

Does Service Automation Affect Service Quality and Hotel Brand Image in Hotel Chains in Egypt: Managers' Point of View?

هل تؤثر أتمتة الخدمة على جودة الخدمة وصورة العلامة التجارية للفنادق في سلاسل الفنادق في مصر: وجهة نظر المديرين؟

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Abstract

المستخلص

Quality and innovation are the two factors that hoteliers strive for in order to offer their guests innovative products and services. In addition, hotels offer a wide range of services to their consumers. In this study, the main aim is to explore the perspectives of hotel department managers regarding the impact of service automation (SA) on service quality (SQ) and hotel brand image (HBI) in the context of hotel chains in Egypt. For this study, we selected a convenient sample of hotel department managers from Egyptian hotel chains. Online surveys were conducted with 114 hotel department managers. The analysis was performed using SPSS software. As a result of this research, it appears that the brand image of hotel chains is not significantly affected by service automation. The quality of service is, however, significantly impacted by service automation. Moreover, from the point of view of the hotel manager, the quality of service has a considerable impact on the brand image of a hotel.

الجودة والابتكار هما العاملان اللذان يسعى أصحاب الفنادق إلى تحقيقهما من أجل تقديم منتجات وخدمات مبتكرة لضيوفهم. بالإضافة إلى ذلك، تقدم الفنادق مجموعة واسعة من الخدمات لعملائها. الهدف الرئيسي من هذه الدراسة هو اكتشاف وجهات نظر مديري أقسام الفنادق فيما يتعلق بتأثير أتمتة الخدمة على جودة الخدمة وصورة العلامة التجارية للفنادق في نطاق سلاسل الفنادق في مصر. تم اختيار العينة الملائمة من مديري أقسام الفنادق في سلاسل الفنادق في مصر. تم إجراء استطلاعات الرأي عبر الإنترنت مع 114 من مديري الأقسام في سلاسل الفنادق. تم إجراء التحليل الإحصائي باستخدام برنامج SPSS. وتشير نتائج هذه الدراسة إلى أن أتمتة الخدمة ليس لها تأثير على صورة العلامة التجارية لسلاسل الفنادق. وبالرغم من ذلك، فإن أتمتة الخدمة لها تأثير كبير على جودة الخدمة المقدمة. أيضا فإن جودة الخدمة لها تأثير كبير على صورة العلامة التجارية للفندق من وجهة نظر المديرين.

Keywords: Service Automation; Robots, Artificial Intelligence; Service Quality; Hotel Brand Image.

الكلمات الدالة: أتمتة الخدمة؛ الروبوتات؛ الذكاء الاصطناعي؛ جودة الخدمة؛ صورة العلامة التجارية.

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Introduction

Despite being highly competitive, Egypt's hospitality sector contributes significantly to the economy in the current economic climate (Tong-On, Siripipatthanakul and Phayaphrom, 2021). Egypt's tourism industry is directly affected by the COVID-19 outbreak. Hoteliers in the Egyptian market have been adversely affected by the COVID-19 pandemic. The government has imposed flight restrictions in order to protect the public health, and foreign visitors have canceled their travel plans. Hotel industry survival is difficult at the present time because of the current difficult economic climate (Bhrammanachote & Sawangdee, 2021; Siripipatthanakul, 2021).

Having a competitive edge in a market that is highly competitive is extremely valuable for hotels. To achieve a competitive advantage, they must also gain the confidence of their customers. It is essential for hotels to provide high-quality services to their customers in today's highly competitive environment (Al-Ababneh, Masadeh, Al-Shakhsheer and Habiballah, 2018). An automated service process enables a hotel to provide a high level of service to both internal and external customers while remaining competitive (Narangajavana & Hu, 2008 ; Banerjee & Sah, 2012 ; Al-Shami, Al-Hammadi, Hammadi and et al., 2021 ; Bo and Gottfridsson, 2021).

There has been an increase in the use of robotics, artificial intelligence, and service automation (RAISA) technologies in the tourism, hospitality, and travel industries. Some of these technologies include delivery robots, robotic concierges, conveyor restaurants, and self-service kiosks. Although there has been considerable progress in the field of social robotics, only limited research has been conducted on the automation of service in the tourism and hospitality industry (Ivanov & Webster, 2017 ; Parvez, Ozturen and Cobanoglu, 2020 ; Ali, Gardi, Othman and et al., 2021 ; Li, Yin, Qiu and Bai, 2022). This research has partially filled a gap in the literature.

Significance of the Research

The purpose of this study was to extend the theory of service quality to include the role that the hotel brand plays in the hotel service process. It also helped to adopt a novel model that was used for the first time in this study as no other researcher has previously used such a model.

By utilizing the latest service automation technology, hotel managers and other hospitality industry businesses can meet the needs and expectations of their guests. In addition, they can increase guest loyalty to the hotel's brand image by providing a higher level of service. The data may also provide information for the development of effective marketing strategies by determining the degree to which guests are loyal to the brand. Thus, high levels of business performance will be achieved.

The relationship between service automation, service quality, and hotel brand image in hotel chains in Egypt has been investigated in a limited number of studies.

Review of Literature

Service Automation (SA) and Hotels Industry

An automated system is a machine or group of machines that performs a series of actions in accordance with a predetermined or programmable sequence (Collier, 1983). A further definition of automation is the use of machines to perform a task in accordance with a predetermined or reprogrammable sequence of tasks (Ivanov, Webster and Berezina, 2017 , p.11). Early examples of service automation include automated teller machines (ATMs), conveyor systems, self-checkout machines, and vending machines. It is expected that information and communication technologies will continue to be improved in order to enhance the customer experience and service efficiency (Law, Buhalis and Cobanoglu, 2014).

