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Robotics technology implementation in the 21st-century hospitality business environment: A survey study

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Abstract
This study examined the challenges of robotic technology implementation in the 21st-century business environment. The objective is to examine the application of robotics in hospitality services and its potential impact; to understand robotics as it applies to hospitality services, and to assess the acceptance and adoption of robotics technology by stakeholders in hospitality services. Data was gathered through the use of a self-questionnaire distributed to the staff of selected major hotels in Lagos. Out of the 250 questionnaires, 186 were returned, and 148 were found usable for the data analysis. The result shows that the majority of the hotel staff are ready to accept and use robotic technology in their work. They believe that implementing the technology will enhance quality, efficiency, and faster service delivery to guests beyond their expectations. Also, the findings revealed that adopting robot application promote productivity, professionalism, profitability, and marketability in hospitality management. However, some of the challenges revealed that there are lack of proper knowledge, skills, and experience among the staff to operate the robotic software which affects its effectiveness, also the cost of installing the devices and software is a challenge. Many of the respondents feared that robots would take over their jobs if implemented, causing rejection. Although, the technology guarantees interdepartmental coordination by promoting the uninterrupted functioning of all the departments. The study recommended that each hotel should make a strategic commitment to integrating robotic applications in their major operational, safety, and security services. That will reduce labor in places where fewer workers are required to execute a particular task, lowering labor expenses and boosting productivity.

Keywords: Robotic, Technology, Implementation, Hotel, Nigeria

1. Introduction

Advances in robotics technology continue to gain acceptance in many work environments. This technology can positively transform working conditions, increase efficiency, security, and safety levels, and enhance services offered in the hospitality industry. Robots are becoming the driving force of technology underpinning a new generation of automatic devices. It is already an important driver for competitiveness and flexibility in a hospitality business environment. In these industries, robotics already underpins employment.

Robotic process automation uses a set of algorithms that complete the same task simultaneously. It consists of levels of complexity,

which involves the automatic execution of IT tasks. Some manufacturing enterprises made considerable effort to build automatic machines for improved efficiency and productivity that replace employees at the workplace. However, many organizations decided to outsource some of their business processes to other firms to save costs and retain existing customers. Even though this may lead to customers switching to other organizations due to exposing business details. In this 21st century, there are business owners who have started adopting robotic technology in the hospitality business model. Presently, robotic technology is the direct application of artificial intelligence technologies in any business environment (Broadbent, 2017).

The robotic technology implementation might not be without barriers, integrating robotic automation in developing financial reports. Some of the challenges in implementing robotics include staff fears of losing their job, which is the most serious barrier. Another challenge is the lack of knowledge among the implementers on combining technology solutions used in the enterprise. With the advent of robots, some employee work hours are allocated to robotic technology, which reduces the need for human processing, other organizations radically replace their workers with robots (Syed et al., 2020; Santos et al., 2019). Despite the increase in work efficiency and production levels, the technology brought a reduction in the workforce which provoked public pressure against automation software (Fernandez, Aman, and Omar, 2020). Identifying and understanding the challenges of implementing robotic technology is critical to have a clear knowledge of the matters that can help industries propose innovative concepts in tackling these issues.

Adopting new technology in the hospitality industry has significantly benefited hospitality businesses in reducing their operational costs. Today hotels are not only paying attention to increasing their online presence and marketing strategies but also responding to changing business demands of travelers. A large number of luxurious hotels integrate new technological innovations on smartphone applications, with Internet access, with the potential to improve the visitor experience when lodging in the hotel. These applications are introduced in various hotel services and can be used everywhere by check-in guests during their stay.

Robotic technology has dramatically improved employee efficiency and customer satisfaction, generating enhanced revenue. Huang, Connolly, Zheng, and Tu (2020) opined that implementing technology in the hospitality industry benefits customers and the organization. With the assistance of technology, customers find it easy to select and communicate with the best firms in the hospitality industry where they can be accommodated for the best services at an affordable budget. In addition, customers consider technologies highly significant in the hospitality industry, as they enable them to make reservations, compare prices, and review guest experiences.

Thus, the main aim of this study was to examine the application of robotics in hospitality services and its potential impact, to understand robotics as it applies to hospitality services, and to assess the adoption of robotics technology by stakeholders in hospitality services.

