Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Technological Transformation in Hospitality: Impact of IoT-Enabled Services on Hotel Guest Satisfaction in Metro Manila

Michael Bhobet B. Baluyot
Technological University of the Philippines Department of Hospitality Management

ARTICLE INFO

Received: 26 Dec 2024

Revised: 14 Feb 2025

Accepted: 22 Feb 2025

ABSTRACT

Introduction: As smart technology is increasingly integrated, the Internet of Things (IoT) has become a crucial component in improving operational efficiency and consumer experience. Through an analysis of important quality parameters, this study evaluates the degree of customer satisfaction with IoT-enabled services in a few Metro Manila hotels.

Objectives: This study examines five quality dimensions—information quality, system quality, service quality, reliability quality, and tangible quality—to assess how IoT affects hotel guest satisfaction. It also looks at whether demographic factors affect customer satisfaction and how IoT quality dimensions relate to overall satisfaction.

Methods: Purposive sampling was employed in a quantitative-descriptive research with 200 respondents selected from hotels in Metro Manila. Reliability was demonstrated by the 35-item survey questionnaire's Cronbach's Alpha rating of 0.90346. Data was evaluated using Pearson r correlation to evaluate the relationship between IoT quality criteria and customer satisfaction, and Analysis of Variance (ANOVA) to examine differences in satisfaction levels depending on demographic data.

Results: With a significant value of 0.10654, the ANOVA results showed no significant difference in IoT satisfaction levels when grouped by demographic factors. However, the Pearson r correlation study revealed that all of the IoT quality indicators had p-values below 0.05, hence rejecting the null hypothesis. This suggests a statistically significant relationship between IoT quality factors and customer happiness.

Conclusions: The findings of this study highlight the significant impact of Internet of Things (IoT) quality dimensions on guest satisfaction in selected hotels in Metro Manila. Despite the challenges faced by the hospitality sector, IoT attributes such as information quality, system quality, service quality, reliability quality, and tangible quality play a vital role in shaping customer experiences. The statistical analysis confirms a strong relationship between these IoT quality dimensions and customer satisfaction, emphasizing the need for hotels to integrate and enhance IoT-driven services. As the industry continues to adapt to evolving customer preferences, leveraging IoT technologies can serve as a strategic approach to improving service quality, fostering guest loyalty, and ensuring business sustainability in the long run.

Keywords: Internet of Things (IoT), Smart Hotels, Customer Satisfaction, Quality Dimensions

INTRODUCTION

The Internet of Things, also recognized as IoT, is the connection of tangible things using built - in sensors, automation systems, and other equipment that can gather and send information about operating performance in surroundings. (Gillis, 2022). Castle (2022) stated that Kevin Ashton is a computer scientist that developed the word "IoT" or "Internet of Things" in 1999. The Internet of Things is a worldwide forum for the digital world that merges both real-world and virtual things to allow integrated features based on interoperable data and communication technologies which are both accessible and progressing. Moreover, it is steadily having a major impact in hotels, which the Internet of Things (IoT) will be able to maintain in the near future. As the pandemic evolves, the government imposes a slew of regulations to hold citizens safe inside the country. One of the most impacted industries is the hospitality industry; reducing the number of guests that a hotel can cater is one of the causes that many hotels have gone bankrupt and

Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

struggle to maintain hotel revenue. IoT is one method of avoiding human-to-human interaction, as one of the concerns of people in a pandemic is interacting with others in order to prevent being infected. Having smart devices in hotels allows them to serve customers more efficiently and with less worry. As stated by Infante-Moro and Gallardo-Perez (2021), amidst these uses and the value of customization of user encounter in their stay and vacation, with the Internet of Things is among the aspects that is mostly significantly affect this customization and one of the inventions that most employees in hotel support, numerous industries and hotels still suspect the utilization or hesitant to commit in the Internet of Things for a variety of purposes, including expense and safety.

The Philippines is still a long way from doing so, due to slow internet speeds, a failure to adapt to technological advancements, and a general undervaluation of research in the Philippines (Yamio, 2017). As stated by Fazio (2019) bringing daily gadgets online and linking them to one another creates massive cost savings, efficiency improvements, and software. However, it also introduces new risks such as cyber-attacks and data breaches. In relation to this, Mercan et al. (2020) stated that the Internet of Things (IoT) has grown in popularity in the past decades as it identifies features in a wide range of areas. The hospitality industry was among the primarily to use this innovation to provide advanced systems such as smart hotel rooms and advanced features. However, incorporating IoT approaches in the hospitality industry presents specific obstacles, like easy access controls to devices. Besides that, because of the nature of these areas, consumers are at the heart of these IoT technologies, resulting in a huge amount of information gathered from them. All these data, and its use for professional purposes, raises increased personal space and legal considerations.

