mill turned into a modern art gallery. The purpose of this research was to look into the performance of the building's new usage from the user's point of view. Visitors, artists, gallery managers, and workers were designated as users. Multiple data collecting techniques were used, including historical research on the building, conversion strategy analysis, a walkthrough investigation and a user survey. The POE also focused on the users' acceptance boundaries for building performance standards such as indoor air quality, lighting, acoustics, thermal qualities, and spatial characteristics.

According to the results, consumers viewed the building to be a pleasant environment, but they were dissatisfied with the new use of the converted structure. Nonetheless, in such research, end-user input in the context of AR of historic structures, as well as hotel guests' perspectives as main users of boutique hotels, is frequently disregarded. Furthermore, the key physical components of architecture that should be addressed in the adaptation process are not specified. This research attempts to examine the indicators and then organize them into their primary portions based on what hotel guests have mentioned.

Methodology

Documentary analysis was used to identify physical features of architecture that should be taken into account in the AR of historic buildings converted into boutique hotels. "architecture and interior design," "location and accessibility," "quality of restoration," "architectural adaption," and "installations and amenities" were among the factors considered. Hotel guests who spent at least one night in Yazd's boutique hotels were deemed users in accordance with the goals of the study. The researchers used the most prominent international and national travel platforms to investigate the most common difficulties affecting the physical components of architecture that hotel customers faced during their stay at boutique hotels in Amman.

The key contribution of this study is the recommendation of criteria for more user-friendly boutique hotels. This comprises the key components and their sub-indicators that should be examined by conservators, investors, and hotels throughout the AR process of historic structures. Furthermore, the extracted criteria may be used to enhance the operation of boutique hotels since they define the order of importance from the consumers' perspective.
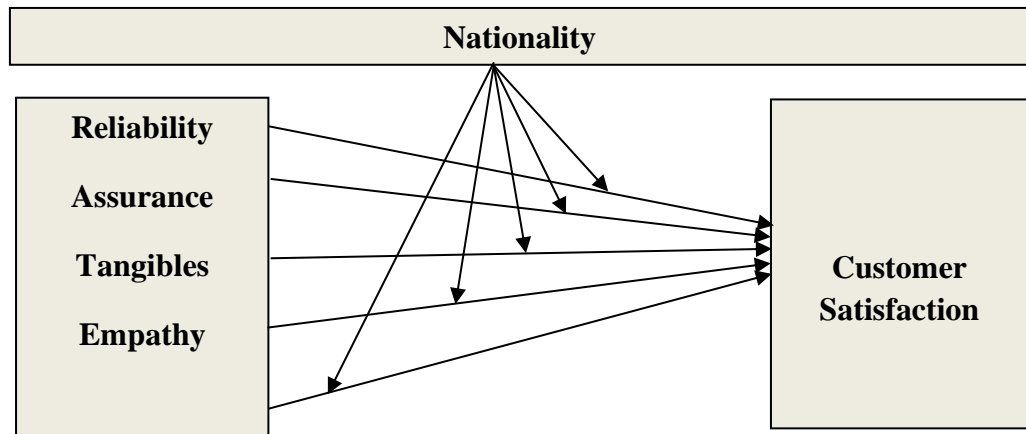
Fig. 1. Model of the study
Source: Authors

Study Hypotheses
> H1: There is a statistically significant impact of reliability on customer satisfaction in the heritage hotel buildings in Amman.
> H2: There is a statistically significant impact of responsiveness on customer satisfaction in the heritage hotel buildings in Amman.
> H3: There is a statistically significant impact of assurance on customer satisfaction in the heritage hotel buildings in Amman.
> H4: There is statistically significance impact of empathy on customer satisfaction in Heritage hotel buildings in Amman.
> H5: There is a statistically significant impact of tangibility on customer satisfaction in the heritage hotel buildings in Amman.
> H5: There is a statistically significant impact of nationality on the dimensions of service quality in the heritage hotels in Amman.