Tourism scholars believe that automation will transcend the theory of tourism and will find its way into current tourism operations, replacing labor-intensive tourism with an automated industry of the future (Tussyadiah, 2020). Due to the fact that robots are immune to viruses and can perform tasks efficiently and quickly, they are able to accomplish tasks that employees would prefer to ignore or escape. Due to the complexity of the current COVID-19 situation, it was determined that automation would be utilized to operate the robot broadly and intelligently as the program is installed on an automated machine on which the robots operate and an employee supervises them (Kim, Kim, Badu-Baiden and et al., 2021).

Robotics, artificial intelligence, and service automation (RAISA) are influencing the hospitality industry and allowing them to offer their guests extraordinary (Lukanova & Ilieva, 2019 ; Al-shami et al., 2021). A major part of RAISA's innovative approach is introducing innovative ways of improving procedures, escalation efficiency, and ensuring quality levels are maintained at a constant level--which is an integral part of RAISA's innovative approach (Haynes, 2020). The manufacturing industry has long used machines with automated functions, however recently, the hospitality industry has adopted these technologies to redesign service levels. Furthermore, robots are the foundation of self-service technologies whereby part of the production and delivery of the service can be transferred to the customer (Christou, Simillidou and Stylianou, 2020). In addition “*automated robots in the service is the foundation of self-service technologies through which part of the process of producing and delivering the service is transferred to the customer, Self-service technologies can be defined as a service delivery method, which allows the customer to become a producer / co-producer of the service without the need for mediation of service staff*” (Lukanova & Ilieva, 2019 , p.3).

Service Automation (SA) and Guest Life Cycle

According to the literature review of the RAISA for hospitality, their implementation can be tailored to meet specific service delivery requirements. In the following table, a number of basic examples of how RAISA can be applied to hotel companies is presented, defining the scope of the study.

Table (1): Examples of RAISA Application in Hotels

Automation Service /	SA	AI	Robots
Guest Life Cycle			
Pre- Arrival	Virtual Reality Mobile check-in	AI Search Platform Chatbots	
Arrival	Digital kiosks / Smartphone Room Keys/Non-stop check-in		Porter Robots
During Stay	In-room smart technologies	Interactive Hubs Chatbots	Social Front desk robots Concierge robots Delivery robots Vacuum cleaning robots Room assistant robots
Departure	Express Checkout kiosks	Digital Travel assistant	Porter robots
Assessment		AI platform	

Source: (Lukanova & Ilieva, 2019)

During the Pre-Arrival phase, potential customers make reservations and gather information (Lukanova, 2014). In the initial stages of researching a destination, prospective customers are looking for information about the accommodation options available. Various hotel types, services, amenities, and prices are compared. The customer then makes a reservation based on the information gathered and purchases a hotel room. Consequently, it is crucial for hotels at this point to be as visible to potential guests as possible (Howell & Hadwick, 2017 ; Jabeen et al., 2021). Using technology such as mobile technology, virtual reality, and virtual assistants in the hospitality industry is an effective method of increasing customer loyalty, improving customer interactions, and improving customer satisfaction in the hospitality industry. (Wang & Fesenmaier, 2013 ; Dickinson, Ghali, Cherrett and et al., 2014; Howell & Hadwick, 2017).

After welcoming the guest, registering him or her, and assigning him or her room, the second stage of the Guest Cycle begins. To benefit guests upon their arrival and to reduce their frustration, the hospitality industry has increasingly adopted innovative technologies such as digital kiosks, mobile check-ins, and smartphone room keys (Beatson, 2010).

As guests are provided with a variety of services during the occupancy stage, as well as performing a variety of operations, RAISA provides a variety of applications and implementation opportunities. It is not sufficient to offer high speed Internet, a smart TV, and digital entertainment devices in order to create an unforgettable experience (Bartelds, 2014). As a result, the hospitality industry must continue to enhance RAISA at all levels of operational performance in order to improve the user experience. Among these activities are front office operations that are visible to the customer and are conducted without or with his involvement. In addition, back office operations that are carried out outside of the customer's view (Margarido, 2015 ; Lukanova & Ilieva, 2019).

In the Departure stage, guests pay their bills, vacate the hotel room, and check out during the check-out process. In addition to enhancing guests' positive impressions of the hotel and improving their guest experience, automating service processes can also enhance their positive impression of the hotel (Kim & Qu 2014 ; Berezina, 2015 ; Hertzfeld, 2019).

The Assessment stage occurs after the guest has left the hotel, during which guests provide feedback regarding their stay (Barreda & Bilgihan, 2013). Today's technology makes it possible for guests to provide feedback and share information using a variety of channels (Neuhofer, Buhalis and Ladkin, 2012). Furthermore, at this stage, the hotel has the opportunity to gain insight into the preferences and opinions of its guests, which can be used to convert these guests into loyal customers (Berezina, 2015).

Service Quality (SQ)

According to Parasuraman, Valarie and Leonard, (1985), service quality may be defined as the difference between what consumers perceive as service and what they desire as service. When the service received or felt aligns with expectations, the service quality is considered acceptable. It is considered very positive if the service exceeds the consumer's expectations. In contrast, it is considered poor quality if the service received is less than expected.