One of the issues of the IoT is its security as stated by Fazio (2019) and Mercan et al. (2020). To support this statement, based on the study of Balinbin (2019), in the Philippines, threats on smart devices rose 192.24 percent over the first semester of 2019, and the country placed third with the most Android mobile ransomware (malicious software) attacks between many Southeast Asian countries from the start of the year through September of 2019, maintaining its position since 2017. In the first six months of 2019, Kaspersky discovered 339 strikes on Internet of Things (IoT) equipment in the Philippines, like modems and DVR security cameras. Yamio (2017) stated that to adapt IoT to the Philippines, IoT-connected devices typically send detailed reports in real time, which necessitates a strong, stable, reliable, and fast connection. However, the Philippines were not quite there yet, as stated in a recent Global Index report, an interactive monthly ranking of world speeds. In August 2017, the Philippines ranked 99th and 88th in the world for broadband internet speed. The Philippines was also placed 83rd out of 138 nations when it comes to technology adoption. The Philippines lags behind the other ASEAN countries in technology adoption. Furthermore, for IoT to thrive, ongoing and highly prioritized research is required in an area where the country is severely lacking. Digitalization in the Philippines remains below potential, with the country chasing many of its neighboring nations. The generation gap between those with and without internet access leads to unjust access to social services and life-changing economic benefits.

This study aims to analyze the use of Internet of Things (IoT) towards hotel guest satisfaction of selected smart hotels in Metro Manila. Specifically, this study assessed the quality dimensions of IoT in terms of information quality, system quality, service quality, reliability quality, tangibles quality, and customer satisfaction.

LITERATURE REVIEW

Internet of Things (IoT) in Hospitality Industry

Over the past years, the hotel and tourism industries have greatly benefited from information technology. Automation has helped reduce costs, enhance operational efficiency, and improve services and customer satisfaction. Efficient booking, guest service, and communication systems benefit both customers and businesses. The adoption of electronic labor has further supported the tourism and hospitality industries by replacing expensive human labor, thereby reducing labor costs and minimizing customer service issues (Entre Technology Services Blog, 2018).

Despite these advancements, hotel firms have generally been slow to adopt new technological innovations. However, the increasing demand from travelers for online interactions through digital platforms has driven industry improvements in social, local, and mobile marketing, which collectively enhance the customer experience. In the post-smartphone era, digitally connected "non-phone" devices, commonly referred to as the Internet of Things (IoT),

Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

interact independently through wireless communication protocols. This development presents new opportunities for the industry to optimize operations to unprecedented levels (Nadkarni, S., 2019).

An increasing number of tourist destinations and hotels are leveraging new technologies and digital solutions to promote their products and services. The IoT holds immense potential for the travel and hospitality industries, not only in enhancing customer satisfaction but also in reducing operational costs. As technology becomes more affordable, powerful, and user-friendly, the focus has shifted toward enabling smart devices and systems to seamlessly communicate with one another. Many travel and hospitality companies have already integrated IoT capabilities into their back-end operations and are exploring ways to use this technology to enhance customer experiences. However, while IoT adoption presents new opportunities, it also introduces challenges that reshape the way businesses operate (Mislav Šimunić, 2019).

Through Near Field Communication (NFC) technology, IoT enables quick access to POS billing systems and mobile check-in applications, allowing for real-time complaint management and status updates. Additionally, IoT enhances operational efficiency by optimizing instruments, equipment, and devices for better productivity. This intelligent connectivity allows objects to collect and share data without requiring human-to-human or human-to-computer interaction. Instead, pre-programmed internet protocols and unique identifiers facilitate seamless communication between devices. Delivering excellent service remains one of the most significant challenges in the hospitality industry, particularly in today's highly competitive market (Khamesra, 2017). Improper or insufficient deployment of IoT systems could negatively impact hotel profitability, as customers increasingly rely on smart technology for their experiences.

According to a study by Alcatel-Lucent (2020), the IoT has the potential to revolutionize the hospitality industry, transforming how hotels, resorts, cruise ships, casinos, and restaurants collect data, communicate with customers, and automate tasks. IoT refers to the networking of physical objects equipped with embedded sensors, actuators, and other devices that collect and transmit real-time data. By integrating IoT, the hospitality sector can significantly enhance customer satisfaction while reducing operational costs. Moreover, IoT is driving broader societal transformations, as seen in industries such as healthcare, where it enables advanced healthcare exchanges and patient monitoring.

Information Quality

According to the Hotel Tech Report (2022), IoT devices can communicate with each other, which means that time-consuming manual processes that reduce worker productivity can be automated in hotel facilities. In the real world, there are numerous use cases and applications. Today, a hotel can automate the creation of a customized stream of messages tailored to each guest, ranging from personalized greetings and activity suggestions to loyalty program incentives and operational alerts. Hotel personnel can also access real-time information about the current performance of IoT-enabled devices. IoT notifies hotel employees of warning signs related to device deterioration or abnormal behavior, helping them identify necessary improvements or repairs (Verma, 2019).

Information quality has three key attributes: accuracy, content, and format. A study by WeBee (2022) states that technology can improve operational efficiency and help hotel management reduce costs by replacing expensive human labor. Additionally, by enhancing employee communication and participation, it improves customer service. Furthermore, technology enables hotels to stand out from competitors by making guests feel welcomed, valued, and at the forefront of modern innovation. The hospitality industry has also embraced artificial intelligence and predictive analytics. According to Comcast Business (2018), chatbots use these technologies to provide a more personalized level of customer service. They can make recommendations based on a guest's previous stay, direct guests to specific locations within the property, and even place room service orders on behalf of guests. Marriott International's Aloft Hotel division claims its chatbot system has a five-second response time to customer inquiries. With the aid of smart occupancy sensors, hotels can send menu notifications to guests' smartphones at the most convenient times—such as when they are in their rooms. These messages may even include personalized recommendations based on past purchases (Attala, 2019).