Reliability:
> To ensure the reliability of the tool we are using, the Cronbach's Alpha equation to sample the original study, table (1) explain that:

Table 1. The values of reliability coefficient by Cronbach's alpha
Source: Authors

Factors	Cronbach's alpha
Perceived privacy	0.891
Perceived usefulness	0.906
Perceived ease of use	0.744
Intentions to book hotel Online	0.882
Habit	0.951
The tools as whole	0.964

> We show in the table 1 the reliability coefficient for the items strong loading, where the range of values is 0.744- 0.951. . They are sufficient values.

Sample study
> The study sample consisted of 299 tourists who used the heritage hotels in Amman, who were randomly selected from the study population. Table 2 shows the descriptive statistics of the personal variables.

Table 2: Descriptive statistics of the personal variables
Source: Authors

Variable	Group	Frequency	Percentage
Gender	Male	199	66.6
	Female	100	33.4
Age	Less than 20 years	33	11.0
	21-30 years	51	17.1
	31-40 years	67	22.4
	41-50 years	72	24.1
	51-60 years	47	15.7
	61 years and more	29	9.7
Income	Less than 1000 $	82	27.4
	1001$- 1500$	107	35.8
	1501-2000	75	25.1
	More than 2001$	35	11.7
Occupation	Private sector	120	40.1
	Public sector	179	59.9
Education	High school	48	16.1
	Bachelor's degree	136	45.5
	Master's degree	79	26.4
	Postgraduate	36	12.0
Nationality	European	41	13.7
	Asia	79	26.4
	USA	48	16.1
	Australian	75	25.1
	Canada	31	10.4
	others	25	8.4
Total		**299**	**100.0**

Table 2 shows the following:
1. The number of males were 199 (66.6%), and the number of females were 100 (33.4%).
2. The highest percentage by the age were 24.1% for the 41-50 years, while the lowest percentage was 9.0% for the 61 years and more.
3. The highest percentage by income was 35.8% for the level 1001$- 1500$, while the lowest percentage was 11.7% for the level more than 2001$.
4. The number of those working in the private sector was 120 (40.1%), while the number of those working in the public sector was 179 (59.9%).
5. The highest percentage of the educational qualifications was 45.5% for the Bachelor's Degree level, while it was 12.0% for the postgraduate education level.
6. The nationality was 26.4% for the Asian nationals, while it was the lowest percentage of 8.4% for the (other nationals.

Findings
　　　　This section presents the findings of the study, which aims to recognize the variables which play a crucial role in hotel bookings and moderate positions of habit a case study.The following presents the results analysed according to the study hypotheses.

H1: Perceived privacy/security influences consumer Intentions to book hotel Online (INT).
To test this hypothesis, we used the "simple linear regression analysis", as shown below:

Table 3. The results for simple linear regression
Source: Authors

R	R Square	Adjusted R Square	F	Sig*	Regression coefficients				
					Domain	β	Std. Error	T	Sig*
0.679	0.461	0.459	254.16	**0.00***	PSC	0.616	0.039	15.943	.000*

* Statistically significant at the level of statistical significance ($\alpha \le 0.05$)

We show in the table 3 the following:
1. The value F = 15.943 and statistically significant 0.00 is less than the level of statistical significance $\alpha \le 0.05$. Thus, a simple linear regression model is suitable for measuring the causal relationship between the independent variable (perceived privacy/ security) and the dependent variable (intentions to book a hotel online).
2. The value of the correlation coefficient between the independent variable (perceived privacy/security) and the dependent variable (intentions to book hotel online) was 0.679, while the value of the coefficient of determination was R^2 0.461. The value of the adjusted determination coefficient (Adjusted R^2) was 0.459 which indicates that the independent variable (perceived privacy/security) was able to explain (45.9%) the changes in the dependent variable (intentions to book a hotel online) and the rest attributed to other factors.
3. There is a statistical significance for the coefficient of simple linear regression equation related to the independent variable (perceived privacy/ security), where the value is T =15.943, which shows the impact of the effect of the perceived privacy/security) on the intentions to book a hotel online. Thus, there is a significance for the coefficient of simple linear regression equation, which was 0.616, which is a positive effect, and then we validate the hypothesis.