As defined by Parasuraman, Zeithaml and Berry, (2002), service quality is defined as the difference between customers' expectations and perceptions of the service experience. The SERVQUAL scale consists of five dimensions (tangible, reliable, responsiveness, assurance, and empathy) and 22 items. As part of the empirical research, in-depth interviews were conducted with banks, credit card companies, product maintenance companies, long-distance carriers, and their customers. Despite this, the perception of service quality in restaurants can be influenced by the customers' assessment of their dining experiences and their expectations regarding their dining experiences (Marković, Raspur and

Šegarić, 2010). Customer satisfaction is strongly influenced by the quality of restaurant service (Kim et al., 2009 ; Ladhari et al., 2008).

Providing a higher level of quality is essential in order to meet customer expectations (Akbaba, 2006 ; He & Li, 2011; Hemsley-Brown & Alnawas, 2016). Mohsin and Lockyer (2010), service quality consists of both the process and the results of service delivery, which are continuously compared with the actual performance of the service providers. Thus, service quality is evaluated by evaluating the interaction between the customer and the employee (i.e., the process element), the service environment, and the outcome of the service (Brady & Cronin, 2001). In the increasingly competitive hospitality industry, it has been demonstrated that providing high quality service is essential in order to retain customers. Therefore, it is often monitored in order to improve customer loyalty (Camilleri, 2019).

Customer satisfaction, corporate image, and consumer retention can all be positively affected by the provision of excellent service in the hospitality sector (Hu et al., 2009 ; Mohsin & Lockyer, 2010). On the other hand, hotels that provide insufficient service quality may experience contentious issues such as negative customer feedback, which is often conveyed through online reviews (Akbaba, 2006 ; Dedeoğlu & Demirer, 2015). In order to improve the satisfaction of guests at all levels of service, hotel managers should be capable of identifying both tangible and intangible aspects that need to be improved (Rauch et al., 2015 ; Alharbi, 2018 ; Irama & Abror, 2019 ; Dam & Dam, 2021).

Hotels Brand Image (HBI)

The relationship between brand image and customer satisfaction is well established in the past (Wu, Liao, Chen and Hsu, 2011 ; Anwar, Min and Dastagir, 2019). Further, previous studies have shown that brand perception predicts customer satisfaction and positively impacts customer satisfaction (Wu et al., 2011 ; Anwar et al., 2019). In some previous studies, it has been suggested that brand image and customer loyalty are also related (Tu, Wang and Chang, 2012 ; Hsieh, Lu and Lu, 2018 ; Anwar et al., 2019). Furthermore, some previous empirical findings have suggested that customer loyalty can be influenced by a favorable image (e.g., brand, shop, retail) (Tu et al., 2012 ; Hsieh et al., 2018 ; Anwar et al., 2019).

The purpose of branding is to identify and differentiate the products and services of companies from those of their competitors in an efficient manner. The use of branding as a marketing strategy has been widely employed to enhance the performance of businesses (Hsu, Oh and Assaf, 2012 ; Liu, Chu, Wong and et al, 2012 ; Mizik, 2014). According to literature, the primary objective of any business should be to build a strong (Keller, 2008 ; O’Cass & Weerawardena, 2010 ; Mandil, 2016). The terms brand image and brand association are similar (Hsu et al., 2012). The relationship between a brand and a consumer's memory is known as brand association (Romaniuk & Nenycz-Thiel, 2013).

In many cases, consumers make their purchasing decisions based on their perceptions of the brand image of a company (Kim & Kim, 2005). As a consequence of strong brand image, consumers are more likely to pay more for a product or service (Keller, 1993 ; Cretu & Brodie, 2007). The concept of a unique brand image is based on the belief that it distinguishes a company from its competitors and enables it to gain a certain position in a consumer's mind, contributing to a potential boost in brand equity (Yoo et al., 2000 ; Sondoh, Omar and Wahid, 2007 ; Surjaatmadja, Hubaib and Muda, 2019). From a cognitive perspective, the brand image is related to the functional features which attract tourists (Horng, Liu, Chiu and Tsai, 2012). Positive brand images are associated with benefits and high expectations of quality by consumers (Hyun & Kim, 2011).

Research Aim and Objectives

Since the literature is lacking and relevant studies are inadequate, the primary aim of this research is to explore hotel departments managers' perspectives regarding the effect of service automation on service quality and hotel brand image in hotel chains in Egypt in light of the highlighted gaps in the literature.

The following sub-objectives have been defined in accordance with this main objective:

- 1) Identify how service automation affects service quality in Egyptian hotel chains.
- 2) Examine how service automation affects hotel brand image in Egyptian hotel chains.
- 3) Determine how service quality affects the hotel brand image.

Conceptual Framework and Hypotheses Development

Hotel brand image and service quality may be affected as a dependent variable by service automation as an independent variable. However, as an independent variable, hotel brand image may be influenced by service quality as a dependent variable. Below are diagrams illustrating these relationships and hypotheses:

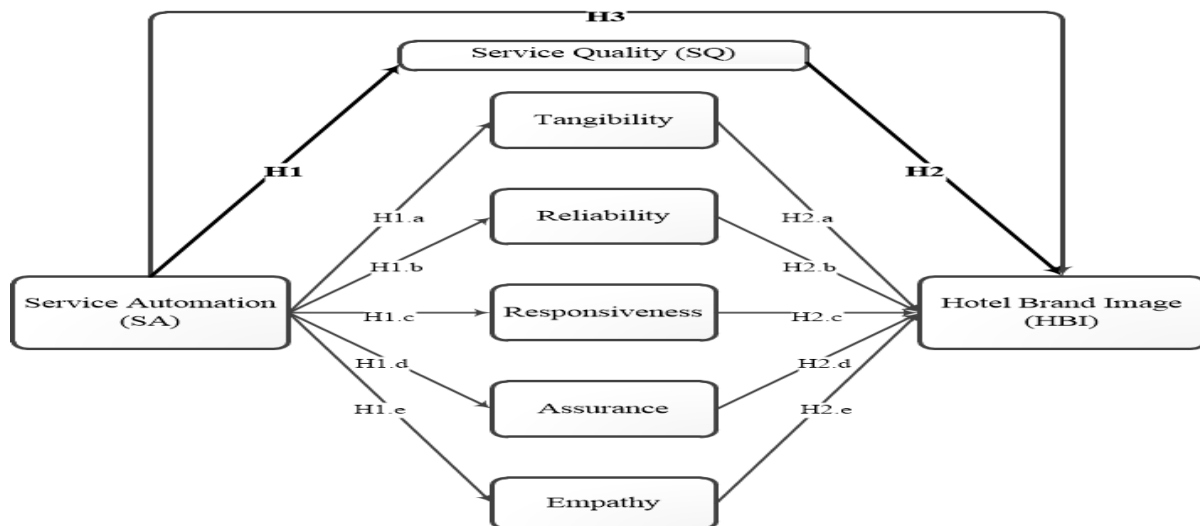


Figure (1) : Conceptual framework of the research.

Source: Adopted by The Researcher (Designed by Visio 2016).

H1: Service automation has a direct positive significant effect on service quality.

H1. a: Service automation has a direct positive significant effect on Tangibility.

H1. b: Service automation has a direct positive significant effect on Reliability.

H1. c: Service automation has a direct positive significant effect on Responsiveness.

H1. d: Service automation has a direct positive significant effect on Assurance

H1. e: Service automation has a direct positive significant effect on Empathy

H2: Service quality has a direct positive significant effect on hotel brand image.

H2. a: Tangibility has a direct positive significant effect on hotel brand image.

H2. b: Reliability has a direct positive significant effect on hotel brand image.

H2. c: Responsiveness has a direct positive significant effect on hotel brand image.

H2. d: Assurance has a direct positive significant effect on hotel brand image.

H2. e: Empathy has a direct positive significant effect on hotel brand image.

H3: Service automation has a direct positive significant effect on hotel brand image.

Methodology

The relationship between service automation, service quality, and hotel brand image is examined. A systematically defined research methodology was presented, which utilized a step-by-step approach in gathering data in order to explain the research methodology. In this field of research, positivism is widely accepted as an imperative component. The empirical research is conducted using a quantitative methodology. An online survey on google forms was justified as a method of collecting data using social media channels. The questionnaire included four main sections; the first section was a general overview covering the key sampling characteristics of participants. The second section collect responses regarding the experience of the service automation. The third section focused on data pertaining to service quality (responsiveness, tangibles, reliability, assurance, and empathy). The fourth section contained responses related to hotel brand image. A questionnaire was developed based on the researcher's research hypotheses and guidelines considered crucial in generating optimal final response rates.

The research population in this research consists of all guests who have stayed in hotel chains in Egypt over the past three years. It is not possible to determine the exact size of the hotel chain's guest population. The research depended on the convenience sample in the field research. Most research studies require samples larger than 30 and smaller than 500 (Roscoe, 1975). Pilot study of 20 respondents been used to test validity of the survey. There was only a total of (116) respondents to departments managers' survey in this research been collected.

Validity of the Research

A construct's validity refers to its accuracy in representing the concept being examined. As a result of scale validity, a scale can be guaranteed to be unidimensional, conform to its conceptual meaning, and to achieve the required level of reliability (Hair et al., 2010). Sekaran and Bougie (2016) concluded that construct validity exists by determining that all items have a value of between 0.35 (35%), 0.85 (85%) based on corrected item-total correlations.

Reliability of the Research

As a method of assessing the reliability of measurement scales containing a number of components, the Cronbach alpha coefficient is commonly used (Winch, 1999). The Cronbach alpha coefficient indicates how homogeneous the items within the review are. When the Cronbach alpha coefficient exceeds 0.70 (Hair et al., 2003), the item is considered extremely reliable. During this research, Cronbach's alpha coefficient was used to determine the constructs' reliability, and a threshold of 0.70 was established for assessment.

Table (2): Reliability Assessment

Variable	Cronbach's Alpha	No. of Items
Service Automation	0.941	10
Tangibility	0.800	3
Reliability	0.942	6
Responsiveness	0.927	4
Assurance	0.943	3
Empathy	0.974	3
Hotel Brand Image	0.971	7

Results and Discussion

This research gathered the data from hotel chains guests between June, 2022 and August, 2022. The present research gathered a total of 116 responses from hotel departments managers using online surveys which were valid for further analysis. The demographic profiles of the 116 respondents are specified below.

Sample Characteristic

It is possible to quantitatively describe data sets through two elements of descriptive statistics; the central tendency theory and the dispersion theory (Saunders et al., 2009). When conducting studies involving human participants, Pallant (2020) recommends that demographic information, including gender, age, education level, and other relevant information, be reported.

Below table shows that 90.5% of the sample gathered was males and 9.5% were females.

Below table presents the respondents' age. The figures show that 38.8% within the age group 30-39, 30.2% within the age group of 40-50, 24.1% of the respondents were within the age group 19-29 and 6.9% within the age group of +50.