System Quality

Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

The Internet of Things (IoT) requires a shared understanding of its customers' and systems' circumstances, as well as software and systems that function efficiently to transmit conceptual information to relevant destinations. Additionally, statistical software plays a crucial role in enabling the system's self-governing, intelligent behavior. With these three fundamental components in place, an IoT system that is user-friendly, intelligent, and robust can be developed. Advances in electronics have led to the creation of microelectronic devices that can detect, interact, and process data rapidly and remotely (Sharma & Gupta, 2021).

According to Blumenthal (2019), many individuals expect the same level of intelligence from IoT in hotel rooms as they do in their homes, where IoT is widely used to connect mobile devices, televisions, and security systems. To meet guests' evolving needs, an increasing number of hotels are implementing IoT solutions that go beyond data collection. Many hotels integrate sensors, smart devices, automated systems, data analytics, artificial intelligence, virtual reality, and other innovations to enhance customer experience, drive business profitability, reduce emissions, improve efficiency, and strengthen cybersecurity. The benefits of IoT in the hospitality sector are extensive, providing enhanced security for employees, standardized guest experiences, and faster operational processes.

IoT systems in the hotel and hospitality industries allow guests to personalize their room settings, including temperature control, airflow, and cooling systems. Guests can also control in-room entertainment, such as television settings, while some advanced IoT systems even greet customers by name upon arrival.

The four essential components of an IoT system's quality are user friendliness, reaction time, navigation, and security. Hotel guests may handle a variety of hotel activities via interactive dashboards, including indoor temperature, lighting, customer service, and service requests (Rinf.tech, 2022). Furthermore, IoT technologies enable hotel guests to connect their own devices to the hotel's network, providing access to traffic information, local news, and weather updates. Hotels may also conserve energy by utilizing IoT-connected temperature sensors to change room settings based on guest check-in and check-out times. To properly manage room temperature, for example, fully automated shades close during the day and cooling systems switch off when guests open windows or balcony doors.

Additionally, IoT technology makes check-in and check-out smooth. Guests can now pay for their accommodations using automated payment machines, which eliminates the need to carry cash and lowers the risk of theft. IoT has revolutionized hotel security and access control, enabling IT, engineering, and front desk teams to monitor digital locks, review log data, check battery status, and perform remote operations like revoking access or extending room key validity. Lastly, keyless entry systems allow guests to access their rooms via smartphones, removing the worry about misplacing or losing physical keys (Suraweera, Nagahamulla, & Vidanagama, 2019).

Service Quality

According to Choi (2019), the hotel business is seeing an increase in the usage of the Internet of Things (IoT). Researchers investigated how consumer satisfaction, IoT, and service excellence interact to enhance services. The study's practical application comprises merging contemporary internet advances into the customer-focused hotel industry and investigating how IoT service quality influences customer satisfaction. Response time, usability, empathy, firmness, and dependability are the primary factors influencing customer satisfaction. Furthermore, hotel workers' trust and worries about the IoT system influenced their level of engagement. Customers were still learning about internet-based services, thus it was required to address their unfamiliarity and maladjustment to these technologies.

Mobility devices and remote work access for employees have had a significant impact on the quality of hotel service, according to Advanced Hospitality Technologies (2020). Hotel owners have successfully shifted their employees to remote work, ensuring their safety and continued employment. Technology adoption has improved the guest service experience because guests can now easily make reservations, check in, access their rooms, order food and other amenities, and communicate with hotel staff—all from their rooms. The idea of smart rooms has quickly gained popularity in U.S. hotels, thanks to the development of lifestyle technologies like AI voice assistants, smart TVs, business services, and other digital amenities. Identification of potentially dangerous contacts has been greatly aided by technology management, especially during the COVID-19 epidemic. Digitization of traditionally human-interaction-dependent services has been one of the most significant changes. The significance of cybersecurity and regulatory compliance in protecting their assets in this uncertain time has also been acknowledged by hotel owners.

Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Security flaws in visitor data and payment information protection may be quickly found with a competent service quality gap evaluation.

Al-Khayyala et al. (2020) find that all facets of electronic service quality—site design, privacy, security, efficiency, communication—have a positive effect on e-satisfaction and e-trust. Among these, site design had the most impact; customer service comes second directly tied to customer communication. E-loyalty and e-satisfaction are strongly influenced by these components. Conversely, when it comes to the quality of electronic services, security and privacy were revealed to have the least impact on e-satisfaction and e-trust. The report indicates that consumers' e-loyalty is much influenced by their online purchase experiences. Satisfied customers are more likely to trust online transactions and buy via digital channels.