H2: Perceived Usefulness influences consumer Intentions to book hotel Online (INT)
To sure this hypothesis we used the Simple linear regression analysis, as 0shown below:

Table 4. The results for simple linear regression
Source: Authors

R	R Square	Adjuste d R Square	F	Sig*	Regression coefficients				
					Domain	β	Std. Error	T	Sig*
0.834	0.696	0.695	679.03	0.00*	PUS	0.861	0.033	26.058	.000*

* Statistically significant at the level of statistical significance ($\alpha \le 0.05$)

We show in the Table 4 the following:

1. The value F = 679.03 and statistically significant 0.00 is less than the level of statistical significance α ≤ 0.05. Thus, a simple linear regression model is suitable for measuring the causal relationship between the independent variable (perceived usefulness) and the dependent variable (intentions to book a hotel online).

2. The value of the correlation coefficient between the independent variable (perceived usefulness) and the dependent variable (intentions to book a hotel online) was 0.834. The value of the coefficient of determination (R^2) is 0.696 and the value of the adjusted determination coefficient (Adjusted R^2) is 0.695 which indicates that the independent variable (perceived usefulness) was able to explain (69.5%); the changes in the dependent variable (Intentions to book hotel Online) and the rest attributed to other factors.

3. There is a statistical significance for the coefficient of simple linear regression equation related to the independent variable (perceived usefulness), where the value of T =26.058, which shows the impact of the effect of perceived usefulness on the intentions to book a hotel online. Thus, there is a significance for the coefficient of simple linear regression equation, which was 0.861, which is a positive effect, and then we validate the hypothesis.

H3: Perceived Ease of Use influences consumer Intentions to book hotel Online (INT).
To test this hypothesis, we used the Simple linear regression analysis, as shown below:

Table 5. The results for simple linear regression
Source: Authors

R	R Square	Adjusted R Square	F	Sig*	Regression coefficients				
					Domain	β	Std. Error	T	Sig*
0.756	0.572	0.571	396.93	0.00*	PEU	0.77	0.039	19.923	.000*

* Statistically significant at the level of statistical significance (α ≤ 0.05)

We show in the table 5 the following:

1. The value F = 679.03 and statistically significant 0.00 is less than the level of statistical significance α ≤ 0.05. Thus, a simple linear regression model is suitable for measuring the causal relationship between the independent variable (perceived ease of use) and the dependent variable (intentions to book hotel online).

2. The value of the correlation coefficient between the independent variable (perceived ease of use) and the dependent variable (intentions to book hotel online) was 0.756. The value of the coefficient of determination (R^2) was 0.572 and the value of the adjusted determination coefficient (Adjusted R^2) was 0.571, which indicates that the independent variable (perceived ease of use) was able to explain (57.1%) the changes in the dependent variable (intentions to book a hotel online) and the rest attributed to other factors.

3. There is a statistical significance for the coefficient of simple linear regression equation related to the independent variable (perceived ease of use), where the value T =19.923, which shows the impact of the effect of (perceived ease of use) on the intentions to book a hotel online. Thus, there is a significance for the coefficient of simple linear regression equation, which was 0.77, which is a positive effect, and then we validate the hypothesis.

H4: Habit will reduce the influence of commitment on intention to book hotel online.
To test this hypothesis, we applied the multiple regressions, table (7) explain this:

Table 6. The result for R Square Change
Source: Authors

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
0.844	0.713	0.712	0.579	0.715	370.411	2	296	0.000*

* Statistically significant at the level of statistical significance ($\alpha \leq 0.05$)

It is evident from the previous table that the value of the correlation coefficient reached 0.844, and that the value of the coefficient of determination (R^2) was 0.713., and that the value of the modified coefficient of determination (Adjusted R^2) is 0.712, which indicates that the independent variables (influence of commitment) is able to explain (71.2%) the changes occurring in the dependent variable, and upon entering the variable (habit), this variable was able to change the correlation coefficient to 0.715 and this indicates the increase in the relationship between the independent variables (influence of commitment) and dependent variable.