Below table presents the respondent's educational level. The figures show that, 72.4% of the respondents have a university degree education, 17.2% have a Post graduate studies education, 6% have a high school education and 4.3% have a Basic Education.

Below table presents the location of the chain. The figures show that, 57.8% of the respondents stay in local or national chain and 42.2% of the respondents stay in global chain.

Below table presents the hotel location area. The figures show that, 21.6 of the respondents working in hotels in Hurghada and red sea area, 20.7% of the respondents working in hotels in Cairo, 19.8% of the respondents working in hotels in other areas, 31.9% of the respondents stay in hotels in Sharm El Sheikh and 6.0% of the respondents working in hotels in Luxor & Aswan.

Table (3): Sample Characteristic Analysis

Sample Characteristic	Frequency	Percent
Gender		
Male	105	90.5
Female	11	9.5
Total	116	100.0
Age		
19 - 29	28	24.1
30 - 39	45	38.8
40 - 50	35	30.2
+ 50	8	6.9
Total	116	100.0
Education		
Basic Education	5	4.3
High school	7	6.0
University degree	84	72.4
Post graduate studies	20	17.2
Total	116	100.0
Chain Classification		
Local or National chain	67	57.8
Global chain	49	42.2
Total	116	100.0
Hotel Location		
Cairo	24	20.7
Sharm El Sheikh	37	31.9

Hurghada & Red Sea	25	21.6
Luxor & Aswan	7	6.0
Other	23	19.8
Total	262	100.0

Descriptive Statistics

This part introduces the descriptive statistics for the study variables. All items were evaluated on a five point Likert scale; a score of (1) illustrated 'strongly disagree' or 'Extremely helpful' for service automation variable and a score of (5) illustrated 'strongly agree' or 'Not helpful at all' for the service automation variable.

The mean score for all 3 variables are as follows: service automation is between 3.58 and 4.25, service quality (tangibility) is between 3.74 and 4.37, service quality (reliability) is between 3.62 and 4.26, service quality (responsiveness) is between 3.57 and 3.86, service quality (assurance) is between 3.68 and 3.75, service quality (empathy) is between 3.85 and 3.95 and hotel brand image is between 3.80 and 4.13.

The figures for the items of the service automation variable have a mean of (3) which is higher than the point of neutrality, which indicates that most of the respondents agree with the items of service automation variable, also the figures for the items of the service quality variable have a mean of more than (3) which is higher than the point of neutrality, which indicates that most of the respondents agree with the items and the figures for the items of the hotel brand image variable have a mean of more than (3) which is higher than the point of neutrality, which indicates that most of the respondents agree with the items.

Table (4): Summary Variables Statistics of Managers Survey

Items	Mean	Minimum	Maximum	Std. Deviation	No. of Items
Service Automation	3.922	3.580	4.250	1.129	10
Tangability	3.990	3.741	4.371	1.042	3
Reliability	3.943	3.621	4.259	1.086	6
Responsivness	3.683	3.569	3.862	1.176	4
Assurance	3.724	3.681	3.750	1.240	3
Empathy	3.908	3.845	3.948	1.143	3
Hotel Brand Image	3.985	3.802	4.129	1.112	7

Correlation

Pearson correlation was used to identify the correlation between the research framework variables as detailed in the following table. Correlation coefficients are based on linear relationships or measures of the strength of relationships between variables. In this study, correlation coefficient values (r) between 0.10 and 0.29 are regarded as weak, 0.30 and 0.49 are regarded as medium strength, and 0.50 to 1.0 are regarded as strong (Cohen, 2013). The following table illustrates the correlation matrix with the correlation coefficient of Pearson as well as the associated test outcomes. This is in order to demonstrate the linear relationship between the variables.

Table (5): Correlation

Variable		Service automation	Tangibility	Reliability	Responsiveness	Assurance	Empathy	Hotel Brand Image
Service automation	Pearson Correlation	1	.653**	.516**	.479**	.433**	.577**	.609**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000
Tangibility	Pearson Correlation	.653**	1	.822**	.677**	.689**	.755**	.802**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000
Reliability	Pearson Correlation	.516**	.822**	1	.788**	.817**	.823**	.802**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000
Responsiveness	Pearson Correlation	.479**	.677**	.788**	1	.899**	.854**	.847**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000
Assurance	Pearson Correlation	.433**	.689**	.817**	.899**	1	.783**	.807**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000
Empathy	Pearson Correlation	.577**	.755**	.823**	.854**	.783**	1	.888**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000
Hotel Brand Image	Pearson Correlation	.609**	.802**	.802**	.847**	.807**	.888**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	

Hypotheses Testing

In order to test the hypotheses (**H1. a**) below, simple linear regression was used. It is evident from the below table that the service automation variable is responsible for 42.6% (R squared=0.426) of the variance in tangibility.

Table (6) : R Square Coefficient (Tangibility)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics
					R Square Change F Change Sig. F Change
1	.653 ^a	0.426	0.421	0.79290	0.426 84.643 0.000

a. Predictors: (Constant), Service Automation

From below table, it is revealed that the independent variables (service automation) have significant effect on the dependent variable (tangibility) where $F=84.64$, $DF(1, 114)$ and significance is less than 1% so, the hypothesis is rejected, and the effect is significant.

Table (7): Significance of Impact SA on Tangibility by ANOVA

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53.214	1	53.214	84.643	.000 ^b
	Residual	71.671	114	0.629		
	Total	124.885	115			
a. Dependent Variable: Tangibility						
b. Predictors: (Constant), Service Automation						

Below table presents the value explained by each independent variable (β). It is clear that SA is significantly and positively affecting tangibility ($\beta=0.603$, $p<0.01$).