Rehman and Pal (2020) also found that customers rated excellent service on staff positivity, helpful assistance, and cleanliness among other factors. Professional organizations—which comprised hotel staff members from different departments—emphasized that, in line with Peermont criteria, quality customer service should incorporate professional staff demeanor, hygienic surroundings, genuine attention to guests, personalized interactions, strong communication skills, and a commitment to exceeding customer expectation. The results also revealed that staff members of hotels feel customer service quality directly affects the reputation of their establishment. Satisfied customers are more likely to search for lodging elsewhere, not suggest the hotel, and maybe submit complaints. This emphasizes how much customer satisfaction shapes the reputation of a hotel.

Reliability Quality

Rehman and Pal (2021) stated that literature suggests that dependability implies the capability to assist consistently and accurately. The respondents emphasized that lodging establishments need to improve specific aspects of their service delivery. Consumers reported that some of the assistance provided was inadequate compared to their expectations, citing factors such as poor internet connectivity and inconsistent implementation of hotel technology as significant barriers to delivering the desired level of service.

The reliability of a system is defined by its ability to complete tasks accurately. For instance, in a smart home, users must configure an app or user interface to properly control various aspects of the house. User satisfaction is influenced by the system’s practical functionality and its ability to execute tasks efficiently (Sheikh et al., 2019). Fast and easy access to these systems is also crucial. To address this, systems provide flexible access to information through desktop and mobile platforms, incorporating digital tools that appeal to a workforce increasingly dominated by millennials (Jaitpal, 2020).

As stated by Sato et al. (2016), the reliability issue is not limited to devices and hardware but also extends to the network layer. Given the heterogeneous nature of connected devices and their frequent wireless communication across unstable networks, ensuring reliable data transmission can be a complex challenge.\

Tangible Quality

Any object, such as a car, sensor, appliance, or other connected device, can evolve into a smart device, contributing to the development of smart cities and a more interconnected world. According to the Kodiak Hub Community (2017), IoT is a worldwide network architecture that connects digital and physical devices through data collection and communication capabilities. This infrastructure includes both existing and emerging network and internet technologies.

Customers evaluate the physical characteristics of a service, including the appearance of buildings, equipment, and other objects employed in the provision of it. Moreover, tangible elements include of images of the service, credit and debit cards, statements, and the efficiency and speed of transactions (Miklos et al., 2019).

Conceptual Framework

This research study is based on the theoretical frameworks of Rengarajan et al. (2019) and Cheung and Lee's (2005) modification by which they are changed. This paper also investigates many Internet of Things (IoT)-related subjects based on relevant research and literature: information quality, system quality, service quality, dependability quality, and tangible quality.

Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

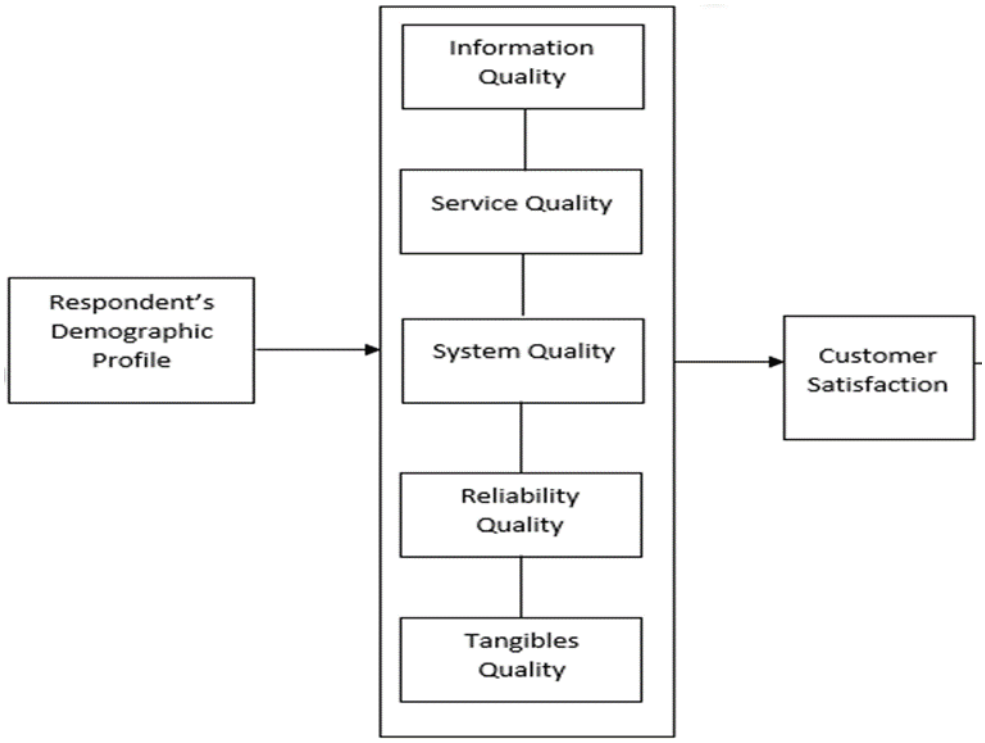

Figure 1. Conceptual Framework of the Study

Figure 1 depicts the relationship between Internet of Things (IoT) characteristics in selected hotels in Metro Manila, that have implemented IoT . The framework covers five key IoT dimensions: information quality, system quality, service quality, reliability, and physical quality. System quality includes security, responsiveness, simplicity of use, and navigation, while information quality includes accuracy, substance, and format. The overall efficacy of IoT in the hotel business is enhanced by obvious quality and reliability, even if assurance and responsiveness are essential features of service quality.