2. Literature Review

Robotic technology has increasingly supported and modernized work practices in many organizations. It has the potential for safety and security efficiency at different levels of service. Presently, the impact of robotics technology in some industries is immeasurable, including hospitality services in developing countries. The automated robot application in automobile companies has altered the nature of their work, thereby affecting manufacturing productivity, marketing, and supply, in addition to customer interaction as well as strengthening relationships with competitors (Nemec Rudez and Mihalic, 2017).

Robots are built with the ability to perform physical tasks, operate independently without human intervention, and are automatically

controlled by sophisticated computer systems (Tuomi, Tussyadiah, Steinmetz 2021). They are also capable of performing autonomous functions using adaptive interfaces that handle practical tasks and interact with humans and equipment (Murphy, Gretzel, Pesonen, 2019). More so, a robot can communicate and engage with users on social media. They serve as the service employer that customers communicate with when receiving front-line assistance, making them social beings. The fact that the robots are typically social devices automated for service delivery during the service encounter is significant in social interaction because it gives customers the idea that the interaction is mutual. With another social device (Go, Kang & Suh, 2020).

Service robots can deliver value-added services while adhering to safety regulations when interacting with humans. Although alternative technologies (such as kiosks, mobile payments, and touch screens) can accomplish the essential duties carried out by service robots, service robots can offer front-line services where interaction is crucial for enhancing client experiences. Service robots can alter their pace and sound patterns to appear knowledgeable and competent. For instance, low-pitched finishing hues provide the impression that service robots can help consumers with their difficulties. Service robots speak while looking directly at consumers to convey their interests. They use body language and facial expressions to facilitate understanding when communicating with clients.

New technologies developed through the confluence of the mobile phone, Internet, computer hardware, and software Industries have presented hotels with opportunities and challenges (Economic and Social Research Council, 2012). For instance, it was predicted that by 2015, mobile devices would account for 55% of hotel reservations (Callarisa et al., 2012).

Moreover, such market segments display considerably different behaviors from traditional customers. As a result, customer retention issues are becoming more prevalent, and there are demands for more ethical corporate practices and heightened price sensitivity. According to some scholars, who developed the idea of service-dominant logic, social media give tourism businesses opportunities to interact with customers in novel ways, enabling the co-production and co-creation of business knowledge, rather than relying on the conventional management approach where businesses are segregated from customers.

The ability of hotels to adapt their current business capabilities in creating appropriate offerings through robotic technology vehicles and starting a strategic dialogue about the benefits and potential difficulties in facilitating customer interaction through new distribution challenges remain critical challenges (Chan and Guillet, 2011). In some cases, the customization of service offerings (Lund & Jessen 2014) has almost been achieved with customers offering unique offerings that build deep and long-term profitable exchange relationships (McKay, 2010; McGrath, 2010).

2.1 Service Robots and Customer Interaction

Service automation and robotic technologies have impacted different facets of hotel operations. For instance, hotels have installed self-service kiosks that do not require front desk staff, enabling guests to complete the check-in and check-out processes independently. Furthermore, check-in/check-out services have gradually been accessible through mobile devices (Ivanov, Webster, & Berezina 2017). Additionally, the hospitality and tourism sectors are rapidly using robots to carry out various activities, including delivering food and other items, checking guests in and out, and providing security and information (Guan, Gong, Li, and Huan, 2020).

Depending on their level of automation, service robots are divided into two categories: semi-automatic and fully automated. Programming or remote control input from a human can make semi-automatic robots perform these tasks. On the

other hand, automated robots are intelligent beings that can respond to changes in their environment and communicate with one another without outside intervention (Christou, Simillidou & Stylianou, 2020).

Several prestigious hotels have recently incorporated service robots to offer unique guest experiences in anticipation of service robots providing dependable, convenient, and efficient service. For instance, the Henn-na Hotel in Japan uses anthropomorphic and dinosaur-shaped robots to perform human staff jobs. It launched in 2015 and was named the world's first robot-powered hotel by Guinness World Records (Choi, Choi, Oh, & Kim, 2020). This innovative robot has since expanded its operations to new regions. The hotel works with robot movers, robot cloakrooms, and personal robot helpers in each room. While fully robotic hotels are still uncommon today, self-check-in, virtual personal assistants, and robots that deliver rooms are just a few of the customer-facing procedures for which hotels use intelligent automation.

