

**Utilization of the Internet of Things in Creating Smart Room  
Customization and Improving the Quality of Services in the Tourism and  
Hospitality Industry**

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**ABSTRACT**

*This study is a qualitative study with a descriptive approach, namely describing each main object used in this study, including the Internet of Things, Smart Room Customization, and Service Quality. The data used in this study are secondary data that researchers obtain from various credible sources such as books, scientific articles, credible websites, and various other research sources. The data obtained are analyzed by stages of data collection, data reduction, and drawing conclusions. The result in this article shows that the Internet of Things can create smart room customization. Smart room customization is built using the concept of the Internet of Things (IoT), a concept where an object has the ability to receive and send data over a network without requiring human interaction to a computer. The Internet of Things (IoT) is a concept that aims to expand the benefits of continuously connected internet connectivity. Kaur, Singh, Khairwal, & Jain conducted a study on the Home Automation and Security System with the GSM communication method and Android Application, the system can control equipment and help protect thieves because there is an alarm and can send signals to the owner using Android. Giorgos Sfikas also conducted a study Creating a Smart Room using an IoT approach, a study that explains the concept of building a Smart Room using Arduino and a Bluetooth module to control electronic equipment. In the end, the benefits that the researcher mentioned above serve to facilitate customers in accessing, utilizing facilities, and other things that can facilitate customers to travel and stay in an integrated place and hotel. The convenience that the researcher mentioned above is one form of improving the quality of tourism services.*

**Keywords:** Challenge, Opportunity, Food Security, Traditional Agriculture

**ABSTRAK**

Penelitian ini merupakan studi kualitatif dengan pendekatan deskriptif yaitu mendeskripsikan setiap objek utama yang digunakan dalam penelitian ini, antara lain *Internet of Things*, *Smart Room Customization*, dan *Service Quality*. Data yang digunakan dalam penelitian ini adalah data sekunder yang diperoleh peneliti dari berbagai sumber yang kredibel seperti buku, artikel ilmiah, *website* yang kredibel, dan berbagai sumber penelitian lainnya. Data yang diperoleh dianalisis berdasarkan tahapan pengumpulan data, pengurangan data, dan penarikan kesimpulan. Hasilnya dalam pertunjukan artikel ini. *Internet of Things* dapat membuat kustomisasi ruangan yang cerdas. *Smart Room Customization* dibangun menggunakan konsep *Internet of Things* (IoT), sebuah konsep di mana suatu objek memiliki kemampuan untuk menerima dan mengirim data melalui jaringan tanpa memerlukan interaksi manusia ke komputer. *Internet of Things* (IoT) adalah konsep yang bertujuan untuk

memperluas manfaat konektivitas internet yang terhubung secara berkelanjutan. Kaur, Singh, Khairwal, & Jain melakukan penelitian tentang Sistem Otomasi dan Keamanan Rumah dengan metode komunikasi GSM dan Aplikasi Android, sistem dapat mengontrol peralatan dan membantu melindungi pencuri karena ada alarm dan dapat mengirim sinyal kepada pemilik menggunakan Android [1]. Giorgos Sfikas juga melakukan kajian *Creating a Smart Room using an IoT approach*, sebuah studi yang menjelaskan konsep membangun *Smart Room* menggunakan Arduino dan modul Bluetooth untuk mengontrol peralatan elektronik. Pada akhirnya, manfaat yang disebutkan peneliti tersebut di atas berfungsi untuk memudahkan pelanggan dalam mengakses, memanfaatkan fasilitas, dan hal-hal lain yang dapat memudahkan pelanggan untuk bepergian dan menginap di tempat dan hotel yang terintegrasi. Kemudahan yang disebutkan peneliti di atas merupakan salah satu bentuk peningkatan kualitas layanan pariwisata.

**Kata kunci:** *Challenge, Opportunity*, Ketahanan Pangan, Pertanian Tradisional

## INTRODUCTION

Internet of Things or often called (IoT) is a system that can connect devices or objects through technology. Internet of Things in its application can also identify, find, track, monitor objects and trigger related events automatically and in real time, the development and application of computers, the Internet and other information and communication technologies (ICT) have a major impact on society economic management, production operations, social management and even personal life (Meliyana Nur Saputri, 2016).