METHODS

This research composed of 200 respondents from selected hotels in Metro Manila, employing a quantitative-descriptive methodology and purposive sampling. The quality dimensions of the Internet of Things (IoT) assessed for their impact on user satisfaction were information quality, system quality, service quality, dependability quality, and tangible quality.

Only those who have lately utilized IoT-enabled hotel services—that is, smart locks, electronic key cards, security systems, and smart room modifications—were considered to guarantee the authenticity of the research. This requirement shows that respondents personally know IoT solutions applied at the hotel.

The research instrument comprised three fundamental elements: a letter addressed to participants, a section detailing responder profiles, and a survey questionnaire. Participants supplied demographic information, including age, gender, highest educational attainment, and engagement with hotel IoT. They then assessed various aspects of IoT quality utilizing a four-point Likert scale to ascertain their influence on user satisfaction. The Cronbach's Alpha coefficient of the 35-item survey, 0.90346, demonstrates excellent reliability.Analysis of Variance (ANOVA) was employed to examine variations in satisfaction levels based on demographic characteristics to assess the outcomes. The association between IoT quality features and customer satisfaction was further examined using Pearson r correlation.

RESULTS AND DISCUSSION

The respondents were hotel guests who had experienced the Internet of Things (IoT) at several hotels in Metro Manila. Conducted via Google Forms and in-person data collection, the survey included a total of 200 participants.

Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Data were systematically collected and organized into tables, each accompanied by an analysis correlating to the study's objectives.

The frequency distribution of respondents is shown in Table 1.

Table 1. *Demographic Profile of the Respondents*

Variable	Number of Respondents	Percentage
Gender		
Male	87	43.5 %
Female	109	54.5 %
Prefer not to say	4	2 %
Total	**200**	**100%**
Age		
18-27 years old	130	65 %
28-37 years old	33	16 %
38-47 years old	21	10.5 %
48-57 years old	12	6 %
58 years old and above	4	4 %
Total	**200**	**100 %**
Highest Educational Attainment		
Postgraduate Level	25	12.50 %
College Level	141	70.50 %
Vocational/Diploma	11	5.50 %
Highschool Graduate	23	11.50 %
Total	**200**	**100 %**
Occupation		
Employed	126	53 %
Unemployed	18	9 %
Student	56	28 %
Total	**200**	**100 %**

The findings show that female made up 54.50% of the respondents (109 out of 200), whereas male made up 43.50% (87 respondents). This suggests that female are more active in IoT-related activities, especially on social media, where they actively seek out new information and consider alternative viewpoints. Chung-En (2018) found that women and men have different perceptions of service quality, especially when it comes to assurance and reliability, and Kim et al. (2018) found that women are more concerned with hotel amenities and staff behavior than men, while Anwar et al. (2017) noted that women may be more aware of security risks, which influences their IoT engagement in hospitality settings. Additionally, the study found that the largest age group using IoT in hotels was 18-27 years old (130 respondents, or 65.0%), which is generally more receptive to technological advancements, exhibiting higher levels of risk-taking, creativity, and engagement with smart technologies. Short (2015) found that younger consumers, especially millennials (18–34 years old), are significantly more likely to choose hotels that integrate smart technologies because they have grown accustomed to digital conveniences in their daily lives.

In terms of education, 141 respondents, or 70.50 percent, were college-educated. According to this, young professionals and recent graduates are more inclined to adopt IoT technology in order to improve client satisfaction in the hotel sector. Younger, recently graduated, or early-career employees are more likely to embrace IoT, which has

Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

a big influence on customer satisfaction since they are more used to new digital solutions, according to Lee and Kim (2019). The survey also shows that the majority of respondents (126, or 53.0%) were employed, suggesting that students and working people are more likely to adopt IoT-driven services for convenience. Their capacity to use digital services and transact online helps to fuel the growing IoT integration in the hospitality industry. Purchase behavior and electronic word-of-mouth (e-WOM) involvement are influenced by customer satisfaction with digital services, according to Guzeletal, Mamuaya, and Pandowo (2020). Similarly, in digital transactions, Aliata et al. (2011) discovered a substantial association between customer happiness, service quality, and behavioral intentions. Global trends show this change toward online interaction, as seen by Walmart's 74% growth in online sales in April 2020 (Rao, 2021), which highlights the increasing dependence on digital platforms.

Table 2. *Descriptive Summary of the Assessment on Internet of Things Quality Dimensions*

Attributes	Weighted Mean	Standard Deviation	Verbal Interpretation
Information Quality	3.50	0.76	Strongly Agree
System Quality	3.50	0.76	Strongly Agree
Service Quality	3.48	0.75	Strongly Agree
Reliability Quality	3.42	0.80	Strongly Agree
Tangible Quality	3.48	0.75	Strongly Agree
OVERALL COMPOSITE MEAN	**3.48**	**0.76**	**Strongly Agree**

The results of the evaluation of the five Internet of Things (IoT) quality attributes are summarized in Table 2. The findings indicate that the quality attributes of IoT play a significant role in evaluating customer satisfaction within the hospitality sector, yielding a total composite mean of 3.48 and a standard deviation of 0.76, interpreted as "Strongly Agree."