Table 7. The results for multiple regressions
Source: Authors

F	Df	Sig*	Regression coefficients				
			Domain	β	Std. Error	T	Sig*
370.411	296	0.00*	Influence of commitment	0.841	0.07	11.944	0.00*
			Habit	0.771	0.038	20.124	0.00*

* Statistically significant at the level of statistical significance ($\alpha \leq 0.05$)

Through the previous table, the results of the application of the multiple regression analysis test showed a statistically significant effect at the indication level ($0.05 \geq \alpha$) of the variable (influence of commitment) of habit as an intermediate variable, with the value of the effect of the independent variable (influence of commitment) on the dependent variable (intentions to book hotel online) (0.841). The direct impact of the intermediate variable (Habit) on the relationship between influence of commitment and the dependent variable (intentions to book hotel online) (0.771), indicates the validity of the hypothesis.

Conclusion
This work contributes to the emerging area of POE research and has implications for the use of POE in cultural asset conservation and the hotel sector. Furthermore, based on the architectural characteristics of AR employing PCA, this research gives fresh insights on boutique hotel practices in Jordan. This study suggests the criteria, including major components and their sub-indicators, for conservators, investors and hoteliers to consider in the AR of historic buildings for more user-friendly boutique hotels. Furthermore, the extracted criteria might be used to enhance the management of the boutique hotels since they establish the order of priorities from the perspective of hotel visitors as consumers. The results of the application of the multiple regression analysis test revealed a statistically significant effect at the indication level (0.05) of the variable (influence of commitment) of habit as an intermediate variable, with

the value of the effect of the independent variable (influence of commitment) on the dependent variable (intentions to book hotel online) 0.841. The direct impact of the intermediate variable (Habit) on the relationship between the influence of commitment and the dependent variable (intentions to book hotel online).

According to the previous table, the correlation coefficient reached (0.844), the coefficient of determination (R2) has (0.713) and the modified coefficient of determination (Adjusted R2) is (0.712), indicating that the independent variable (influence of commitment) was able to explain (71.2 percent) the changes occurring in the dependent variable, and upon entering the variable (habit), this variable was able to explain (71.2 percent) the changes occurring in the dependent variable. The correlation coefficient (0.756) between the independent variable (perceived ease of use) and the dependent variable (Intentions to book hotel Online), the coefficient of determination (R2) (0.572), and the adjusted determination coefficient (Adjusted R2) (0.571) indicate that the independent variable (perceived ease of use) could explain (57.1 percent) the changes in the dependent variable (Intentions to book hotel Online).

According to Hein and Houck (2008), feasibility might be a difficult element in the AR of historic structures. The study's findings are consistent with the findings of Movahedi et al. (2017) who suggest that accessibility and architectural characteristics of buildings might play an important role in transforming historic buildings into boutique hotels. According to Jawabreh et al. (2022), the Ministry of Cultural Heritage has not adopted a special regulatory framework involving boutique hotels (or AR in general), and greater emphasis has been placed on the physical repair of buildings than their usage (Jawabreh et al, 2020). The preservation of decorations and aesthetic elements is also vital in this procedure. However, the Ministry of Tourism and Antiquities has sought to remedy this loophole in subsequent laws (Jawabreh, 2020). Owing to the newness of this legal instrument, its usefulness cannot be evaluated in this study. As a result, as Wahab et al. (2018) argue, if conservation efforts in the AR of boutique hotels are not supervised, these hotels may lose their distinctiveness soon.

With a value of T =19.923, the coefficient of the simple linear regression equation related to the independent variable (perceived ease of use) is statistically significant, showing that the perceived ease of use influences the likelihood that a guest will make an online hotel reservation. Therefore, we accept the hypothesis since the coefficient of the simple linear regression equation is statistically significant (0.77).

As noted in the earlier sections, more historic structures are anticipated to be incorporated in AR projects based on national legislation. As a result, the Ministry of Tourism and Antiquities should identify the types of historic buildings that are ideal for conversion into boutique hotels and communicate the AR principles to possible investors.

Apart from the aesthetic and preservation concerns, the demands of hotel guests and architectural spatial linkages should be prioritized while approving AR designs. The government should also consider proper oversight during historic building restoration, as well as periodic monitoring of boutique hotels to ensure regular repair and upkeep.

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