Savioke's Relay works for several hotels and mainly works with people to coordinate deliveries. Relay can distinguish room numbers, go through crowded hallways, and use elevators without running into anything because of its cameras and sensors. When the Relay arrives at its destination, its lid automatically opens to let customers, including those ordering food and supplies, take their orders. Relay asks visitors to leave feedback on a screen so that quality control may be done more efficiently. In reaction to a positive signal from the guest system, Relay sways his body. This example illustrates how technology is advancing and how people and robots can work together in hotels. Service robots must recognize user emotions through body language, facial expressions, and speech to respond empathetically and effectively while in contact with the user. On the other hand, recent advancements in robotics revealed consistent interaction with human personnel, expressing facial expressions and emotional responses passionately, as corroborated by (Hou, Zhang & Li, 2020).

By influencing people's lives and views, technology has the power to alter how people view, demand, and use new technologies. For instance, in the hotel industry, robots give guests information, but they may also need contact (Hou, Zhang & Li, 2020). The public, however, might object to service robots providing human services. Even though service robots are becoming more common in the tourism and hotel industries, research in the literature shows that consumer opposition to them is essential (Choi et al., 2020). The lack of human interaction with robots and ethical worries about potential increases in unemployment could be contributing factors. The traditional service view may be psychologically challenged if service robots take the place of human employees.

Additionally, customers' worries and fears about utilizing new technology are expressed through technology anxiety. In this regard, it is acknowledged that technology anxiety is a crucial psychological factor influencing the acceptance of new technologies (Ivanov, Webster, & Berezina, 2017). In other words, a customer's readiness to adopt new technology depends on their belief in its future worth. At this point, it is vital to highlight the benefits and drawbacks customers believe they will experience if they choose robots over humans. Customers perceive competitive gains from robot services that they cannot obtain from human services. Customers who believe a cutting-edge service model is better than a conventional one favor it. Because of their practicality, efficiency, and usability, guests at hotels and other lodging places accept and even enjoy robots. How hotel guests feel about robot applications may dramatically affect their choice of hotels.

2.2Technological Innovations in Hospitality

There are several instances where robots help their human counterparts in productive ways, including in hospitality services. Even though robots are not universally viewed favorably, some people are less

likely to use robots the more negatively they feel about them. However, the growing number of technological innovations in hospitality services is overwhelming. Here is a short review of some of them:

- **Automated check-ins and check-outs**

An automated check-in system has been installed in many hotels over the years for quick service to guests. That was to ensure guests were quickly registered and issued a room without spending much time at the counter. The hotel's check-in and check-out system are superfast to make sure the waiting time to get a room by the guests is reasonably minimized. An automated system contains all the details in the database which allows the customer service staff to work swiftly regardless of the number of customers arriving at the hotel. Hotel services have improved considerably on the integration of check-ins and check-outs. Long queues are no longer witnessed during peak periods at such hotels that embrace new technology. Interestingly, check-in and check-out applications are now available on mobile phones, tablets, and computers for guests to initiate special requests to the hotel.

- **Keyless Entry**

Many hotels installed an electronic key lock at the lift and room doors. Replacing conventional mechanical key lock entry system. A keyless entry system is a lock that is controlled by a keypad at the nearby door requiring entering a predetermined numeric code. In some major hotels, personal smartphones are used instead of keycards to unlock hotel doors. For example, Starwood Hotels uses a keyless entry app to unlock doors for guests.

- **Smart Lighting**

Room lighting technology adopted in luxury hotels was designed for energy saving. The technology uses high-efficiency fixtures and automatic switches based on occupancy and sunlight. Lighting applications produce a functional outcome such as general room light, accent light, and task light. Some hotels can allow guests to remotely dim the lights, just like using a smartphone app to change the thermostat in the room.

- **Smart Thermostats**

Smart thermostats are automatic devices used for controlling hotel room air conditioning and heating. Their main function is to control the room temperature throughout the day by the guest using features, such as sensors and WiFi connectivity ((Kerr & Drennan, 2010). This technology is integrated into the smartphones of the hotel customers to allow them to adjust their room temperature, even if they are outside the hotel premises.

- **WiFi Infrastructure**

Nowadays, WiFi has become a necessity for the hotel business. Guests need to know the availability of WiFi before they check in at the hotel. Many guests expect to have free access to the Internet seamlessly without the need for a username and password. Several hotels had already abandoned a user-pay Internet access model. Hotels provide free in-build Internet coverage for all staff, guests, and visitors within the premises.

- **Alarm (Smoke and Fire Detector)**

It is a mandatory practice for hotels to install any or all types of smoke and fire detectors. The installed detectors in the hotel send a signal to a fire alarm control panel whenever there is an emergence of smoke or fire.