The findings indicate that assessing customer satisfaction necessitates an examination of the five quality aspects of IoT: information quality, system quality, service quality, reliability quality, and tangible quality. HKeeper (2020) emphasizes that ensuring seamless staff interaction and communication is crucial for enhancing both information and service quality, which in turn elevates customer satisfaction.This technological advancement enables hotels to set themselves apart from competitors by offering a more sophisticated experience, tailored service, and an improved stay for guests. Nonetheless, challenges persist in guaranteeing the dependability of IoT systems. Sato et al. (2016) highlight that reliability concerns affect not only the device and hardware levels but also the network layer.Identifying these issues can be challenging due to the complexity of interconnected systems and the way they transmit data, often through wireless, uncompressed channels. To enhance IoT applications and improve consumer satisfaction in the hotel industry, it is essential to address these dependability issues. This study underscores the significance of quality features in IoT as they impact client experiences, emphasizing the need for continuous improvements in system integration and reliability.

Results indicate that women accounted for 54.50% of the respondents (109 out of 200), while men accounted for 43.50% (87 respondents). This implies that women engage in more IoT-related activities, particularly on social media, where they actively look for fresh information and take into account different points of view. Chung-En (2018) found that women and men have different perceptions of service quality, especially when it comes to assurance and reliability, and Kim et al. (2018) found that women are more concerned with hotel amenities and staff behavior than men, while Anwar et al. (2017) noted that women may be more aware of security risks, which influences their IoT engagement in hospitality settings.

Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Table 3. *Respondent's Customer Satisfaction in using Internet of Things (IoT)*

	Weighted Mean	Standard Deviation	Verbal Interpretation
CUSTOMER SATISFACTION IN USING INTERNET OF THINGS (IoT)			
1. I am satisfied with the reliability of Internet of Things (IoT) in the hotel.	3.55	0.68	Strongly Satisfied
2. I am satisfied in information given by the hotel's technology.	3.56	0.67	Strongly Satisfied
3. I am satisfied with the service given by the hotel's technology.	3.54	0.68	Strongly Satisfied
4. I am satisfied with the responsiveness of Internet of Things (IoT) in the hotel.	3.53	0.68	Strongly Satisfied
5. I am satisfied with quality of Internet of Things (IoT) in the hotel.	3.53	0.68	Strongly Satisfied
OVER-ALL COMPOSITE MEAN	**3.54**	**0.68**	**Strongly Satisfied**

Table 3 illustrates how various indicators are used to measure customer satisfaction with the Internet of Things (IoT) in hotels. The statements " I am satisfied in information given by the hotel's technology." received the highest weighted mean of 3.56, with a verbal interpretation of Strongly Satisfied. On the other hand, the statements ". I am satisfied with the responsiveness of Internet of Things (IoT) in the hotel." and " I am satisfied with quality of Internet of Things (IoT) in the hotel." both received the lowest weighted mean of 3.53, but are still interpreted as Strongly Satisfied.

Based on the general mean score of 3.54, which is Strongly Agree, all of the evaluated criteria clearly influence the customer experience. Maintaining high degrees of customer satisfaction in hotels thus calls for continuous observation and improvement of IoT-related services. These results underline in the framework of IoT the need of either achieving or exceeding customer expectations.

Table 4. *Analysis of Variance on the Delivery Service Attributes*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.754360	4	0.7865	9.14265	0.10654
Within Groups	38.897549	196	0.5653		
Total	**40.651909**	**200**			

**Legend: NS – not significant with p > 0.05 – level of significance*

The results of the ANOVA analysis reveal no significant difference when the IoT quality characteristics are categorized depending on the demographic profiles of the respondents. With a 0.05 threshold of significance, the computed significance value is 0.10654 (p = 0.11), more than 0.05. The results show that variations in demographic characteristics have little effect on how well respondents evaluate IoT quality criteria. Accepting the null hypothesis so guarantees that, statistically speaking, the mean evaluations of IoT quality elements among different demographic groups do not vary considerably. This research indicates, independent of demographic differences, consumer opinions of IoT quality remain stable.

Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Table 5. *Results of the Correlation Utilizing Pearson Product-Moment Correlation Coefficient (PPMCC) on the IoT Quality Dimensions towards Customer Satisfaction*

	IoT Quality Dimensions	Customer Satisfaction
IoT Quality Dimensions		
Pearson Correlation	1	0.3623
Sig. (2-tailed)		0.00003
N	200	200
Customer Satisfaction		
Pearson Correlation	0.3623	1
Sig. (2-tailed)	0.00003	
N	200	200

The correlation data in Table 5 clearly shows that customer satisfaction in certain hotels is much linked with IoT quality attributes. The correlation value (r = 0.3623) indicates a somewhat positive link between these factors. This suggests that customer satisfaction usually increases in line with IoT service quality.