H1. a: Service automation has a direct positive significant effect on Tangibility is supported.

Table (8): Simple Linear Regression analysis (Tangibility)

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.630	0.267		6.100	0.000
	Service Automation	0.603	0.066	0.653	9.200	0.000
a. Dependent Variable: Tangibility						

We performed simple linear regression in order to test the hypotheses (**H1. b**) below. As can be seen from the table below, the service automation variable is responsible for 26.6% ($R^2=0.266$) of the variance in reliability.

Table (9): R Square Coefficient (Reliability)

Model Summary								
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
						R Square Change	F Change	Sig. F Change
1	.516 ^a	0.266	0.260	0.93389	0.266	41.371	0.000	
a. Predictors: (Constant), Service Automation								

From below table, it is revealed that the independent variables (Service Automation) have significant effect on the dependent variable (reliability) where $F=41.371$, $DF(1, 114)$ and significance is less than 1% so, the hypothesis is rejected, and the effect is significant.

Table (10): Significance of Impact SA on Reliability by ANOVA of Managers Survey

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.082	1	36.082	41.371	.000 ^b

Residual	99.424	114	0.872
Total	135.506	115	
a. Dependent Variable: Reliability			
b. Predictors: (Constant), Service Automation			

Below table presents the value explained by each independent variable (β). It is clear that SA is significantly and positively affecting reliability ($\beta=0.496$, $p<0.01$).

H1. b: Service automation has a direct positive significant effect on Reliability is supported.

Table (11): Simple Linear Regression analysis (Reliability)

Coefficients ^a						
Model		Unstandardized		Standardized	t	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	1.996	0.315		6.341	0.000
	Service Automation	0.496	0.077	0.516	6.432	0.000
a. Dependent Variable: Reliability						

For the purpose of testing the hypotheses (**H1.c**) below, we used simple linear regression. The table below indicates that the service automation variable is responsible for 23% (R squared = 0.230) of the variance in responsiveness.

Table (12): R Square Coefficient (Reliability) of Managers Survey

Model Summary							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	.479 ^a	0.230	0.223	1.03710	0.230	33.984	0.000
a. Predictors: (Constant), Service Automation							

From below table, it is revealed that the independent variables (Service Automation) have significant effect on the dependent variable (responsiveness) where $F=33.98$, $DF(1, 114)$ and significance is less than 1% so, the hypothesis is rejected, and the effect is significant.

Table (13) : Significance of Impact SA on Responsiveness by ANOVA

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.553	1	36.553	33.984	.000 ^b
	Residual	122.617	114	1.076		
	Total	159.170	115			
a. Dependent Variable: Responsiveness						
b. Predictors: (Constant), Service Automation						

Below table presents the value explained by each independent variable (β). It is clear that SA is significantly and positively affecting responsiveness ($\beta=0.500$, $p<0.01$).

H1.c: Service automation has a direct positive significant effect on Responsiveness is supported.

Table (14): Simple Linear Regression analysis (Responsiveness) of Managers Survey

		Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
		B	Std. Error	Beta			
1	(Constant)	1.724	0.350		4.932	0.000	
	Service Automation	0.500	0.086	0.479	5.830	0.000	

a. Dependent Variable: Responsiveness

As a method of testing the hypotheses (**H1. d**) below, we used simple linear regression. A large proportion of the variance in assurance can be attributed to the service automation variable (R squared = 0.433), as shown in the table below.

Table (15): R Square Coefficient (Assurance) of Managers Survey

Model Summary							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	.433 ^a	0.188	0.181	1.12283	0.188	26.353	0.000

a. Predictors: (Constant), Service Automation

From below table, it is revealed that the independent variables (Service Automation) have significant effect on the dependent variable (assurance) where $F=26.353$, $DF(1, 114)$ and significance is less than 1% so, the hypothesis is rejected, and the effect is significant.

Table (16): Significance of Impact SA on Assurance ANOVA of Managers Survey

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.225	1	33.225	26.353	.000 ^b
	Residual	143.726	114	1.261		
	Total	176.950	115			

a. Dependent Variable: Assurance

b. Predictors: (Constant), Service Automation

Below table presents the value explained by each independent variable (β). It is clear that SA is significantly and positively affecting assurance ($\beta=0.476$, $p<0.01$).

H1. d: Service automation has a direct positive significant effect on Assurance is supported

Table (17): Simple Linear Regression analysis (Assurance) of Managers Survey

Coefficients ^a						
Model		Unstandardized		Standardized	t	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	1.856	0.378		4.905	0.000
	Service Automation	0.476	0.093	0.433	5.134	0.000

a. Dependent Variable: Assurance

We used simple linear regression to test the hypotheses (**H1. e**) below. The table below illustrates how a large percentage of empathy variance can be attributed to the service automation variable (R squared = 0.333).

Table (18) : R Square Coefficient (Empathy) of Managers Survey

Model Summary							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	.577 ^a	0.333	0.328	0.93689	0.333	57.039	0.000

a. Predictors: (Constant), Service Automation

From below table, it is revealed that the independent variables (Service Automation) have significant effect on the dependent variable (empathy) where $F=57.04$, $DF(1, 114)$ and significance is less than 1% so, the hypothesis is rejected, and the effect is significant.