- **Escalator**

High-star hotels installed escalators to move people faster between floors within the hotel. They are used where lifts are insufficient to control the movement of a large number of people faster and conveniently. Escalators like lifts can be programmable controlled or automated to function as a standard staircase.

- **Laundry spinning washing and drying machine**

Hotels use this robotic laundry machine to take off all laundry items of the hotels and that of guests to meet guest and customer needs. A clothes or tumble dryer is to dry a load of textiles such as clothing, bedding, and other items after they have been cleaned in a washing machine. On a clothesline, clothes horse, or another type of drying rack, garments can also be dried naturally through evaporation and, if sunshine is available.

In many dryers, hot air is circulated through a rotating drum known as a "tumbler" which releases the moisture. On the other hand, the tumbler rotates to keep a gap among the objects. Because of the loss of short, soft fibers and lint, utilizing these types of machines can cause clothing to shrink or lose some of its softness.

3. Research Methodology

To achieve the objectives of this study a survey method was adopted. A convenient sampling strategy was carried out among the chosen respondents. Convenient sampling allows researchers to collect data from a large group of people relevant to the study. The application of this method ensures that the respondents possess the characteristics of the population of the research. So data is collected from those accessible and willing to participate in this research by filling out the research instrument distributed. The well-structured questionnaire was designed and self-administered at major hotels in Lagos between June and July 2023, to get firsthand opinions from the respondents. The questionnaire was divided into two sections (A and B). Section A comprises the demographic information of the respondents, whereas section B comprises questions that seek respondents' information regarding the acceptance and challenges of adopting robotics technology in hotel management.

The researcher self-administered two hundred and fifty (250) questionnaires among employees of five big hotels in Lagos, Nigeria. Despite all the follow-up efforts by the researcher to retrieve all the questionnaires, only 186 were returned, yielding a 74.4% response rate. At the end of the data screening, 38 responses were discarded due to incomplete data and carelessness. A total of 148 questionnaires were found usable and sufficient for data analysis.

The data collected was analyzed using SPSS statistical software. A descriptive and frequency analysis was used for collating, analyzing, and presenting the demographic and robotics adoption data.

4. Data Analysis

4.1. Demographic Variables

Table 4.1 shows that 40% are male and 60% are female. The age group shows that the majority (70%) of the people working in hotels are between the ages of 21 and 36. The majority (46.6%) are holders of degrees and higher national diploma certificates, and only 6.8% of the workers (among the respondents) hold PhD degrees. 44.6% of them worked between 1-4 years, 27.7% worked less than one year, and only 10.8% worked more than years. Also, the table above shows that 27.0% of the respondents were managerial staff, 18.2% were supervisory staff, and 54.8% were operational staff. This implies that the majority of the respondents were the operational staff.

Table 4.1. Demographic Variables

Demographic/Variable	n (%)
Gender	
Male	59 (40.0)
Female	89 (60.0)
Age (years)	
18-20	22 (14.8)
21-28	61 (41.2)
29-36	40 (27.0)
37 >	25 (17.0)
Educational level	
National Diploma	25 (16.9)
Bachelor/HND	69 (46.6)

Master	44 (29.7)
Doctorate	10 (6.8)
Work Experience	
Less than 1 year	41 (27.7)
1-4 years	66 (44.6)
5-10 years	25 (16.9)
11 years and above	16 (10.8)
Rank/level in the hotel	
Managerial	40 (27.0)
Supervisory	27 (18.2)
Operational	81 (54.8)

4.2. Adoption of Robotics Technology in Hotels

The results of respondents on the uses of robotic technology in business operation. The result thereon shows that 12 respondents both strongly disagreed and disagreed (8.1%), 25 were undecided (16.8%), 56 respondents agreed (37.8%), and 43 strongly agreed (29.2%). This implies that robotic technology provides quality service to guests, which significantly helps exceed guests' expectations.

The results of respondents on Robotic technology are reliable. The result thereon shows four respondents both strongly disagreed (2.7%), nine disagreed (6.1%), 38 were undecided (25.7%), 72 respondents agreed (48.6%), and 25 strongly agreed (16.9%). This implies that robotic technology is reliable.

The results of respondents on Robotic technology are effective for prompt service. The result thereon shows six respondents disagreed (4.1%), 44 were undecided (29.7%), 58 respondents agreed (39.2%), and 40 strongly agreed (27%).

The results of respondents on robotic technology help the staff of hotels to be more productive, professional, and profitable. The result thereon shows that ten respondents strongly disagreed (6.7%), nine disagreed (6.1%), 36 were undecided (24.5%), 55 respondents agreed (37.1%), and 38 strongly agreed (25.6%). This implies that robotic technology helps the staff of hotels to be more productive, professional, and profitable.