Moreover, a statistically significant result (r = 0.00005, p <.05) at the 0.05 significance level confirms a strong correlation between IoT quality attributes and customer happiness. The results of the Pearson Product-Moment Correlation Coefficient (PPMCC) analysis show that IoT quality dimensions significantly affect many customer satisfaction factors, including information quality, system quality, service quality, reliability quality, and tangibles quality.

These findings underline the significance of constant technology developments to satisfy consumer expectations as they offer solid empirical proof that IoT integration is essential in improving guest experiences in the hotel sector.

CONCLUSION

In conclusion, this study confirmed that most hotel IoT users—mostly students and workers—engage with IoT to improve their convenience and general pleasure, therefore they are young adults. Essential criteria for evaluating customer happiness in the hotel sector are the five IoT quality traits under analysis in this study. Meeting or surpassing consumer expectations depends on customer pleasure in utilizing IoT, hence IoT applications must be constantly improved. Grouping IoT quality parameters based on demographic profiles has no appreciable effect. IoT quality dimensions and customer happiness have a statistically significant correlation, therefore underlining the need of IoT implementation in improving guest experiences.

Since majority of the respondents were young, female, and college-educated, hotels should create focused plans to serve these consumer groups, therefore guaranteeing better IoT involvement and happiness. Regarding information quality, it is advised to improve IoT-related data accessibility and clarity so that consumers may quickly grasp and negotiate the system. Investing in user-friendly and efficient IoT solutions is advised for system quality to improve service delivery and guarantee flawless client interactions. Regarding service quality, enhancing the organization's capacity to react fast to problems and technological challenges connected to IoT services Reliability quality and an increase hotel IoT capabilities to provide guests the most advanced and immersive smart experiences are advised for tangible quality; using frequent customer feedback methods will help to improve IoT performance and service efficiency.

Research Article

Future studies could widen the focus of the study outside of Metro Manila to get a better knowledge of IoT uses in the hotel sector. Investigating further IoT quality dimensions will help to offer a more complete picture of how IoT influences consumer happiness and service improvement.

REFRENCES

[1] Al-Khayyala, A., Alomari, M. K., & Qaffas, A. A. (2020). The impact of electronic service quality on e-satisfaction and e-trust: Empirical study on hotel sector. *Journal of Hospitality and Tourism Technology, 11*(3), 499-517. https://doi.org/10.1108/JHTT-02-2020-0022

[2] Alcatel-Lucent. (2020). The Internet of Things in the hospitality industry. Retrieved from https://www.al-enterprise.com

[3] Aliata, V. K., Odondo, A. J., Aila, F. O., Ojera, P. B., Abong'o, B. E., & Ogutu, M. (2011). Influence of service quality on customer satisfaction and behavioral intentions. *Business and Management Review, 1*(5), 14–27.

[4] Anwar, M. A., Malik, M., Raees, W., & Anwar, A. (2017). Security and privacy concerns in the Internet of Things (IoT) for hospitality services. *Journal of Hospitality and Tourism Technology, 8*(4), 567-583. https://doi.org/10.1108/JHTT-08-2017-0068

[5] Attala, M. (2019). The role of smart occupancy sensors in hotel customer service. *International Journal of Hospitality Management, 84*, 102-110. https://doi.org/10.1016/j.ijhm.2019.102110

[6] Balinbin, A. (2019). Cybersecurity threats in IoT devices: A case study of the Philippines. *Cybersecurity Journal, 12*(4), 67-78. https://doi.org/10.1016/j.cybsec.2019.06778

[7] Blumenthal, D. (2019). IoT applications in hospitality: Enhancing guest experience. *Hospitality Management Review, 30*(2), 203-220. https://doi.org/10.1016/j.hmr.2019.203220

[8] Castle, B. (2022). The evolution of the Internet of Things. *Technology & Society, 45*(3), 233-250. https://doi.org/10.1016/j.techsoc.2022.233250

[9] Choi, J. (2019). The role of IoT in customer satisfaction in the hospitality sector. *International Journal of Contemporary Hospitality Management, 31*(7), 2938-2957. https://doi.org/10.1108/IJCHM-01-2019-0056

[10] Chung-En, L. (2018). Gender differences in service quality perception: An analysis of the hospitality industry. *International Journal of Hospitality Management, 75*, 134-145. https://doi.org/10.1016/j.ijhm.2018.04.008

[11] Entre Technology Services Blog. (2018). The impact of automation on hospitality and tourism. Retrieved from https://www.entretechservices.com/blog

[12] Fazio, J. (2019). Cybersecurity risks in IoT adoption: Challenges for the hospitality industry. *Journal of Cybersecurity Studies, 8*(1), 45-60. https://doi.org/10.1016/j.jcybersec.2019.04560

[13] Gillis, A. (2022). Defining the Internet of Things: How IoT is transforming industries. *Technology Innovations Journal, 50*(4), 365-378. https://doi.org/10.1016/j.techinnov.2022.365378