Table (19): Significance of Impact SA on Responsiveness by ANOVA of Managers Survey

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	50.066	1	50.066	57.039	.000 ^b
	Residual	100.064	114	0.878		
	Total	150.130	115			

a. Dependent Variable: Emphy

b. Predictors: (Constant), Service Automation

Below table presents the value explained by each independent variable (β). It is clear that SA is significantly and positively affecting empathy ($\beta=0.585$, $p<0.01$).

H1. e: Service automation has a direct positive significant effect on Empathy is supported

Table (20): Simple Linear Regression analysis (Empathy) of Managers Survey

Coefficients ^a						
Model		Unstandardized		Standardized	t	Sig.
		Coefficients		Coefficients		

		B	Std. Error	Beta		
1	(Constant)	1.615	0.316		5.114	0.000
	Service Automation	0.585	0.077	0.577	7.552	0.000

a. Dependent Variable: Emphy

To test the following hypotheses, multiple linear regression was employed. It can be seen from the following table that the factors of service automation, tangibility, reliability, responsiveness, assurance, and empathy account for 85.8% (R square = 0.858) of the variance in the hotel brand image.

Table (21): R Square Coefficient of Managers Survey

Model Summary							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	.926 ^a	0.858	0.850	0.43089	0.858	109.423	0.000

a. Predictors: (Constant), service automation, tangibility, reliability, responsiveness, assurance and empathy

As shown in the following table, the independent variables (service automation, tangibility, reliability, responsiveness, assurance and empathy) have significant effects on the dependent variable (hotel brand image), with $F=109.42$, $DF(6, 109)$ and significance less than 1%. Thus, the hypothesis has been rejected, and the effect has been demonstrated to be significant.

Table (22): ANOVA Coefficient of Managers Survey

ANOVA^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	121.900	6	20.317	109.423	.000 ^b
	Residual	20.238	109	0.186		
	Total	142.138	115			

a. Dependent Variable: Hotel Brand Image

b. Predictors: (Constant), service automation, tangibility, reliability, responsiveness, assurance and empathy

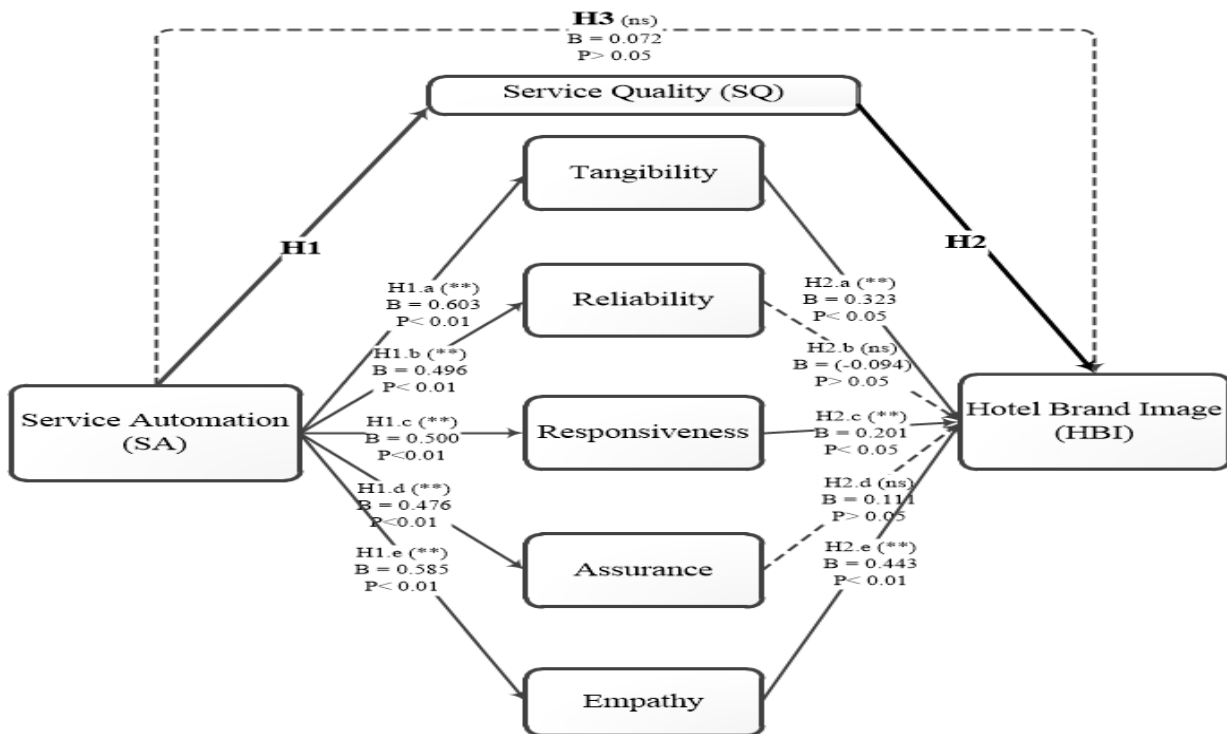
It is important to note that service automation ($B=0.072$, $P>0.05$) is not significant for hotel brand image. Also, assurance ($B=0.122$, and $P>0.05$), reliability ($B= (-0.079)$, and $P>0.05$) are no significant for hotel brand image. On the other hand, tangibility ($B=0.274$, and $P<0.05$) and responsiveness ($B= (-0.196)$ and $P<0.05$) and empathy ($B=0.420$, and $P<0.01$) have significant effects on hotel brand image.