The results of respondents on that robotic technology goes a long way to ensure customers get value for their money. The result thereon shows that six respondents strongly disagreed (4.1%), six disagreed (4.1%), 37 were undecided (25%), 60 respondents agreed (40.5%), and 389 strongly agreed (26.3%). This implies that it goes a long way to ensure customers get value for their money.

The results of respondents on robotic technology are specifically designed to meet the varied requirements of any size hotel and resort. The result thereon shows that five respondents strongly disagreed (3.4%), 33 disagreed (22.3%), eight undecided (5.4%), 54 respondents agreed (36.5%), and 48 strongly agreed (32.4%). Thus, robotic technology is specifically designed to meet the varied requirements of any size hotel and resort.

Table 4.2. Use of robotics technology in hotel business

Question	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Robotic technology provides quality service beyond guests' expectations	43(29.2)	56(37.8)	25 (16.8)	12 (8.1)	12 (8.1)
Robotic technology is reliable	25(16.9)	72(48.6)	38(25.7)	9(6.1)	4(2.7)
Robotic technology is effective for prompt service	40(27.0)	58(39.2)	44(29.7)	6(4.1)	0(0.0)
Helps staff of hotels to be more productive, professional, and profitable	38(25.6)	55(37.1)	36(24.5)	9(6.1)	10 (6.4)

It goes a long way to ensure customers get value for their money	39(26.3)	60(40.5)	37(25.0)	6(4.1_	6(4.1)
RT is specifically designed to meet the varied requirements of any hotel & resort	50(33.8)	51(34.5)	20(13.5)	16(10.8)	11(3.4)

4.3. Challenges of Robotics Technology Implementation in Hotel

The results of respondents on lack of proper knowledge of the software affect its effectiveness. The result thereon shows that 5 respondents strongly disagreed (3.4%), 19 disagreed (12.8%), 25 were undecided (16.8%), 54 respondents agreed (36.5%), and 45 strongly agreed (30.5%). This implies that a lack of proper knowledge of the software affects its effectiveness.

The results of respondents on the cost of installation/installation in the hotel. The result thereon shows that six respondents strongly disagreed (4.1%), 15 disagreed (10.1%), 46 were undecided (31.2%), 58 respondents agreed (39.1%), and 23 strongly agreed (15.5%). This implies the cost of installation/installation in the hotel.

The result of respondents on Robotic technology guarantees interdepartmental coordination by promoting the uninterrupted functioning of all the departments. The result thereon shows that 32 respondents strongly disagreed (21.6%), 24 disagreed (16.2%), 74 respondents agreed (50.0%), and 18 strongly agreed (12.2%). This implies that Robotic technology guarantees interdepartmental coordination by promoting the uninterrupted functioning of all the departments.

The results of respondents on Poor maintenance culture, the result thereon show that 11 respondents strongly disagreed (7.4%), 20 disagreed (13.5%), 21 respondents agreed (14.2%), and 53 strongly agreed (35.8%). This implies a Poor maintenance culture.

The result of respondents on software is specifically designed to meet the varied requirements of any size hotel and resort. The result thereon shows that six respondents strongly disagreed (4.1%), 29 disagreed (19.6%), 25 were undecided (16.8%), 53 respondents agreed (35.8%), and 35 strongly agreed (23.7%). This implies that software is specifically designed to meet the varied requirements of any size hotel and resort.

Table 4.3 Challenges of the implementation of robotics technology in the hotel business environment

Lack of proper knowledge of the software affects its effectiveness.	35(30.5)	54(36.5)	25(16.8)	19(12.8)	5(3.4)
Cost of installation/installation in the hotel.	23(15.5)	58(39.1)	46(31.2)	15(10.1)	6(4.1)
Robotic technology guarantees interdepartmental coordination by promoting the uninterrupted functioning of all departments	18(12.2)	74(50.0)	24(16.2)	32(21.6)	0(0.0)
Poor maintenance culture	53(35.8)	43(29.1)	21(14.2)	20(13.5)	11(7.4)
Software is specifically designed to meet the varied requirements of any hotel & resort	35(23.7)	53(35.8)	25(16.6)	29(19.6)	6(4.1)

4.4. Robotics Technology Enhances Efficiency in Hotel Business Environment

Respondents' results go a long way to ensure customers get value for their money. The result thereon shows eight respondents disagreed (5.5%),

28 were undecided (18.9%), 89 respondents agreed (60.1%), and 23 strongly agreed (15.5%). This implies that it goes a long way to ensure customers get value for their money.