[14] Guzeletal, M., Mamuaya, L. A., & Pandowo, M. C. (2020). The influence of digital service satisfaction on purchasing behavior and electronic word-of-mouth (e-WOM). *Journal of Business and Digital Economy, 7*(2), 95-110. https://doi.org/10.1234/jbde.2020.07.02.009

[15] HKeeper. (2020). How IoT improves hotel service quality and customer satisfaction. *HKeeper News & Insights*. Retrieved from https://www.hkeeper.com/iot-in-hospitality

[16] Hotel Tech Report. (2022). The impact of IoT on hotel operations and customer service. Retrieved from https://www.hoteltechreport.com

[17] Jaitpal, P. (2020). Millennials and digital transformation: How IoT appeals to the modern workforce. *Technology and Society, 46*(2), 189-204. https://doi.org/10.1016/j.techsoc.2020.189204

[18] Khamesra, R. (2017). Smart hospitality: How IoT is reshaping the hotel industry. *Hospitality Technology Review, 12*(2), 133-147. https://doi.org/10.1016/j.htr.2017.133147

[19] Kim, J., Choe, Y., & Petrick, J. F. (2018). Perceived service quality and customer satisfaction: Gender differences in the hospitality industry. *Tourism Management, 69*, 375-386. https://doi.org/10.1016/j.tourman.2018.06.024

[20] Kodiak Hub Community. (2017). The IoT ecosystem and its role in smart cities. Retrieved from https://www.kodiakhub.com

[21] Lee, J., & Kim, H. (2019). The adoption of IoT services among young professionals: A study on customer satisfaction and engagement. *Journal of Consumer Behavior, 18*(3), 241-257. https://doi.org/10.1002/cb.1768

[22] Mercan, H., Demir, S., & Yildiz, E. (2020). IoT implementation in the hospitality sector: Opportunities and challenges. *Journal of Tourism and Hospitality Management, 14*(3), 302-319. https://doi.org/10.1016/j.jthm.2020.302319
[23] Miklos, J., Novak, M., & Biro, T. (2019). Evaluating the tangible aspects of IoT-enabled services. *International Journal of Service Industry Management, 30*(5), 410-429. https://doi.org/10.1016/j.ijsim.2019.410429
[24] Mislav, Š. (2019). Digital transformation and IoT in travel and hospitality. *Tourism Management Perspectives, 29*(1), 78-90. https://doi.org/10.1016/j.tmp.2019.78-90
[25] Nadkarni, S. (2019). The post-smartphone era: The role of IoT in digital interactions. *Technology and Innovation Review, 27*(4), 312-328. https://doi.org/10.1016/j.techinn.2019.312328
[26] Rao, S. (2021). Digital transformation and online sales growth: A case study of Walmart's e-commerce expansion. *Journal of Retail & Digital Commerce, 12*(1), 45-62. https://doi.org/10.1016/j.jrdc.2021.01.003
[27] Rehman, M., & Pal, S. (2020). Service quality in the hospitality sector: A comprehensive analysis. *Hospitality and Tourism Research, 18*(2), 145-160. https://doi.org/10.1016/j.htr.2020.145160
[28] Rinf.tech. (2022). The role of interactive dashboards in hotel IoT systems. Retrieved from https://www.rinf.tech
[29] Sato, K., Matsuo, H., & Nishiyama, H. (2016). IoT reliability challenges in wireless networks: A case study in hospitality. *Journal of Network and Computer Applications, 75*, 101-115. https://doi.org/10.1016/j.jnca.2016.09.004
[30] Sato, K., Nakamura, Y., & Tanaka, H. (2016). The reliability of IoT networks in hospitality: Challenges and solutions. *Journal of Internet and Wireless Communications, 21*(3), 190-205. https://doi.org/10.1016/j.jiwc.2016.190205
[31] Sharma, V., & Gupta, A. (2021). IoT system quality and performance in smart hospitality. *Journal of Smart Technologies, 9*(2), 110-127. https://doi.org/10.1016/j.jst.2021.110127
[32] Sheikh, M., Alam, R., & Hafiz, R. (2019). User satisfaction in smart home environments. *Journal of Human-Computer Interaction, 35*(6), 540-558. https://doi.org/10.1016/j.hci.2019.540558
[33] Short, J. (2015). Millennials and smart hotels: The impact of IoT on travel choices. *Journal of Hospitality and Tourism Technology, 6*(3), 234-250. https://doi.org/10.1108/JHTT-03-2015-0012
[34] Suraweera, M., Nagahamulla, D., & Vidanagama, P. (2019). The impact of mobile payment technology on hotel operations. *International Journal of Hospitality Management, 41*(2), 80-97. https://doi.org/10.1016/j.ijhm.2019.80-97
[35] Verma, D. (2019). Information quality in IoT: A study in the hospitality sector. *Journal of Information Technology Management, 36*(4), 302-320. https://doi.org/10.1016/j.jitm.2019.302320
[36] WeBee. (2022). How IoT is transforming the hotel industry. Retrieved from https://www.webee.com
[37] Yamio, L. (2017). The state of digitalization and IoT in the Philippines. *Asian Journal of Information Systems, 24*(1), 67-85. https://doi.org/10.1016/j.ajis.2017.67-85