One of the major problems of IoT is that it is such a broad concept that no uniform architecture has been proposed. For the IoT idea to work, it must consist of a variety of sensor technologies, networks, communications and computing, etc. Here are some IoT architectures or models given by some researchers, authors, and practitioners (AZHARI, 2024): 1. ITU Architecture According to the recommendations of the International Telecommunication Union (ITU), the network, Internet of Things Architecture consists of: (a) Sensing Layer (b) Access Layer (c) Network Layer (d) Middleware Layer (e) Application Layer This is like the Open Systems Interconnection (OSI) reference model in networking and data communication. 2. IoT Forum Architecture IoT Forum says that Internet of Things Architecture is basically categorized into 3 types including Application, Processor and Transpiration. Internet of Things allows various objects to communicate data over a network without requiring direct communication between computers or humans. IoT, short for Internet of Things, has grown rapidly as a result of the convergence of the internet, wireless technology, and micro electromechanical systems (MEMS). In addition, RFID is often used as a communication method related to IoT.

The basic concept of the Internet of Things is to give a unique identity to every physical object in the real world that can be recognized by a computer system and represented as data in the system. Initially, in IoT, computers could use methods such as scanning barcodes, QR codes, or radio frequency identification (RFID) technology to identify the object (Budiman, D. F., Rahman, A. S., Misbahuddin, M. S. I., & Wiriasto, 2021). Today, objects can be identified through IP addresses and use the internet to

communicate with other objects, allowing for the exchange of information and mutual development. The use of the Internet of Things will bring significant benefits to society. For example, in the tourism and Hospitality sectors by improving the quality of digital-based services in each of these sectors (Ansori, 2018).

According to (Tjiptono, 2008) service quality is a dynamic state that can meet or exceed consumer expectations. Service is a series of activities carried out to serve someone (Trisnawati & Fahmi, 2017). Service quality is something that shows the ability to satisfy customer needs. Service quality is in the form of customer assessments of the superiority of the service obtained at that place (Adhiputra, 2017). So this study concludes that service quality is an assessment related to the fulfillment of customer expectations in service to determine the level of consumer satisfaction.

Service quality is the relationship resulting from the comparison between customer expectations and the performance of the company providing the service. Service can also be interpreted as all forms of maximum service delivery provided by the company with all the advantages in order to meet consumer needs in order to meet customer satisfaction expectations (Bernik, 2019). According to (Tjiptono, 2016), service quality is an effort to meet consumer needs and desires, as well as the accuracy of its delivery. Service quality can also be interpreted as the level of excellence expected and control to meet customer desires. According to (Hasibuan, 2007), service quality is a subjective assessment of customers regarding how well a service meets their expectations. Customers will compare the service they experience with the service they expect, if the quality of service they receive exceeds expectations, they are satisfied.

There are four characteristics of service quality, including (Kasmir, 2018): 1. People-Processing Service means something that someone needs in the form of services. 2. Possession-Processing Service means something related to goods. 3. Mental-Stimulus Processing Service explains something that someone does in the form of an assessment. 4. Information Processing Service explains that services are intended for intangible assets such as information. Parasuraman et al (1998), Wong and Sohal (2003) state that there are five strong dimensions, namely (Supriyanto, 2019): 1. Direct evidence (tangibles) The company's expertise in showing its capabilities to consumers. 2. Reliability (reliability) The ability to be polite to visitors and provide services presented immediately. 3. Assurance (assurance) The knowledge of a company in creating a sense of trust in consumers. 4. Empathy (empathy) Ease of good communication, providing good attention to customers.

Based on this, this article aims to analyze the use of the Internet of Things in creating Smart Room Customization and improving the Quality of Service in the fields of tourism and Hospitality. This article will examine the title mentioned above comprehensively using a descriptive qualitative approach. More complete information about the research methodology can be seen in the sub-chapter of the research methodology below.