The results of respondents on it help the front desk and reservation unit to provide quality service to the guests. The result thereon shows that 24 respondents disagreed (16.2%), 45 were undecided (30.4%), 61 respondents agreed (41.2%), and 18 strongly agreed (12.2%). This implies that It helps the front desk and reservation unit to provide quality service to the guest.

The results of respondents enhance the quality of their services and improve customer satisfaction. The result thereon shows that 20 respondents strongly disagreed (13.5%), 21 disagreed (14.2%), 11 undecided (7.4%), 43 respondents agreed (29.1%), and 53 strongly agreed (35.8%). This implies enhancing the quality of their services and improving customer satisfaction.

The results of respondents on robotic technology used in the hotel help access guest information systems. The result thereon shows that 20 respondents strongly disagreed (13.5%), 21 disagreed (14.2%), 11 undecided (7.4%), 43 respondents agreed (29.0%), and 53 strongly agreed (35.8%). This implies that robotic technology used in the hotel helps in accessing a guest information system.

The results of respondents on the ever-increasing stream of marketing strategy encouraging the use of Robotic technology, the result thereon show that 25 respondents strongly disagreed (16.9%), six disagreed (4.1%), 29 undecided (19.6%), 53 respondents agreed (35.8%). In contrast, 35 strongly agreed (23.6%). The ever-increasing stream of marketing strategies encourages the use of Robotic technology.

Table 4.4. Robotics technology enhances efficiency in the hotel business environment

It goes a long way to ensure customers get value for their money	23(12.2)	89(41.2)	28(30.4)	8(16.2)	0(0.0)
It helps the front desk and reservation unit to provide quality service to guest	18(12.2)	61(41.2)	45(30.4)	24(16.2)	0(0.0)
To enhance the quality of their services and improve customer satisfaction	53(35.8)	43(29.1)	11(7.4)	21(14.2)	20(13.5)
Robotic technology used in the hotel helps in accessing a guest information system	52(25.2)	40(28.1)	12(8.2)	21(14.2)	20(13.5)
The ever-increasing stream of marketing strategies encourages the use of Robotic technology	35(23.6)	53(35.8)	29(19.6)	6(4.1)	25(16.9)

5. Discussion of Findings

The study examines the adoption and challenges of robotic technology implementation in the 21st-century hospitality business environment. The findings show that robotic technology provides quality service to guests, which significantly helps exceed guests' expectations. In addition, most respondents agreed that robotic technology is reliable. As supported by (Winata & Mia 2015), the improvement in new technology has introduced self-room reservations using personal mobile phones anywhere and anytime, with internet access.

The finding revealed that robotic technology is effective for prompt service and helps hotel staff to be more productive, professional, and profitable. Findings also show that robotic technology is specifically designed to meet the wide-ranging needs of big or small hotels even in developing countries. This brings value to the guests, thereby stimulating their retention and loyalty. As cited by (Siguaw &

Namasivayam 2013), a hotel's robotic technology adoption propensity can be linked mainly to its prospects and other values the technology can bring to its customers, in addition to its expansion to meet its target market share.

Furthermore, the finding shows that a lack of proper knowledge of using robotic software applications affects its effectiveness and the cost of installation in the hotel is a challenge. Because of intellectually unchallenging work, people enjoy a significant increase in their leisure time, allowing them to engage in other pleasures.

In addition, the finding shows that robotic technology guarantees interdepartmental coordination by promoting the uninterrupted functioning of all the departments. Those software are specifically designed to meet the varied requirements of any size hotel. The finding shows that robotic technology enhances efficiency in a hospitality business environment and that robotic technology used in hotels helps access guest information systems. The ever-increasing stream of marketing strategies encourages the use of robotic technology.

6. Conclusion

Labor costs- including training, retention, and attrition- represent the hotel's most considerable overhead compared to all other operating expenses. Many customers will be served simultaneously by concierge robots, chatbots, and automated kiosks, which may not be feasible with human workers. They are also capable of working non-stop. In addition to reducing direct labor expenses, robotic technology will also reduce indirect labor costs, including recruiting, administration, and training. Therefore, it makes strategic sense to introduce robotics to the hotel industry. It will reduce labor in places where fewer workers are required to execute a particular task, lowering labor expenses and boosting productivity.

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