Table (23): Multi Linear Regression analysis of Managers Survey

		Coefficients ^a				
Model		Unstandardized		Standardized	t	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	0.101	0.172		0.587	0.558
	Service Automation	0.072	0.049	0.073	1.489	0.139
	Tangability	0.274	0.077	0.257	3.544	0.001
	Reliability	-0.079	0.087	-0.077	-0.913	0.363
	Responsivness	0.196	0.094	0.208	2.076	0.040
	Assurance	0.122	0.082	0.136	1.482	0.141
	Empthy	0.420	0.081	0.431	5.155	0.000

a. Dependent Variable: Hotel Brand Image

Based on the above figure, it is evident that only three hypotheses out of six are significant. The other three hypotheses are not significant as follows summaries:



Note: →(**) = significant at 0.01, - - -> (ns)= not significant

Figure (2) : Study Model Summary

Source: adopted by The Researcher (Designed by Visio 2016)

According to the researcher, there have been a number of studies published on this topic, and although these studies are conducted in different environments, they are comparable to the researcher's study area. A significant impact was made on the study design by the knowledge of previous studies and the benefits derived from them.

Firstly, the similarities between the current research and previous researches:

The current research agreed in its aim and results with many other researches such as:

A similar aim was pursued in the present study as in those conducted by Minh et al. (2015), Mandil (2016), Ali et al. (2021), Bo and Gottfridsson (2021) and Kanyama et al. (2022) which examined customer perceptions of service quality.

A further conclusion is that this research agrees with Al-Shami et al. (2021) regarding the purpose of the study, namely the exploration of how hotels use automation in order to carry out their operations.

More above, the current study agrees with Mandil (2016), Alharbi (2018), Irama and Abror (2019) in terms of its primary focus, which is the impact of service quality on hotel brand image.

In addition, the results of Minh et al. (2015), Lee et al. (2018), Alharbi (2018), Irama and Abror (2019), Surjaatmadja et al. (2019) and Ali et al. According to 's study from Bo and Gottfridsson (2021) and Kanyama et al. (2022), the quality of service that a hotel brand provides significantly influences its image.

Moreover, the current research confirms the results of Al-Shami et al. (2021), that hotel automation has a negative impact on guest perceptions and quality.

Second, the differences between the current research and previous researches

The current research differs in its aim partially from some researches, such as:

The current research differs from the research conducted by Surjaatmadja et al. (2019) in that it examined if brand image and service quality influence public use of remittances and customer satisfaction levels.

A difference between this research and the research by Jabeen et al. (2021) is that the current research uses the analytic hierarchy process, a multi-criteria decision-making methodology, to prioritize the factors influencing automation.

This research differs from Jabeen et al. (2021) summarize that human knowledge, services, and robotics applications are the most influential factors for automation implementation.

There is a significant difference between the current research and the research conducted by Li et al. (2022), whereby they reported that automation had a positive significant on the quality of their service.

Conclusion

A major objective of this study is to compare the perspectives of guests and managers regarding the relationship between service automation, service quality, and hotel brand image within the context of Egypt's hotel chains. A review of some of the current literature and a review of different theoretical perspectives was conducted in order to develop an integrative conceptual framework. The framework was composed of three dimensions: service automation, service quality dimensions, and hotel brand image. The hypotheses were developed in a series of steps. To illustrate the relationship between the variables, this research model was created using Microsoft Visio 2016.

For the purpose of examining the hypotheses based on a positivist approach, a survey was used as a means of obtaining quantitative data. In order to examine the hypothesized associations between variables, the researcher administered and observed a questionnaire to 116 hotel chain department managers. SPSS 26.0 software was used to analyze the hypothesized associations between variables.

As a result of the managers' survey, it is concluded that service automation has no significant impact on the brand image of hotel chains. Although the quality of the hotel's service is partially responsible for the brand image of the hotel, service automation has a significant positive impact on service quality from the perspective of the manager.

Limitations of The Research

Several studies have shown that convenience sampling does not accurately reflect the characteristics of the general population. This is primarily a convenience sampling study that employs a non-probability methodology. Although the sample size of this study was sufficient and the characteristics of the sample met the criteria for the intended population, caution is imperative when generalizing the results beyond this sample.

A second limitation of this study is that the research context is limited to Egyptian hotel chains. It is critical to note that the characteristics and characteristics of different hotel classifications may vary significantly from one another. It is therefore difficult to generalize the results of this study.

As a final consideration, choosing the right data collection technique is sometimes difficult. In this study a questionnaire tool was used, which is flawed in that it does not identify some problems because the questions are not flexible. Furthermore, the respondent may need to elaborate in the response.

Recommendations for Future Researches

Future research should focus on the following directions:

Firstly, in light of the fact that the research was limited to hotels owned by chains in Egypt, future studies may include other types of hotels, such as independently owned hotels.

Moreover, future research should focus on a single or a few of these technologies to examine their perceptions by staff members. This is based on the research model used, which was a comprehensive analysis of all the latest automation technologies.

A literature review indicated that hotel personnel are concerned regarding the introduction of these technologies. It is recommended that future research will focus on reducing the staff's concern about the introduction of these technologies.

In addition, the exploration of the effect of the latest service automation, robotics, and artificial intelligence technologies on the revenues of hotels and restaurants is a promising future research area that has the potential to contribute significantly to the hotel and restaurant industry.

Recommendations for The Hotels Decision Makers

There is a significant positive impact of service automation on service quality. Therefore, hotel decision makers should take this into consideration for upcoming updates whenever there is a requirement for service automation.

According to the literature, hotels should be interested in integrating cutting-edge technologies throughout the entire customer journey. This is in order to stay current with the latest technological developments in comparison with the global market and also to keep its brand image up.

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