## **RESEARCH METHODS**

Based on the explanation above, it can be concluded that this study aims to thoroughly analyze the main functions and objectives in this study regarding the use of the Internet of Things in creating Smart Room Customization and improving the quality of services in the fields of tourism and Hospitality (Imam Gunawan, 2014). This study is a qualitative study with a descriptive approach, namely describing each main object used in this study, including the Internet of Things, Smart Room Customization, and Service Quality (Manzilati, 2017). The data used in this study are secondary data that researchers obtain from various credible sources such as books, scientific articles, credible websites, and various other research sources (Sugiyono, 2019). The data obtained are analyzed by stages of data collection, data reduction, and drawing conclusions with a more complete explanation below (Rukin, 2019).

## **RESULT AND DISCUSSION**

### **Internet of Things and Quality Service**

Internet of Things or often called (IoT) is a system that can connect devices or objects through technology. Internet of Things in its application can also identify, find, track, monitor objects and trigger related events automatically and in real time, the development and application of computers, the Internet and other information and communication technologies (ICT) have a major impact on society economic management, production operations, social management and even personal life (Meliyana Nur Saputri, 2016).

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### **Utilization of The Internet of Things in Creating Smart Room Customization and Improving The Quality of Services in The Tourism and Hospitality Industry**

IoT is revolutionizing the hospitality sector by providing personalized experiences for guests. Digital room keys open doors using a smartphone, eliminating

the need for cumbersome physical keys. Motion sensors detect guest presence, automatically adjusting room temperature and lighting for optimal comfort. Digital butlers offer 24-hour room service via a mobile app, making it easy for guests to order food, drinks, or other amenities without leaving their rooms. IoT is also enriching the tourist experience at tourist attractions. Sensors placed throughout historical sites provide real-time information on occupancy rates, wait times, and visitor preferences. Virtual tour guide systems offer tours tailored to individual interests and schedules. Interactive navigation systems guide tourists through sprawling tourist complexes, ensuring they don't miss out on key attractions (Kurniawan, 2016).

The transportation and logistics industry has also seen the positive impact of IoT. Buses and trains are equipped with GPS tracking technology, providing real-time information about location and arrival times. Integrated booking platforms make it easier for travelers to book tickets, rent cars, and arrange airport transfers. Intelligent traffic management systems reduce congestion, ensuring a smoother journey for travelers. IoT offers a variety of benefits to travelers. Personalized experiences enhance overall convenience and satisfaction. Real-time information helps travelers make informed decisions, maximizing their time at a destination. Accurate navigation systems eliminate the stress and frustration associated with getting lost, making travel more enjoyable. Ease of booking and always-available services streamline the travel process, giving travelers peace of mind (Kaur, 2016).

In addition to the benefits above, the Internet of Things can also create smart Room Customization. Smart Room Customization is built using the concept of the Internet of Things (IoT), a concept where an object has the ability to receive and send data over a network without requiring human interaction to a computer. The Internet of Things (IoT) is a concept that aims to expand the benefits of continuously connected internet connectivity. Kaur, Singh, Khairwal, & Jain conducted a study on the Home Automation and Security System with the GSM communication method and Android Application, the system can control equipment and help protect thieves because there is an alarm and can send signals to the owner using Android [Giorgos Sfikas also conducted a study Creating a Smart Room using an IoT approach, a study that explains the concept of building a Smart Room using Arduino and a Bluetooth module to control electronic equipment (Iqbal et al., 2021).

In the end, the benefits that the researcher mentioned above serve to facilitate customers in accessing, utilizing facilities, and other things that can facilitate customers to travel and stay in an integrated place and hotel. The convenience that the researcher mentioned above is one form of improving the quality of tourism services.

## **CONCLUSION**

IoT is revolutionizing the hospitality sector by providing personalized experiences for guests. Digital room keys open doors using a smartphone, eliminating the need for cumbersome physical keys. Motion sensors detect guest presence, automatically adjusting room temperature and lighting for optimal comfort. Digital butlers offer 24-hour room service via a mobile app, making it easy for guests to order

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